Test Report

of the accredited Testing Laboratory
0274 – TÜV AUSTRIA GMBH – Location Vienna - EMC Radio
ISED Laboratory Company Number: 2932K, CAB identifier: AT0001

Order Confirmation Number: 2025-AT-TC-EE-ET-EX-0-000028
About

the Radio - test listed below

Applicant:	VusionGroup GmbH Kalsdorfer Strasse 12 A – 8072 Fernitz-Mellach
Test object:	Electronic shelf labelling system Product Marketing Name: E700 7.3 Model: EDB2-0730-A FCC ID: 2ACQM-EDB2-0730-A IC: 12154A-EDB20730A
Serial number:	Prototype
Accredited regulation:	FCC: 47 CFR Part 15 (eCFR 26.08.2025) RSS-247 Issue 3, August 2023 RSS-102 Issue 6, December 2023 ANSI C63.10-2020

Stefan Zillner

Examined by / Testing Laboratory

TÜV AUSTRIA GMBH

Andreas Malek

Approved by / Testing Laboratory

TÜV AUSTRIA GMBH

The results of this test report only refer to the provided equipment.

Issued on 22.09.2025 in Vienna / TIC

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1. Applicant

Company:	VusionGroup GmbH
Department:	Product & Project Manager
Address:	A – 8072 Fernitz-Mellach; Kalsdorfer Strasse 12
Contact person:	Mrs. Tamara Risek Gmajnic

EUT received on:	26.08.2025
Tests were performed on:	26.08. to 19.09.2025

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2. Description of EUT

EUT:	Electronic shelf labelling system
Product Name:	E700 7.3
Model:	EDB2-0730-A
Serial Number:	Prototype
Manufacturer:	VusionGroup GmbH A – 8072 Fernitz-Mellach; Kalsdorfer Strasse 12
Description:	VusionGroup GmbH provided the following configuration for the measurements: Prototype with special firmware for continuous transmission
Operating mode:	The measurements were carried out at the following running states: test-firmware running, transmitting continuously
Technical data EUT:	Rated voltage: 3VDC Rated frequency: DC Mains voltage during the tests: 3VDC
Climatic conditions in the emc laboratory:	Relative humidity: 40% Temperature: 24°C

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3. Standards / Final result

Name	Title	Deviation	Result
FCC: 47 CFR Part 15 (eCFR 26.08.2025)	RADIO FREQUENCY DEVICES	none	OK
RSS-247 Issue 3, August 2023	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices	none	OK
RSS-102 Issue 6, December 2023	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)	none	OK
ANSI C63.10-2020	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	none	OK

Result: Opinions and interpretation of testing laboratory
OK: EUT passed
NOK: EUT failed

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4. TEST RESULTS

4.1. TEST OBJECT DATA

General EUT Description

2.1033 (c) Technical description

2.1033 (7) Type of emission: 1M04F1D – Channel spacing 2 MHz

2.1033 (8) Frequency range: 2402 to 2480 MHz (channel center frequencies).

2.1033 (9) Power range and Controls: The maximum peak output power is 6,75 mW and there is no power regulation.

2.1033 (10) Maximum output power rating: 6,75 mW eirp.

2.1033 (11) DC Voltage and Current: 3V DC

RSS-135 This standard does not apply to:

1.1.(a) a receiver that scans radio frequencies for the purpose of enabling its associated transmitter to avoid transmitting in an occupied frequency but which does not have the capability of decoding the message (e.g. converting it to audio voice) contained in the radio signal

Worst case Spurious Emissions: 47,189 dBµV/m AVG (8,59 dBµV/m accounting the Duty Cycle) at 4804,0 MHz

Tests were performed August 26th to September 19th 2025.

All test equipment was calibrated at the time of testing.

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4.2. Number of channels and channel spacing § 2.1033

Conducted Measurement

Rated output power: 6,75 mW

There are 40 Channels used, starting at 2402 till 2480 MHz each separated by 2 MHz channel spacing.

Test Equipment used: N/A

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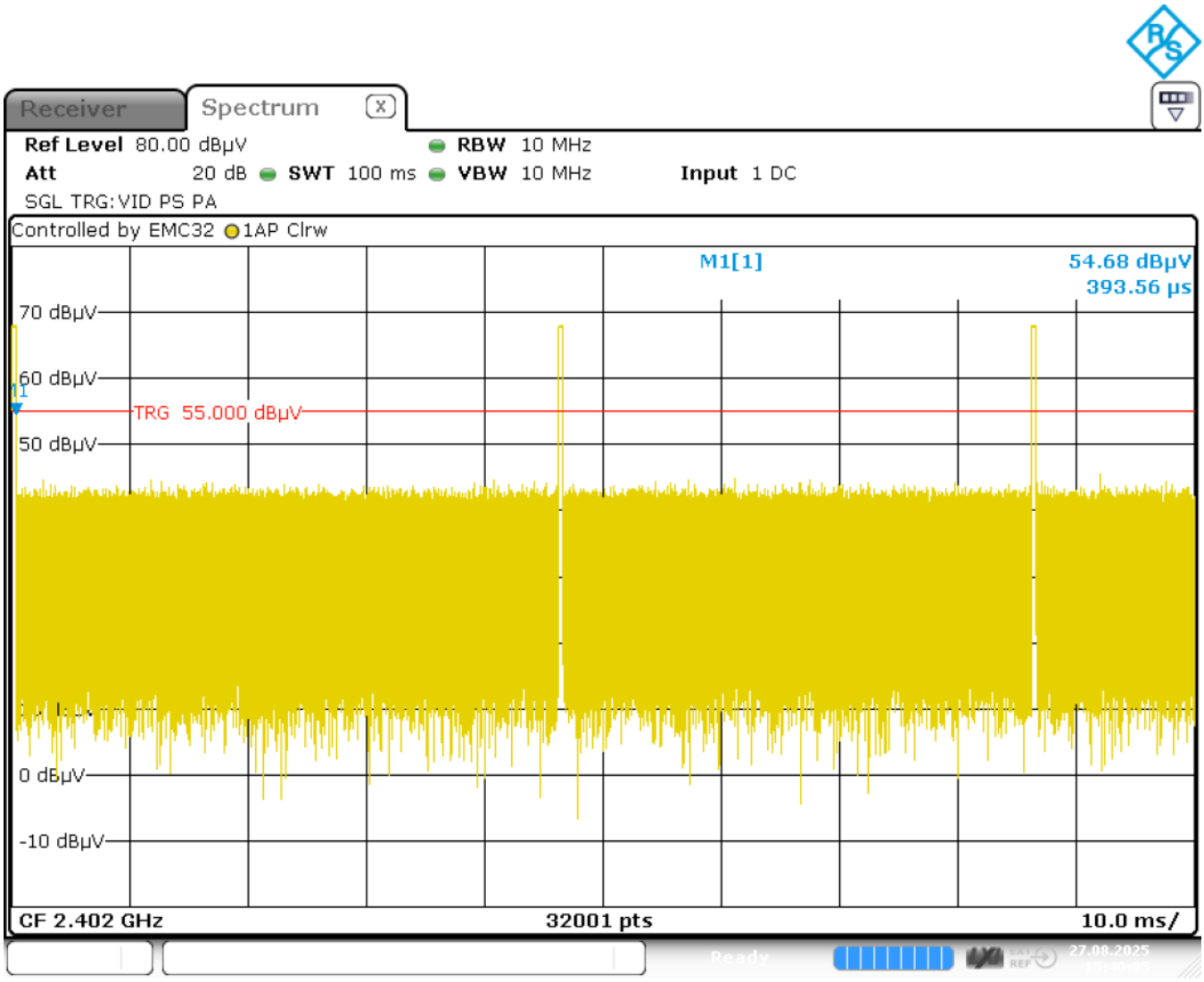
4.3 Duty Cycle measurements for averaging § 15.209 (d)

Mode: data transmission (worst case in 100ms)

A EUT sample with worst-case duty cycle measurements was provided by the manufacturer.
The electronic shelf label does not transmit on its own and only responds to inquiries and commands from an access point.



Date: 27.AUG.2025 15:40:05

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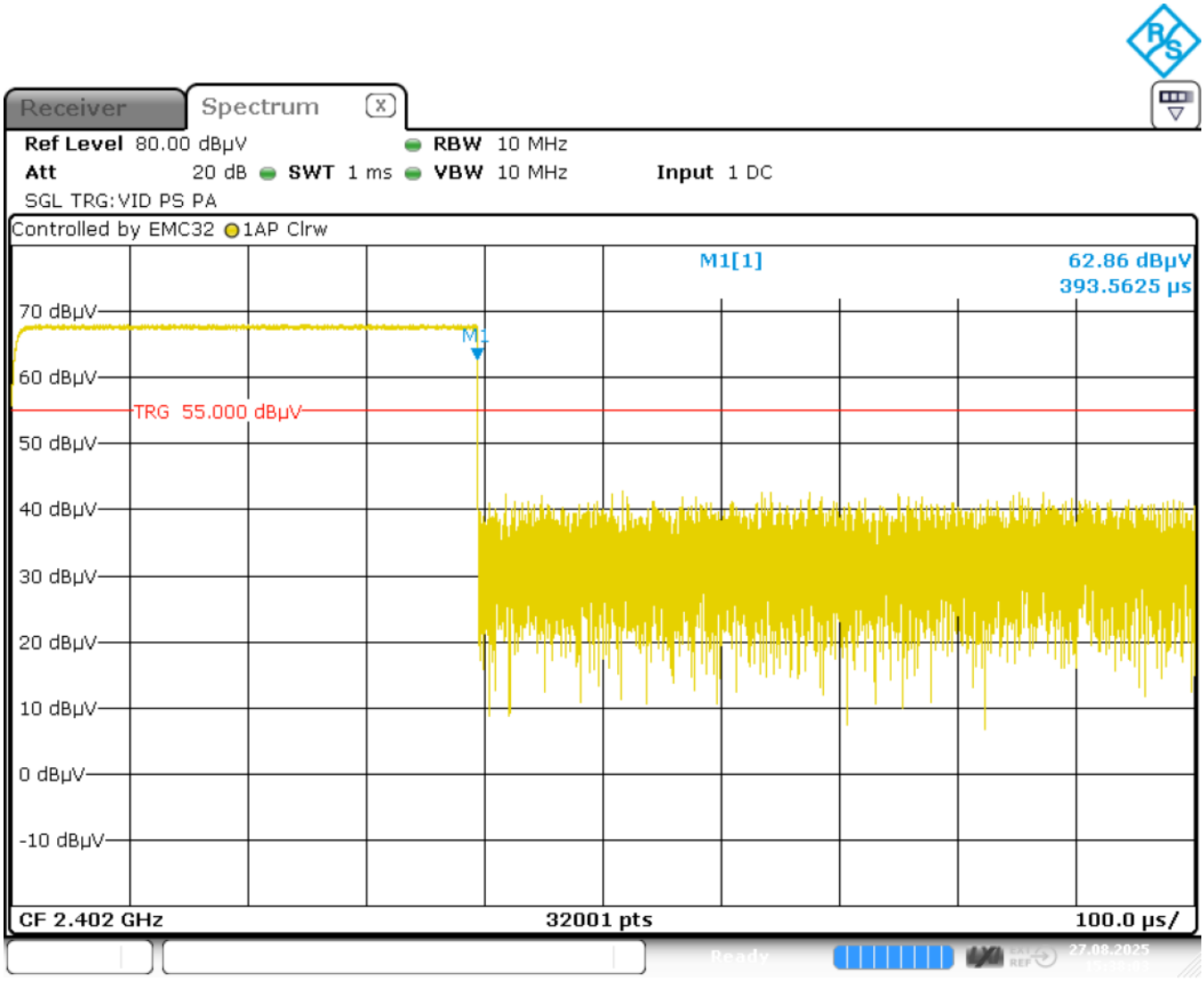
Worst case transmission, zoomed in:



Date: 27.AUG.2025 15:38:03

There are three transmission bursts in a 100ms time frame and each has a length of 0,394 ms, giving a duty cycle of 1,18% or an average factor of -38,6 dB.

LIMIT **SUBCLAUSE 15.209(d)**

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Equipment used: EMV-205

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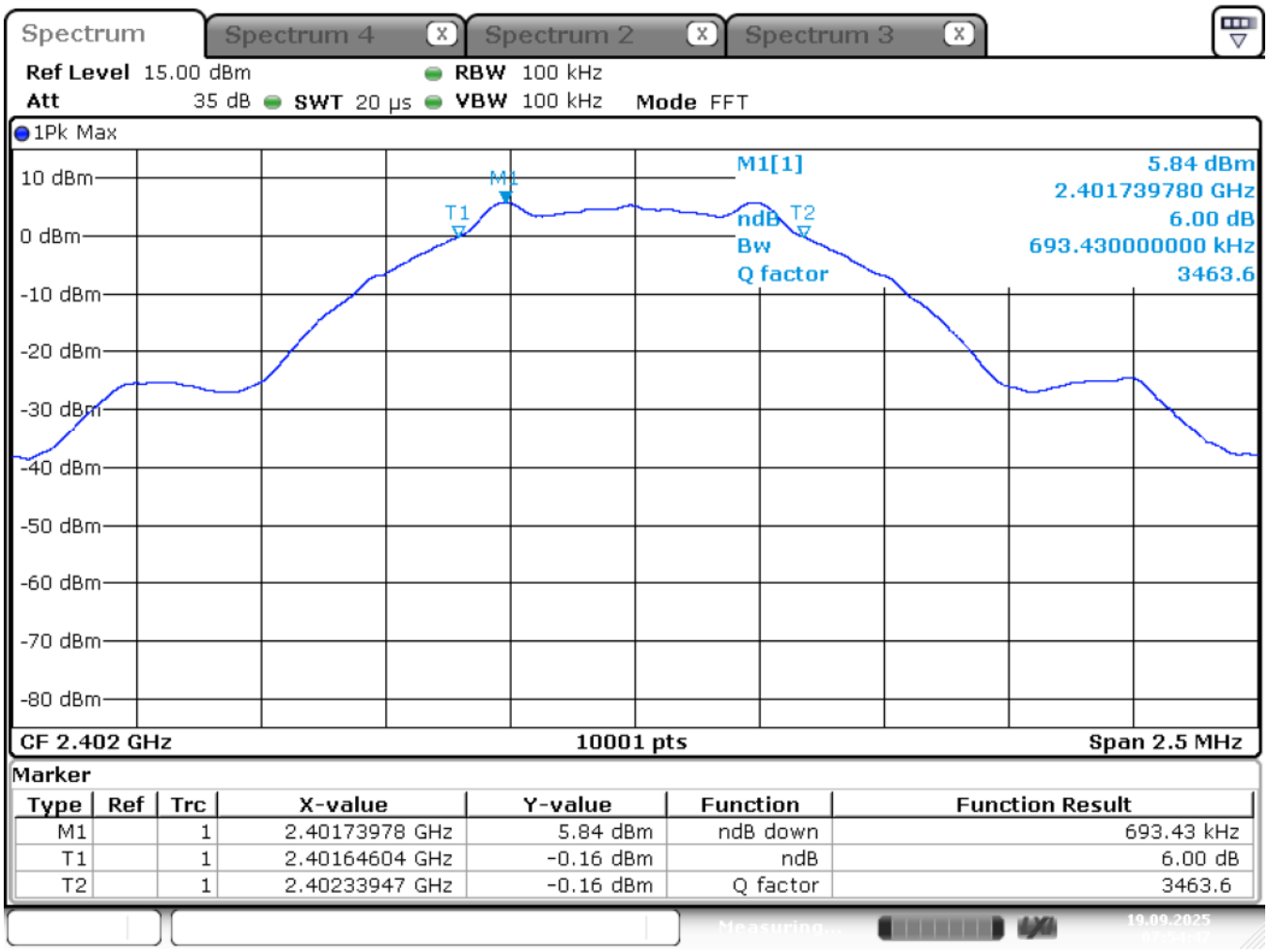
4.4. 6 dB Bandwidth

§ 15.247(a)(2)
5.2.a)

Conducted Measurement

Rated output power: 6,75 mW Channel 0 (2402 MHz center frequency)



Date: 19.SEP.2025 07:54:48

6dB Bandwidth: 693,43 kHz

DTS Bandwidth measurement according to KDB 558074 and ANSI C63.10.

LIMIT **SUBCLAUSE 15.247(e) – 5.2.a)**

Under normal test conditons	6 dB Bandwidth at least 500 kHz

Test Equipment used: EMV-205

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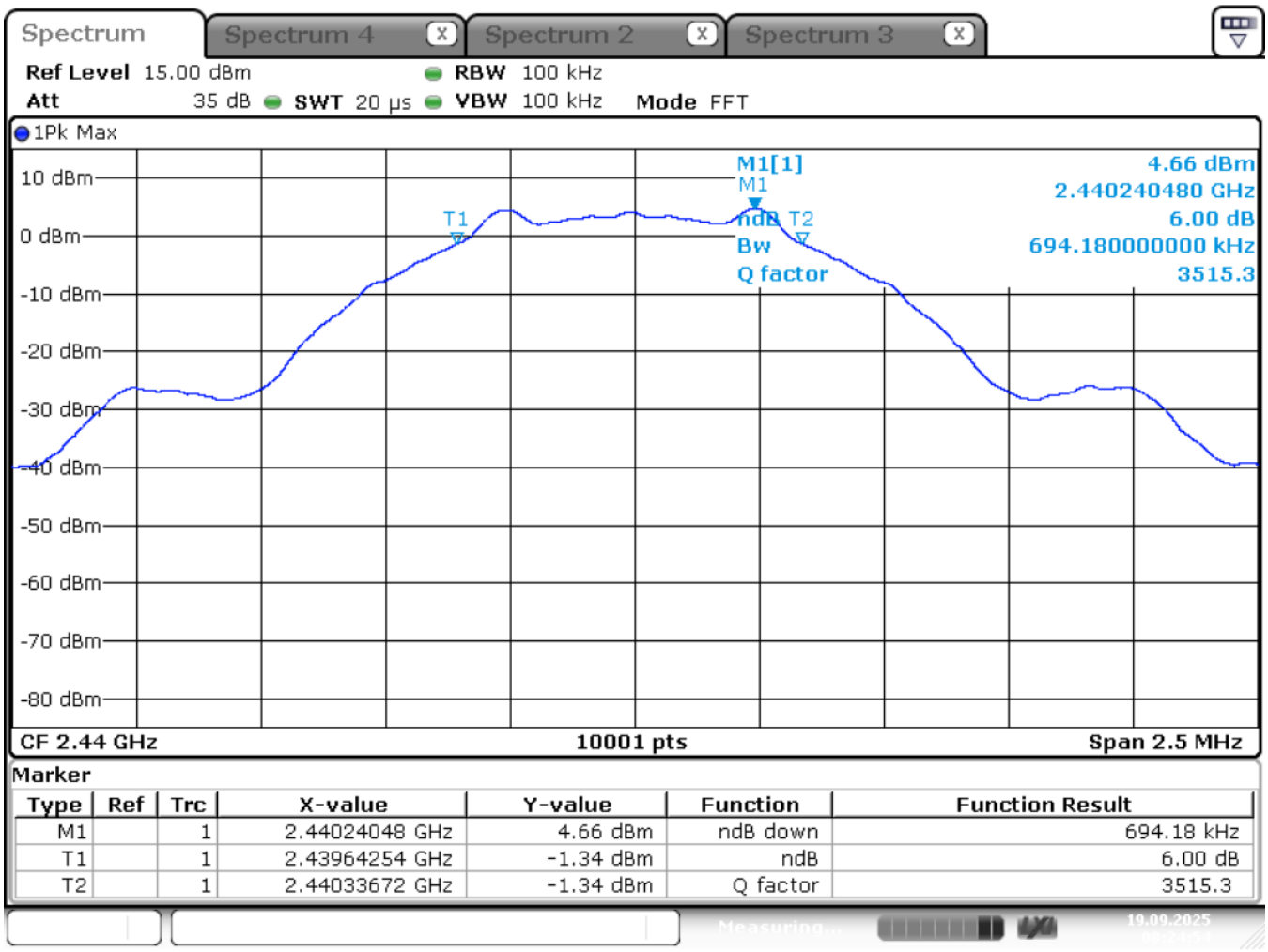
6 dB Bandwidth **§ 15.247(a)(2) 5.2.a)**

Conducted Measurement

Rated output power: 6,75 mW Channel 19 (2440 MHz center frequency)



Date: 19.SEP.2025 08:24:55

6dB Bandwidth: 694,18 kHz

DTS Bandwidth measurement according to KDB 558074 and ANSI C63.10.

LIMIT **SUBCLAUSE 15.247(e) – 5.2.a)**

Under normal test conditons	6 dB Bandwidth at least 500 kHz

Test Equipment used: EMV-205

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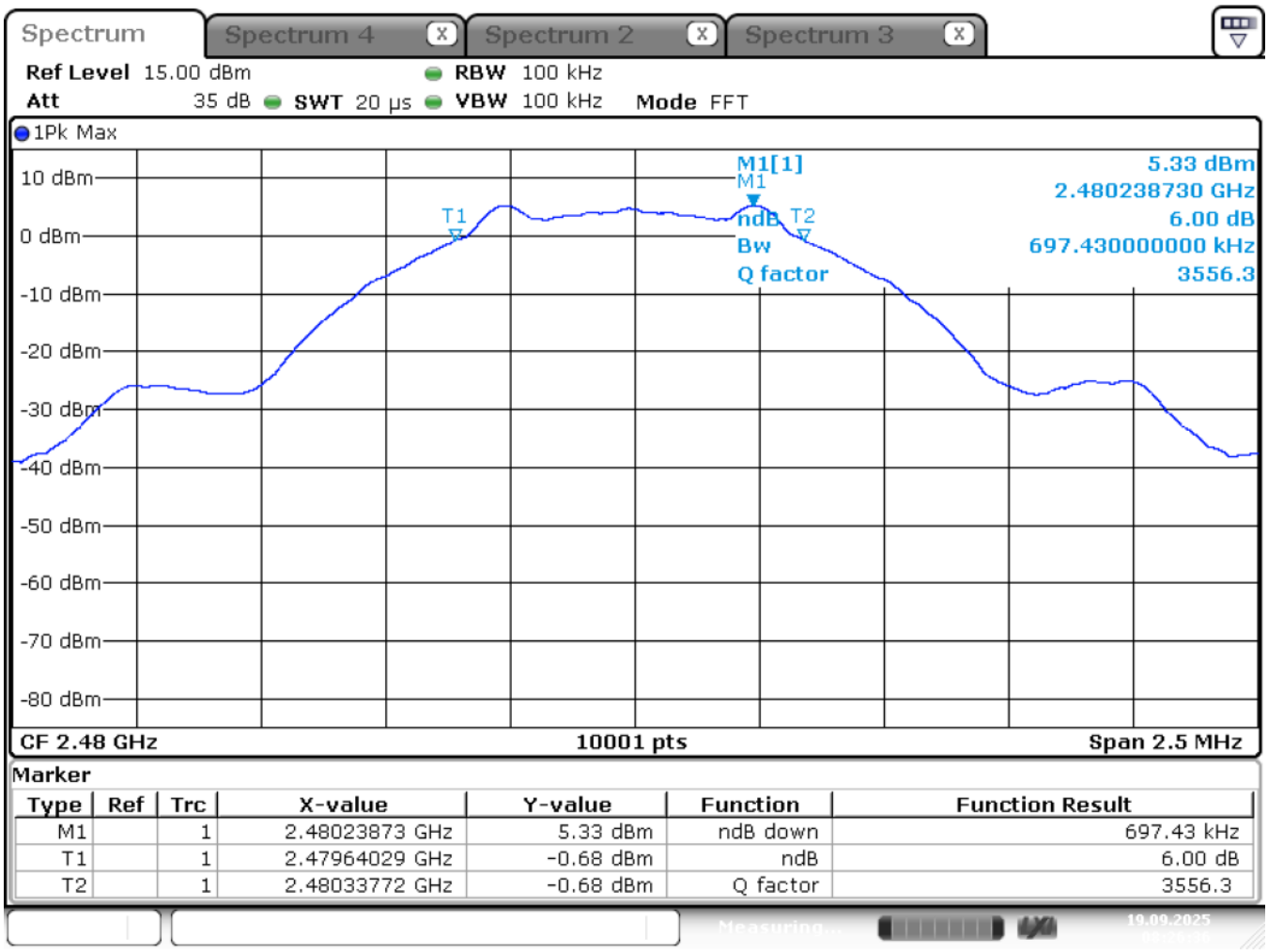
6 dB Bandwidth **§ 15.247(a)(2) 5.2.a)**

Conducted Measurement

Rated output power: 6,75 mW Channel 39 (2480 MHz center frequency)



Date: 19.SEP.2025 08:26:36

6dB Bandwidth: 697,43 kHz

DTS Bandwidth measurement according to KDB 558074 and ANSI C63.10.

LIMIT **SUBCLAUSE 15.247(e) – 5.2.a)**

Under normal test conditons	6 dB Bandwidth at least 500 kHz

Test Equipment used: EMV-205

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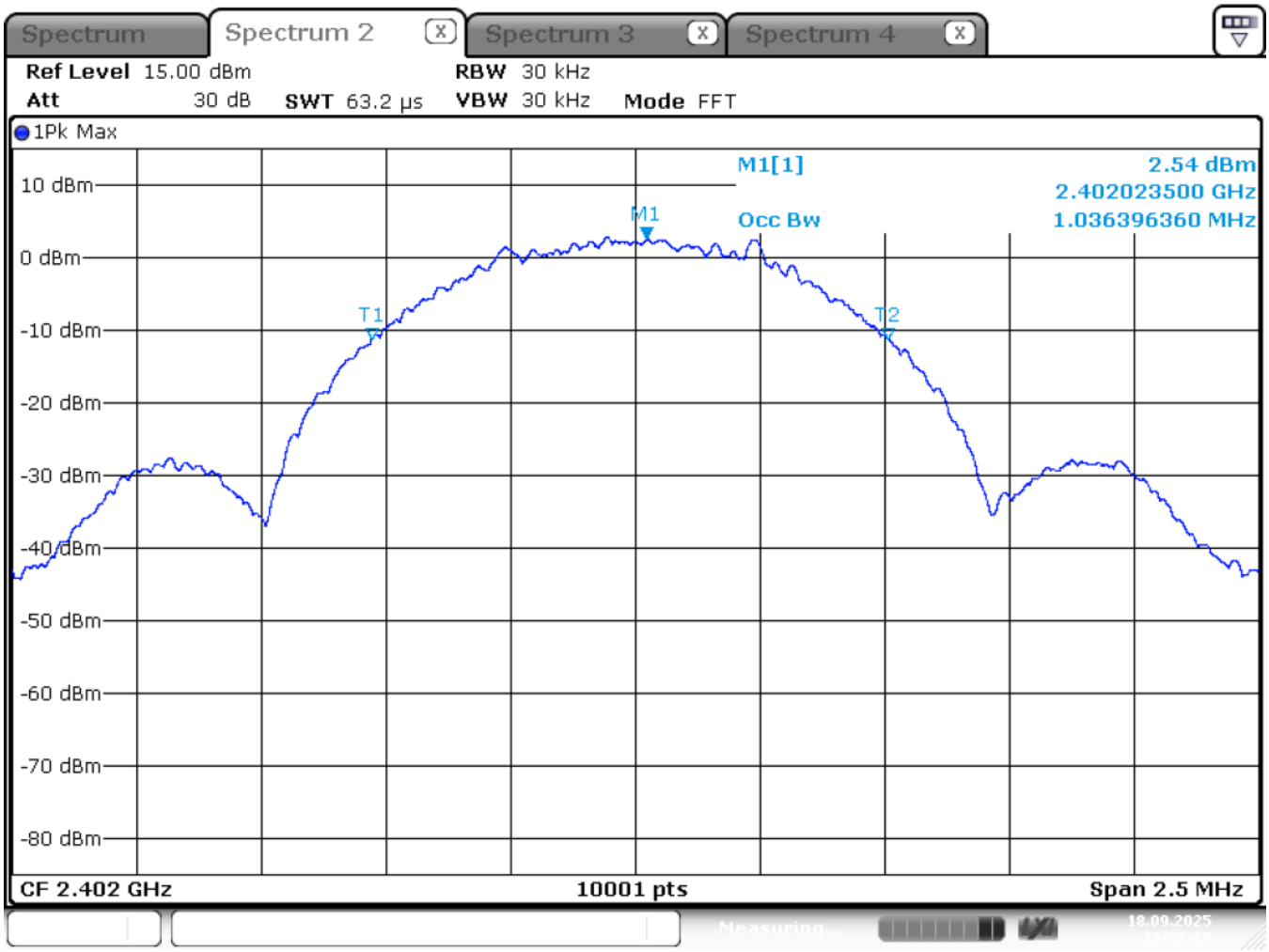
4.5. 99% Bandwidth **RSS 247**

Conducted Measurement

Rated output power: 6,75 mW Channel 0 (2402 MHz center frequency)



Date: 18.SEP.2025 18:52:16

99% Bandwidth: 1036,4 kHz

LIMIT **RSS 247**

None; for IC reporting purposes only

Test Equipment used: EMV-205

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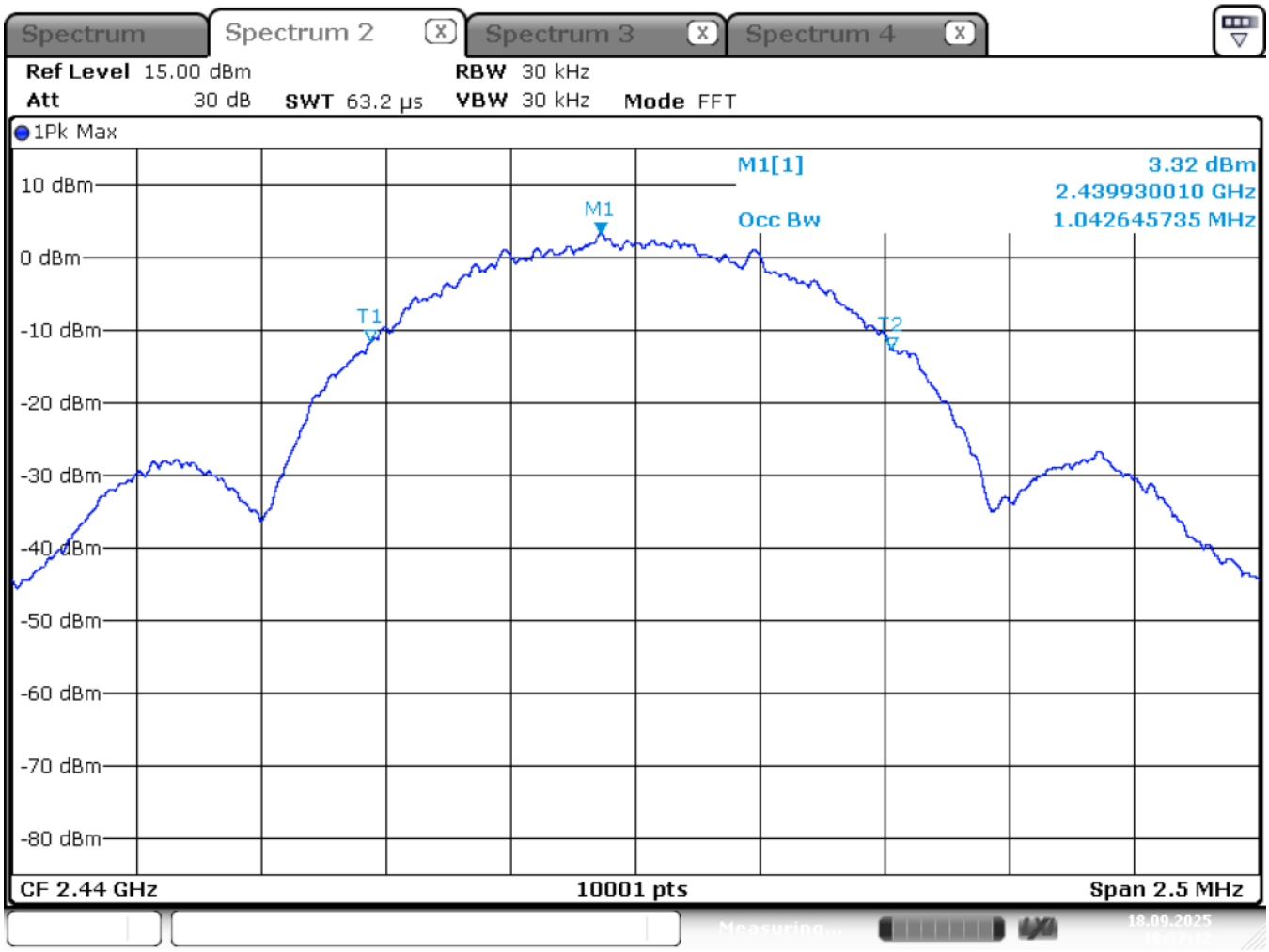
99% Bandwidth **RSS 247**

Conducted Measurement

Rated output power: 6,75 mW Channel 19 (2440 MHz center frequency)



Date: 18.SEP.2025 18:37:12

99% Bandwidth: 1042,65 kHz

LIMIT **RSS 247**

None; for IC reporting purposes only

Test Equipment used: EMV-205;

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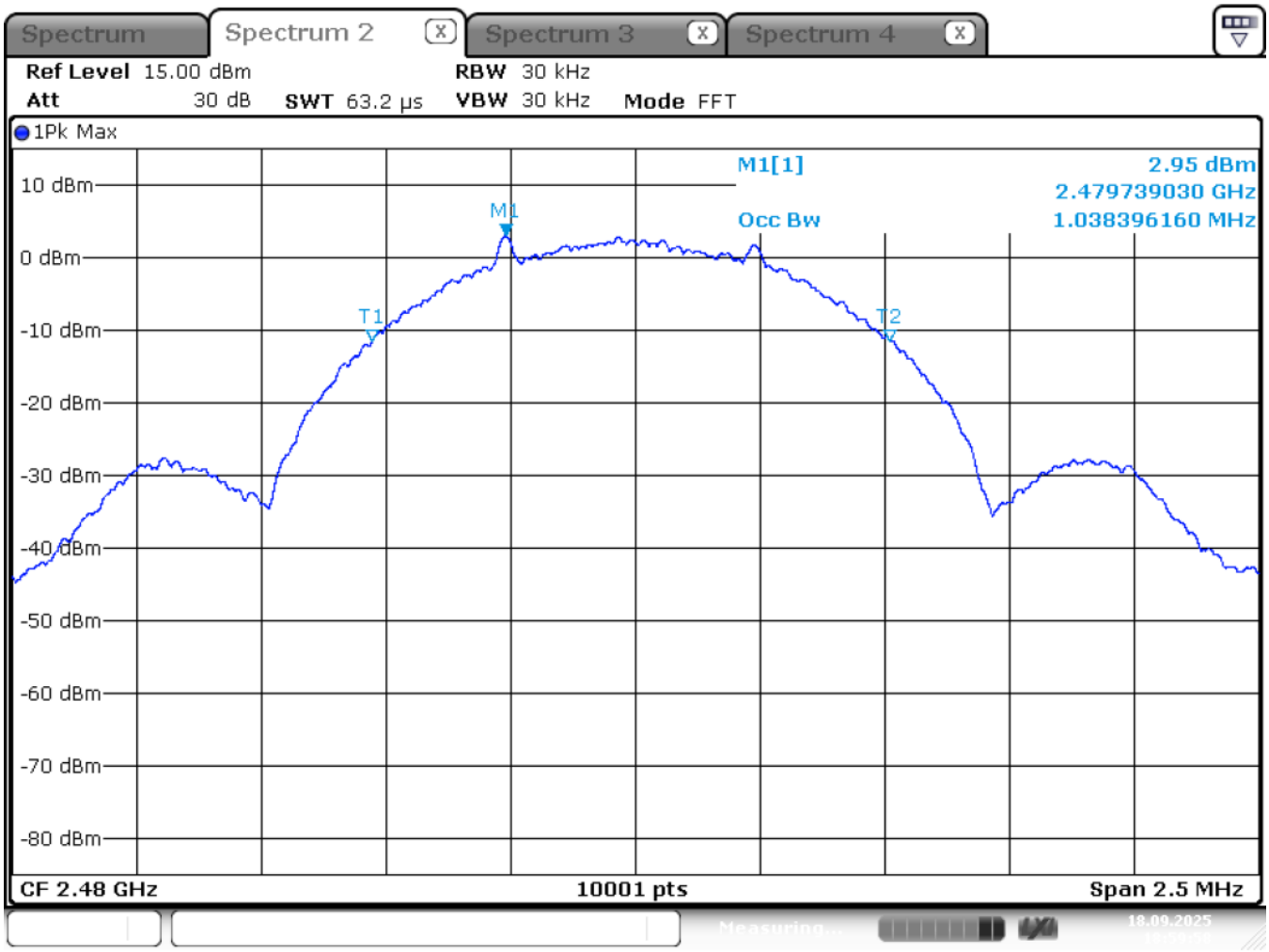
99% Bandwidth **RSS 247**

Conducted Measurement

Rated output power: 6,75 mW Channel 39 (2480 MHz center frequency)



Date: 18.SEP.2025 18:59:58

99% Bandwidth: 1038,4 kHz

LIMIT **RSS 247**

None; for IC reporting purposes only

Test Equipment used: EMV-205

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4.6. Maximum Peak RF Power Output

§ 15.247(b)(3)
5.4.4

Conducted Measurement according to ANSI C63.10 11.9.1.2

Rated output power: 6,75 mW

Test conditions		Transmitter power (mW)		
		2402 MHz	2440 MHz	2480 MHz
T_{nom} (23)°C	V_{nom} (3) V	3.85	3.23	3.46
Measurement uncertainty		± 0,75 dB		

Radiated Measurement

Rated output power: 6,75 mW

Test conditions		Transmitter power (mW) EIRP		
		2402 MHz	2440 MHz	2480 MHz
T_{nom} (23)°C	V_{nom} (3) V	6.75	6.47	6.11
Measurement uncertainty		± 2 dB		

Maximum Gain derived from EIRP and conducted measurement:		Maximum Gain (dBi)		
Test condition		2402 MHz	2440 MHz	2480 MHz
T_{nom} 23 °C	V_{nom} (3)V	2.434	3.022	2.467

LIMIT **SUBCLAUSE 15.247(b)(3) – 5.4.4**

Under normal test conditons	1W conducted (4W eirp)

Test Equipment used: EMV-205; NT-100; NT-110/1; NT-111/1; NT-139; NT-207/1;

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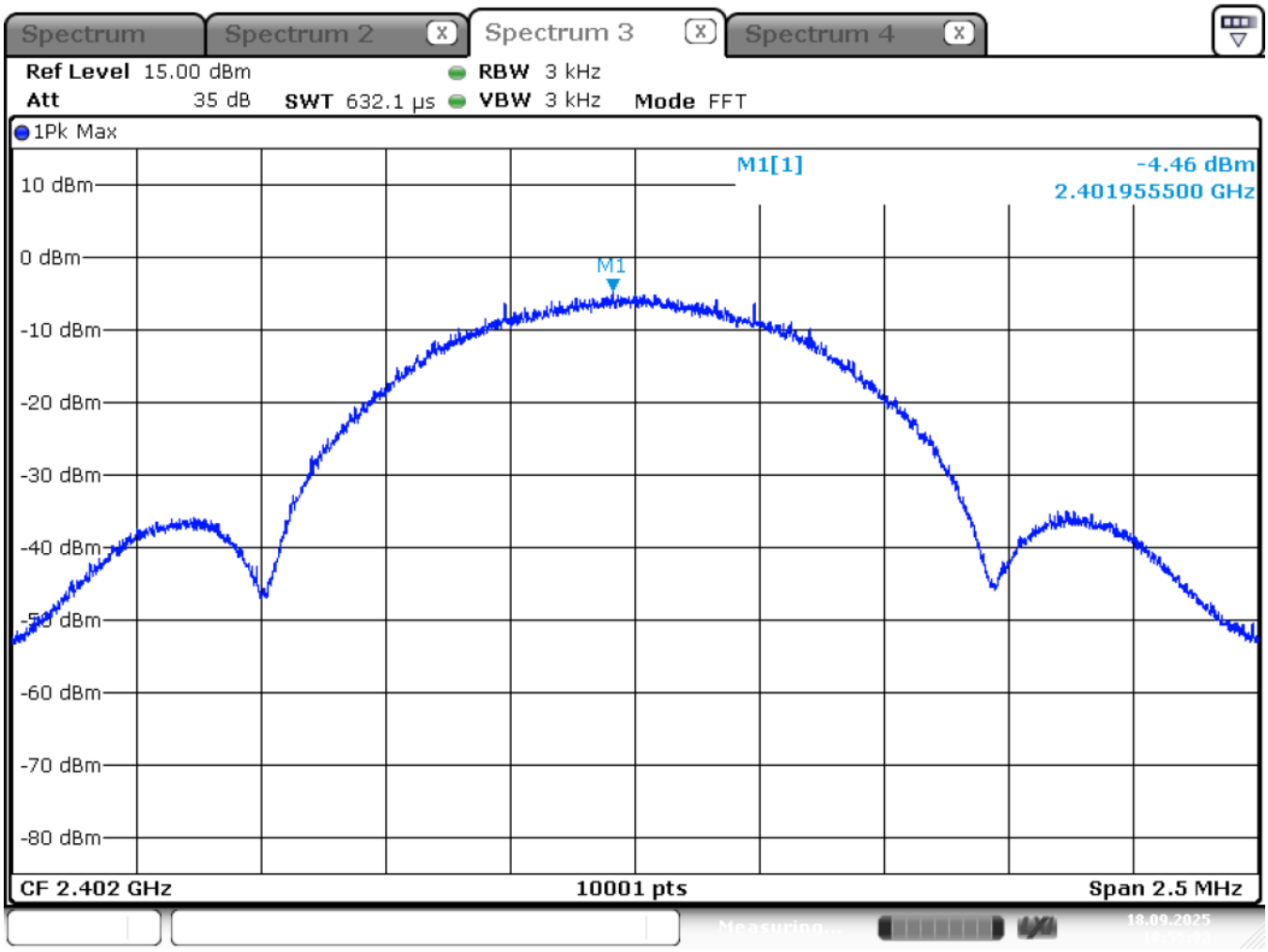
4.7. Power spectral density

§ 15.247(e)
5.2.2

Conducted Measurement

Rated output power: 6,75 mW Channel 0 (2402 MHz center frequency)



Date: 18.SEP.2025 18:55:02

Power Spectral density: -4,46 dBm @ 2401,96 MHz

LIMIT **SUBCLAUSE 15.247(e) – 5.2 b)**

Under normal test conditons	+8dBm in any 3 kHz band

Test Equipment used: EMV-205

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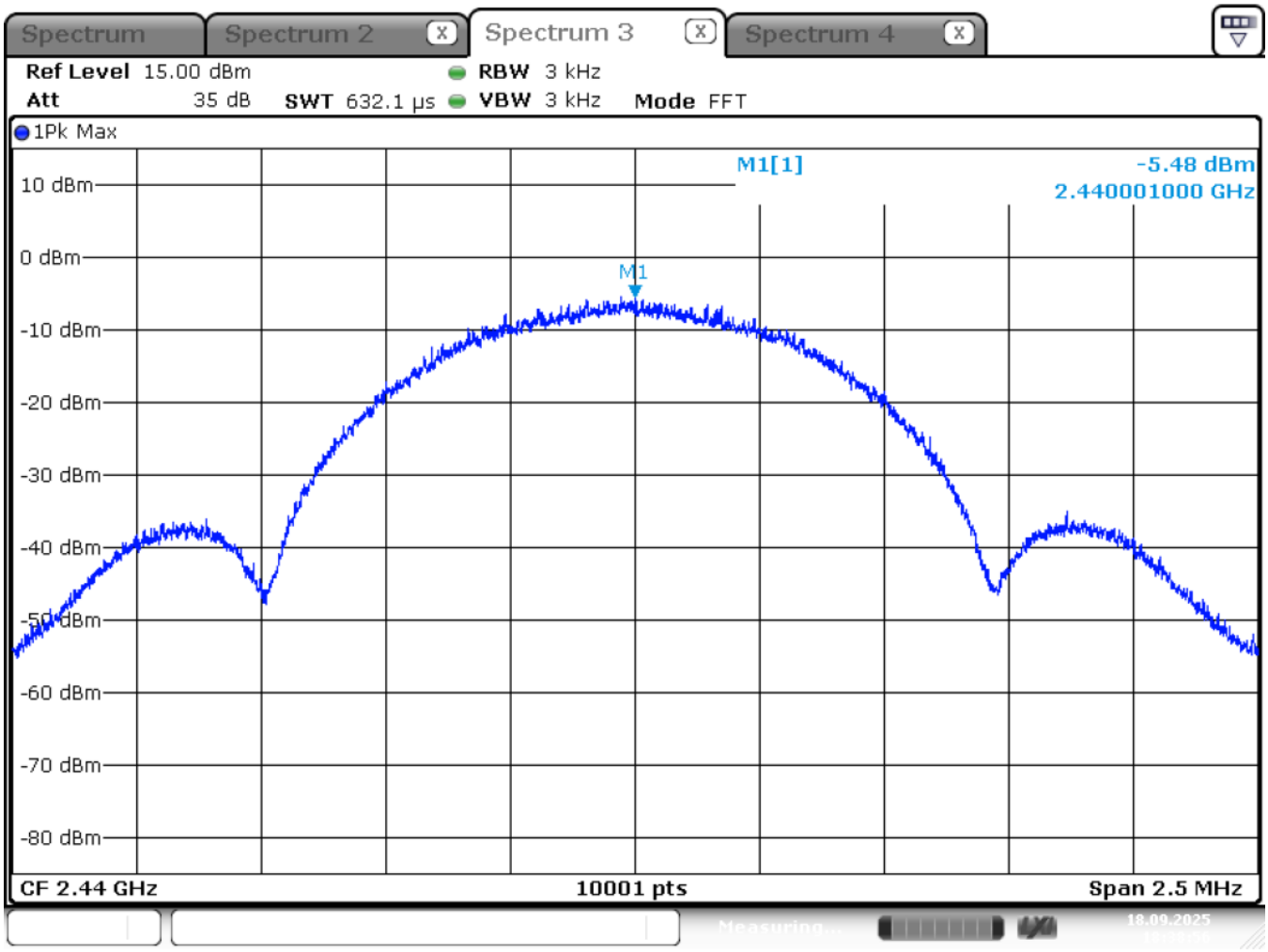
Power spectral density **§ 15.247(e)**
5.2 b)

Conducted Measurement

Rated output power: 6,75 mW Channel 19 (2440 MHz center frequency)



Date: 18.SEP.2025 18:38:57

Power Spectral density: -5,48 dBm @ 2440,0 MHz

LIMIT **SUBCLAUSE 15.247(e) – 5.2 b)**

Under normal test conditons	+8dBm in any 3 kHz band

Test Equipment used: EMV-205

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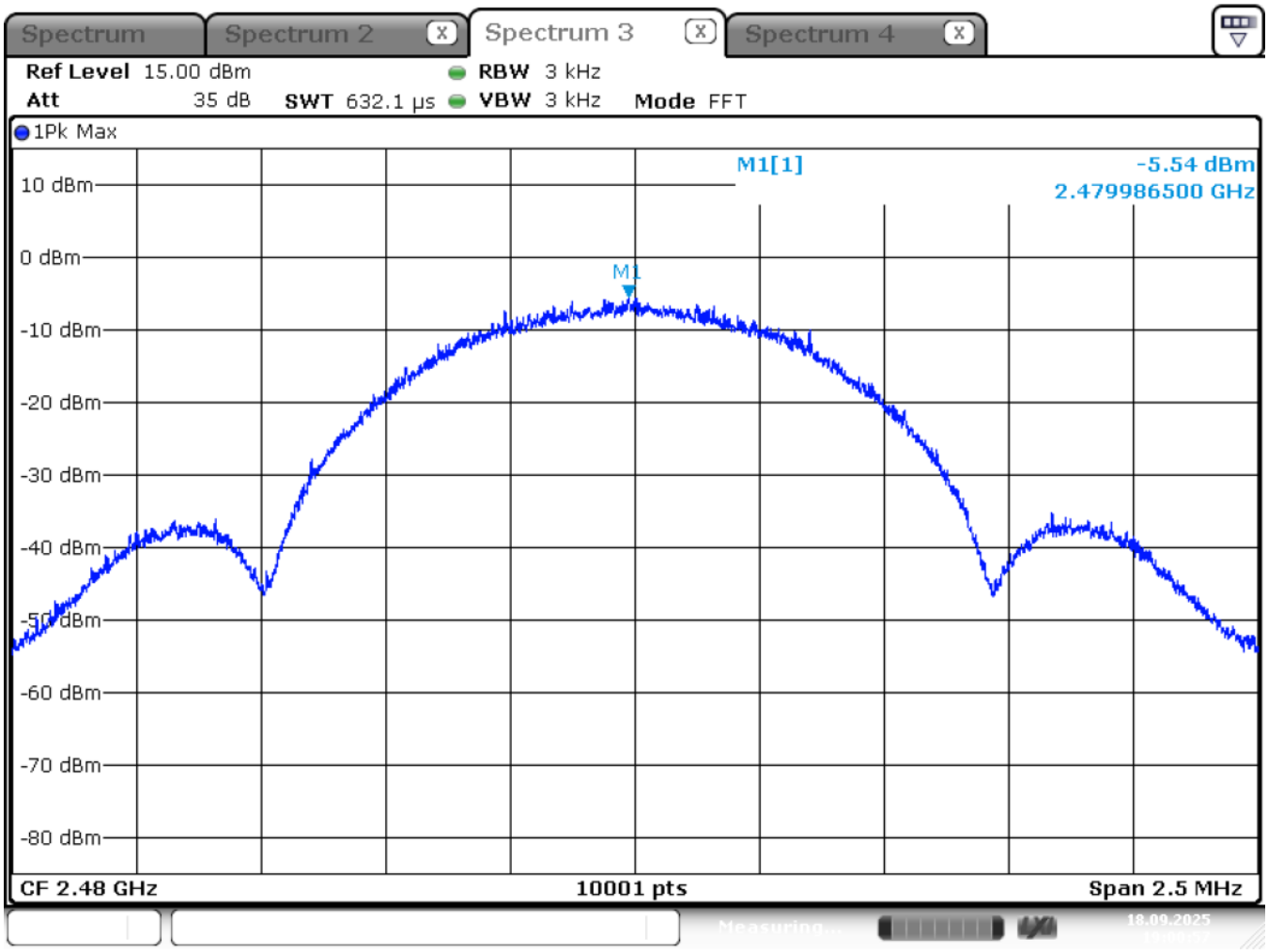
Power spectral density **§ 15.247(e)**
5.2 b)

Conducted Measurement

Rated output power: 6,75 mW Channel 39 (2480 MHz center frequency)



Date: 18.SEP.2025 19:00:57

Power Spectral density: -5,54 dBm @ 2479,987 MHz

LIMIT **SUBCLAUSE 15.247(e) – 5.2 b)**

Under normal test conditons	+8dBm in any 3 kHz band

Test Equipment used: EMV-205

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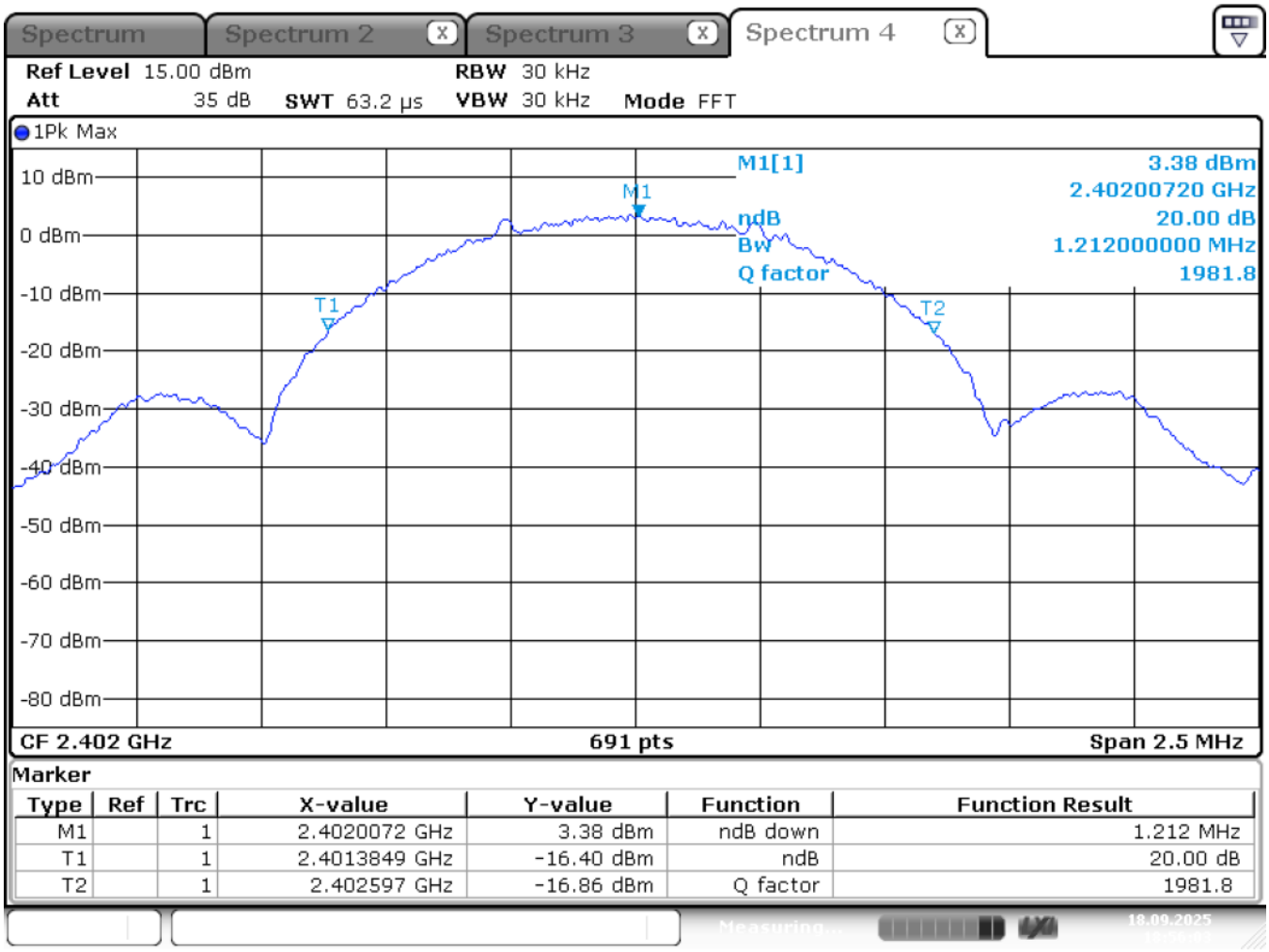
4.8 Additional provisions to the general radiated emission limitations § 15.215(c)

Conducted Measurement

Channel 0 (2402 MHz)



Date: 18.SEP.2025 18:56:04

Frequency band: 2400-2483.5 MHz
Lower frequency 20 dB bandwidth marker: 2401.3849 MHz
The 20 dB bandwidth of the emission on the lowest channel is fully contained within the frequency band.

LIMIT SUBCLAUSE 15.215(c)

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. In the case of intentional radiators operating under the provisions of subpart E, the emission bandwidth may span across multiple contiguous frequency bands identified in that subpart. The

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requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Test Equipment used: EMV-205

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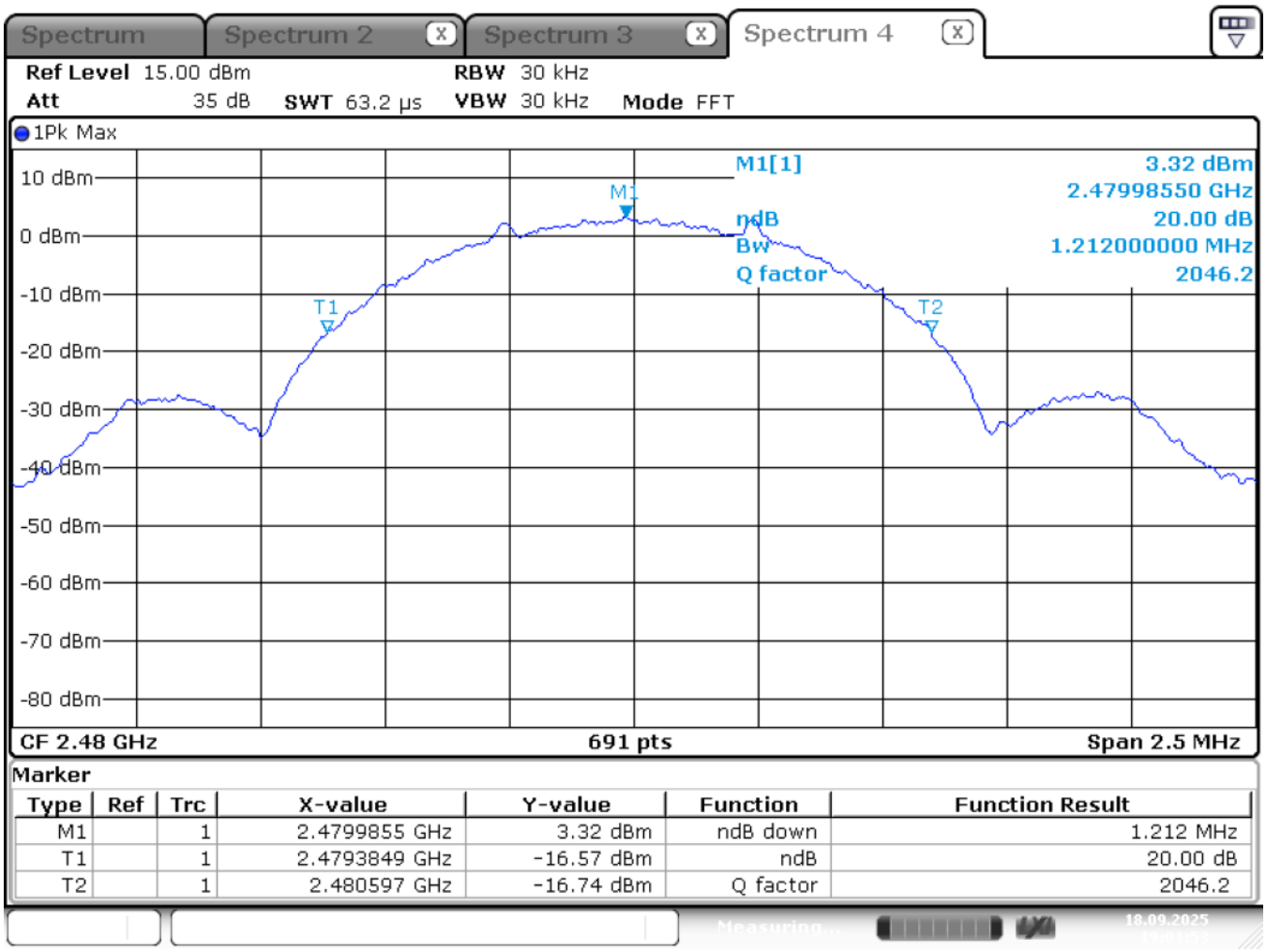
Channel 39 (2480 MHz)

Conducted Measurement



Date: 18.SEP.2025 19:01:54

Frequency band: 2400-2483.5 MHz
Upper frequency 20 dB bandwidth marker: 2480.597 MHz
The 20 dB bandwidth of the emission on the lowest channel is fully contained within the frequency band.

LIMIT **SUBCLAUSE 15.215(c)**

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. In the case of intentional radiators operating under the provisions of subpart E, the emission bandwidth may span across multiple contiguous frequency bands identified in that subpart. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a

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frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Test Equipment used: EMV-205

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4.9. Emissions in restricted bands — § 15.209(a)
Emissions falling within restricted frequency bands — RSS-Gen

Measuring apparatus parameters 9 kHz to 150 kHz

Parameter	Preview measurement	Final measurement	Parameter	Preview measurement	Final measurement
Start frequency	9 kHz	9 kHz	Detector	Max Peak	Quasi Peak
Stop frequency	150 kHz	150 kHz	Measuring time	10 ms	1 s
Stepsize	50 Hz	50 Hz	RF-attenuation	0dB	0dB
IF- Bandwidth	200 Hz	200 Hz	Preamplifier	20 dB	20 dB

Measuring apparatus parameters 150 kHz to 30 MHz

Parameter	Preview measurement	Final measurement	Parameter	Preview measurement	Final measurement
Start frequency	150 kHz	150 kHz	Detector	Max Peak	Quasi Peak
Stop frequency	30 MHz	30 MHz	Measuring time	10 ms	1 s
Stepsize	2.25 kHz	2.25 kHz	RF-attenuation	0dB	0dB
IF- Bandwidth	9 kHz	9 kHz	Preamplifier	20 dB	20 dB

Measuring apparatus parameters 30 MHz to 1000 MHz

Parameter	Preview measurement	Final measurement	Parameter	Preview measurement	Final measurement
Start frequency	30 MHz	30 MHz	Detector	Max Peak	Quasi Peak
Stop frequency	1000 MHz	1000 MHz	Measuring time	10 ms	1 s
Stepsize	30 kHz	30 kHz	RF-attenuation	0dB	0dB
IF- Bandwidth	120 kHz	120 kHz	Preamplifier	20 dB	20 dB

Measuring apparatus parameters 1 GHz to 25 GHz

Parameter	Preview measurement	Final measurement	Parameter	Preview measurement	Final measurement
Start frequency	1 GHz	1 GHz	Detector	Max Peak / Average	Max Peak / Average
Stop frequency	25 GHz	25 GHz	Measuring time	100 ms	100 ms
Stepsize	250 kHz	250 kHz	RF-attenuation	0dB	0dB
IF- Bandwidth	1 MHz	1 MHz	Preamplifier	20 dB	20 dB

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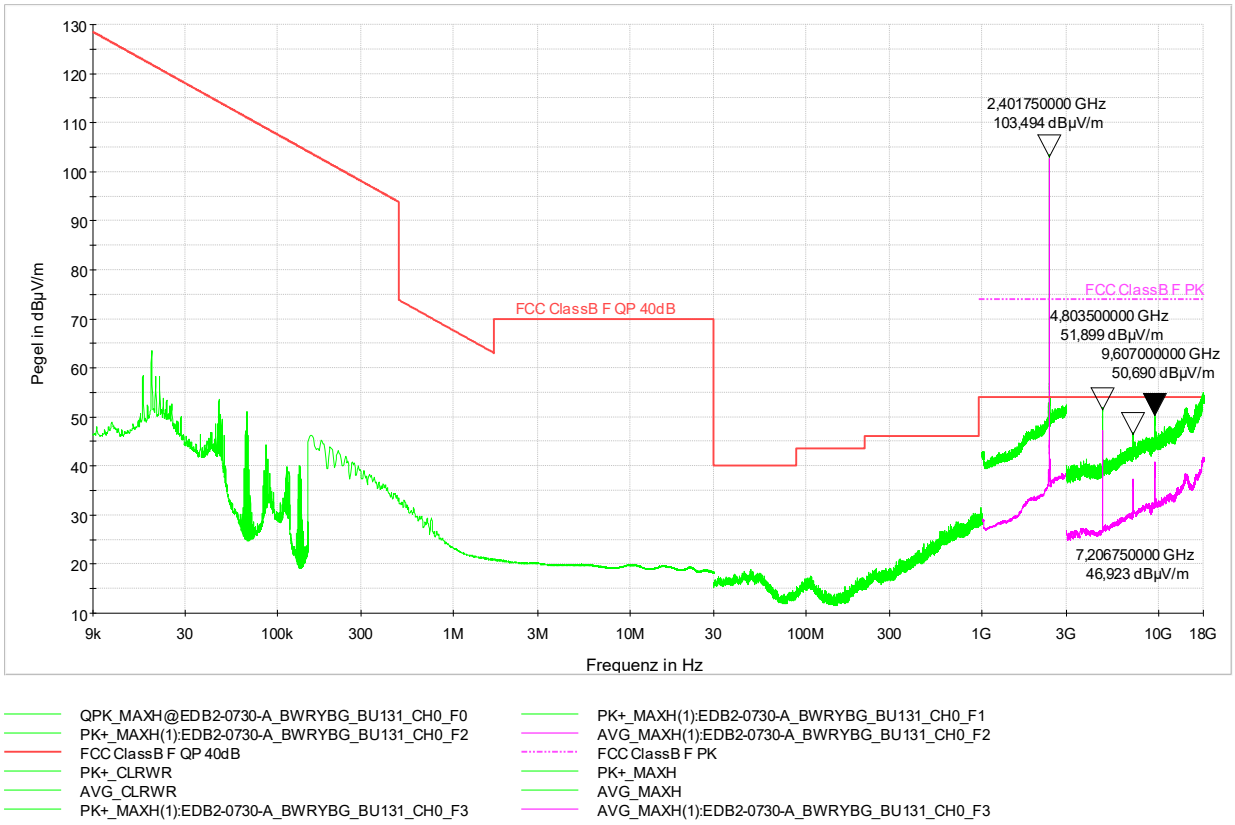
Emissions in restricted bands **§ 15.209(a)**
Emissions falling within restricted frequency bands **RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 0: 2402 MHz



Worst case Emission: 47,189 dBµV/m AVG at 4804,0 MHz.

Frequency (MHz)	Value (dBµV/m) without duty-cycle	Value (dBµV/m) with duty cycle
4804,0	47,189 AVG	8,59 AVG
7206,5	37,27 AVG	-1,33 AVG
9608,75	40,763 AVG	2,16 AVG

Remark: Although the measurements were made up to the 10th harmonic (25 GHz) the frequency range above 18 GHz is not automatized, so no graphs are available. Nevertheless, no emissions above noise level were found in the frequency range above 18 GHz.

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LIMIT **SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-122/1; NT-131/1; NT-139; NT-207/1; NT-216; NT-337/1; NT-472; NT-511/1; NT-520/1

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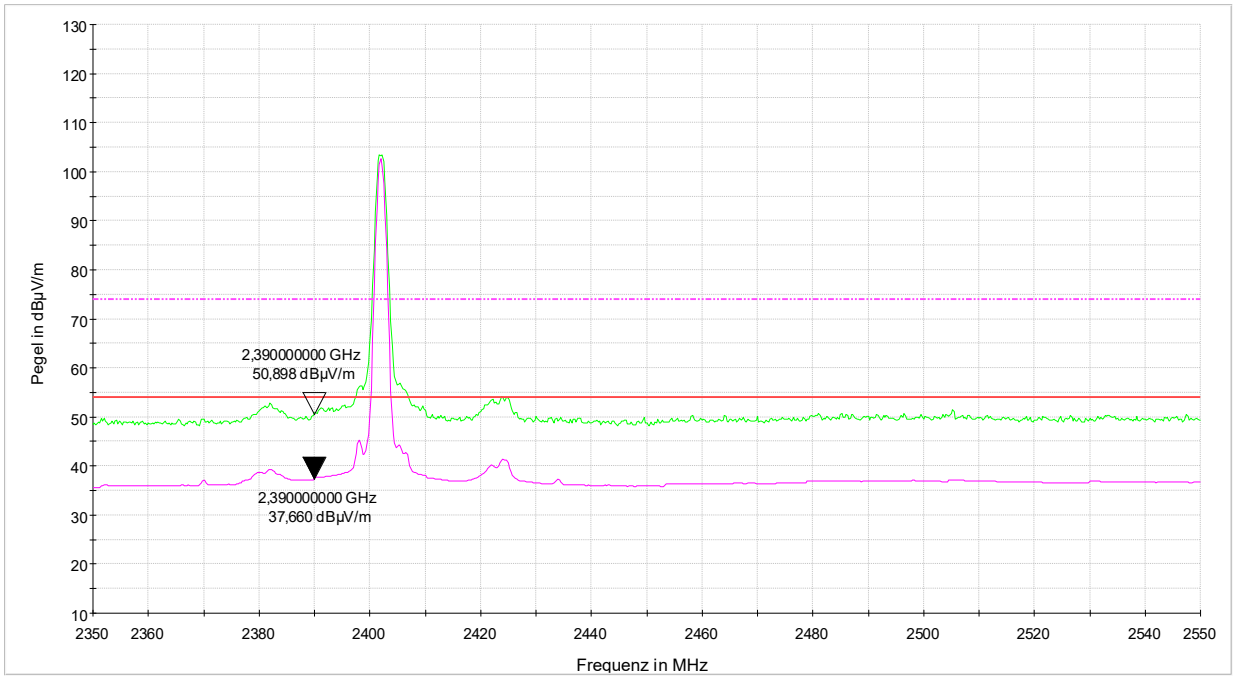
Emissions in restricted bands **§ 15.209(a), § 15.212(c)**
Emissions falling within restricted frequency bands **RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 0: 2402 MHz



LIMIT **SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-122/1; NT-131/1; NT-139; NT-207/1; NT-216; NT-337/1; NT-472; NT-511/1; NT-520/1

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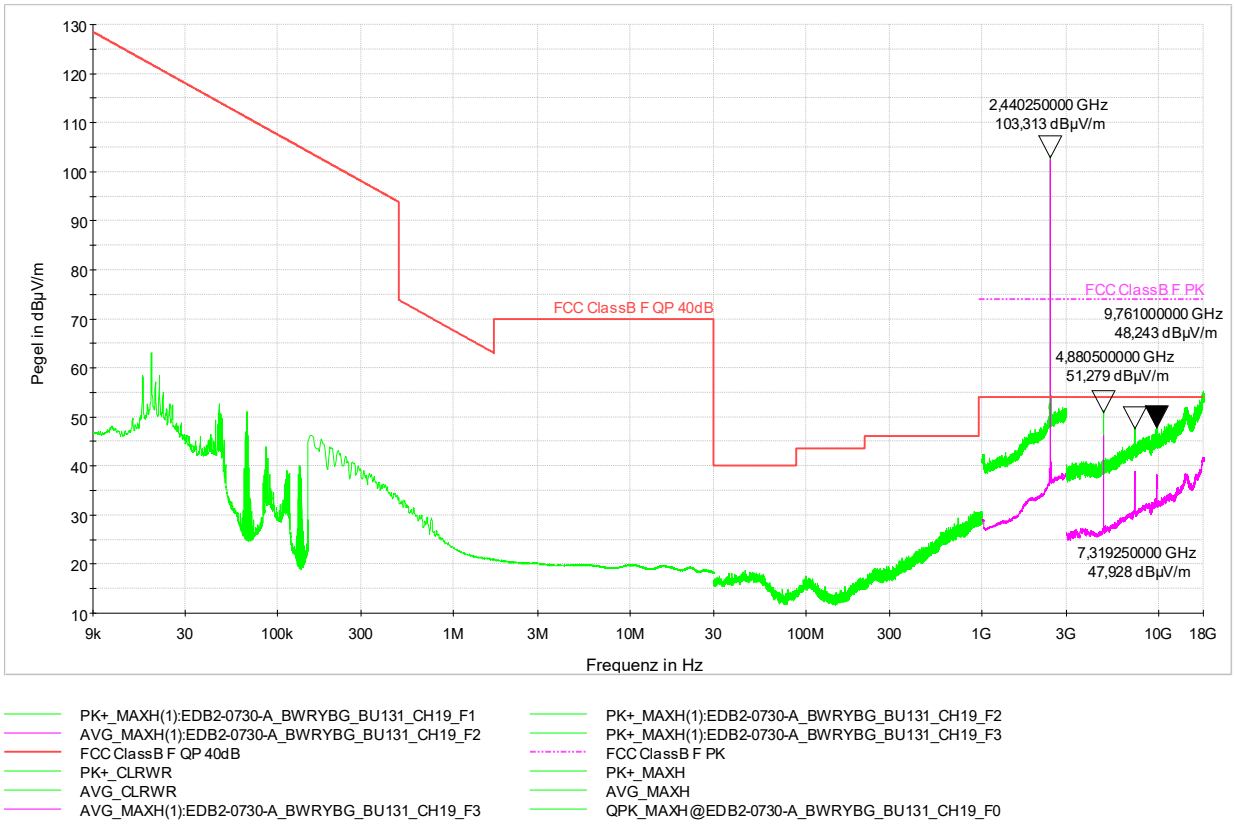
Emissions in restricted bands **§ 15.209(a)**
Emissions falling within restricted frequency bands **RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 19: 2440 MHz



Worst case Emission: 46,207 dBµV/m AVG at 4880,0 MHz.

Frequency (MHz)	Value (dBµV/m) without duty-cycle	Value (dBµV/m) with duty cycle
4880,0	46,207 AVG	7,61 AVG
7320,5	38,9 AVG	0,3 AVG
9760,75	38,36 AVG	-0,24 AVG

Remark: Although the measurements were made up to the 10th harmonic (25 GHz) the frequency range above 18 GHz is not automatized, so no graphs are available. Nevertheless, no emissions above noise level were found in the frequency range above 18 GHz.

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LIMIT **SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-122/1; NT-131/1; NT-139; NT-207/1; NT-216; NT-337/1; NT-472; NT-511/1; NT-520/1

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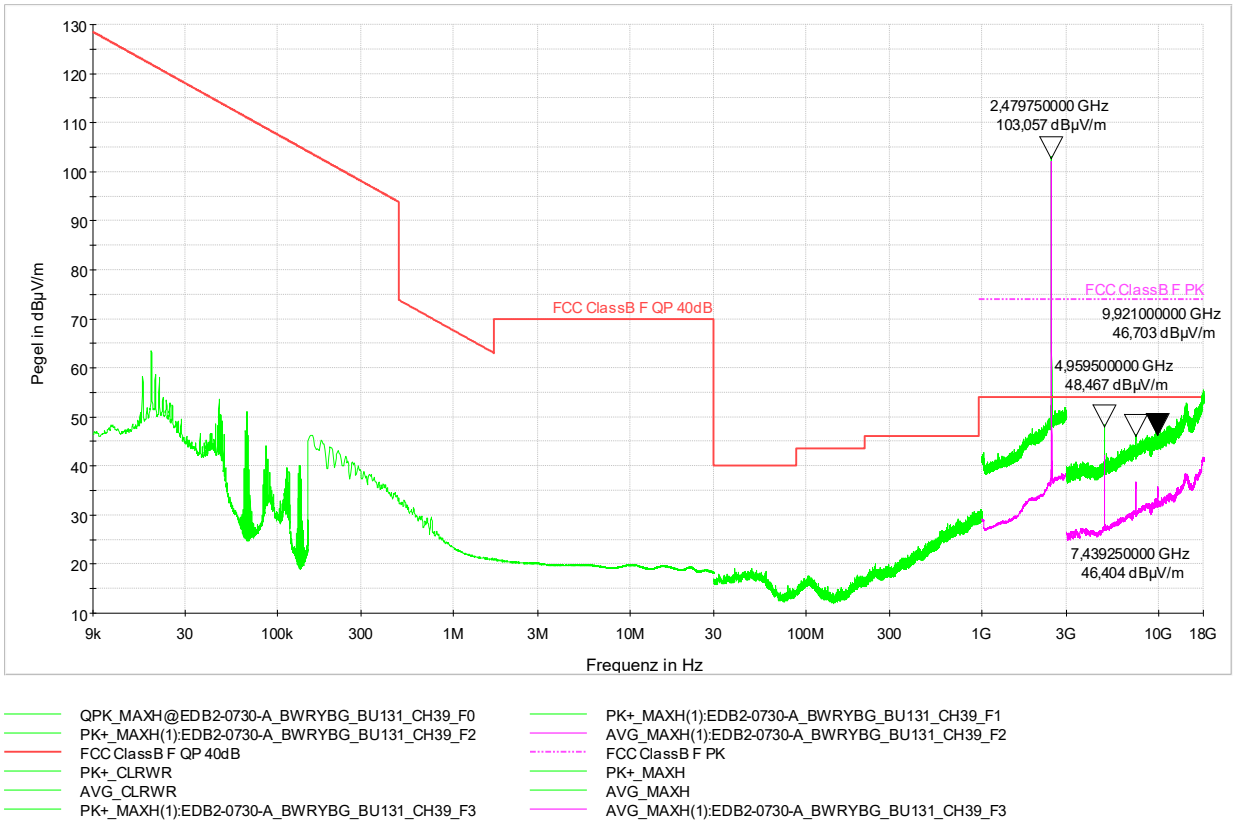
Emissions in restricted bands **§ 15.209(a)**
Emissions falling within restricted frequency bands **RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 39: 2480 MHz



Worst case Emission: 42,113 dBµV/m AVG at 4960,0 MHz.

Frequency (MHz)	Value (dBµV/m) without duty-cycle	Value (dBµV/m) with duty cycle
4960,0	42,113 AVG	3,51 AVG
7439,5	36,683 AVG	-1,92 AVG
9920,75	35,816 AVG	-2,78 AVG

Remark: Although the measurements were made up to the 10th harmonic (25 GHz) the frequency range above 18 GHz is not automatized, so no graphs are available. Nevertheless, no emissions above noise level were found in the frequency range above 18 GHz.

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LIMIT **SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-122/1; NT-131/1; NT-139; NT-207/1; NT-216; NT-337/1; NT-472; NT-511/1; NT-520/1

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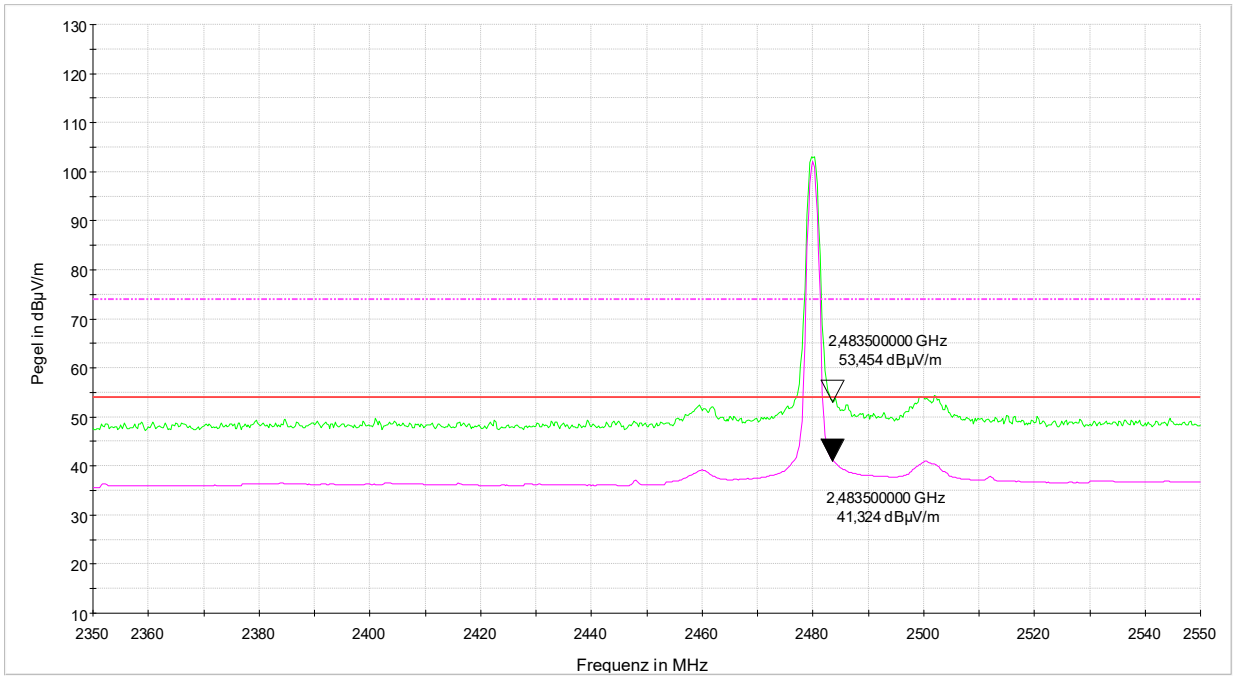
Emissions in restricted bands **§ 15.209(a), § 15.212(c)**
Emissions falling within restricted frequency bands **RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 39: 2480 MHz



LIMIT **SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-122/1; NT-131/1; NT-139; NT-207/1; NT-216; NT-337/1; NT-472; NT-511/1; NT-520/1

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4.10 RF Exposure

KDB 447498 D04
§1.1307(b)(3)(i)(B)

according to KDB 447498 D04 Interim General RF Exposure Guidance v01 “RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES”.

The device has only one antenna and simultaneous transmission does not apply.
The evaluation followed the flowchart in Figure A.1.

Title 47 §1.1307(b)(3)(i)(B):

(3) Determination of exemption. (i) For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^{x} & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);

Duty cycle measurement see section 4.3.
Maximum conducted power and EIRP values are taken from Section 4.5.
Calculations are done for a minimum separaton distance of 1 cm. This distance is derived from the device casing. It is conservative, as customers are not expected to touch or lean on electronic shelf labels for extended periods of time.
Production variance was declared by the manufacturer, see operational description.

f [MHz]	cond. P [mW]	duty cycle [1]	production variance [1]	max. time-averaged power [mW]	EIRP [mW]	ERP [mW]	ERP incl. prod. var. [mW]
2402	3.85	0.0118	1.58	0.07	6.75	4.12	0.08
2440	3.23	0.0118	1.58	0.06	6.47	3.95	0.07
2480	3.46	0.0118	1.58	0.06	6.11	3.72	0.07

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Title 47 §1.1307(b)(3)(i)(B) exemption calculation:

Frequency range (see 4.1 and 4.2)	max(max. time avg. P, ERP) [mW]	§1.1307(b)(3)(i)(B) limit (P_{th}) [mW]	P / Pth [1]	< 1
2402	0.08	10.39	0.01	OK
2440	0.07	10.28	0.01	OK
2480	0.07	10.17	0.01	OK

The available maximum time-averaged ERP is below P_{th} for separation distances of 1 cm and above.

The device is a *SAR exempt RF device* as per Title 47 §1.1307(b)(3)(i)(B).

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RF Exposure **RSS-102, Issue 6**

6.3 SAR exemption limits

Devices operating at or below the applicable output power levels (adjusted for tune-up tolerance) specified in table 11, based on the separation distance, are exempt from SAR evaluation. The separation distance, defined as the distance between the user and/or bystander and the antenna and/or radiating element of the device or the outer surface of the device, shall be less than or equal to 20 cm for these exemption limits to apply.

Table 11: Power limits for exemption from routine SAR evaluation based on the separation distance

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm (mW)	At separation distance of 10 mm (mW)	At separation distance of 15 mm (mW)	At separation distance of 20 mm (mW)	At separation distance of 25 mm (mW)
≤300	45	116	139	163	189
450	32	71	87	104	124
835	21	32	41	54	72
1900	6	10	18	33	57
2450	3	7	16	32	56
3500	2	6	15	29	50
5800	1	5	13	23	32

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm (mW)	At separation distance of 35 mm (mW)	At separation distance of 40 mm (mW)	At separation distance of 45 mm (mW)	At separation distance of ≥50 mm (mW)
≤300	216	246	280	319	362
450	147	175	208	248	296
835	96	129	172	228	298
1900	92	138	194	257	323
2450	89	128	170	209	245
3500	72	94	114	134	158
5800	41	54	74	102	128

The exemption limits in table 11 Table 11 are based on measurements and simulations of half-wave dipole antennas at separation distances of 5 mm to 50 mm from a flat phantom, which provides a SAR value of approximately 0.4 W/kg for 1 g of tissue.

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For limb-worn devices where the 10 gram of tissue applies, the exemption limits for routine evaluation in table 11 are multiplied by a factor of 2.5.

For controlled-use devices where the 8 W/kg for 1 gram of tissue applies, the exemption limits for routine evaluation in table 11 Table 11 are multiplied by a factor of 5.

When the operating frequency of the device is between two frequencies located in table 11, linear interpolation shall be applied for the applicable separation distance. If the separation distance of the device is between two distances located in table 11, linear interpolation may be applied for the applicable frequency. Alternatively, the limit corresponding to the smaller distance may be employed. For example, in case of a 7 mm separation distance, either use the exception value for a 5 mm separation distance or interpolate between the limits corresponding to 5 mm and 10 mm separation distances.

For implanted medical devices, the exemption limit for routine SAR evaluation is set at an output power of 1 mW, regardless of frequency.

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RSS-102 Exemption calculation

Frequency (MHz)	cond. P (mW)	max. EIRP (mW)	Duty Cycle (1)	Tune-up tolerance (1)	Avg. cond. P (mW)	Avg. EIRP (mW)	separation distance (mm)	Limit (mW)	
2402	3.85	6.75	0.0118	1.58	0.072	0.126	10	18.15	OK
2440	3.23	6.47	0.0118	1.58	0.060	0.121	10	17.64	OK
2480	3.46	6.11	0.0118	1.58	0.064	0.114	10	17.43	OK

*) Duty cycle measurement see section 4.3.

**) Calculations are done for a minimum separaton distance of 1 cm and limb worn exposure. The distance is derived from the device casing. It is conservative, as customers are not expected to touch electronic shelf labels for extended periods of time.

The time-averaged output power is below the exemption limit for routine evaluation.

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Appendix 1
Test equipment used

☐	Anechoic Chamber with 3m measurement distance	NT-100	☐	Ant. tripod for EN61000-4-3 Model TP1000A	NT-156
☐	Stripline according to ISO 11452-5	NT-108	☐	Power quality analyzer Fluke 1760 (complete set)	NT-160 - NT-173
☐	MA4000 - Antenna mast 1 - 4 m height	NT-110/1			
☐	DS - Turntable 0 - 400 ° Azimuth	NT-111/1	☐	ESCI - Test receiver 9 kHz - 7 GHz	NT-203/1
☐	CO3000 Controller Mast+Turntable	NT-112/1	☐	ESR – Test receiver 20 Hz – 26,5 GHz	NT-207/1
☐	HUF-Z3 - Log. Per. Antenna 200 - 1000 MHz	NT-121	☐	Digital Radio Tester CMW500	NT-208/1
☐	FMZB 1519-60D - Loop Antenna 9 kHz - 30 MHz	NT-122/2	☐	Noise-gen., ITU-R 559-2 20 Hz – 20 kHz	NT-209
☐	HFH-Z6 - Rod Antenna 9 kHz - 30 MHz	NT-123	☐	CMTA - Radiocommunication analyzer ; 0,1 - 1000 MHz	NT-210
☐	Dipole Antenna VHA9103 30 - 300 MHz	NT-124/1a	☐	3271 - Spectrum analyzer 100 Hz - 26,5 GHz	NT-211
☐	Dipole Antenna UHA9105 300 - 1000 MHz	NT-124/1b	☐	Digital Radio Tester Aeroflex 3920	NT-212/1
☐	3115 - Horn Antenna 1 - 18 GHz (immunity)	NT-125	☐	Mixer M28HW 26,5 GHz - 40 GHz	NT-214
☐	3116 - Horn Antenna 18 - 40 GHz	NT-126	☐	RubiSource T&M Timing reference	NT-216
☐	SAS-200/543 - Bicon. Antenna 20 MHz - 300 MHz	NT-127	☐	Radiocommunicationanalyzer SWR 1180 MD	NT-217
☐	AT-1080 - Log. Per. Antenna 80 - 1000 MHz	NT-128	☐	Mixer FS-Z60 40 GHz – 60 GHz	NT-218/1
☐	HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-129	☐	Mixer FS-Z90 60 GHz – 90 GHz	NT-219/1
☐	HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-130	☐	Rigol MSO8204 Digital scope	NT-220/2
☐	3146 - Log. Per. Antenna 200 – 1000 MHz	NT-131	☐	TPS 2014 Digital scope	NT-222
☐	VULB 9163 Trilog Antenna 30 – 3000 MHz	NT-131/1	☐	Artificial Ear according to IEC 60318	NT-224
☐	Loop Antenna H-Field	NT-132	☐	1 kHz Sound calibrator	NT-225
☐	Horn Antenna 500 MHz - 2900 MHz	NT-133	☐	SRM-3006 Spectrumanalyzer	NT-233/1a
☐	Horn Antenna 500 MHz - 6000 MHz	NT-133/1	☐	E-field probe SRM 75 MHz – 3 GHz	NT-234
☐	Log. per. Antenna 800 MHz - 2500 MHz	NT-134	☐	Field Meter NBM-500 incl. E- and H-Field probes	NT-240a-e
☐	Log. per. Antenna 800 MHz - 2500 MHz	NT-135	☐	Magnetometer HP-01	NT-241/1
☐	BiConiLog Antenna 26 MHz – 2000 MHz	NT-137	☐	EFA-3 H-field- / E-field probe	NT-243
☐	Conical Dipol Antenna PCD8250	NT-138	☐	EHP-50F H-field- / E-field probe	NT-243/1
☐	HF 906 - Horn Antenna 1 - 18 GHz (emission)	NT-139	☐	Field Meter EMR-200 100 kHz – 3 GHz	NT-244
☐	HZ-1 Antenna tripod	NT-150	☐	E-field probe 100 kHz – 3 GHz	NT-245
☐	BN 1500 Antenna tripod	NT-151	☐	H-field probe 300 kHz – 30 MHz	NT-246

Competence Center:
Electrical & Enviromental

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Appendix 1 (continued)
Test equipment used

☐	E-field probe 3 MHz – 18 GHz	NT-247
☐	H-field probe 27 MHz – 1 GHz	NT-248
☐	ELT-400 1 Hz – 400 kHz	NT-249
☐	MDS 21 - Absorbing clamp 30 - 1000 MHz	NT-250
☐	CDN EMCL-35 EM Injection clamp	NT-251/1
☐	FCC-203I-DCN Ferrite decoupling network	NT-252
☐	PR50 Current Probe	NT-253
☐	i310s Current Probe	NT-254/1
☐	Fluke 87 V True RMS Multimeter	NT-260
☐	Model 2000 Digital Multimeter	NT-261
☐	Fluke 87 V Digital Multimeter	NT-262/1
☐	ESH2-Z5-U1 Artificial mains network 4x25A	NT-300
☐	ESH3-Z5-U1 Artificial mains network 2x10A	NT-301
☐	ESH3-Z6-U1 Artificial mains network 1x100A	NT-302
☐	ESH3-Z6-U1 Artificial mains network 1x100A	NT-302a
☐	EZ10 T-Artificial Network	NT-305
☐	SMA100A - Signal generator 9 kHz - 6 GHz	NT-310/1
☐	RefRad Reference generator	NT-312
☐	SMP 02 Signal generator 10 MHz - 20 GHz	NT-313
☐	40 MHz Arbitrary Generator TGA1241	NT-315
☐	Artificial mains network NSLK 8127-PLC	NT-316
☐	PSURGE 4.1 Surge generator	NT-324
☐	IMU4000 Immunity test system	NT-325/1a-e
☐	VCS 500-M6 Surge-Generator	NT-326
☐	Oscillatory Wave Simulator incl. Coupling networks	NT-328a+b+c
☐	BTA-250 - RF-Amplifier 9 kHz - 220 MHz / 250 W	NT-330
☐	Prana N-MT 500 - RF-Amplifier 80 - 1000 MHz / 500 W	NT-332/1
☐	BBA150 RF-Amplifier 1 GHz - 6 GHz	NT-333/1
☐	APA01 – RF-Amplifier 0,5 GHz – 2,5 GHz	NT-334
☐	Preamplifier 1 GHz - 4 GHz	NT-335
☐	Preamplifier for GPS MKU 152 A	NT-336
☐	Preamplifier 1 GHz – 18 GHz	NT-337/1
☐	DC Block 10 MHz – 18 GHz Model 8048	NT-338
☐	2-97201 Electronic load	NT-341
☐	TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-344
☐	TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-345
☐	VDS 200 Mobil-impuls-generator	NT-350
☐	LD 200 Mobil-impuls-generator	NT-351
☐	MPG 200 Mobil-Impuls-Generators	NT-352
☐	EFT 200 Mobil-impuls-generator	NT-353
☐	AN 200 S1 Artificial Network	NT-354
☐	FP-EFT 32M 3 ph. Coupling filter (Burst)	NT-400/1
☐	PHE 4500 - Mains impedance network	NT-401
☐	IP 6.2 Coupling filter for data lines (Surge)	NT-403
☐	TK 9421 High Power Volt. Probe 150 kHz - 30 MHz	NT-409
☐	ESH2-Z3 - Probe 9 kHz - 30 MHz	NT-410
☐	CN-EFT1000 - Capacitive clamp (Burst)	NT-411/1
☐	Highpass-Filter 100 MHz – 3 GHz	NT-412
☐	Highpass-Filter 600 MHz – 4 GHz	NT-413
☐	Highpass-Filter 1250 MHz – 4 GHz	NT-414
☐	Highpass-Filter 1800 MHz – 16 GHz	NT-415

Competence Center:
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Appendix 1 (continued)
Test equipment used

☐	RF-Attenuator 10 dB DC – 18 GHz / 50 W	NT-417/1
☐	RF-Attenuator 6 dB DC – 18 GHz / 50 W	NT-418
☐	RF-Attenuator 3 dB DC – 18 GHz / 50 W	NT-419
☐	RF-Attenuator 20 dB DC - 1000 MHz / 25 W	NT-421
☐	RF-Attenuator 30 dB DC - 1000 MHz / 1 W	NT-423
☐	RF-Attenuator 30 dB	NT-424
☐	RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-425
☐	RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-426
☐	RF-Attenuator 6 dB	NT-428
☐	RF-Attenuator 0 dB - 81 dB	NT-429
☐	WRU 27 - Band blocking 27 MHz	NT-430
☐	WHJ450C9 AA - High pass 450 MHz	NT-431
☐	WHJ250C9 AA - High pass 250 MHz	NT-432
☐	RF-Load 150 W	NT-433
☐	Impedance transducer 1:4 ; 1:9 ; 1:16	NT-435
☐	RF-Attenuator DC – 18 GHz 6 dB	NT-436
☐	RF-Attenuator DC – 18 GHz 6 dB	NT-437
☐	RF-Attenuator DC – 18 GHz 10 dB	NT-438
☐	RF-Attenuator DC – 18 GHz 20 dB	NT-439
☐	ESH3-Z2 - Pulse limiter 9 kHz - 30 MHz	NT-441
☐	Power Divider 6 dB/1 W/50 Ohm	NT-443
☐	Directional coupler 0,1 MHz – 70 MHz	NT-444
☐	Directional coupler 0,1 MHz – 70 MHz	NT-445
☐	Tube imitations according to EN 55015	NT-450
☐	FCC-801-M3-16A Coupling decoupling network	NT-458
☐	FCC-801-M2-50A Coupling decoupling network	NT-459
☐	FCC-801-M5-25 Coupling decoupling network	NT-460
☐	FCC-801-T4 Coupling decoupling network	NT-463
☐	FCC-801-C1 Coupling decoupling network	NT-464
☐	SW 9605 - Current probe 150 kHz – 30 MHz	NT-465/1
☐	95242-1 – Current probe 1 MHz – 400 MHz	NT-468
☐	94106-1L-1 – Current probe 100 kHz – 450 MHz	NT-471
☐	WHKX12-2700-3000-18000 3 GHz Highpass filter	NT-472
☐	WHKX10-3870-4500-18000 4,5 GHz Highpass filter	NT-473
☐	CDN S9 USB3.0 Coupling decoupling network	NT-474
☐	CDN S2 XLR3-1 Coupling decoupling network	NT-475
☐	CDN S8 RJ45 Coupling decoupling network	NT-476
☐	GA 1240 Power amplifier according to EN 61000-4-16	NT-480
☐	Coupling networks according to EN 61000-4-16	NT-481 - NT-483
☐	Van der Hoofden Test Head	NT-484
☐	WRCJV12-5820-5850-5950-5980 5,9 GHz Band Reject Filter	NT-490
☐	WHKX10-5670-6300-18000 6 GHz Highpass filter	NT-491
☐	WHK12-935-1000-7000 1 GHz Highpass filter	NT-492
☐	EMC Video/Audiosystem	NT-511/1
☐	EMC32 Version 10.60.20 Test software	NT-520/1
☐	SRM-TS Version 1.3 software for SRM-3000	NT-522
☐	SRM-TS Version 1.3.1 software for SRM-3006	NT-522/1
☐	Spitzenberger und Spies Test software V4.1	NT-525
☐	Vertical coupling plane (ESD)	NT-531
☐	Test cable #4 for EN 61000-4-6	NT-553
☐	Test cable #3 for conducted emission	NT-554
☐	Test cable #5+#6 ESD-cable (2x470k)	NT-555 + NT-556
☐	Test cable #8 Sucoflex 104EA	NT-559
☐	Test cable #9 (for outdoor measurements)	NT-580
☐	Test cable #10 (for outdoor measurements)	NT-581
☐	Test cable #13 Sucoflex 104PE	NT-584
☐	Test cable #21 for SRM-3000	NT-592
☐	Shield chamber	NT-600
☐	Climatic chamber	M-1200

Competence Center:
Electrical & Enviromental

Test report number:
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Date: 22.09.2025

Appendix 1 (continued)
Test equipment used

☐	Anechoic Chamber 3 m / 5 m measuring distance	EMV-100
☐	Turntabel 6 m diameter	EMV-101
☐	Antenna mast + controller	EMV-102+ EMV-103
☐	EMC Video/Audiosystem	EMV-104
☐	EMC Software EMC32 Version 10.6.2	EMV-105
☐	Hornantenna 1 – 18 GHz HF 907	EMV-110
☐	Antennapre.amp. 1 – 18 GHz BBV 9718 D	EMV-111/1
☐	Trilog Antenna 30-3000 MHz VULB9163	EMV-112
☐	Monopol 9 kHz – 30 MHz VAMP 9243	EMV-113
☐	Antennapre.amp 18 – 40 GHz BBV 9721	EMV-114
☐	Hornantenna 200 – 2000 MHz AH-220	EMV-115
☐	DC Artificial Network PVDC 8300	EMV-150
☐	AC Artificial Network NNLK 8121 RC	EMV-151
☐	AC Artificial Network NNLK 140	EMV- 153a-d
☐	EMI Receiver ESW44	EMV-200/1
☐	Signalgenerator 9 kHz – 40 GHz N5173B	EMV-201
☐	GPS Frequency normal LBE-1420	EMV-202/1
☐	DC Power supply N5745A	EMV-203
☐	Spektrum Analyzator FSV40	EMV-205
☐	Thd Multimeter Model 2015	EMV-206
☐	Poweramplifier PAS15000	EMV- 207/abc
☐	Inrush Current Source	EMV- 208/abc
☐	Arb.-generator Sycore	EMV-209
☐	Harmonics/Flicker analyzer ARS 16/3	EMV-210
☐	Power Supply Regatron AC	EMV-214
☐	Power Supply Regatron DC	EMV-215
☐	Harmonics/Flicker analyser Zimmer	EMV-216
☐	Flicker Impedanz Newtons4th 753	EMV-218
☐	Comemso	EMV-219
☐	HF- Ampflifier 9 kHz-225 MHz BBL200	EMV-300/1
☐	HF- Amplifier 80 -1000 MHz BBA150	EMV-301
☐	HF- Amplifier 0,8 - 6 GHz BBA150	EMV-302
☐	High Power Ant. 20-200 MHz HPBA-2510	EMV-303/1
☐	High Power Ant. 20-200 MHz S12018-21	EMV-303/2
☐	Log.per Antenna 80-2700 MHz STLP 9128 E special	EMV-304
☐	Log.per Antenna 0,7 – 9 GHz STLP9149	EMV-305
☐	HF- Ampflifier 9 kHz-250 MHz BBA150 (low noise)	EMV-306
☐	ISO11451-2 TLS 10 kHz – 30 MHz	EMV-307
☐	Load Dump Generator LD 200N	EMV-350
☐	Ultra Compact Symulator UCS 200N100	EMV-351
☐	Automotive Power fail module PFM 200N100.1	EMV-352
☐	Voltage Drop Symulator VDS 200Q100	EMV-353
☐	Arb. Generator AutoWave	EMV-354
☐	Ultra Compact Symulator UCS 500N7	EMV-355
☐	Coupling decoupling network CNI 503B7 / 32 A	EMV-356
☐	Coupling decoupling network CNI 503B7 / 63 A	EMV-357
☐	Telecom Surge Generator TSurge 7	EMV-358
☐	Coupling decoupling network CNI 508N2	EMV-359
☐	Coupling decoupling network CNV 504N2.2	EMV-360
☐	Immunity generator NSG4060/NSG4060-1	EMV-361
☐	Coupling network CDND M316-2	EMV-362
☐	Coupling network CT419-5	EMV-363
☐	ESD Generator NSG 437	EMV-364
☐	Pulse Limiter VTSD 9561-F BNC	EMV-405
☐	Transient emission BSM200N40+BS200N100	EMV- 450+451
☐	Cap. Coupling Clamp HFK	EMV-455
☐	Mag. Field System MS100N+MC26100+MC2630	EMV- 456-458

Competence Center:
Electrical & Enviromental

Test report number:
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Date: 22.09.2025

Appendix 1 (continued)
Test equipment used

☐	Coupling network CDN M2-100A	EMV-459
☐	Coupling network CDN M3-32A	EMV-460
☐	Coupling network CDN M5-100A	EMV-461
☐	Current Clamp CIP 9136A	EMV-462
☐	DC Artificial Network HV-AN 150	EMV-464+465
☐	Coupling Clamp EM 101	EMV-466
☐	Decoupling Clamp FTC 101	EMV-467
☐	Power attenuator 10 dB / 250 Watt	EMV-469/2
☐	HV AMN NNHV 8123 800A	EMV-472
☐	HV AMN NNHV 8123 800A	EMV-473

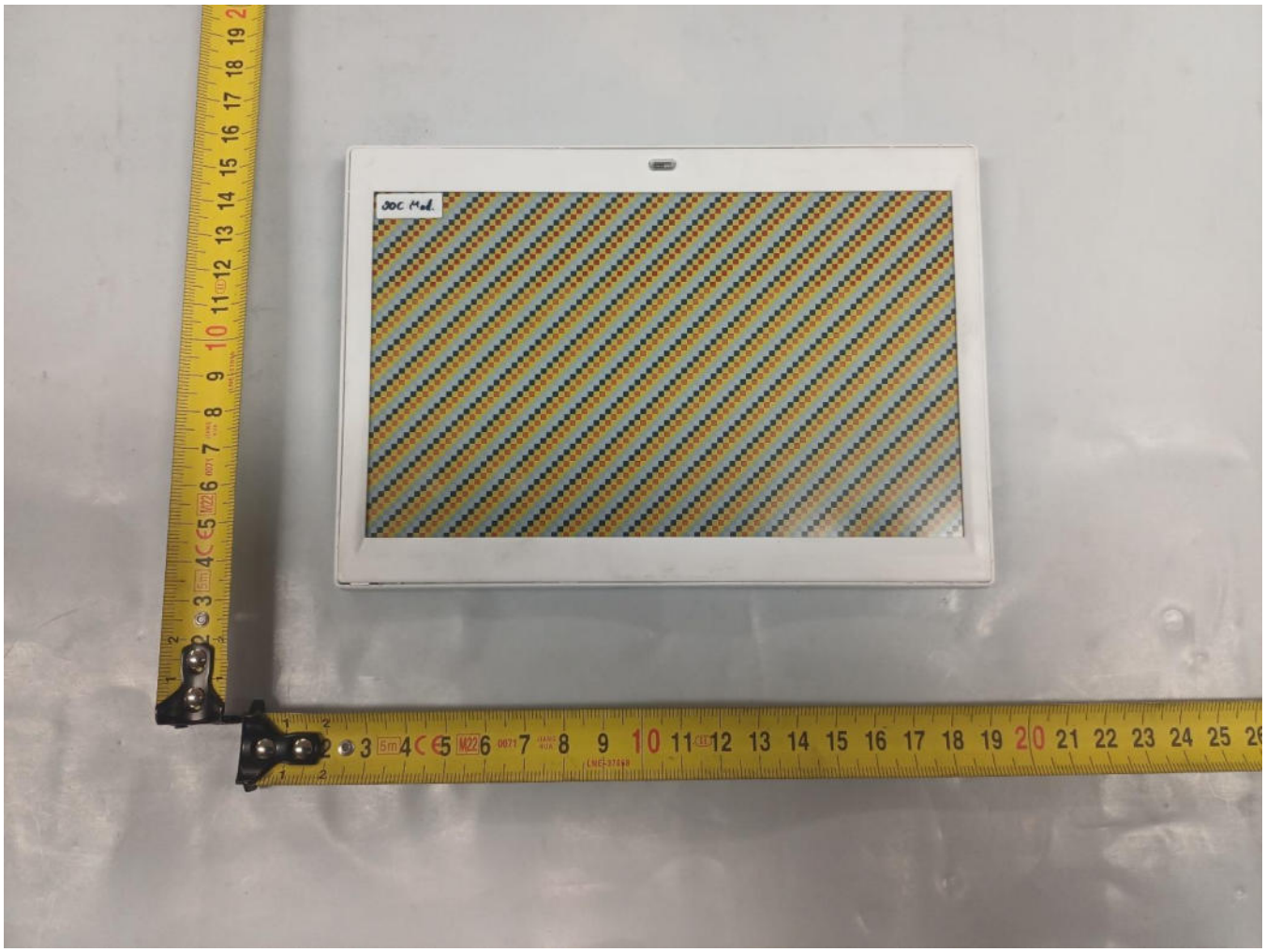
Appendix 2
Photodocumentation

Competence Center:
Electrical & Enviromental

Description: EUT view #1

Test report reference:
2025-AT-TC-EE-ET-EX-0-000028-FG-025

Date: 22.09.2025



Appendix 2
Photodocumentation

Competence Center:
Electrical & Enviromental

Description: EUT view #2

Test report reference:
2025-AT-TC-EE-ET-EX-0-000028-FG-025

Date: 22.09.2025

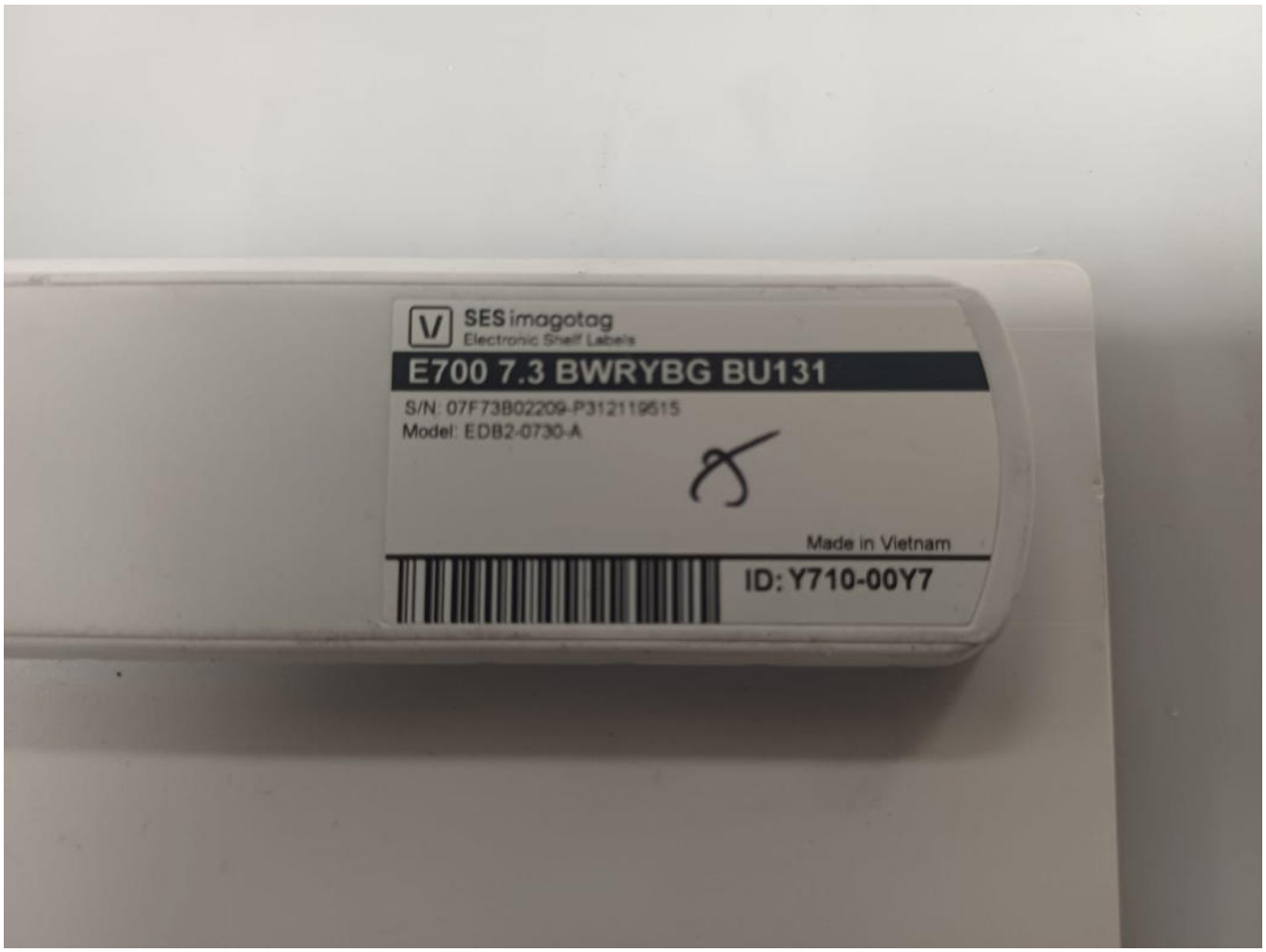
Appendix 2
Photodocumentation

Competence Center:
Electrical & Enviromental

Description: EUT type plate

Test report reference:
2025-AT-TC-EE-ET-EX-0-000028-FG-025

Date: 22.09.2025



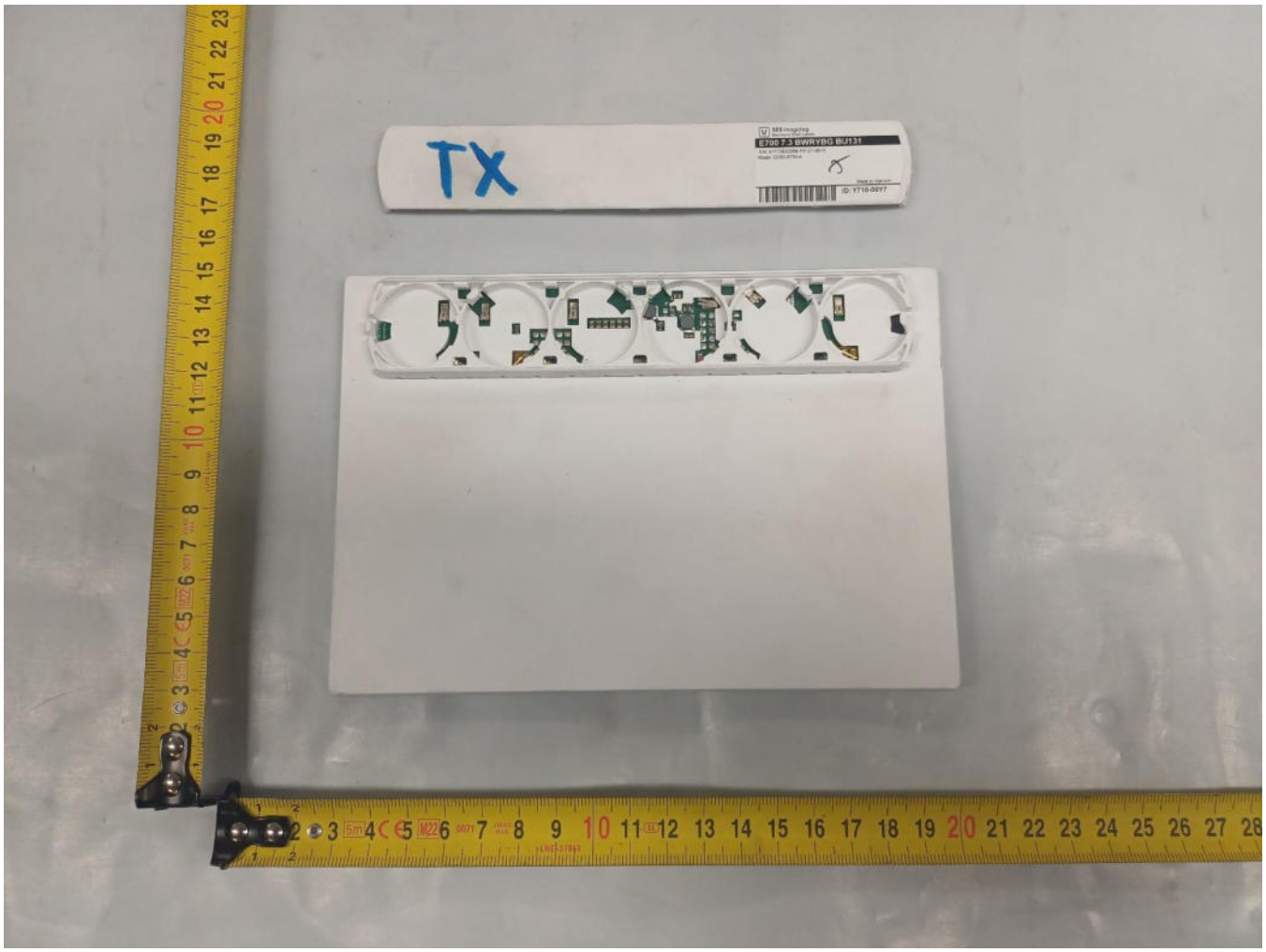
Appendix 2
Photodocumentation

Competence Center:
Electrical & Enviromental

Description: EUT view #3

Test report reference:
2025-AT-TC-EE-ET-EX-0-000028-FG-025

Date: 22.09.2025



Appendix 2
Photodocumentation

Competence Center:
Electrical & Enviromental

Description: EUT view #4

Test report reference:
2025-AT-TC-EE-ET-EX-0-000028-FG-025

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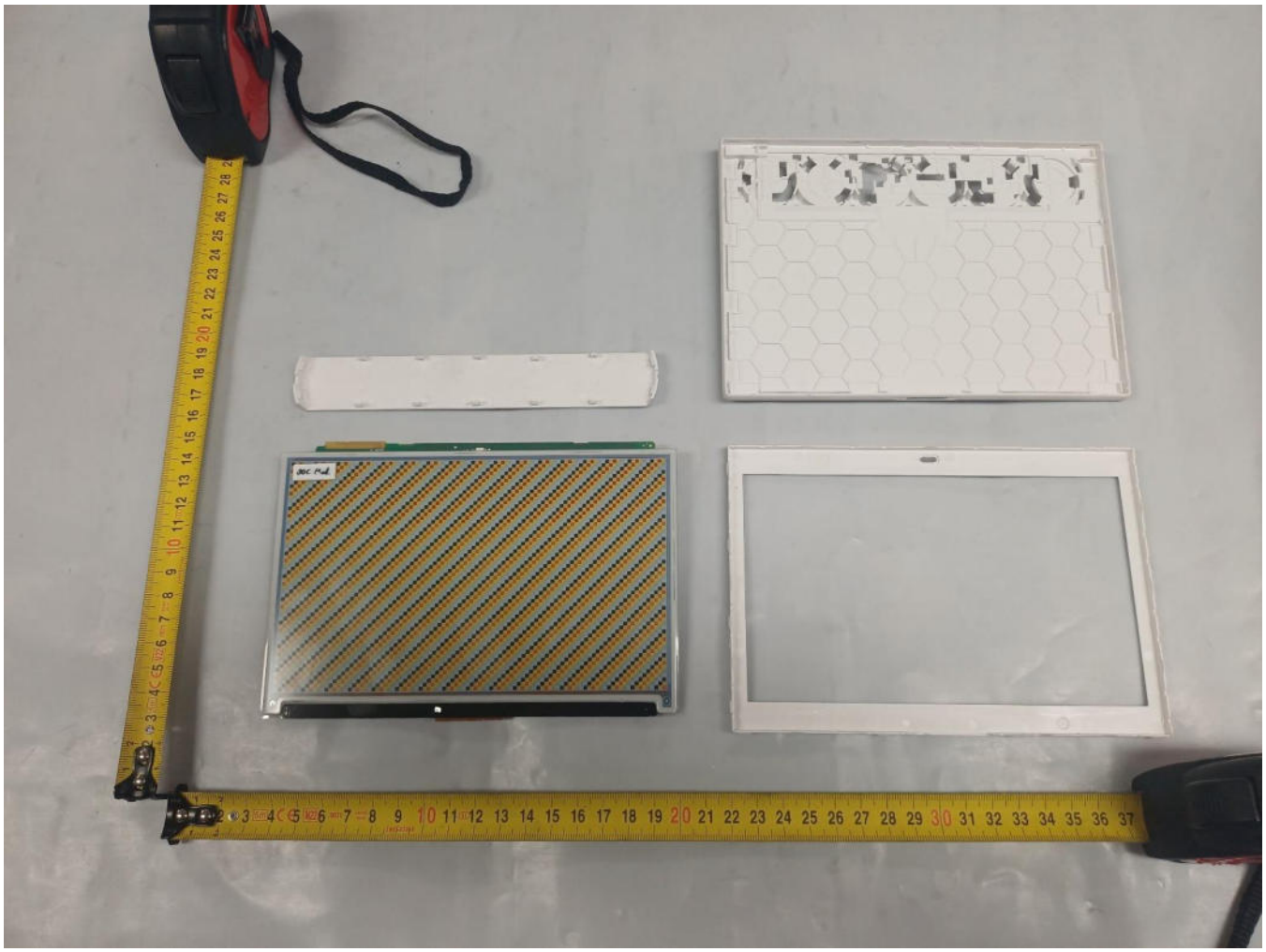
Date: 22.09.2025



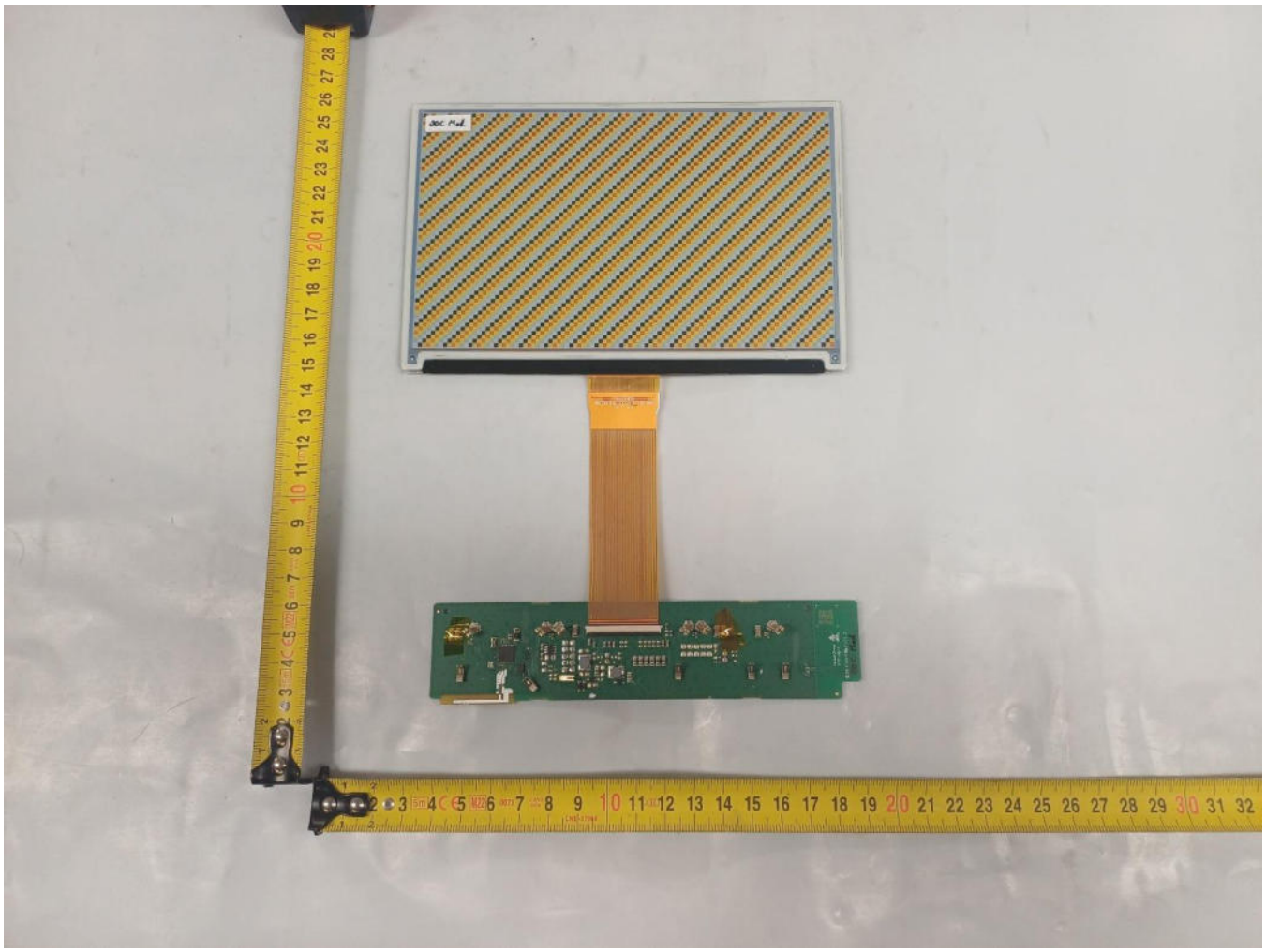
Appendix 2
Photodocumentation

Competence Center:
Electrical & Enviromental

Description: EUT view #5

Test report reference:
2025-AT-TC-EE-ET-EX-0-000028-FG-025

Date: 22.09.2025



Appendix 2
Photodocumentation

Competence Center:
Electrical & Enviromental

Description: EUT view #6

Test report reference:
2025-AT-TC-EE-ET-EX-0-000028-FG-025

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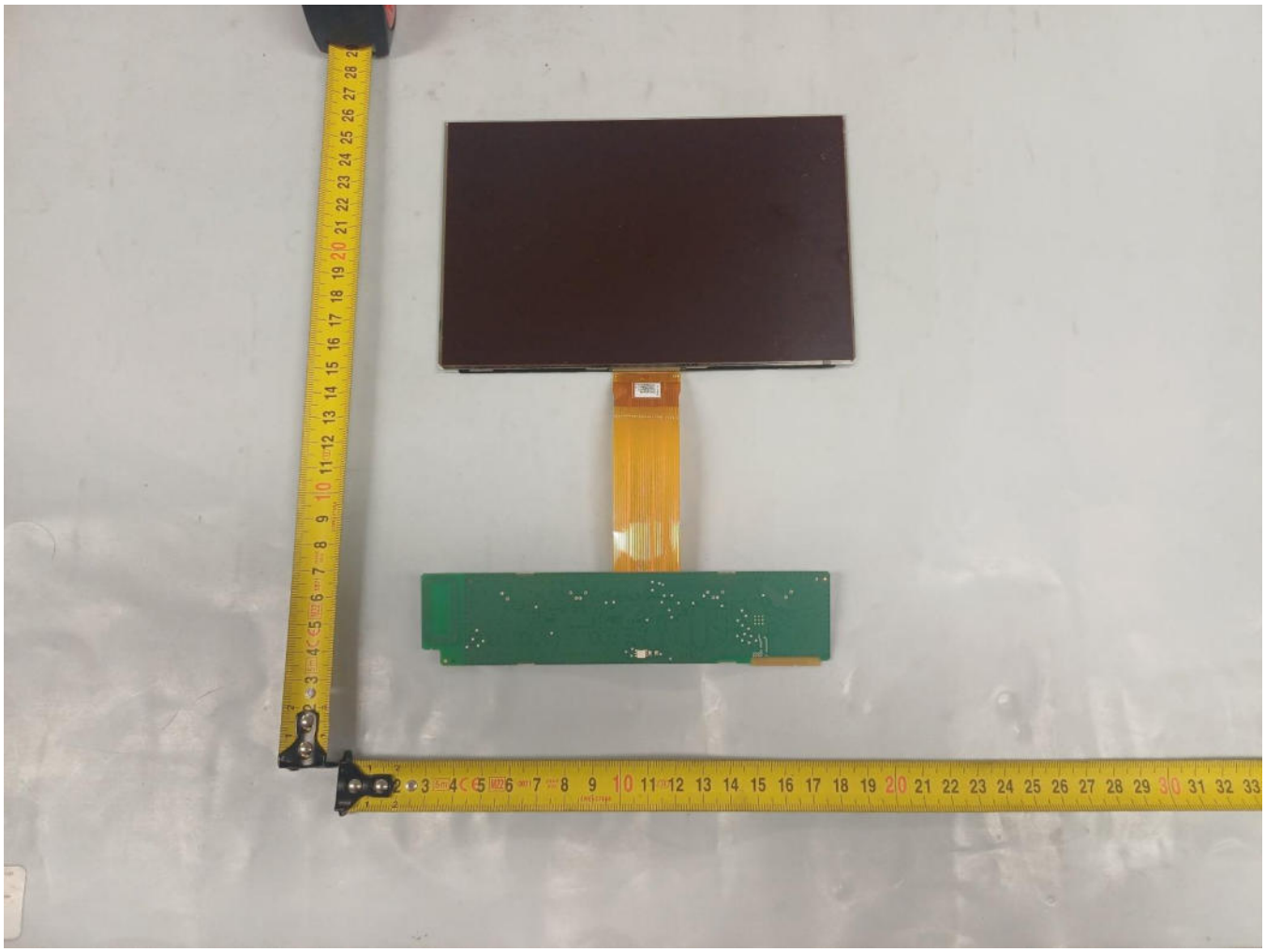
Date: 22.09.2025



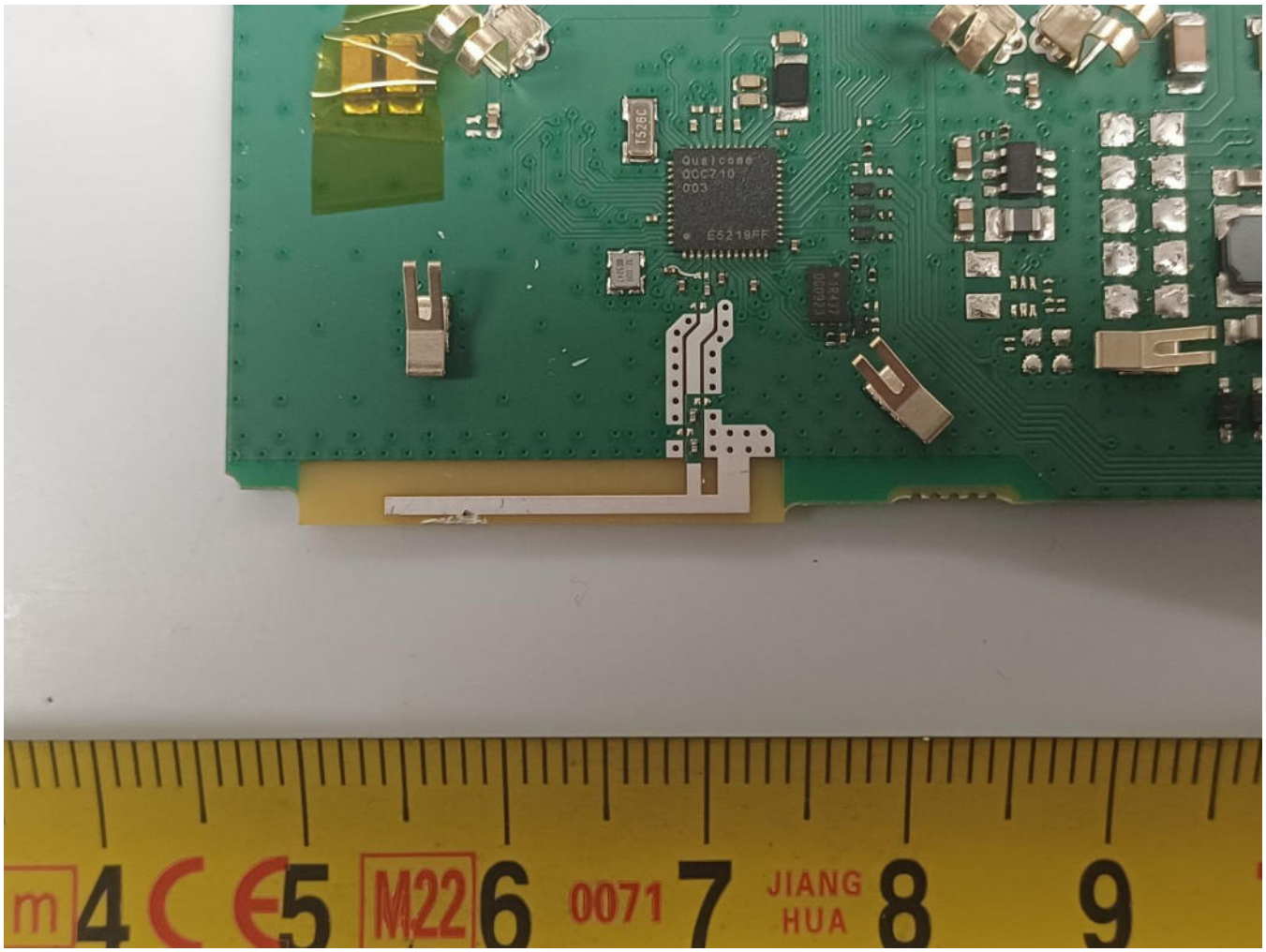
Appendix 2
Photodocumentation

Competence Center:
Electrical & Enviromental

Description: EUT view #7

Test report reference:
2025-AT-TC-EE-ET-EX-0-000028-FG-025

Date: 22.09.2025



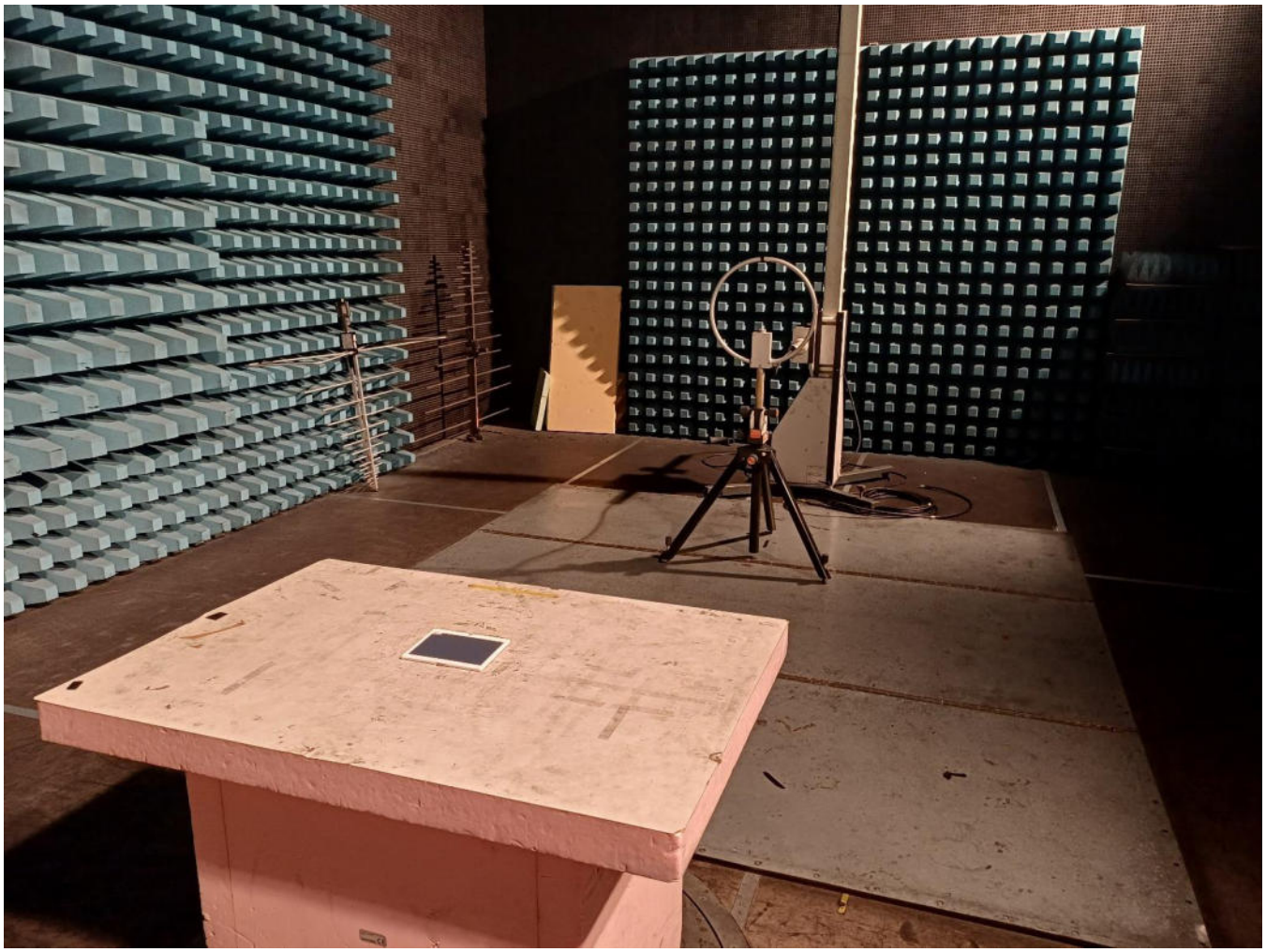
Appendix 2
Photodocumentation

Competence Center:
Electrical & Enviromental

Description: Test setup 9 kHz - 30 MHz

Test report reference:
2025-AT-TC-EE-ET-EX-0-000028-FG-025

Date: 22.09.2025



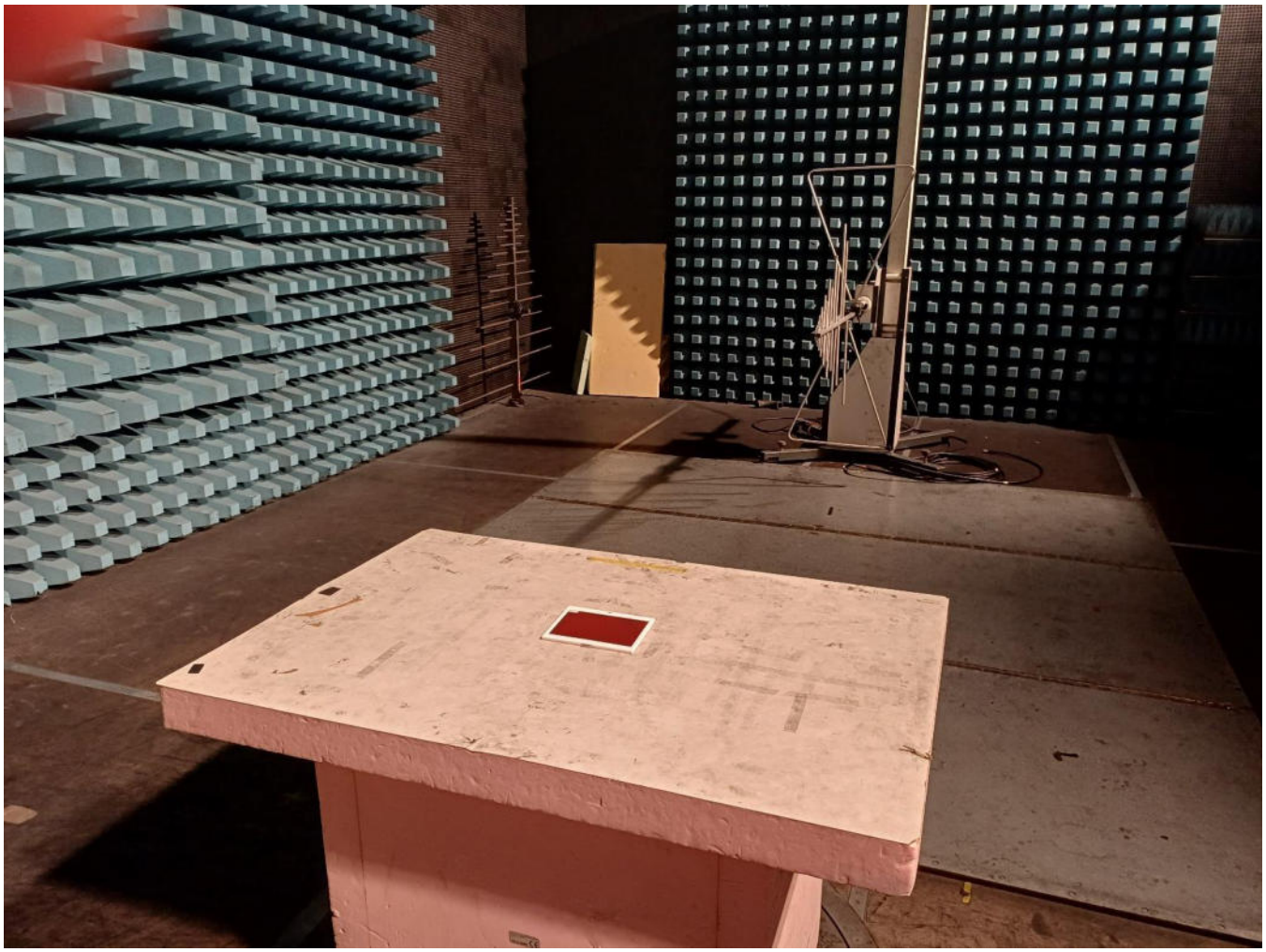
Appendix 2
Photodocumentation

Competence Center:
Electrical & Enviromental

Description: Test setup 30 MHz - 1 GHz

Test report reference:
2025-AT-TC-EE-ET-EX-0-000028-FG-025

Date: 22.09.2025



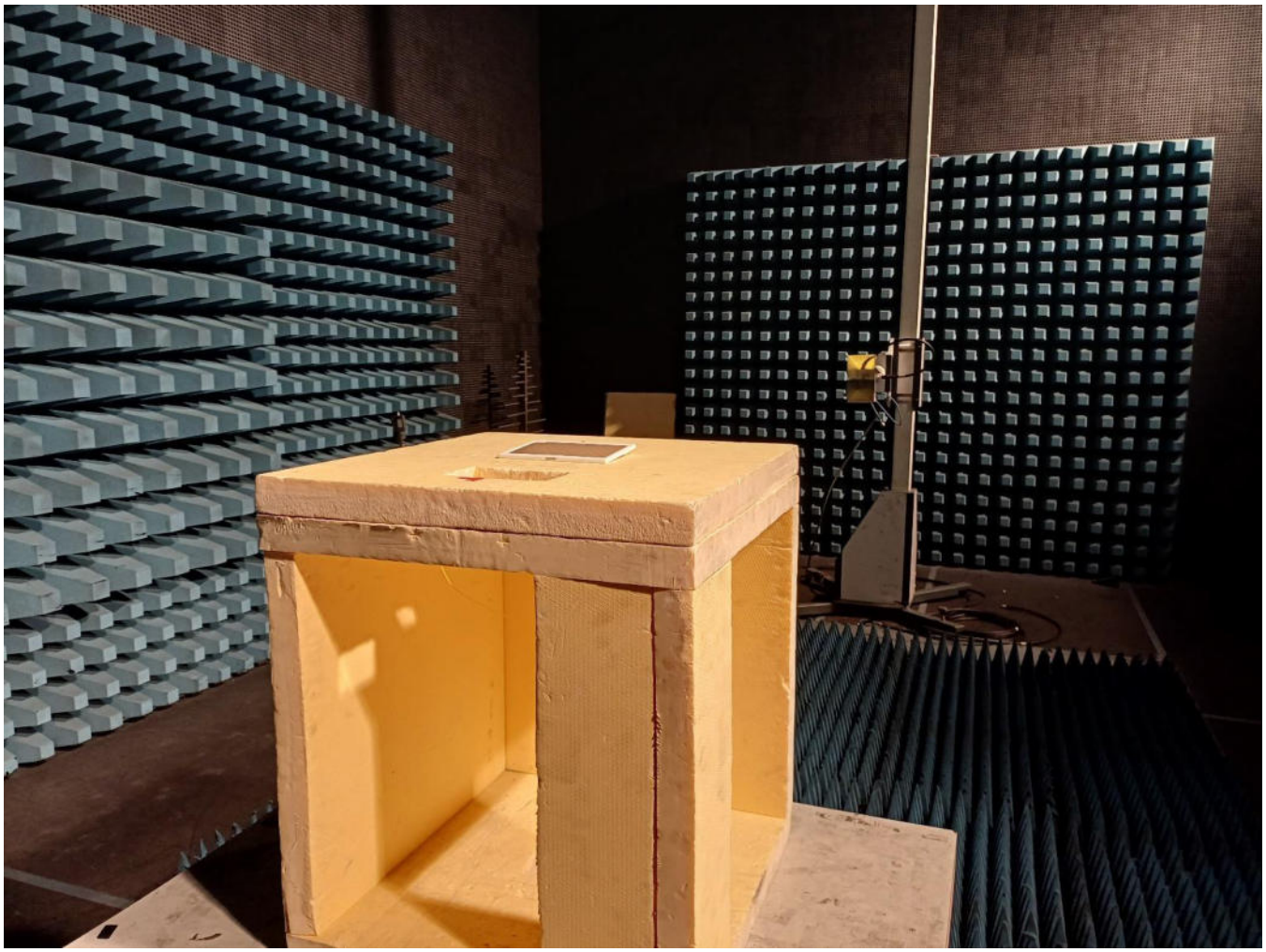
Appendix 2
Photodocumentation

Competence Center:
Electrical & Enviromental

Description: Test setup > 1 GHz

Test report reference:
2025-AT-TC-EE-ET-EX-0-000028-FG-025

Date: 22.09.2025



<< END OF TEST REPORT >>

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Datum, Zeit *Date, time*	2025.09.22 19:26:12 MESZ	
Aussteller-Zertifikat *Issuer's certificate*	TÜV AUSTRIA Group	
Seriennummer *Serial number*	139659165865763702195380405	
Prüfinformation *Check information*	Informationen zur Prüfung der elektronischen Signatur finden Sie unter: https://www.signaturpruefung.gv.at	
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Seriennummer *Serial number*	149890241659918425371750949	
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