RF – TEST REPORT

- FCC Part 15B / ICES-003 -

Type / Model Name	:	Anchor 9 / A010002
Product Description	:	Anchor for UWB localization system
Applicant	:	KINEXON Inc.
Address	:	200 S Wacker Drive, Suite 3100
		CHICAGO, IL 60606, USA
Manufacturer	:	KINEXON GmbH
Address	:	Schellingstr.35
		80799 MÜNCHEN, GERMANY

Test Result according to the standards listed in clause 1 test standards:	**POSITIVE**

Test Report No. : 80236650-04 Rev_0	16. January 2025 Date of issue

Deutsche Akkreditierungsstelle D-PL-12030-01-00

Contents

1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15 Subpart B - Unintentional Radiators (December 2024)

Part 15, Subpart B, Section 15.107	AC Line conducted emission ☐ Class A device ☒ Class B device
Part 15, Subpart B, Section 15.109	Radiated emission, general requirements ☐ Class A device ☒ Class B device
ANSI C63.4: 2014	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
CISPR 16-4-2: 2011 + A1: 2014 EN 55016-4-2: 2011	Uncertainty in EMC measurement

ISED Canada Rules and Regulations - Information Technology Equipment (Including Digital Apparatus)

ICES-003, Issue 7, October 15, 2020	AC Power Line Conducted Emissions ☐ Class A device ☒ Class B device
ICES-003, Issue 7, October 15, 2020	Radiated emission ☐ Class A device ☒ Class B device
ANSI C63.4: 2014	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

2 TEST RESULT SUMMARY

FCC Rule Part	ISED Standard	Description
15.107	ICES-003 3.2.1	AC power line conducted emissions
15.109	ICES-003 3.2.2	Radiated Emissions

Type of test		Test result
Emission:		
A4	Conducted emission (AC mains power / DC power)	passed
A5	Radiated emission (< 1 GHz)	passed
SER 3	Radiated emission (> 1 GHz)	passed

2.1 Revision history of test report

Test report No	Rev.	Issue Date	Changes
80236650-04	0	16 January 2025	Initial test report

The test report with the highest revision number replaces the previous test reports.

2.2 Final assessment

The equipment under test fulfills the requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 17 December 2024

Testing concluded on : 09 January 2025

Checked by:

Klaus Gegenfurtner
I confirm the correctness and integrity of this document
2025.01.16 14:15:33 +01'00'

Klaus Gegenfurtner
Teamleader Radio

Tested by:

I am the author of this document
2025.01.16 13:14:17 +01'00'

Franz-Xaver Schrettenbrunner
Radio Team

3 EQUIPMENT UNDER TEST

3.1 Information provided by the Client

Please note, we do not take any responsibility for information provided by the client or his representative which may have an influence on the validity of the test results.

3.2 Sampling

The customer is responsible for the choice of sample. Sample configuration, start-up and operation is carried out by the customer or according his/her instructions.

3.3 Photo documentation of the EUT – Detailed photos see ATTACHMENT A

3.4 General remarks

None.

3.5 Power supply system utilised

Power supply voltage	:	52 V DC (PoE, 41.1 V DC – 57.0 V DC)

All tests were carried out with a supply voltage of 120 V, 60 Hz unless otherwise stated.

3.6 Highest internal frequency

Highest internal frequency	:	7987.2 MHz

3.7 Short description of the Equipment under Test (EUT)

The KINEXON System is a Real-Time Location System (RTLS) based on Ultra Wideband (UWB) technology. The system operates using active Tags, a network of Receivers (Anchors), and the KINEXON Sensor Network Application.
The KINEXON Anchors are reference points for the tracking sensors that are positioned around a desired area. The Anchor 9 supports UWB channels 3, 5 and 9 with 2 UWB transceivers and antenna paths. The Anchor 9 also supports Bluetooth 5 low energy (BLE 5).

Number of tested samples: 1
Serial number: 390834

3.8 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

- stand-by mode: UWB and BLE modules in stand-by/Rx, digital circuitries on

3.9 EUT configuration

The following peripheral devices and interface cables were connected during the measurements:

- PoE Switch — Model : Netgear GS110TP S/N 3R7595G0451B
- Power adaptor for PoE Switch — Model : Netgear Part Number 332-10317-01
- Mini PC — Model : Intel NUC Board S/N GEFN3100007A
- Power adaptor for Mini PC — Model : Chicony model number A17-120P2A
- Triple socket — Model : Commercially available

Port	Cable	Screening	Transmission	Status	Length
1	Ethernet	shielded	digital	active	< 100 m

Modifications during the EMC test: None

4 TEST ENVIRONMENT

4.1 Address of the test laboratory

CSA Group Bayern GmbH
Straubinger Straße 100
94447 PLATTLING
GERMANY

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15 - 35 °C
Humidity:	30 - 60 %
Atmospheric pressure:	86 - 106 kPa

4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. It is noted that the expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor k = 2. The true value is located in the corresponding interval with a probability of 95 %. The measurement uncertainty was calculated for all measurements listed in this test report on basis of the ETSI Technical Report TR 100 028 Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1 and Part 2. The results are documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

4.4 Conformity Decision Rule

The applied conformity decision rule is based on ILAC G8:09/2019 clause 4.2.1 Binary Statement for Simple Acceptance Rule (w = 0).
Details can be found in the procedure CSA_B_V50_29.

4.5 Measurement protocol for FCC and ISED

4.5.1 General information

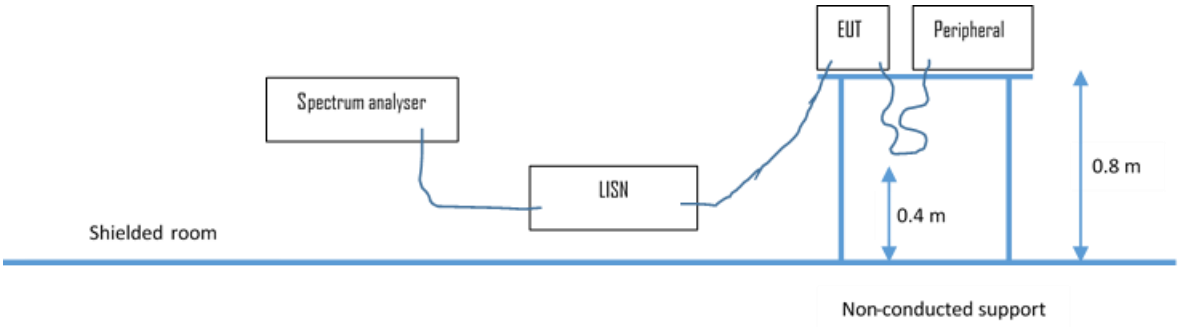
CSA Group Bayern GmbH is recognized as wireless testing laboratory under the CAB identifier:

FCC: DE 0011
ISED: DE0009

4.5.2 Details of test procedures

4.5.2.1 Conducted emission

Test setup according ANSI C63.4



Description of measurement

The final level, expressed in dBμV, is arrived at by taking the reading directly from the Spectrum analyser. This level is compared to the limit.

To convert between dBμV and μV, the following conversions apply:

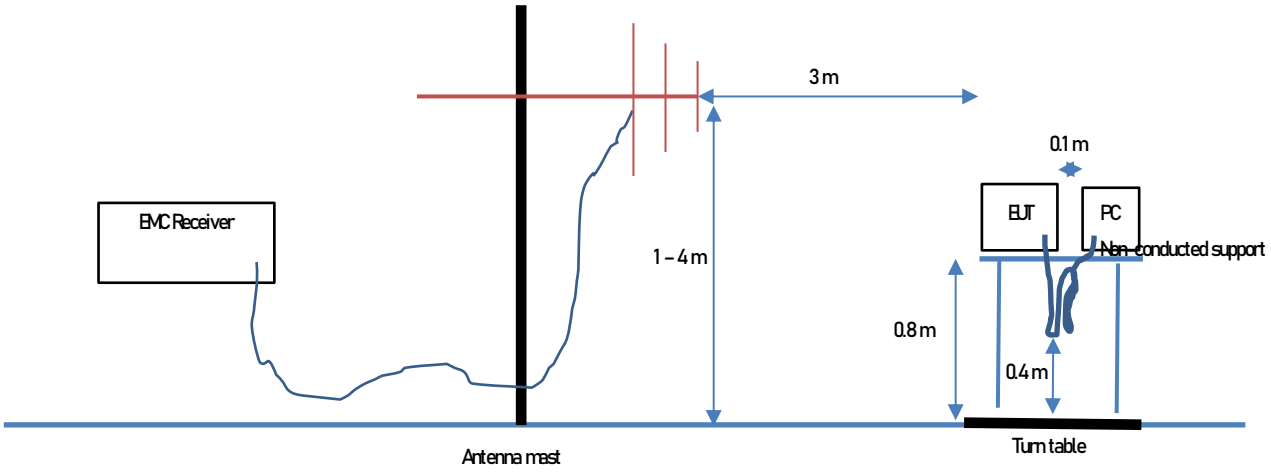
dBμV = 20(log μV)

μV = Inverse log(dBμV/20)

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection and a Line Impedance Stabilization Network (LISN) with 50 Ω / 50 μH (CISPR 16) characteristics. The receiver is protected by means of an impedance matched pulse limiter connected directly to the RF input. Table top equipment is placed on a non-conducting table 80 centimetres above the floor and is positioned 40 centimetres from the vertical ground plane (wall) of the screen room. If the minimum limit margin appears to be less than 20 dB with a peak mode measurement, the emission is re-measured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

4.5.2.2 Radiated emission

4.5.2.2.1 **Anechoic chamber test site (30 MHz - 1 GHz)**
Test setup according ANSI C63.4



Description of measurement

Spurious emission from the EUT is measured in the frequency range of 30 MHz to 1000 MHz using a tuned receiver and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection. Table top equipment is placed on a 1.0 X 1.5 metre non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. The setup of the equipment under test is established in accordance with ANSI C63.4. The interface cables that are closer than 40 centimetres to the ground plane are bundled in the centre in a serpentine fashion so that they are at least 40 centimetres from the ground plane. Cables to simulators/testers (if used in this test) are routed through the centre of the table and to a screened room located outside the test area.
The antenna is positioned 3 or 10 metres horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 metres, measurement scans are made with both horizontal and vertical antenna polarization planes and the EUT is rotated 360 degrees.

The final level is calculated in a calculation sheet by taking the reading from the EMI receiver (Level dBµV) and adding the correction factors and cable loss factor (Factor dB) on to it. The limit is subtracted from this result in order to provide the limit margin listed in the measurement protocols.

Example:

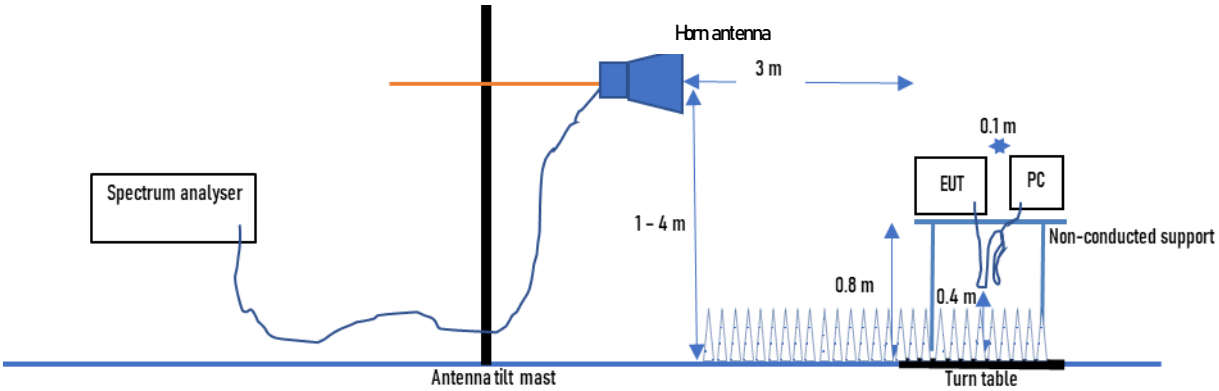
Frequency (MHz)	Reading (dBµV)	+	Correction* (dB/m)	=	Level (dBµV/m)	-	Limit (dBµV/m)	=	Dlimit (dB)
719.0	75.0	+	32.6	=	107.6	-	110.0	=	-2.4

*Correction Factor = Antenna Factor + Cable Attenuation = 30 dB/m + 2.6 dB = 32.6 dB/m

The resolution bandwidth during the measurement is as follows:
30 MHz – 1000 MHz: RBW: 120 kHz

4.5.2.2.2 **Anechoic chamber, 1000 MHz – 18000 MHz**

Test setup according ANSI C63.4

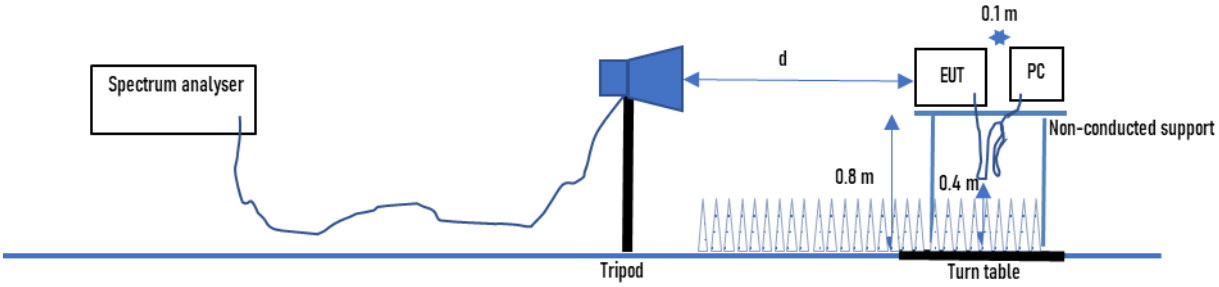


Description of measurement

Radiated emission from the EUT are measured in the frequency range of 1 GHz to the maximum frequency as specified in 47 CFR Part 15 Subpart A section 15.33, using a tuned receiver (spectrum analyser) and appropriate linearly polarized antennas. Table top equipment is placed on a 0.65 X 1.0 metre non-conducting table 80 centimetres above the ground plane. The turntable is fully covered with the appropriate absorber (Type VHP-12).
The interface cables that are closer than 40 centimetres to the ground plane are bundled in the centre in a serpentine fashion, so they are at least 40 centimetres from the ground plane. Measurements are made in both the horizontal and vertical polarization planes in a fully anechoic room using a spectrum analyser set to a peak detector function and a RBW= 1 MHz and VBW = 3 MHz. All tests are performed at a test distance of 3 metres. Hand-held or body-worn devices are rotated around three orthogonal axes in order to determine the position, angle and configuration having the maximum emission. The antenna height is then adjusted from 1 m to 4 m maximizing the measured value. The antenna is mounted to a boresight axis, so the antenna centre always points to the EUT. The turntable is rotated 360° until the spectrum analyser displays the maximum level at the observed frequency. The antenna height is then adjusted from 1 m to 4 m maximizing the measured value. The turntable is re-adjusted to re-affirm the maximum emission value which is then recorded. This procedure is repeated for all frequencies of interest.

4.5.2.2.3 **Anechoic chamber, 18 GHz – 40 GHz**

Test setup according ANSI C63.4



Description of measurement

Radiated emission from the EUT are measured in the frequency range of 1 GHz to the maximum frequency as specified in 47 CFR Part 15 Subpart A section 15.33, using a tuned receiver (spectrum analyser) and appropriate linearly polarized antennas. Table top equipment is placed on a 0.65 X 1.0 metre non-conducting table 80 centimetres above the ground plane. The turntable is fully covered with the appropriate absorber (Type VHP-12).
The interface cables that are closer than 40 centimetres to the ground plane are bundled in the centre in a serpentine fashion, so they are at least 40 centimetres from the ground plane. Measurements are made in both the horizontal and vertical polarization planes in a fully anechoic room using a spectrum analyser set to a peak detector function and an RBW= 1 MHz and VBW = 3 MHz. All tests are performed at a test distance of 3 metres. Hand-held or body-worn devices are rotated around three orthogonal axes in order to determine the position, angle and configuration having the maximum emission. The turntable is rotated 360° until the spectrum analyser displays the maximum level at the observed frequency, the maximum emission value is then recorded. This procedure is repeated for all frequencies of interest.
Where appropriate in frequency range 18 GHz - 40 GHz, the test distance may be reduced to 1 m in order to reduce the noise level to hold a minimum distance between noise level and limit. The limit will be adopted to the measurement distance.

5 TEST CONDITIONS AND RESULTS

5.1 Conducted emission

For test instruments and accessories used see section 6 Part **A 4**.

5.1.1 Description of the test location

Test location: Shielded room SR2

5.1.2 Photo documentation of the test setup

5.1.3 Test result

Frequency range: 0.15 MHz - 30 MHz
Min. limit margin -16.4 at 17.69 MHz

The requirements are **FULFILLED.**

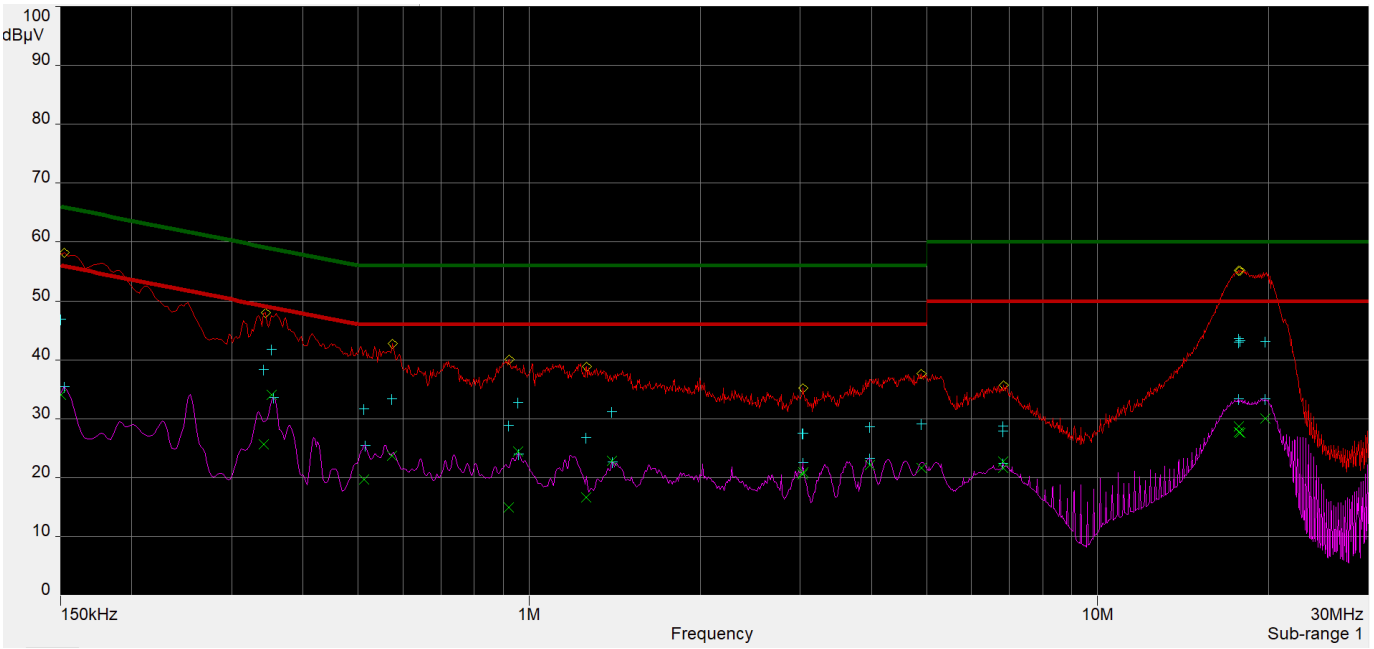
Remarks: For detailed results, please see the following page(s).

For description of the measurement see 4.5.2.

5.1.4 Test protocol

Test point:	L1	Result: passed
Operation mode:	stand-by mode	
Remarks:	None	
Date:	09.01.2025	
Tested by:	Franz-Xaver Schrettenbrunner	

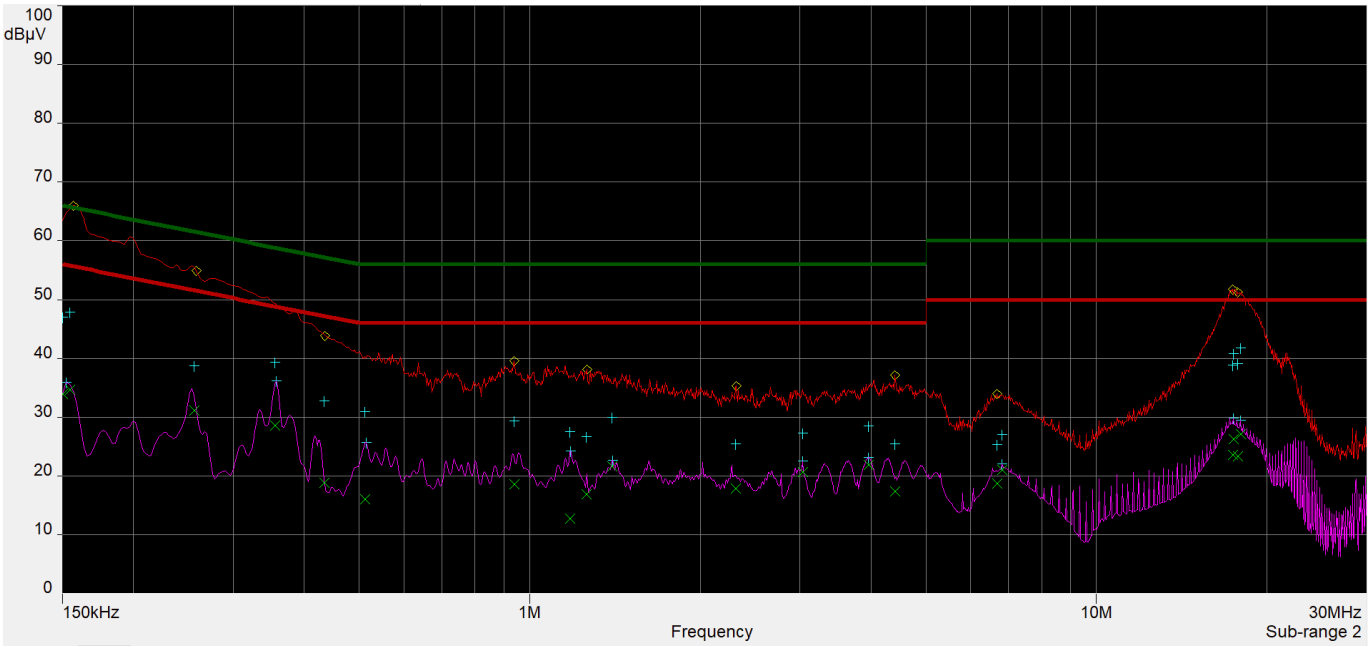
Frequency (Hz)	QuasiPeak (dBµV)	QP Margin	QP Limit (dBµV)	CISPR AV (dBµV)	CISPR AV Margin	AV Limit (dBµV)	RBW (Hz)	Meas.Time (s)	Correction (dB)
150.0036 k	46.955	-19.045	66	34.144	-21.856	56	9000	1	10.332
341.0036 k	38.422	-20.75	59.173	25.675	-23.498	49.173	9000	1	10.331
352.2536 k	41.825	-17.078	58.903	34.069	-14.835	48.903	9000	1	10.334
512.0036 k	31.703	-24.297	56	19.69	-26.31	46	9000	1	10.349
572.7536 k	33.332	-22.668	56	23.779	-22.221	46	9000	1	10.354
919.2536 k	28.817	-27.183	56	15.049	-30.951	46	9000	1	10.383
955.2536 k	32.778	-23.222	56	24.543	-21.457	46	9000	1	10.389
1.2590036 M	26.781	-29.219	56	16.743	-29.257	46	9000	1	10.424
1.3985036 M	31.153	-24.847	56	22.955	-23.045	46	9000	1	10.429
3.0252536 M	27.513	-28.487	56	20.633	-25.367	46	9000	1	10.516
3.0275036 M	27.594	-28.406	56	20.974	-25.026	46	9000	1	10.516
3.9657536 M	28.688	-27.312	56	22.186	-23.814	46	9000	1	10.537
4.8950036 M	29.112	-26.888	56	21.727	-24.273	46	9000	1	10.52
6.8165036 M	27.864	-32.136	60	21.667	-28.333	50	9000	1	10.444
6.8187536 M	28.785	-31.215	60	22.814	-27.186	50	9000	1	10.444
17.6727536 M	43.032	-16.968	60	27.797	-22.203	50	9000	1	10.777
17.6907536 M	43.601	-16.399	60	28.779	-21.221	50	9000	1	10.778
17.8167536 M	43.264	-16.736	60	27.632	-22.368	50	9000	1	10.785
19.6932536 M	43.174	-16.826	60	30.14	-19.86	50	9000	1	10.883



Test point: N
Operation mode: stand-by mode
Remarks: None
Date: 09.01.2025
Tested by: Franz-Xaver Schrettenbrunner

Result: passed

Frequency (Hz)	QuasiPeak (dBµV)	QP Margin	QP Limit (dBµV)	CISPR AV (dBµV)	CISPR AV Margin	AV Limit (dBµV)	RBW (Hz)	Meas.Time (s)	Correction (dB)
150.0036 k	46.994	-19.006	66	33.972	-22.028	56	9000	1	10.322
154.2536 k	47.823	-17.931	65.754	34.726	-21.028	55.754	9000	1	10.323
255.5036 k	38.791	-22.778	61.568	31.199	-20.369	51.568	9000	1	10.323
354.5036 k	39.293	-19.557	58.851	28.594	-20.257	48.851	9000	1	10.334
433.2536 k	32.757	-24.428	57.185	18.946	-28.239	47.185	9000	1	10.345
512.0036 k	30.97	-25.03	56	16.078	-29.922	46	9000	1	10.358
937.2536 k	29.324	-26.676	56	18.665	-27.335	46	9000	1	10.389
1.1780036 M	27.491	-28.509	56	12.756	-33.244	46	9000	1	10.4
1.2590036 M	26.647	-29.353	56	16.938	-29.062	46	9000	1	10.406
1.3985036 M	29.972	-26.028	56	21.698	-24.302	46	9000	1	10.415
2.3097536 M	25.42	-30.58	56	17.884	-28.116	46	9000	1	10.489
3.0275036 M	27.256	-28.744	56	20.746	-25.254	46	9000	1	10.526
3.9612536 M	28.465	-27.535	56	21.877	-24.123	46	9000	1	10.547
4.4090036 M	25.419	-30.581	56	17.471	-28.529	46	9000	1	10.538
6.6702536 M	25.343	-34.657	60	18.809	-31.191	50	9000	1	10.458
6.8165036 M	27.078	-32.922	60	21.043	-28.957	50	9000	1	10.454
17.3960036 M	38.896	-21.104	60	23.601	-26.399	50	9000	1	10.701
17.4230036 M	40.79	-19.21	60	26.318	-23.682	50	9000	1	10.701
17.7267536 M	39.095	-20.905	60	23.452	-26.548	50	9000	1	10.71
17.9270036 M	41.781	-18.219	60	27.152	-22.848	50	9000	1	10.717



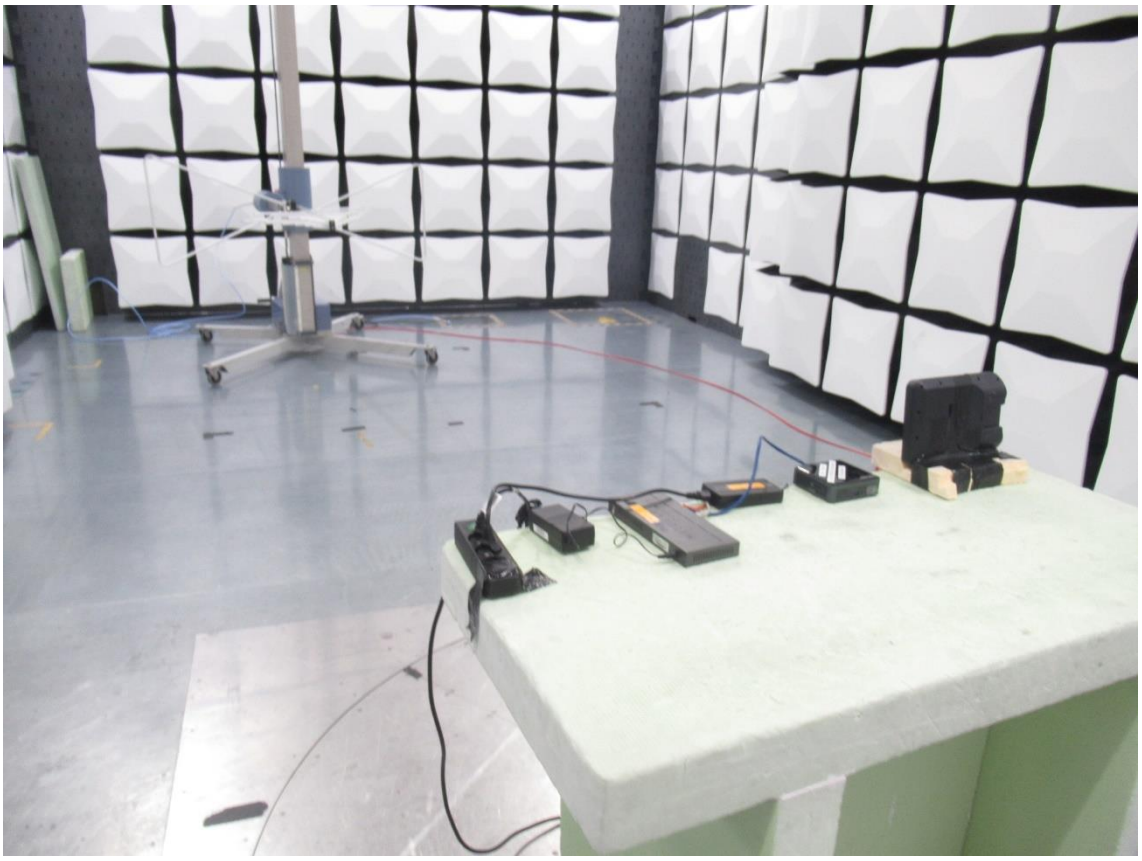
5.2 Radiated emission < 1 GHz (electric field)

For test instruments and accessories used see section 6 Part **A 5**.

5.2.1 Description of the test location

Test location: Semianechoic chamber SAC2
Test distance: 3 m

5.2.2 Photo documentation of the test setup



5.2.3 Test result

Frequency range: 30 MHz - 1000 MHz
Min. limit margin -2.2 dB at 700.02 MHz

The requirements are **FULFILLED.**

Remarks: For detailed results, please see the following page(s).

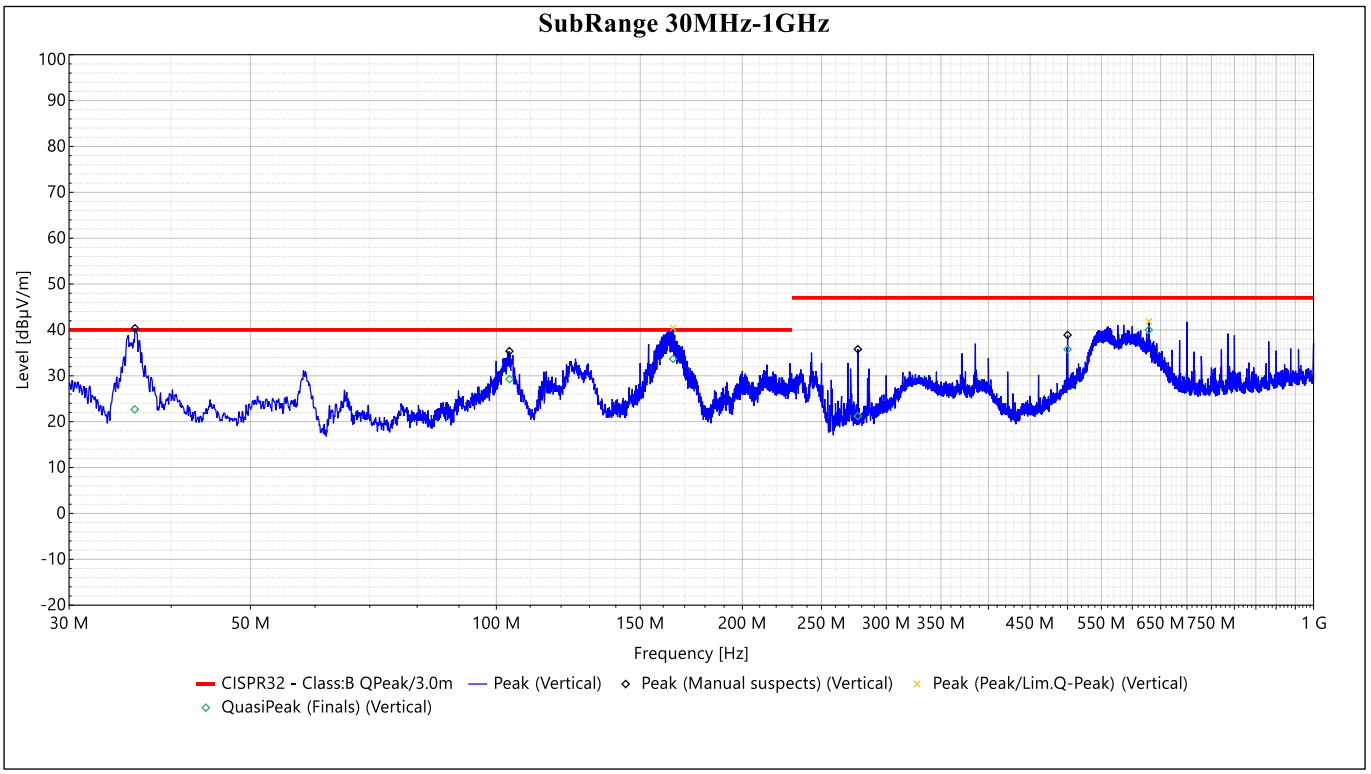
For description of the measurement see 4.5.2.

5.2.4 Test protocol

Operation mode:	stand-by mode	Result: passed
Remarks:	None	
Date:	09.01.2025	
Tested by:	Franz-Xaver Schrettenbrunner	

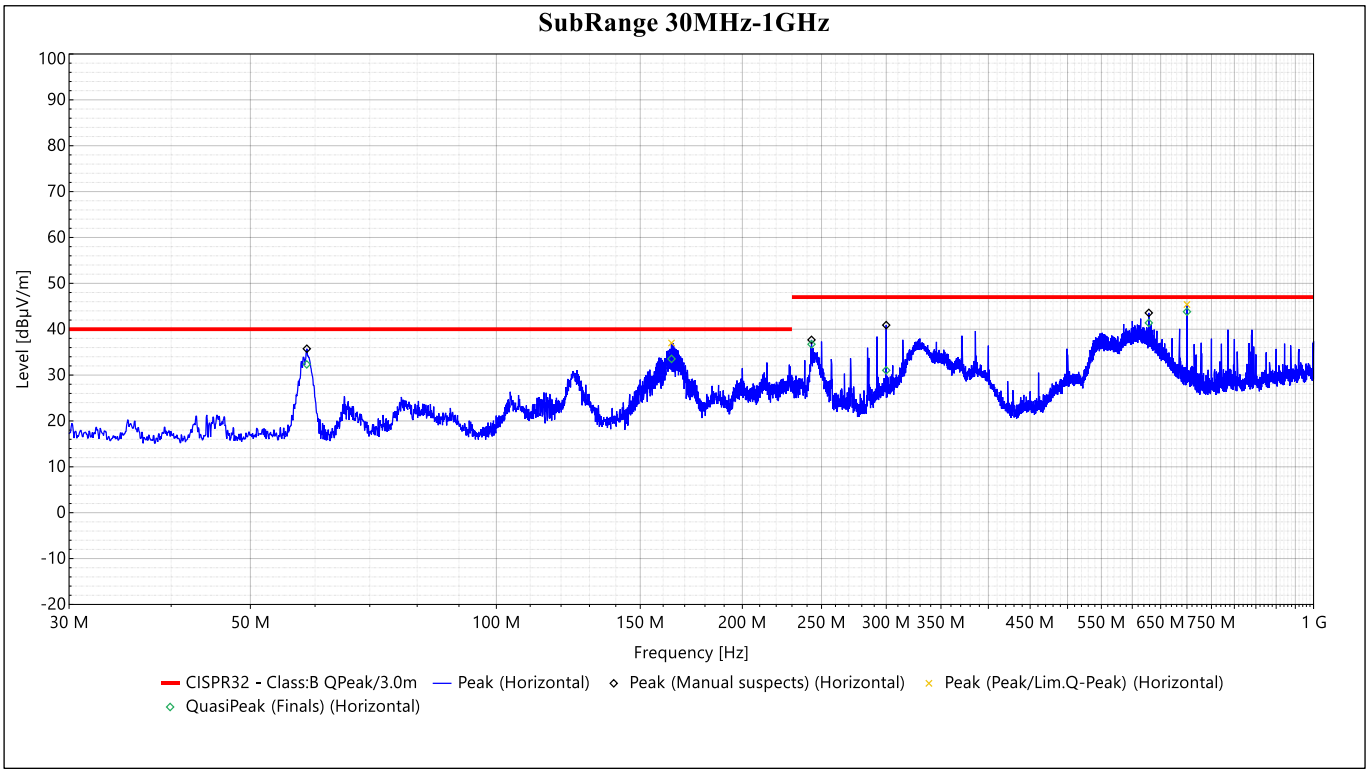
Vertical

Frequency (Hz)	QuasiPeak (dBµV/m)	QP Margin	QP Limit (dBµV/m)	angle	height	polarization	RBW (Hz)	Meas.Time (s)	Correction (dB)
36.0956325 M	22.683	-17.317	40	262	1.17	Vertical	120000	0.01	-12.723
103.7725923 M	29.284	-14.216	43.5	267	1.07	Vertical	120000	0.01	-13.222
164.5588623 M	33.685	-9.815	43.5	173	1.07	Vertical	120000	0.01	-9.311
276.9004615 M	21.207	-24.793	46	118	1.9	Vertical	120000	0.01	-10.234
500.0534523 M	35.778	-10.222	46	259	1.07	Vertical	120000	0.01	-4.68
628.7167315 M	40.015	-5.985	46	194	1.16	Vertical	120000	0.01	-1.811



Horizontal

Frequency (Hz)	QuasiPeak (dBµV/m)	QP Margin	QP Limit (dBµV/m)	angle	height	polarization	RBW (Hz)	Meas.Time (s)	Correction (dB)
58.6089324 M	32.334	-7.666	40	20	3.45	Horizontal	120000	0.01	-10.185
163.8181409 M	33.526	-9.974	43.5	338	1.78	Horizontal	120000	0.01	-9.706
243.0325517 M	36.716	-9.284	46	151	1.26	Horizontal	120000	0.01	-11.161
299.9707172 M	31.037	-14.963	46	114	1.22	Horizontal	120000	0.01	-9.033
628.7067123 M	41.376	-4.624	46	197	1.53	Horizontal	120000	0.01	-1.316
700.0237463 M	43.823	-2.177	46	10	1.53	Horizontal	120000	0.01	-0.339



5.3 Radiated emission > 1 GHz (electric field)

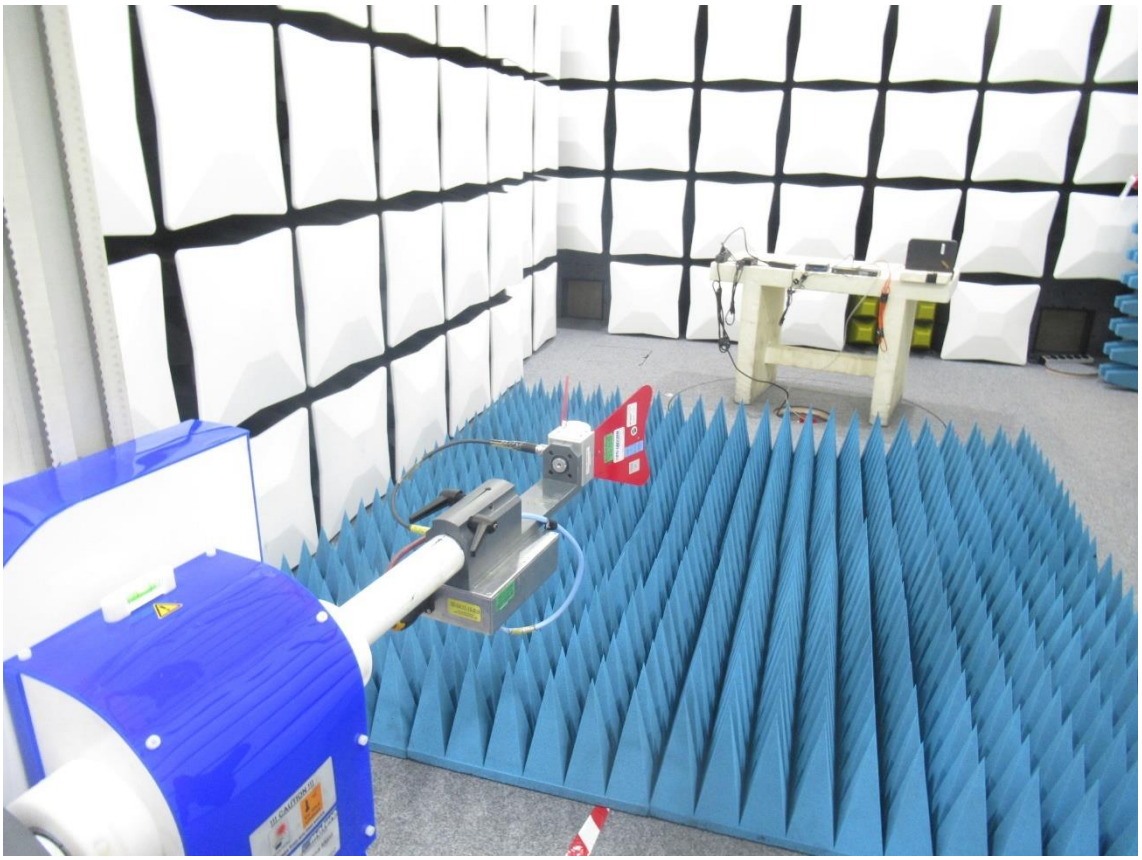
For test instruments and accessories used see section 6 Part **SER 3**.

5.3.1 Description of the test location

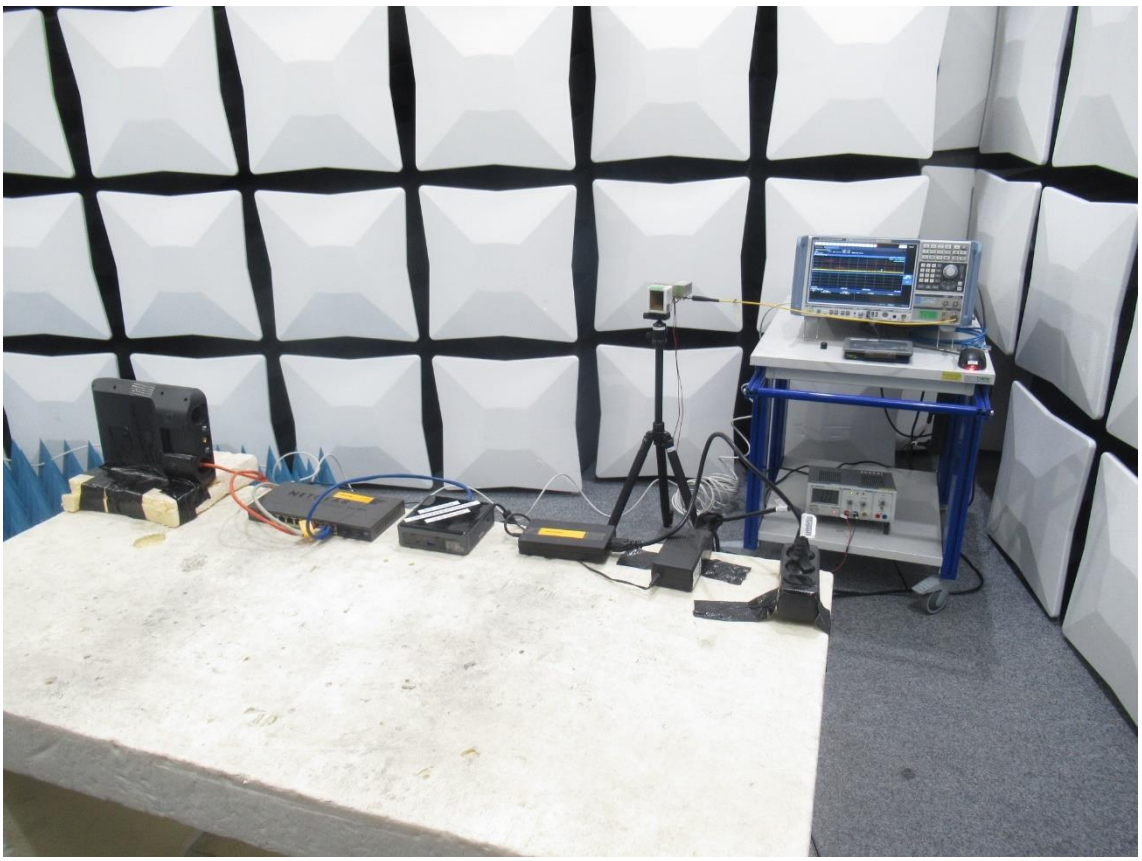
Test location: Fully anechoic room FAR1
Test distance: 3 m

5.3.2 Photo documentation of the test setup

1 – 18 GHz



18 – 40 GHz



5.3.3 Test result

Frequency range:	1000 MHz – 40000 MHz
Min. limit margin	all peak levels below average limit

The requirements are **FULFILLED.**

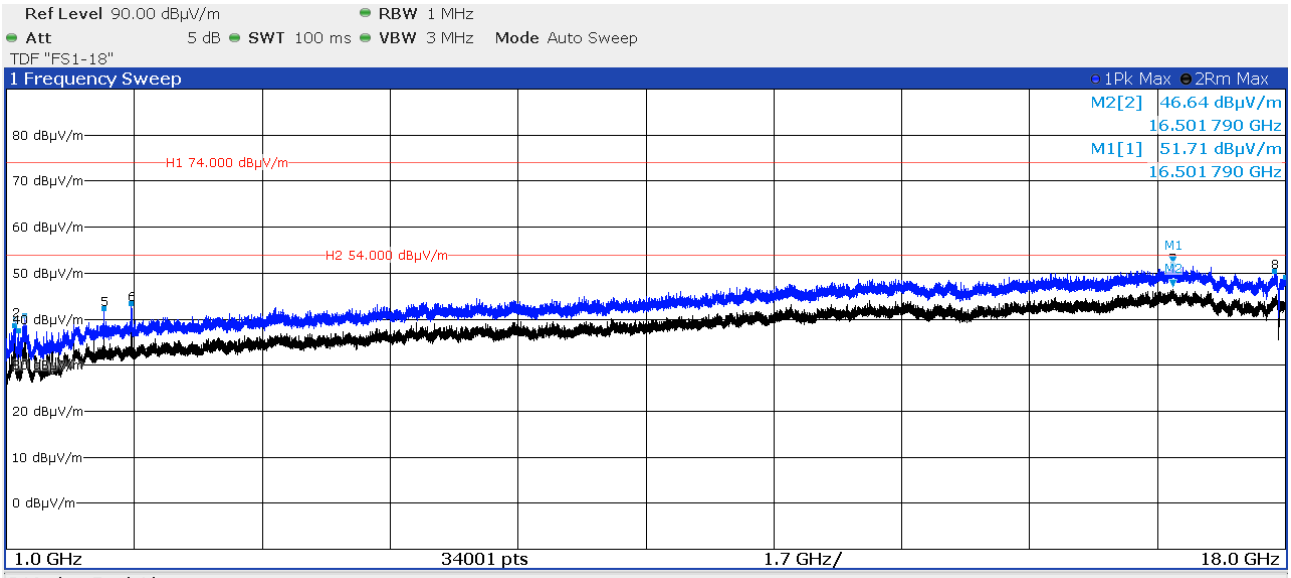
Remarks: For detailed results, please see the following page(s).

For description of the measurement see 4.5.2.

5.3.4 Test protocol

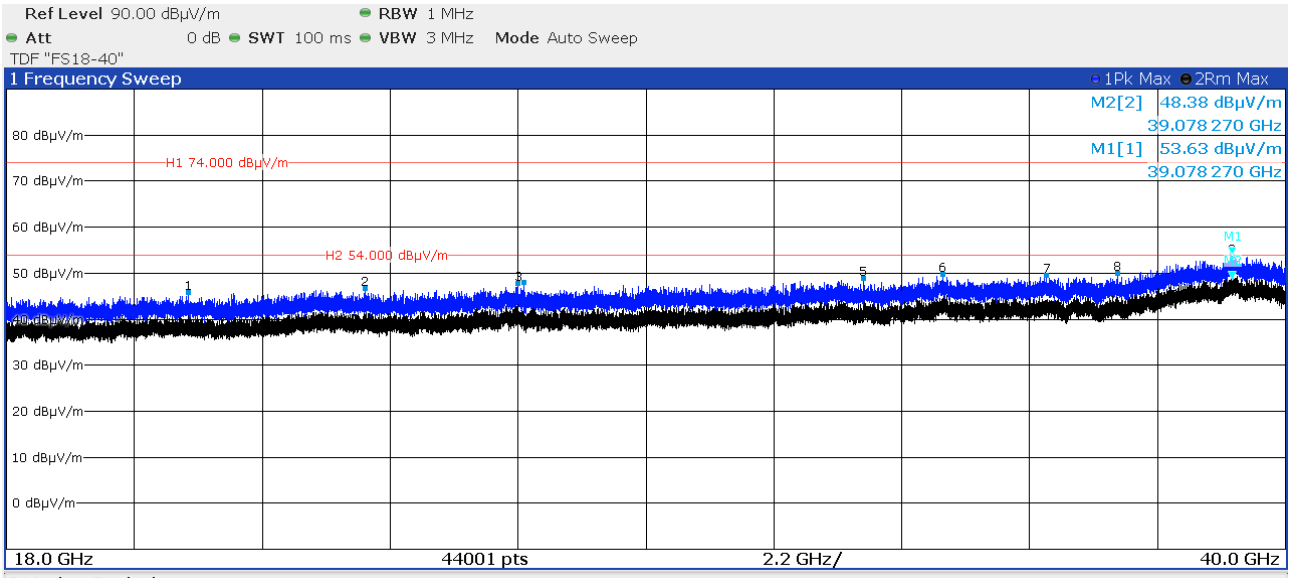
Operation mode:	stand-by mode	Result: passed
Remarks:	None	
Date:	17.12.2024	
Tested by:	Franz-Xaver Schrettenbrunner	

horizontal



2 Marker Peak List

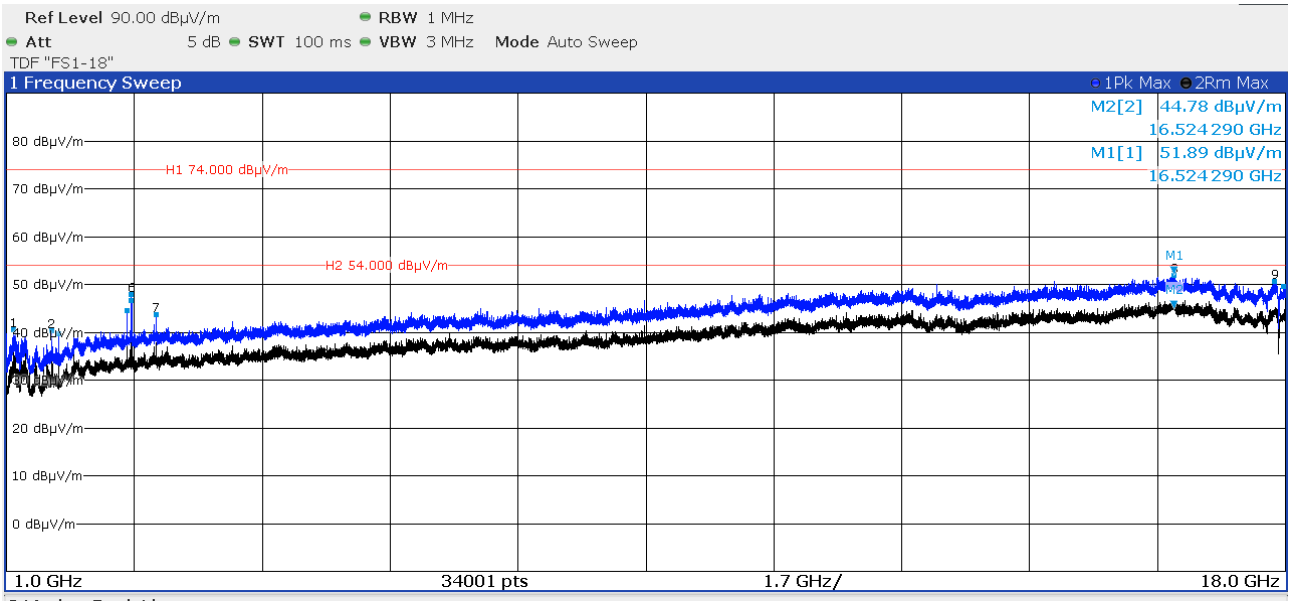
No	X-Value	Y-Value	No	X-Value	Y-Value
1	1.103 750 GHz	38.677 dBµV/m	6	2.658 200 GHz	43.390 dBµV/m
2	1.125 250 GHz	39.928 dBµV/m	7	16.501 790 GHz	51.714 dBµV/m
3	1.157 250 GHz	37.509 dBµV/m	8	17.858 750 GHz	50.499 dBµV/m
4	1.236 240 GHz	40.740 dBµV/m	9	17.997 250 GHz	49.061 dBµV/m
5	2.300 710 GHz	42.388 dBµV/m			



2 Marker Peak List

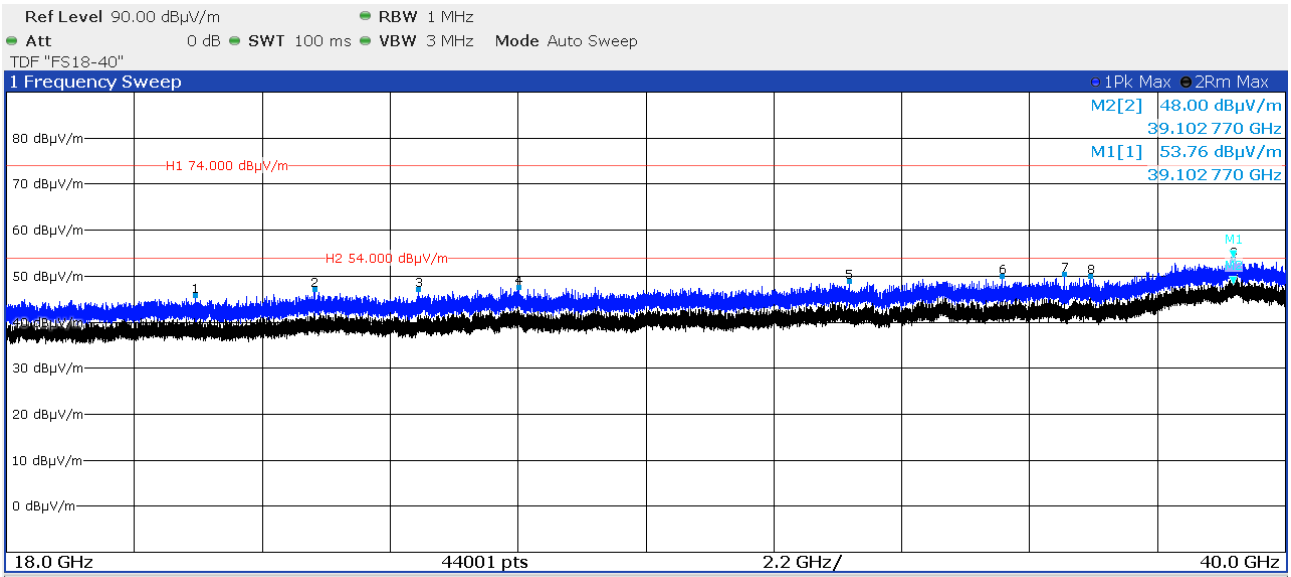
No	X-Value	Y-Value	No	X-Value	Y-Value
1	21.123 180 GHz	45.855 dBµV/m	6	34.104 380 GHz	49.640 dBµV/m
2	24.162 610 GHz	46.687 dBµV/m	7	35.893 840 GHz	49.484 dBµV/m
3	26.797 050 GHz	47.729 dBµV/m	8	37.112 820 GHz	50.024 dBµV/m
4	26.905 050 GHz	48.023 dBµV/m	9	39.078 270 GHz	53.628 dBµV/m
5	32.738 920 GHz	48.957 dBµV/m			

vertical



2 Marker Peak List

No	X-Value	Y-Value	No	X-Value	Y-Value
1	1.095 750 GHz	40.431 dBµV/m	6	2.662 200 GHz	47.996 dBµV/m
2	1.600 230 GHz	40.417 dBµV/m	7	2.986 690 GHz	43.765 dBµV/m
3	1.699 730 GHz	39.687 dBµV/m	8	16.524 290 GHz	51.886 dBµV/m
4	2.608 700 GHz	44.487 dBµV/m	9	17.857 750 GHz	50.585 dBµV/m
5	2.658 200 GHz	46.735 dBµV/m	10	17.971 750 GHz	49.621 dBµV/m



2 Marker Peak List

No	X-Value	Y-Value	No	X-Value	Y-Value
1	21.243 180 GHz	45.783 dBµV/m	6	35.134 860 GHz	49.976 dBµV/m
2	23.297 130 GHz	47.154 dBµV/m	7	36.201 840 GHz	50.486 dBµV/m
3	25.088 590 GHz	47.117 dBµV/m	8	36.654 330 GHz	49.973 dBµV/m
4	26.815 050 GHz	47.590 dBµV/m	9	39.102 770 GHz	53.760 dBµV/m
5	32.495 420 GHz	48.871 dBµV/m			

6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used, in addition to the test accessories, are calibrated and verified regularly.
All listed measuring devices were calibrated at the time of use.

Test ID	Model Type	Kind of Equipment	Manufacturer	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
A 4	ESR3	EMI Test Receiver	Rohde & Schwarz Memming	09-02/03-21-001	03/07/2025	03/07/2024		
	ENV432	V-Netznachbildung	Rohde & Schwarz Memming	09-02/20-21-001	02/09/2026	02/09/2024	02/09/2025	02/09/2024
	KK-SPU195FR01-2X11N-3	Kabelkonf. Spuma_195-	Huber + Suhner	09-02/50-21-037				
	KK-SPU195FR01-2X11N-	Kabelkonf. Spuma_195-	Huber + Suhner	09-02/50-21-040				
	CDB-10K-18-50V-NMF-I	DC Blocker	Tactron Elektronik	09-02/50-22-033	17/07/2025	17/07/2024		
	BAT-EMC 2023.0.8.0	Nexio Software	EMCO Elektronik GmbH	09-02/68-21-002				
	61605	AC_DC Source 61605	Chromsa ATE Inc.	09-07/20-21-011	21/03/2025	21/03/2022		
A 5	ESR7	EMI Test Receiver	Rohde & Schwarz Memming	09-02/03-21-004	05/08/2025	05/08/2024		
	BBV 9743 B	Broadb. Ampl. 10MHz-6	Schwarzbeck Mess-Elektron	09-02/17-21-002	17/12/2025	17/12/2024		
	VULB9168	Trilog-Broadband Anten	Schwarzbeck Mess-Elektron	09-02/24-22-003	06/08/2025	06/08/2024	12/08/2025	12/08/2024
	KK-7.8F-2XNM_4.0M	Cable Assembly 7.8 flexi	Tactron Elektronik	09-02/50-21-018				
	KK-7.8F-2XNM_4.5M	Cable Assembly 7.8 flexi	Tactron Elektronik	09-02/50-21-023				
	KK-7.8F-2XNM_9.5M	Cable Assembly 7.8 flexi	Tactron Elektronik	09-02/50-21-025				
	50F-003 N 3dB	Attenuator 3dB	Tactron Elektronik	09-02/50-22-002				
	CDB-10K-18-50V-NMF-I	DC Blocker	Tactron Elektronik	09-02/50-22-031	17/07/2025	17/07/2024		
	BAT-EMC 2023.0.8.0	Nexio Software	EMCO Elektronik GmbH	09-02/68-21-002				
SER 3	ESW26	EMI Test Receiver	Rohde & Schwarz München	02-02/03-17-002	16/04/2025	16/04/2024		
	FSW43	Spectrum Analyser	Rohde & Schwarz München	02-02/11-15-001	19/08/2025	19/08/2024		
	AMF-6D-01002000-22-10P	RF Amplifier	MITEQ, Inc.	02-02/17-15-004				
	LNA-40-18004000-33-5P	Amplifier 18-40 GHz	MITEQ, Inc.	02-02/17-20-002				
	BBHA 9170	SHF-EHF Horn Antenna	Schwarzbeck Mess-Elektron	02-02/24-05-013	21/03/2026	21/03/2023		
	3117	Horn Antenna	ETS Lindgren	02-02/24-20-007	20/11/2025	20/11/2024		
	BAM 4.5-P	Antenna Mast	maturo GmbH	02-02/50-17-024				
	KK-SF106-2X11N-6,5M	RF Cable	Huber + Suhner	02-02/50-18-016				
	KMS116-GL140SE-KMS116	Cable DC-40GHz	GigaLane Co., Ltd.	02-02/50-20-026				
	0_5 Meter DC-18GHz	NMS111-GL200SC06_5	Tactron Elektronik	09-16/50-23-003				

7 Detailed measurement uncertainty

7.1 Overview

Measurement instrumentation uncertainty shall be taken into account when determining compliance or non-compliance with a disturbance limit.
The measurement instrumentation uncertainty for a test laboratory shall be evaluated. The standard uncertainty $u(x_i)$ in decibels and the sensitivity coefficient c_i shall be evaluated for the estimate x_i of each quantity. The combined standard uncertainty $u_c(y)$ of the estimate y of the measurand shall be calculated as

$$u_c(y) = \sqrt{\sum_i c_i^2 \; u^2(x_i)}$$

The expanded measurement instrumentation uncertainty U_{lab} for a test laboratory shall be calculated as $U_{lab} = 2\, u_c(y)$

$$U_{lab} = 2\, u_c(y)$$

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} in the table below, then:
- compliance is deemed to occur if no measured disturbance exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} in the table below, then:
- compliance is deemed to occur if no measured disturbance, increased by ($U_{lab} – U_{cispr}$), exceeds the disturbance limit.
- non-compliance is deemed to occur if any measured disturbance, increased by ($U_{lab} – U_{cispr}$), exceeds the disturbance limit.

7.2 Definitions and symbols

X_i	Input quantity
x_i	estimate of X_i
$u(x_i)$	standard uncertainty of x_i
c_i	sensitivity coefficient
$u_c(y)$	(combined) standard uncertainty of y
Y	result of a measurement, (the estimate of the measured), corrected for all recognised significant systematic effects
U	expanded uncertainty of y

7.3 Measurement uncertainty

Measurement	U_{lab} [dB]
Conducted disturbance	+ 2.53 / - 2.77
Radiated disturbance (electric field) - 10 m test distance - 3 m test distance - Frequency range: 30 MHz – 200 MHz	 + 3.16 / - 3.22 + 3.16 / - 3.22
Radiated disturbance (electric field) - 10 m test distance - 3 m test distance - Frequency range: 200 MHz – 1000 MHz	 + 4.51 / - 4.51 + 4.51 / - 4.51
Radiated disturbance (electric field) - 3 m test distance - Frequency range: 1 GHz – 30 GHz	 + 5.07 / -3.70