

Report on the FCC and IC Testing of the Latai GmbH

Model: Dustlight 23003.3

In accordance with FCC 47 CFR Part 15 B
and ICES-003 and partly with FCC 47 CFR
Part 15 C and ISED RSS-247

Prepared for: Latai GmbH
Agnes-Pockels Bogen 1
80992 München
Germany

FCC ID: 2BQIB-DL230033
IC: 34240-DL230033



Product Service

Add value.
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Date: 2025-08-25
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RESPONSIBLE FOR	NAME	DATE	SIGNATURE
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Authorised Signatory	Alex Fink	2025-08-25	 SIGN-ID 1067672

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures described on test pages.
All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15 B and ICES-003 and partly in compliance with FCC 47 CFR Part 15 C and ISED RSS-247.
The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Alexander Deese	2025-08-25	 SIGN-ID 1067668

Laboratory Accreditation
DAkkS Reg. No. D-PL-11321-11-03
DAkkS Reg. No. D-PL-11321-11-04

Laboratory recognition
Registration No. BNetzA-CAB-16/21-15

Industry Canada test site registration
3050A-2

Executive Statement:

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15 B:2024, ICES-003:2020, FCC 47 CFR Part 15 C:2024 and ISED RSS-247:2025



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1 Report Summary

1.1 Modification Report

Alternations and additions of this report will be issued to the holders of each copy in the form of a complete document.

Revision	Description of changes	Date of Issue
0	First Issue	2025-07-16
1	Model Number corrected. Manufacturer corrected. Software version corrected. Marking plate updated.	2025-07-24
2	Chapter and test specifications added for transmitter output power.	2025-08-25

Table 1: Report of Modifications

1.2 Introduction

Applicant	Latai GmbH
Manufacturer	Latai GmbH Agnes-Pockels-Bogen 1 80992 München Germany
Model Number(s)	Dustlight 23003.3
Serial Number(s)	---
Hardware Version(s)	1
Software Version(s)	2.11.1
Number of Samples Tested	1
Test Specification(s) / Issue / Date	FCC 47 CFR Part 15 B : 2024 and ICES-003, Issue 7 : 2020 FCC 47 CFR Part 15 C : 2024 ISED RSS-247, Issue 4 : 2025
Test Plan/Issue/Date	---
Order Number	2025-11083 / 025921
Date	2025-07-04
Date of Receipt of EUT	2025-07-09
Start of Test	2025-07-09
Finish of Test	2025-07-09
Name of Engineer(s)	Alexander Deese
Related Document(s)	ANSI C63.4: 2014



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15 B, ICES-003, FCC 47 CFR Part 15 C and RSS-247 is shown below.

Section	Specification Clause	Test Description	Result
2.1	15.107	Conducted Disturbance at Mains Terminal	Pass
2.2	15.109	Radiated Disturbance	Pass

Table 2: Results according to FCC 47 CFR Part 15 B

Section	Specification Clause	Test Description	Result
2.1	6.1	AC Power Line Conducted Emissions	Pass
2.2	6.2	Radiated Emissions	Pass

Table 3: Results according to ICES-003

Section	Specification Clause	Test Description	Result
2.13	15.247	Transmitter output power	Pass

Table 4: Results according to FCC 47 CFR Part 15 C

Section	Specification Clause	Test Description	Result
2.13	6.2	Transmitter output power	Pass

Table 5: Results according to RSS-247



1.4 Product Information

1.4.1 Technical Description

The EUT is a Measurement Device with BLE.

Supply Voltage: 3.7 V
Supply Frequency: DC, battery supplied
Highest clock frequency: 240 MHz

If the EUT contains intentional radiating modules:

(Highest) Clock Frequencies 2483.5 MHz
of modules:
FCC IDs of modules: 2BQIB-DL230033
IC IDs of modules: 34240-DL230033





1.5 Test Configuration

The EUT was 3.7 V / DC battery supplied. The device was connected to the Dustlight app provided by the applicant via BLE.

1.6 Modes of Operation

Connected via BLE. The applicant set an output power of 3dBm in the device's software.

1.7 Deviations from Standard

1.8 EUT Modifications Record

The table below details modifications made to the EUT during the test program.
The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
0	As supplied by the customer	Not Applicable	Not Applicable

Table 6



1.9 Test Location

TÜV SÜD Product Service conducted the following tests at our Straubing test laboratory:

Test Name	Name of Engineer(s)
Configuration according to 1.5 and 1.6	
Conducted Disturbance at Mains Terminal	Alexander Deese
Radiated Disturbance	Alexander Deese

Office Address:

Äußere Frühlingstraße 45
94315 Straubing
Germany



2 Test Details

2.1 Conducted Emissions on Mains Terminals

2.1.1 Specification Reference

FCC 47 CFR Part 15 B, Clause 15.107
ICES-003, Clause 6.1

2.1.2 Equipment under Test and Modification State

Dustlight 23003.3; S/N ---; Modification state 0

2.1.3 Date of Test

2025-07-09

2.1.4 Environmental Conditions

Ambient Temperature 25 °C
Relative Humidity 40 %

2.1.5 Specification Limits

Required Specification Limits (Class A)			
Line Under Test	Frequency Range (MHz)	Quasi-peak (dB μ V)	Average (dB μ V)
AC Power Port	0.15 to 0.5	79	66
	0.5 to 30	73	60

Table 7 Class A emission limits

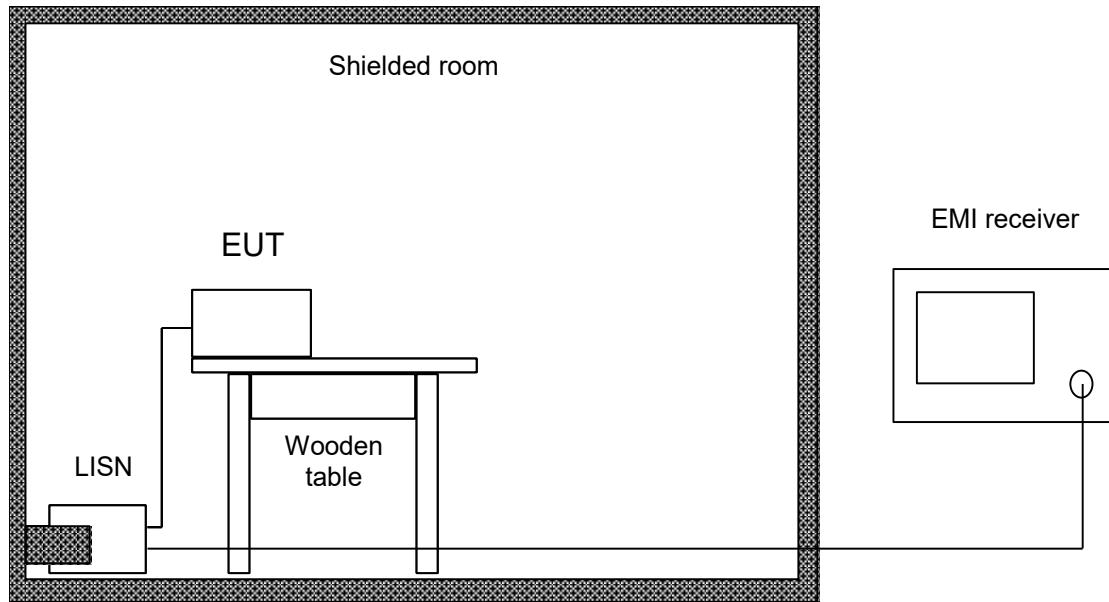
Required Specification Limits (Class B)			
Line Under Test	Frequency Range (MHz)	Quasi-peak (dB μ V)	Average (dB μ V)
AC Power Port	0.15 to 0.5	66 to 56*	56 to 46*
	0.5 to 5	56	46
	5 to 30	60	50

Supplementary information: *Decreases with the logarithm of the frequency.

Table 8 Class B emission limits

2.1.6 Test Method

The test was performed according to ANSI C63.4, sections 5.2 and 7.



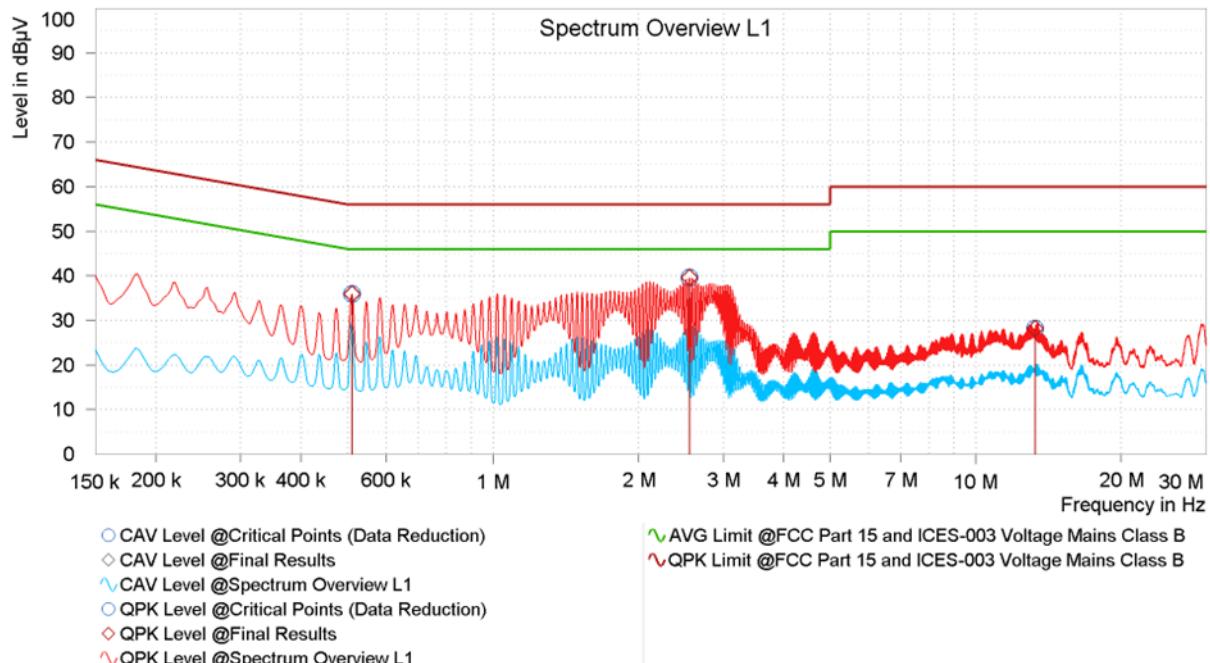
The EUT was placed on a non-conductive table 0.8 m above a reference ground plane and 0.4 m away from a vertical coupling plane.

All power was connected to the EUT through an Line Impedance Stabilization Network (LISN). Conducted disturbance voltage measurements on mains lines were made at the output of the LISN. The LISN was placed 0.8 m from the boundary of the EUT and bounded to the reference ground plane. To simplify testing with quasi-peak and linear average (cispqr-average) detector the following procedure is used:

First the whole spectrum of emission caused by the equipment under test (EUT) is recorded with the detectors set to peak and average using CISPR bandwidth of 10 kHz. After that all emission levels having less margin than 10 dB to or exceeding the average limit are retested with the detectors set to quasi-peak and average. If the average limit is kept with quasi-peak levels measurement with average detector is optional. In cases of emission levels between quasi-peak and average limit an additional measurement with average detector has to be performed.

2.1.7 Test Results

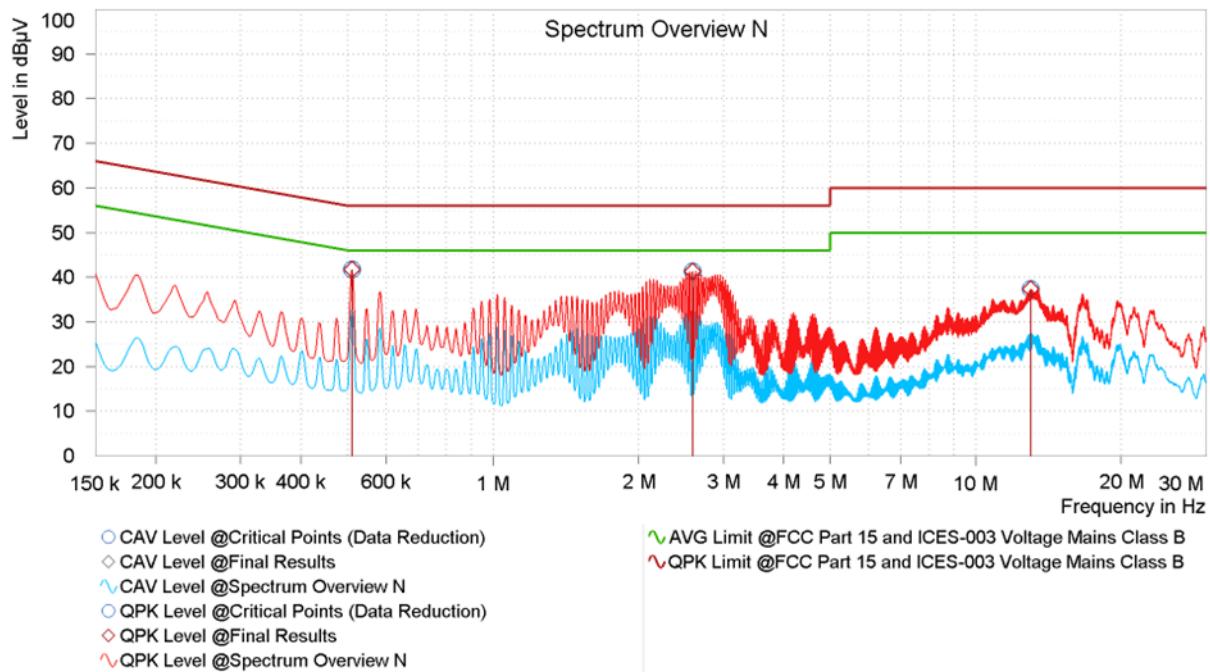
Phase L1:



Frequency [MHz]	QPK Level [dBµV]	QPK Limit [dBµV]	QPK Margin [dB]	CAV Level [dBµV]	CAV: AVG Limit [dBµV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
0.510	35.97	56.00	20.03	---	46.00	---	10.10	L1	9.000	15.000
2.551	39.57	56.00	16.43	---	46.00	---	10.13	L1	9.000	15.000
13.261	28.20	60.00	31.80	---	50.00	---	10.27	L1	9.000	15.000



Phase N:



Frequency [MHz]	QPK Level [dBµV]	QPK Limit [dBµV]	QPK Margin [dB]	CAV Level [dBµV]	CAV: AVG Limit [dBµV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
0.510	41.71	56.00	14.29	---	46.00	---	10.10	N	9.000	15.000
2.594	41.24	56.00	14.76	---	46.00	---	10.13	N	9.000	15.000
13.007	37.29	60.00	22.71	---	50.00	---	10.27	N	9.000	15.000

Sample calculation:

$$\text{Final Value (dB}\mu\text{V)} = \text{Reading Value (dB}\mu\text{V)} + (\text{Cable attenuation (dB)} + \text{LISN Transducer (dB)})$$



2.1.8 Test Location and Test Equipment

The test was carried out in shielded room no. 9

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
V-network	Rohde & Schwarz	ENV216	39911	12	2026-04-30
EMI test receiver	Rohde & Schwarz	EPL1000	67137	12	2025-07-31
ELEKTRA measurement software	Rohde & Schwarz	ELEKTRA K9 Emission – V5.10.0	68260	---	---

Table 9



2.2 Radiated Emissions

2.2.1 Specification Reference

FCC 47 CFR Part 15 B, Clause 15.109
ICES-003, Clause 6.2

2.2.2 Equipment under Test and Modification State

Dustlight 23003.3; S/N ---; Modification state 0

2.2.3 Date of Test

2025-07-09

2.2.4 Environmental Conditions

Ambient Temperature	25 °C
Relative Humidity	40 %

2.2.5 Specification Limits

On any frequency below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a CISPR quasi-peak detector function and related measurement bandwidths. As an alternative to CISPR quasi-peak measurements compliance may be demonstrated with the emission limits using measuring equipment employing a peak detector function as long as the same bandwidth as indicated for CISPR quasi-peak measurements are employed.

Above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz. When average radiated emission measurements are specified, there also is a limit on the peak level of the radio frequency emissions. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit. This peak limit applies to the total peak emission level radiated by the device.

Required Specification Limits (Class A)		
Frequency Range (MHz)	Field strength in 10 m distance	
	(μ V/m)	(dB μ V/m)
30 – 88	90	39
88 – 216	150	43.5
126 – 960	210	46.4
above 960	300	49.5

Table 10 Class A emission limits

Required Specification Limits (Class B)		
Frequency Range (MHz)	Field strength in 1 m distance	
	(μ V/m)	(dB μ V/m)
30 – 88	100	40
88 – 216	150	43.5
126 – 960	200	46
above 960	500	54

Table 11 Class B emission limits

As an alternative to the radiated emission limits shown above, digital devices may be shown comply with the standards contained in the 3rd Edition of CISPR 22. In addition: if measurements must be performed above 1000 MHz, compliance above 1000 MHz shall be demonstrated with the emission limits above. Measurements above 1000 MHz may be performed at the distance specified in the CISPR 22 publications for measurements below 1000 MHz provided the limits above are extrapolated to the new measurement distance using an inverse linear distance extrapolation factor (20 dB/decade), e.g., the radiated limit above 1000 MHz for Class B digital devices is 150 μ V/m as measured at a distance of 10 meters.

2.2.6 Test Method

The test was performed according to ANSI C63.4, sections 5.4, 44 and 8.

The EUT was placed on a non-conductive table, 0.8 m above the ground plane.

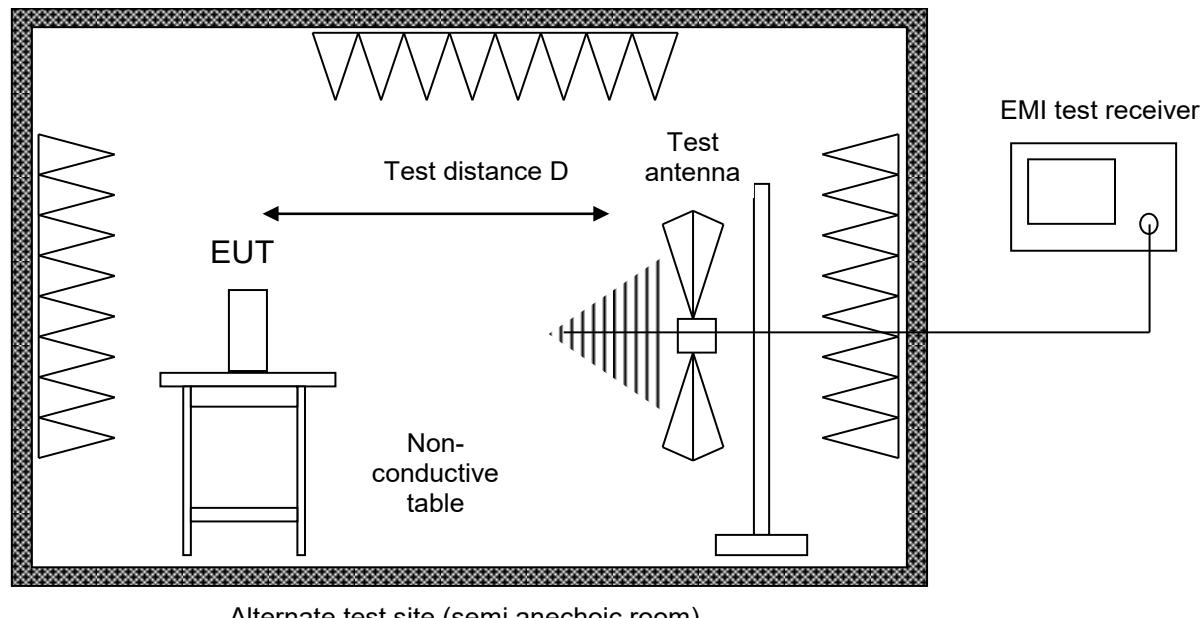
Prescans are performed in six positions of the EUT to get the full spectrum of emission caused by the EUT with the measuring antenna raised and lowered from 1 m to 4 m with vertical and horizontal polarisation to find the combination of table position, antenna height and antenna polarisation for the maximum emission levels.

Data reduction is applied to these results to select those levels having less margin than 10 dB or exceeding the limit using subranges and limited number of maximums.

Further maximisation for adjusting the maximum position is following.

Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.

2.2.6.1 Frequency range 30 MHz – 1 GHz

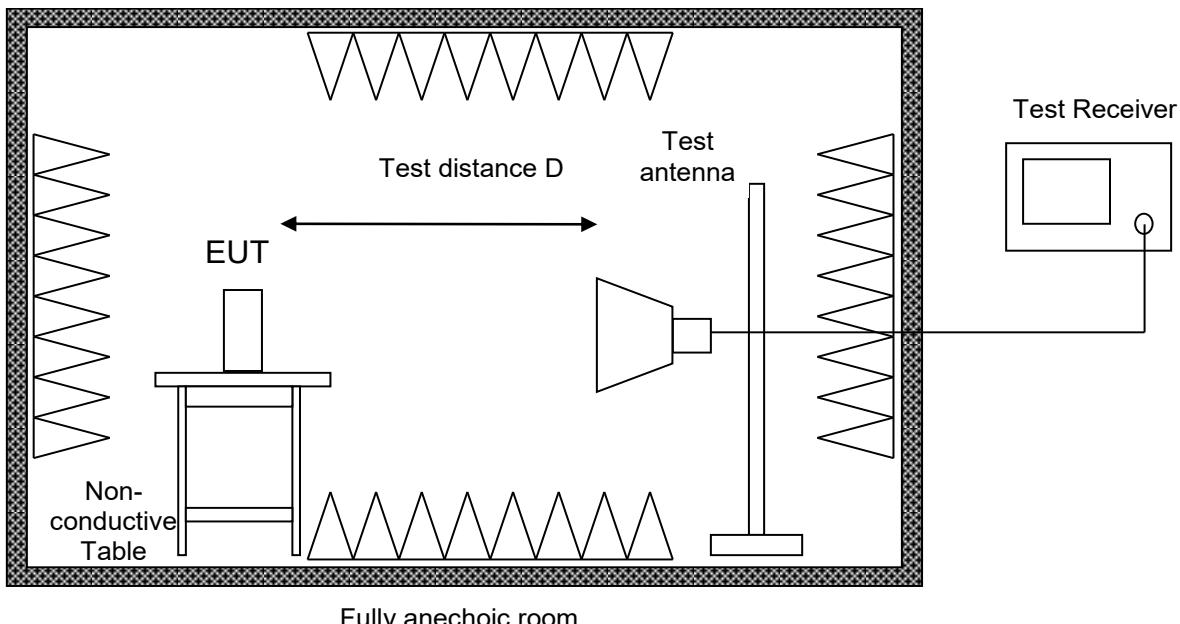


Radiated emissions in the frequency range 30 MHz – 1 GHz is measured within a semi-anechoic room with groundplane complying with the NSA requirements of ANSI C63.4. for alternative test sites. A linear polarised logarithmic periodic antenna combined with a 4:1 broadband dipole ("Trilog broadband antenna") is used.

For prescan tests the test receiver is set to peak-detector with a bandwidth of 120 kHz.

With the measurement bandwidth of the test receiver set to 120 kHz CISPR quasi-peak detector is selected for final measurements following immediately after a final frequency zoom (for drifting disturbances) and maximum adjustment.

2.2.6.2 Frequency range above 1 GHz



Radiated emission tests above 1 GHz are performed in a fully anechoic room complying with the S_vSWR requirements of ANSI C63.4. Measurements are performed both in the horizontal and vertical planes of polarisation using a test receiver with the detector function set to peak and average and the resolution bandwidth set to 1 MHz. Testing above 1 GHz is performed with horn antennas with the EUT in boresight of the antenna.

For prescan tests the test receiver is set to peak- and average-detector with a bandwidth of 1 MHz. With the measurement bandwidth of the test receiver set to 1 MHz and peak- and CISPR average-detector is selected for final measurements following immediately after a final frequency zoom (for drifting disturbances) and maximum adjustment.

2.2.7 Test Results

Frequency range	Limit applied	Test distance
30 MHz – 1 GHz	Class B	3 m
1 GHz – 13 GHz	Class B	3 m

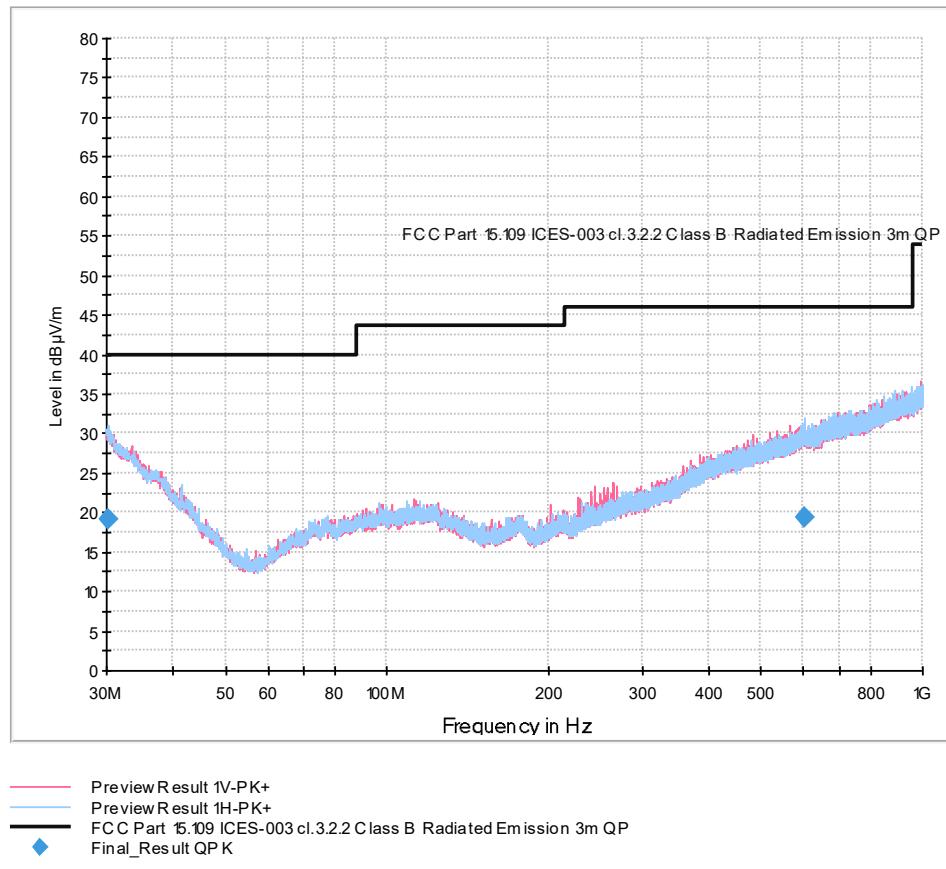
Table 12

Sample calculation:

$$\text{Final Value (dB}\mu\text{V/m)} = \text{Reading Value (dB}\mu\text{V)} + (\text{Cable attenuation (dB)} + \text{Antenna Transducer (dB(1/m)))}$$



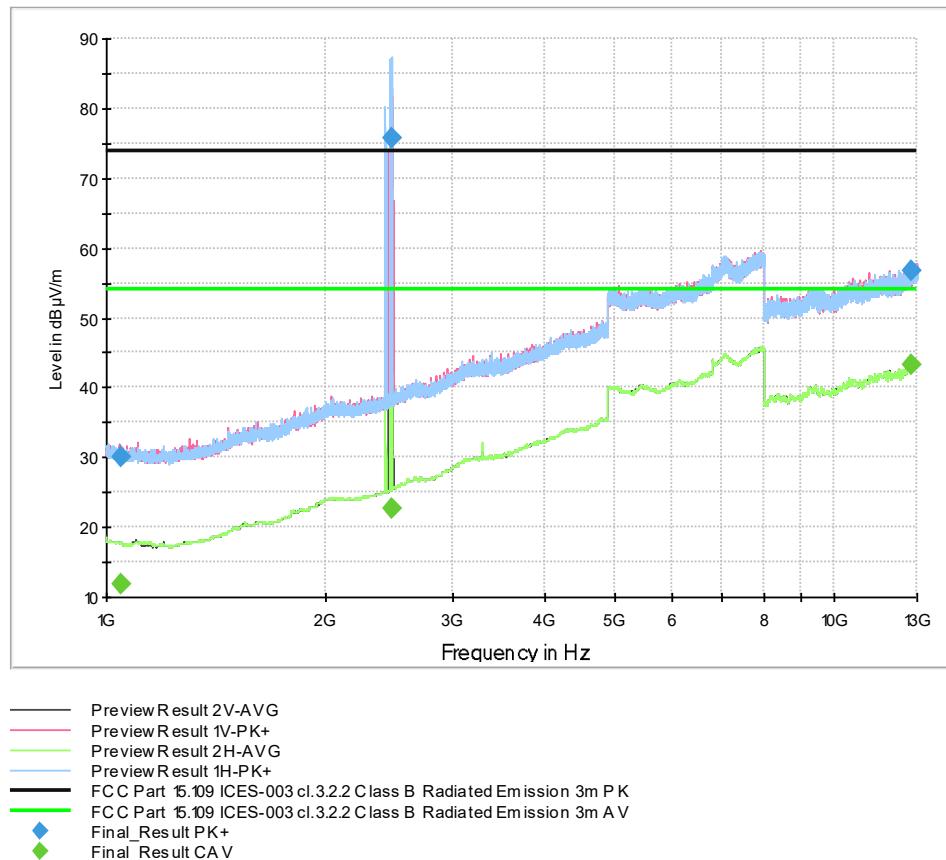
Frequency range 30 MHz – 1 GHz:



Final Results:

Frequency MHz	Qua- siPeak dB μ V/m	Limit dB μ V/m	Margin dB	Meas. Time ms	Band- width kHz	Height cm	Pol	Azi- muth deg	Corr. dB/m
30.120000	19.06	40.00	20.94	1000.0	120.000	138.0	H	41.0	25.1
602.370000	19.31	46.02	26.71	1000.0	120.000	274.0	H	167.0	26.4

Frequency range 1 GHz – 13 GHz:



Final Results:

Frequency MHz	Max- Peak dB μ V/m	CAver- age dB μ V/m	Limit dB μ V/m	Mar- gin dB	Meas. Time ms	Band- width kHz	Height cm	Pol	Azi- muth deg	Corr. dB/m
1045.500000	29.99	---	73.98	43.99	1000.0	1000.000	273.0	H	28.0	18.1
1045.500000	---	11.93	53.98	42.05	1000.0	1000.000	273.0	H	28.0	18.1
2474.750000	75.72	---	*	*	1000.0	1000.000	134.0	H	-135.0	24.6
2474.750000	---	22.79	*	*	1000.0	1000.000	134.0	H	-135.0	24.6
12811.750000	---	43.22	53.98	10.76	1000.0	1000.000	150.0	V	48.0	41.0
12811.750000	56.62	---	73.98	17.36	1000.0	1000.000	150.0	V	48.0	41.0

*: Intentional radiation not evaluated.



2.2.8 Test Location and Test Equipment

The test was carried out in semi anechoic room no. 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
EMI test receiver	Rohde & Schwarz	ESW44	39897	12	2026-03-31
ULTRALOG Antenna	Rohde & Schwarz	HL562E	61486	36	2026-04-30
Double ridged horn antenna	Rohde & Schwarz	HF907	40089	24	2026-11-30
EMC measurement software	Rohde & Schwarz	EMC32 Emission K11 – V11.50	42986	---	---
Semi anechoic room	Frankonia	Cabin no. 11	42961	---	---

Table 13



2.3 Output Power

2.3.1 Specification Reference

FCC 47 CFR Part 15 C, Clause 15.247(b)(3)
ISED RSS-247, Clause 6.2.3.2 c)

2.3.2 Equipment under Test and Modification State

Dustlight 23003.3; S/N ---; Modification state 0

2.3.3 Date of Test

2025-07-09

2.3.4 Environmental Conditions

Ambient Temperature	25 °C
Relative Humidity	40 %

2.3.5 Specification Limits

The maximum conducted output power shall not exceed 1 W (30 dBm).
The e.i.r.p. shall not exceed 4 W (36 dBm).

2.3.6 Test Method

The test was performed according to ANSI C63.10, section 11.9

2.3.7 Test Results

Frequency	Detector	EIRP (dBm)	Limit (dBm)
2440 MHz	RMS	-1.78	30.0

Table 14: EIRP



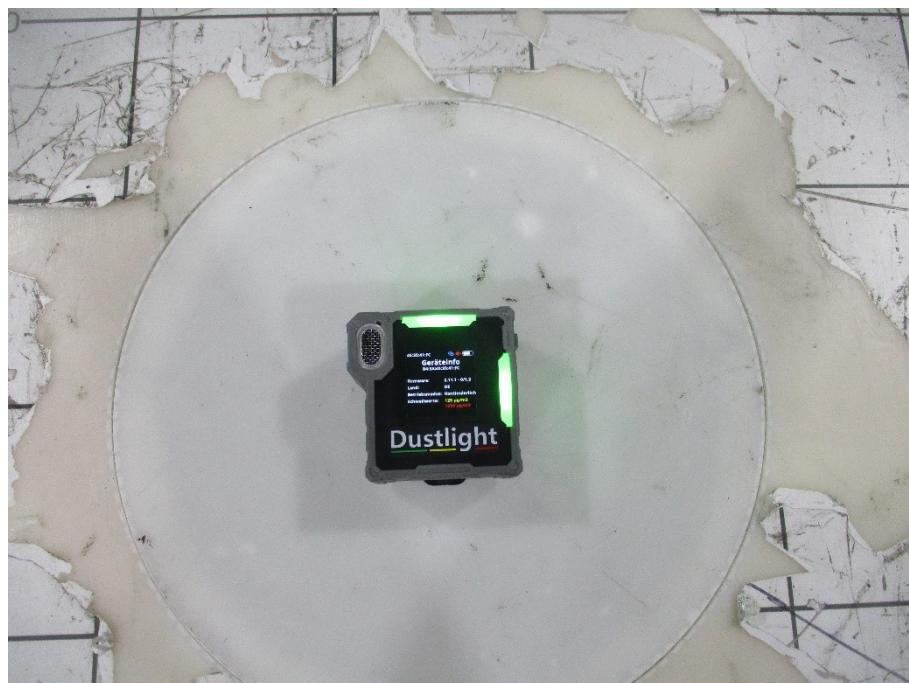
2.3.8 Test Location and Test Equipment

The test was carried out in fully anechoic room no. 2:

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Signal and Spectrum Analyser	Rohde & Schwarz	FSW43	53496	12	2026-04-30
Double ridged horn antenna	Rohde & Schwarz	HF907	40089	24	2026-11-30
RF matrix	TÜV SÜD PS	Relax RF Matrix	19801	24	2027-04-30
Fully anechoic room	Albatross	Cabin no. 2	19312	---	---

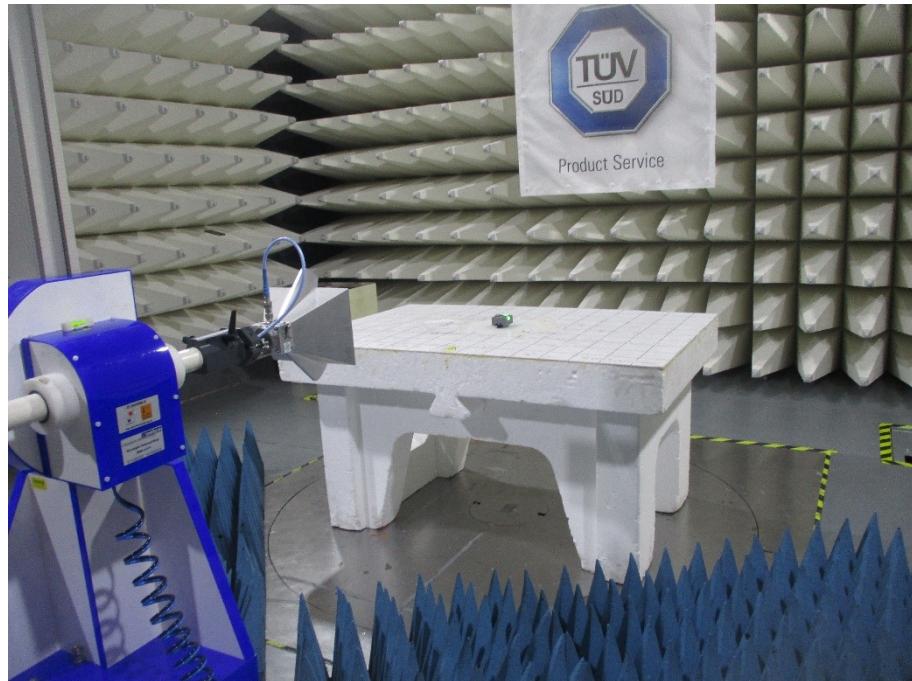
Table 15

3 Photographs of Test Setups





Product Service





4 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Radio Interference Emission Testing		
Test Name	<i>kp</i>	Expanded Uncertainty
Conducted Voltage Emission		
9 kHz to 150 kHz (50Ω/50µH AMN)	2	± 3.8 dB
150 kHz to 30 MHz (50Ω/50µH AMN)	2	± 3.4 dB
100 kHz to 200 MHz (50Ω/5µH AMN)	2	± 3.6 dB
Discontinuous Conducted Emission		
9 kHz to 150 kHz (50Ω/50µH AMN)	2	± 3.8 dB
150 kHz to 30 MHz (50Ω/50µH AMN)	2	± 3.4 dB
Conducted Current Emission		
9 kHz to 200 MHz	2	± 3.5 dB
Magnetic Fieldstrength		
9 kHz to 30 MHz (with loop antenna)	2	± 3.9 dB
9 kHz to 30 MHz (large-loop antenna 2 m)	2	± 3.5 dB
Radiated Emission		
30 MHz to 300 MHz	2	± 4.9 dB
300 MHz to 1 GHz	2	± 5.0 dB
1 GHz to 6 GHz	2	± 4.6 dB
Test distance 10 m		
30 MHz to 300 MHz	2	± 4.9 dB
300 MHz to 1 GHz	2	± 4.9 dB

The expanded uncertainty reported according to CISPR 16-4-2: 2011 + A1 + A2 + Cor1 is based on a standard uncertainty multiplied by a coverage factor of *kp* = 2, providing a level of confidence of *p* = 95.45%

Table 16 Measurement uncertainty based on CISPR 16-4-2

The measurement uncertainty in the laboratory is less than or equal to the maximum measurement uncertainty according to CISPR16-4-2: 2011 + A1 + A2 + Cor1 (U_{CISPR}). This normative regulation means that the measured value is also the value to be assessed in relation to the limit value.

End of Test Report