

EMC Test Report



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Applicant: SHENZHEN TRITEK LIMITED

Product: Rechargeable Li-ion Battery

Model: TP6136N200, TP6136N100

In accordance with Clause 4.2.15 of EN 15194

Prepared for: SHENZHEN TRITEK LIMITED
No. 1601, Building A, Delux Silicon Valley, No. 8, Juhelu, Zhukeng
Community, Longtian Street, Pingshan District, 518118 Shenzhen
City, PEOPLE'S REPUBLIC OF CHINA

COMMERCIAL-IN-CONFIDENCE

Report Number: 68774260688101

RESPONSIBLE FOR	NAME	SIGNATURE	DATE
Approved by	Dawi Xu		2026-06-18
Prepared by	Hardy Huang		2026-06-18

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

EXECUTIVE SUMMARY A sample of this product was tested and found to be in compliance with	Clause 4.2.15 of EN 15194:2017+A1:2023.
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1 Report Summary

1.1 Report Modification Record

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

Issue	Description of Change	Date of Issue
1	First Issue	2026-06-18

1.2 Introduction

The information contained in this report is intended to show verification of the EMC Qualification Approval Testing of the requirements of the standards for the tests listed in Section 1.3.

Applicant SHENZHEN TRITEK LIMITED
Address No. 1601, Building A, Delux Silicon Valley, No. 8, Juhelu, Zhukeng Community, Longtian Street, Pingshan District, 518118 Shenzhen City, PEOPLE'S REPUBLIC OF CHINA
Manufacturer SHENZHEN TRITEK LIMITED
Address No. 1601, Building A, Delux Silicon Valley, No. 8, Juhelu, Zhukeng Community, Longtian Street, Pingshan District, 518118 Shenzhen City, PEOPLE'S REPUBLIC OF CHINA
Factory Anhui tritekpower co., Ltd.
Address Building 15, Gongtou Industrial Zone, No.9 Zimei Road, Suchu Hightech Industrial Park. Chuzhou. Anhui, China
Model Number(s) TP6136N200, TP6136N100
Product Type Rechargeable Li-ion Battery
Test Specification Clause 4.2.15 of EN 15194:2017+A1:2023
Date of Receipt of EUT 2026-06-02
Start of Test 2026-06-02
Finish of Test 2026-06-03
Name of Engineer(s) Hardy Huang

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with Clause 4.2.15 of EN 15194 is shown below.

Specification	Clause	Test Description	Result	Comments/Base Standard
Clause 4.2.15 of EN 15194:2017+A1:2023	Annex B.1.2.5	Radiation emissions (Board-band)	PASS	EN 55025
Clause 4.2.15 of EN 15194:2017+A1:2023	Annex B.1.2.6	Radiation emissions (Narrow-band)	PASS	EN 55025
Clause 4.2.15 of EN 15194:2017+A1:2023	Annex B.1.2.7	Immunity to electromagnetic radiation	PASS	ISO 11452-4:2020 & ISO 11452-2:2019
Clause 4.2.15 of EN 15194:2017+A1:2023	Annex B.8	Immunity to electrostatic discharge test	PASS	EN 61000-4-2:2009

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1.4 Product Information

The TP6136N200 and TP6136N100 models are identical except for their battery capacity and cell type. Therefore, all EMC tests conducted on the higher-capacity model TP6136N200 are deemed to satisfy the relevant EMC requirements for both models, without the need for additional testing.

1.4.1 Technical Description

Nominal voltage	: 36.0VDC
Rated capacity	: 16.5Ah
Charging voltage declared by manufacturer	: 42.0VDC
Maximum continuous charging current	: 8.0A
Maximum continuous discharging current	: 29.0A

1.4.2 EUT Port/Cable Identification

Port	Max Cable Length specified	Usage	Type	Screened
Battery Pack Interface	---	1 (For DC power I/O and Signal I/O)	DC I/O and Signal I/O	---

1.4.3 Test Configuration

Test Configuration	Description
Battery powered	36.0VDC

1.4.4 Modes of Operation

Test Mode	Description
Discharging	The Battery Pack Interface port of EUT is connected to a PC and a slide resistor and set the discharging current to 30.0A. Then running "Battery Monitor-V1.7" software installed on PC to monitor "Discharging" status via CAN BUS-TOOLS.

1.4.5 Auxiliary Equipment (cable) Used during Test:

Equipment	Brand	Model/Type No.	Series No.
Resistance	--	--	--
High Precision Bidirectional DC Power Supply	Kewell	S700-30K-750-0120	6018888230402333
Digital multimeter	Fluke	115C	---

1.4.6 Performance Criteria

Performance criterion A: The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Performance criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however no change of actual operating state or stored data is allowed to persist after test. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Performance criterion C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instruction for use.

1.5 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.6 Test Location

Test site 1:

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch

Address:

Building 12&13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District, Shenzhen, 518052, China

Test Site 2:

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch

Address:

TÜV SÜD Testing Center, No. 63 Chuangqi Road, Shilou Town, Panyu District, Guangzhou 213164, P.R. China

Test Description	Name of Engineer(s)	Test Location
Radiation emissions	Biber Yang	Test Site 2
Immunity to electromagnetic radiation	Biber Yang	Test Site 2
Immunity to electrostatic discharge	Nick Luo	Test Site 2

2 Test Details

2.1 Radiation emissions (Board-band & Narrow-band)

2.1.1 Specification Reference

Clause 4.2.15 of EN 15194:2017+A1:2023, Annex B.1.2.5 & Annex B.1.2.6

2.1.2 Equipment Under Test

TP6136N200

2.1.3 Date of Test

2026-06-02

2.1.4 Test Method

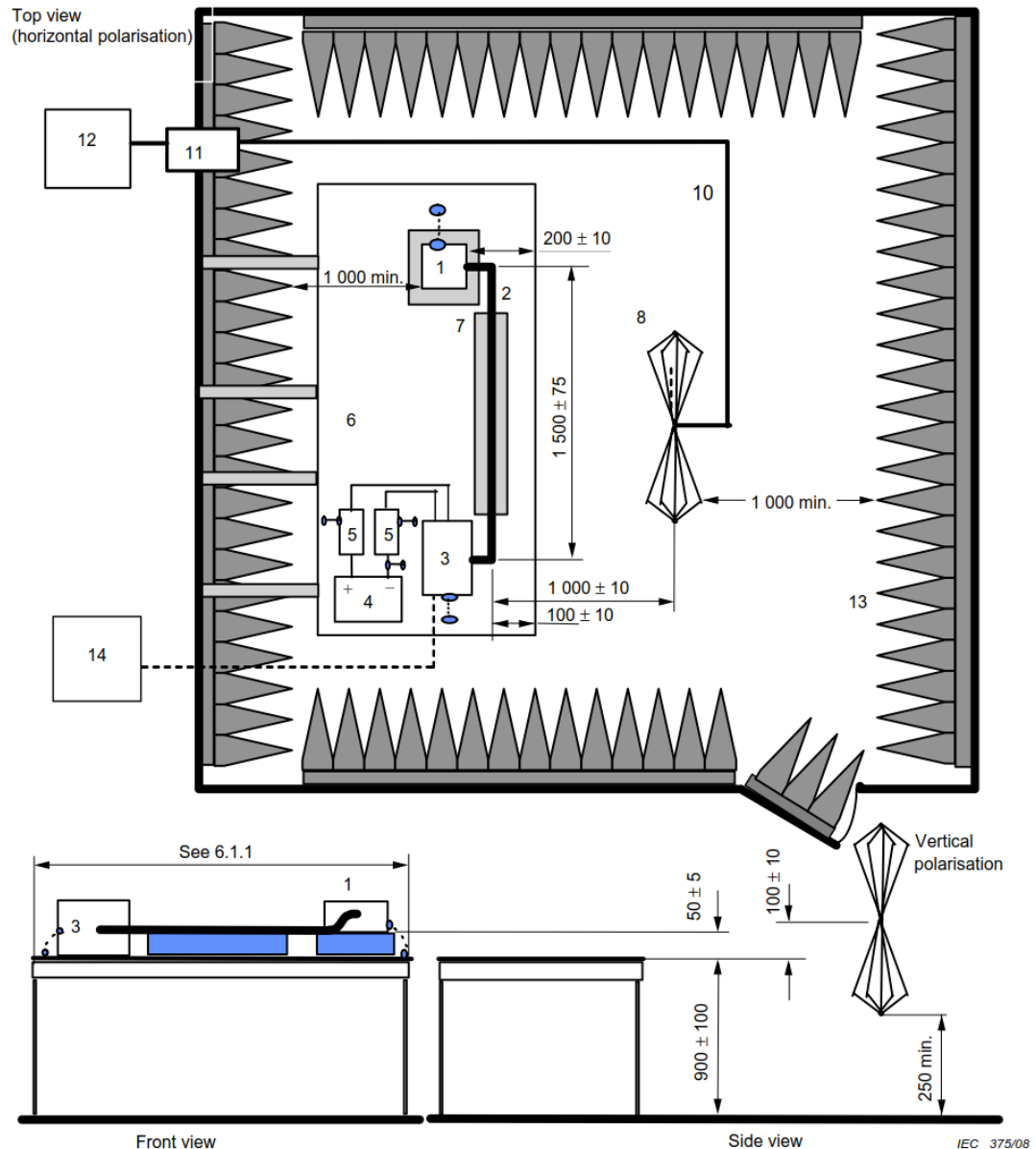
The EUT shall be placed on a non-conductive, low relative permittivity material ($\epsilon_r \leq 1,4$), at (50 ± 5) mm above the ground plane. The case of the EUT shall not be grounded to the ground plane unless it is intended to simulate the actual vehicle configuration.

The side of the EUT, which is nearest to the front edge of the ground plane, shall be located at a distance of (200 ± 10) mm from the front edge of the ground plane.

The test harness shall be placed on a non-conductive, low relative permittivity material ($\epsilon_r \leq 1,4$), at (50 ± 5) mm above the ground plane. The length of test harness parallel to the front of the ground plane shall be (1500 ± 75) mm. The long segment of test harness shall be located parallel to the edge of the ground plane facing the antenna at a distance of (100 ± 10) mm from the edge.

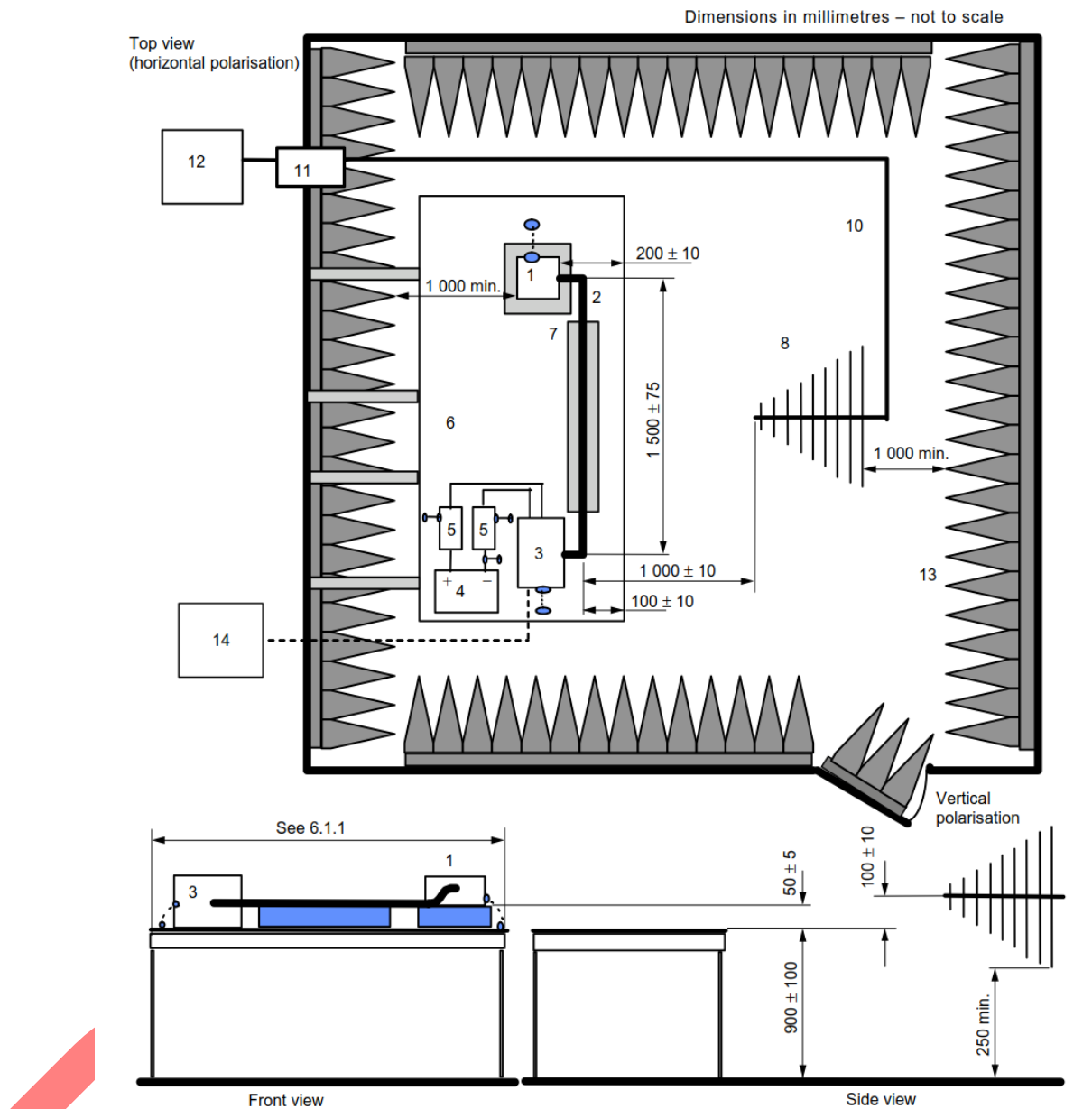
A broad peak detector shall be used to measure broad-band electromagnetic emissions, an average-value detector shall be used to measure narrow-band electromagnetic emissions.

The measuring equipment is described in EN 55012, the test method and test setup are described in EN 55025.

**Key**

- | | |
|---|---|
| 1 EUT (grounded locally if required in test plan) | 8 Biconical antenna |
| 2 Test harness | |
| 3 Load simulator (placement and ground connection according to 6.4.2.5) | 10 High-quality coaxial cable e.g. double-shielded (50 Ω) |
| 4 Power supply (location optional) | 11 Bulkhead connector |
| 5 Artificial network (AN) | 12 Measuring instrument |
| 6 Ground plane (bonded to shielded enclosure) | 13 RF absorber material |
| 7 Low relative permittivity support ($\epsilon_r \leq 1,4$) | 14 Stimulation and monitoring system |

Test configuration – Radiated emission for 30 MHz to 200 MHz



IEC 376/08

Key

- | | | | |
|---|---|----|--|
| 1 | EUT (grounded locally if required in test plan) | 8 | Log-periodic antenna |
| 2 | Test harness | | |
| 3 | Load simulator (placement and ground connection according to 6.4.2.5) | 10 | High-quality coaxial cable e.g. double-shielded (50 Ω) |
| 4 | Power supply (location optional) | 11 | Bulkhead connector |
| 5 | Artificial network (AN) | 12 | Measuring instrument |
| 6 | Ground plane (bonded to shielded enclosure) | 13 | RF absorber material |
| 7 | Low relative permittivity support ($\epsilon_r \leq 1,4$) | 14 | Stimulation and monitoring system |

Test configuration – Radiated emission for 200 MHz to 1000 MHz

2.1.5 Environmental Conditions

Ambient Temperature 23.5 °C
Relative Humidity 41.7 %
Atmospheric Pressure 1000 mbar

2.1.6 Specification Limits

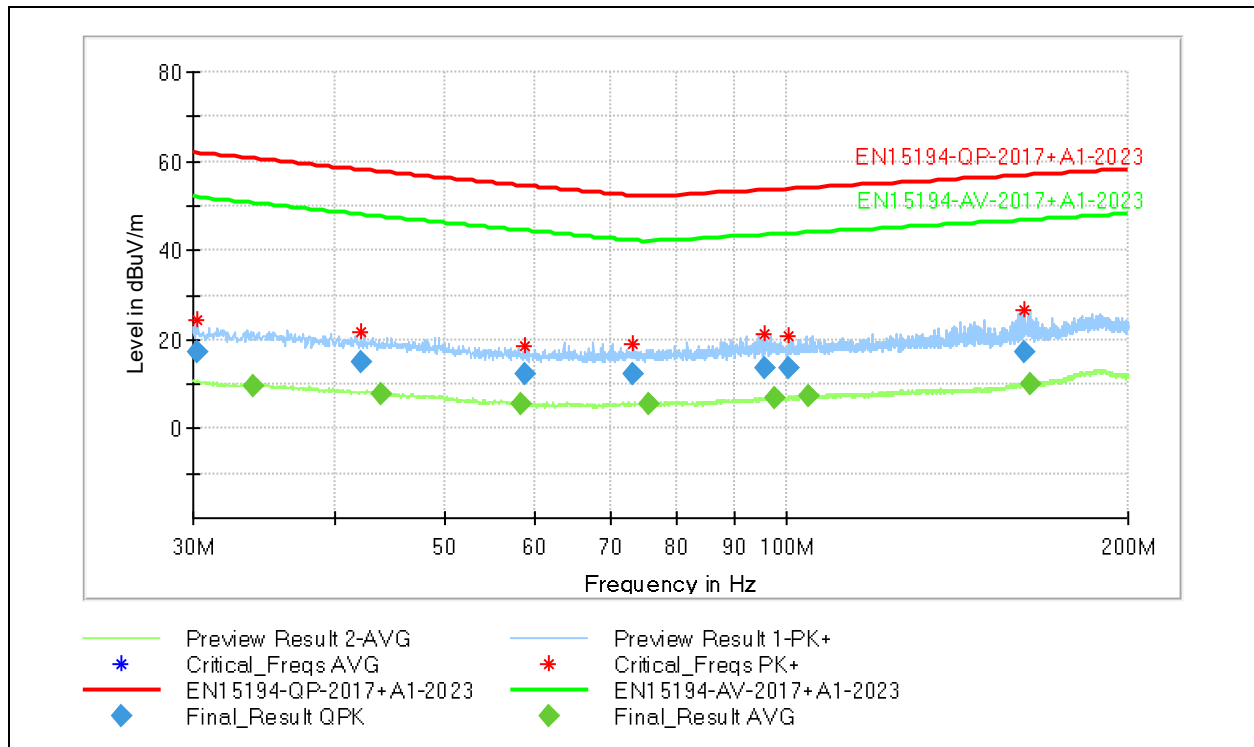
Radiation emissions limits		
Frequency range (MHz)	Quasi-peak dB(μV/m)	Average value dB(μV/m)
30 to 75	$64-25.13 \log(f/30)$	$54-25.13 \log(f/30)$
75 to 400	$54+15.13 \log(f/75)$	$44+15.13 \log(f/75)$
400 to 1000	65	55
f = measuring frequency		

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2.1.7 Test Results

Frequency range: 30 MHz to 200 MHz

Model : TP6136N200
 Test Mode : Discharging
 Test Voltage : Battery operated
 Remark : Horizontal



Critical_Freqs

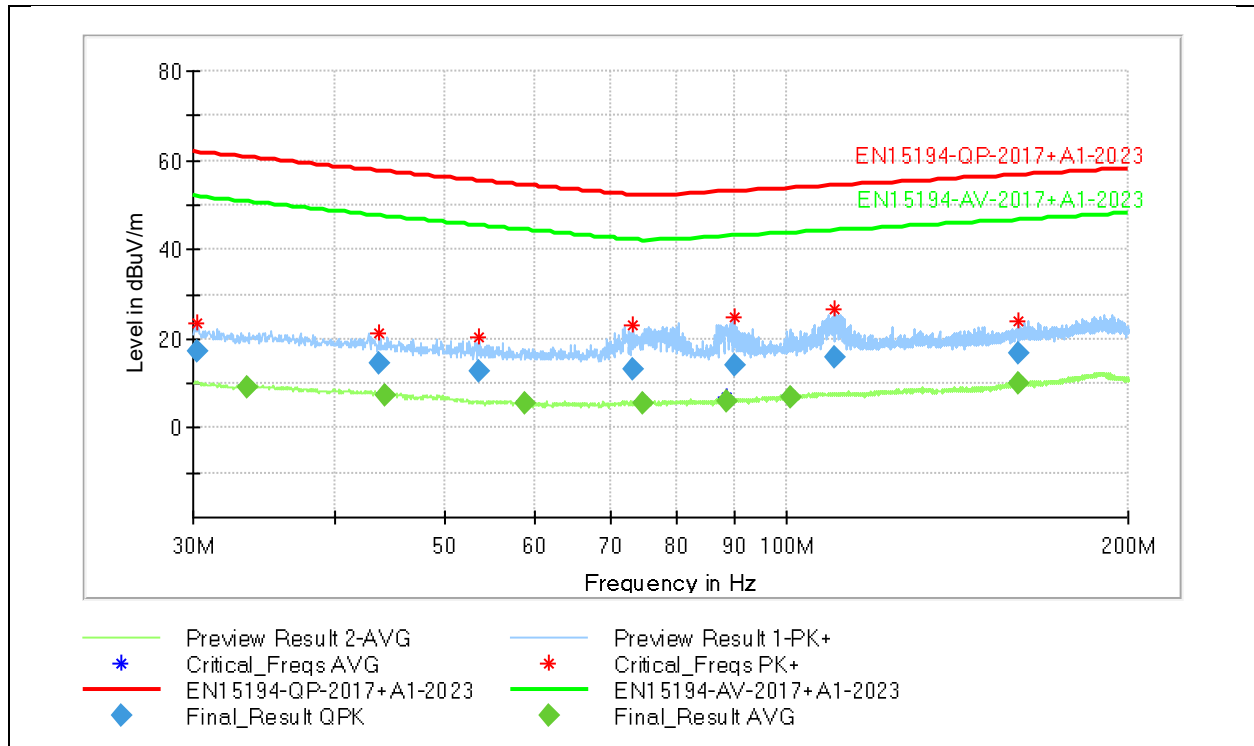
Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB/m)
30.200000	24.20	---	61.92	37.72	H	14.0
33.900000	---	10.20	50.54	40.34	H	13.9
42.200000	21.82	---	58.07	36.25	H	12.7
43.950000	---	8.33	47.57	39.24	H	12.7
58.400000	---	5.99	44.52	38.54	H	10.6
58.750000	18.74	---	54.50	35.75	H	10.6
73.300000	19.10	---	52.23	33.13	H	10.8
75.700000	---	5.93	42.05	36.12	H	10.9
95.700000	21.32	---	53.47	32.15	H	12.1
97.500000	---	7.30	43.56	36.26	H	12.3
100.400000	20.73	---	53.77	33.04	H	12.5
104.650000	---	7.66	43.99	36.33	H	12.8
161.800000	26.73	---	56.79	30.06	H	15.8
164.200000	---	10.63	46.83	36.20	H	16.0

Final Result

Frequency (MHz)	QuasiPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB/m)
30.200000	17.26	---	61.92	44.66	H	14.0
33.900000	---	9.50	50.54	41.04	H	13.9
42.200000	14.93	---	58.07	43.14	H	12.7
43.950000	---	7.77	47.57	39.81	H	12.7
58.400000	---	5.58	44.52	38.94	H	10.6
58.750000	12.44	---	54.50	42.06	H	10.6
73.300000	12.42	---	52.23	39.81	H	10.8
75.700000	---	5.54	42.05	36.51	H	10.9
95.700000	13.62	---	53.47	39.85	H	12.1
97.500000	---	6.71	43.56	36.85	H	12.3
100.400000	13.81	---	53.77	39.96	H	12.5
104.650000	---	7.24	43.99	36.75	H	12.8
161.800000	17.16	---	56.79	39.63	H	15.8
164.200000	---	10.09	46.83	36.74	H	16.0

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Model : TP6136N200
 Test Mode : Discharging
 Test Voltage : Battery operated
 Remark : Vertical



Critical_Freqs

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB/m)
30.300000	23.67	---	61.88	38.21	V	13.6
33.500000	---	9.73	50.68	40.95	V	13.6
43.700000	21.21	---	57.68	36.47	V	12.5
44.200000	---	8.00	47.51	39.51	V	12.4
53.650000	20.25	---	55.45	35.21	V	10.9
58.800000	---	5.88	44.45	38.57	V	10.5
73.300000	22.84	---	52.23	29.39	V	10.7
74.800000	---	5.95	42.03	36.07	V	10.8
88.650000	---	6.74	42.99	36.24	V	11.5
89.850000	24.62	---	53.09	28.47	V	11.6
100.650000	---	7.48	43.75	36.27	V	12.6
110.250000	26.83	---	54.35	27.52	V	13.1
160.000000	---	10.31	46.66	36.36	V	15.8
160.200000	24.06	---	56.73	32.67	V	15.8

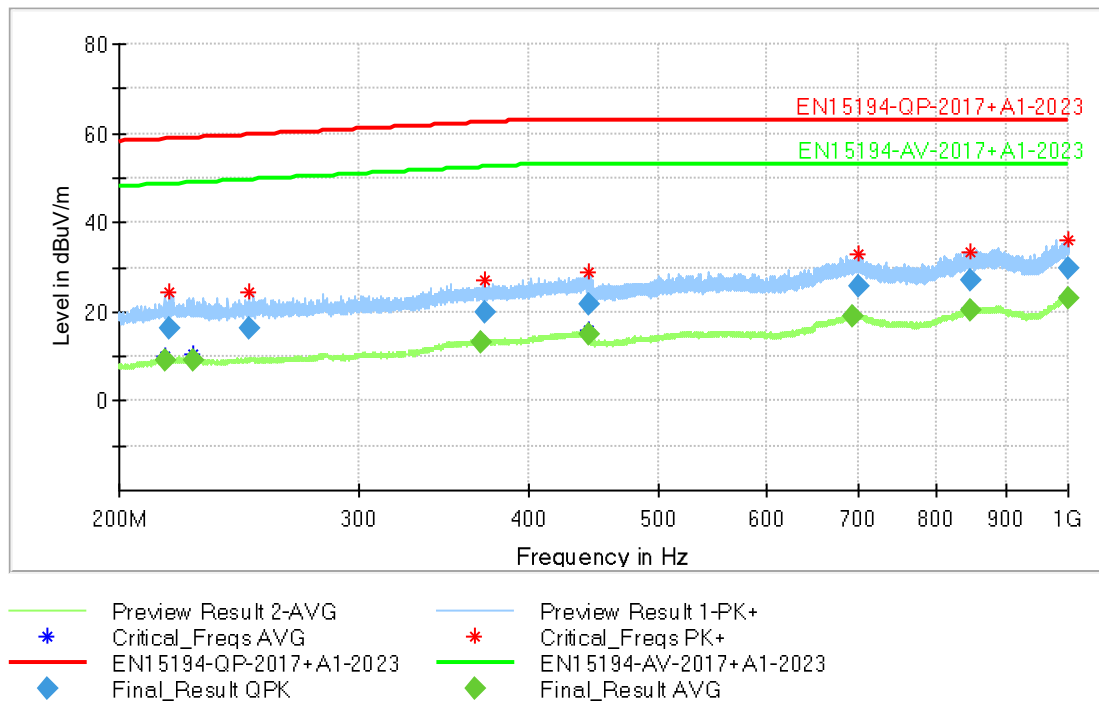
Final Result

Frequency (MHz)	QuasiPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB/m)
30.300000	17.15	---	61.88	44.73	V	13.6
33.500000	---	9.15	50.68	41.53	V	13.6
43.700000	14.50	---	57.68	43.18	V	12.5
44.200000	---	7.51	47.51	40.00	V	12.4
53.650000	12.75	---	55.45	42.71	V	10.9
58.800000	---	5.46	44.45	39.00	V	10.5
73.300000	13.34	---	52.23	38.89	V	10.7
74.800000	---	5.58	42.03	36.44	V	10.8
88.650000	---	6.18	42.99	36.81	V	11.5
89.850000	13.90	---	53.09	39.19	V	11.6
100.650000	---	6.88	43.75	36.87	V	12.6
110.250000	15.80	---	54.35	38.55	V	13.1
160.000000	---	10.06	46.66	36.60	V	15.8
160.200000	16.85	---	56.73	39.87	V	15.8

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Frequency range: 200 MHz to 1000 MHz

Model : TP6136N200
 Test Mode : Discharging
 Test Voltage : Battery operated
 Remark : Horizontal



Critical_Freqs

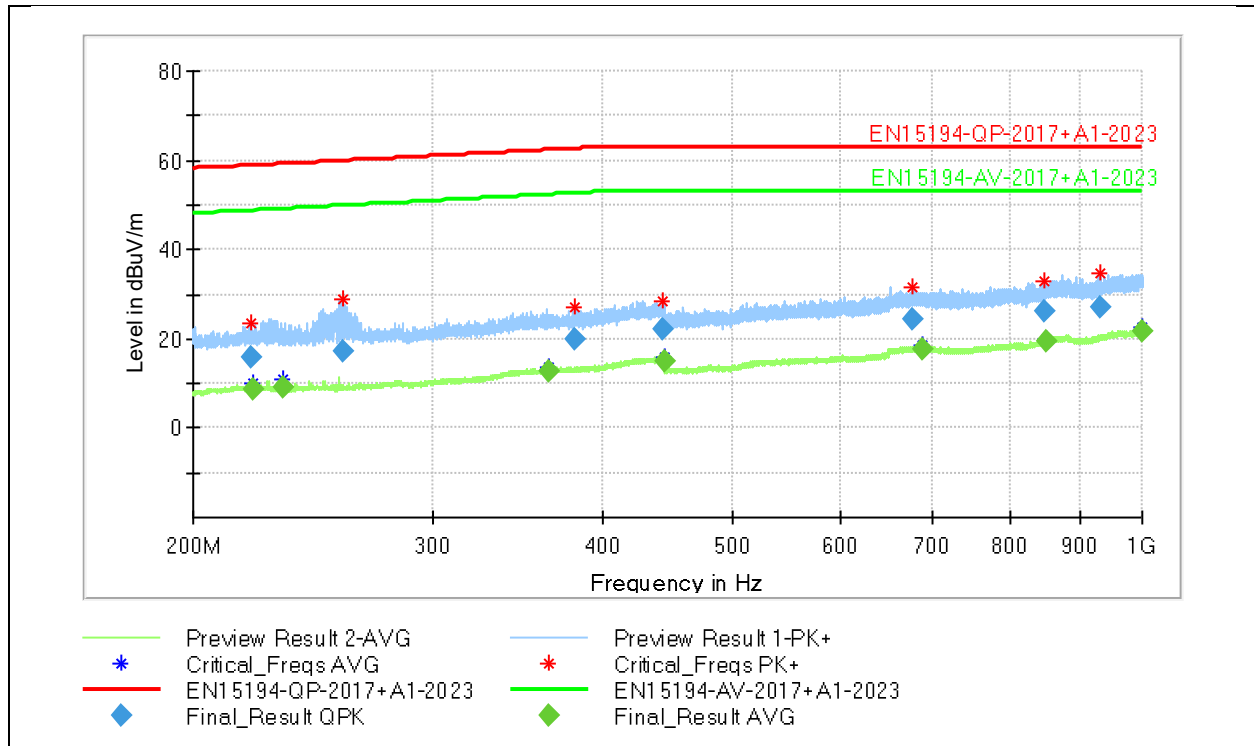
Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB/m)
216.000000	---	9.85	48.65	38.80	H	15.3
217.550000	24.31	---	58.75	34.44	H	15.4
226.600000	---	10.49	48.98	38.49	H	15.5
249.250000	24.34	---	59.68	35.33	H	15.8
369.750000	---	13.84	52.42	38.59	H	18.3
371.650000	27.25	---	62.47	35.22	H	18.4
443.450000	---	15.66	53.00	37.34	H	19.3
443.800000	28.79	---	63.00	34.21	H	19.3
693.550000	---	19.65	53.00	33.35	H	24.8
699.750000	32.85	---	63.00	30.15	H	24.9
846.600000	33.47	---	63.00	29.53	H	25.7
848.050000	---	20.66	53.00	32.34	H	25.7
998.400000	36.06	---	63.00	26.94	H	28.2
999.600000	---	23.68	53.00	29.32	H	28.3

Final Result

Frequency (MHz)	QuasiPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB/m)
216.000000	---	8.97	48.65	39.68	H	15.3
217.550000	16.13	---	58.75	42.63	H	15.4
226.600000	---	9.11	48.98	39.87	H	15.5
249.250000	16.20	---	59.68	43.48	H	15.8
369.750000	---	13.18	52.42	39.24	H	18.3
371.650000	20.06	---	62.47	42.41	H	18.4
443.450000	---	14.95	53.00	38.05	H	19.3
443.800000	21.87	---	63.00	41.13	H	19.3
693.550000	---	18.93	53.00	34.07	H	24.8
699.750000	25.86	---	63.00	37.14	H	24.9
846.600000	26.97	---	63.00	36.04	H	25.7
848.050000	---	20.15	53.00	32.85	H	25.7
998.400000	29.84	---	63.00	33.16	H	28.2
999.600000	---	23.02	53.00	29.98	H	28.3

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Model : TP6136N200
 Test Mode : Discharging
 Test Voltage : Battery operated
 Remark : Vertical



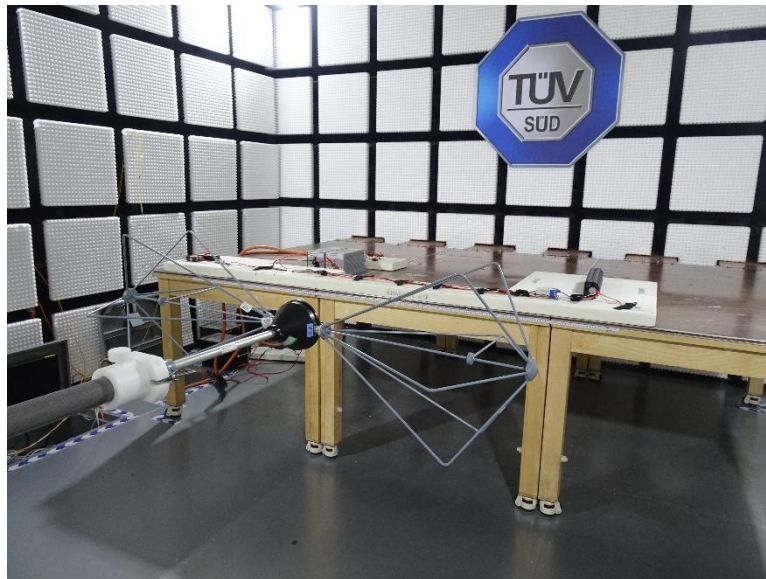
Critical_Freqs

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB/m)
220.700000	23.54	---	58.85	35.31	V	15.3
221.500000	---	9.86	48.82	38.96	V	15.3
232.650000	---	10.84	49.16	38.31	V	15.2
258.300000	29.00	---	59.92	30.92	V	15.3
365.500000	---	13.53	52.34	38.81	V	18.1
382.600000	27.24	---	62.68	35.44	V	18.6
443.300000	28.54	---	63.00	34.46	V	19.5
444.800000	---	15.94	53.00	37.06	V	19.5
676.650000	31.40	---	63.00	31.60	V	23.7
689.450000	---	18.47	53.00	34.53	V	23.6
845.900000	32.82	---	63.00	30.18	V	24.9
848.800000	---	19.95	53.00	33.05	V	25.0
932.050000	34.62	---	63.00	28.38	V	25.6
999.850000	---	22.40	53.00	30.60	V	27.1

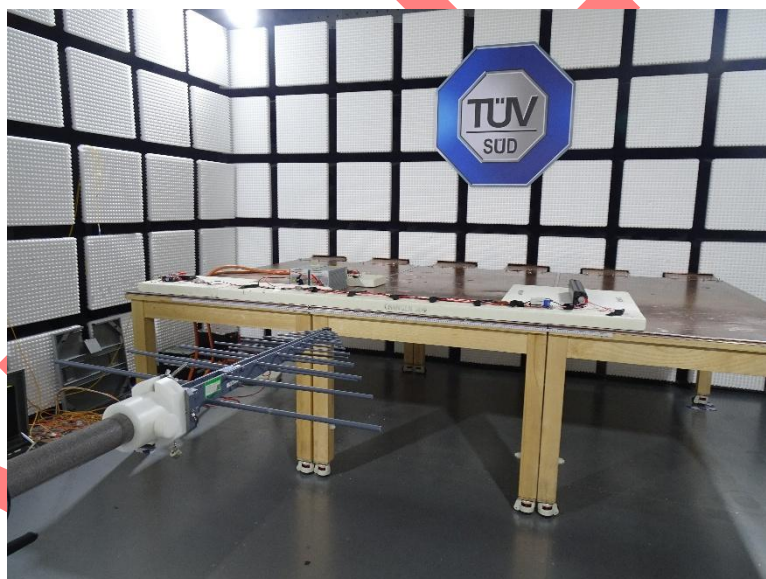
Final Result

Frequency (MHz)	QuasiPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB/m)
220.700000	15.85	---	58.85	43.00	V	15.3
221.500000	---	8.89	48.82	39.93	V	15.3
232.650000	---	8.92	49.16	40.23	V	15.2
258.300000	17.18	---	59.92	42.74	V	15.3
365.500000	---	12.90	52.34	39.44	V	18.1
382.600000	19.98	---	62.68	42.70	V	18.6
443.300000	22.03	---	63.00	40.97	V	19.5
444.800000	---	15.15	53.00	37.85	V	19.5
676.650000	24.46	---	63.00	38.54	V	23.7
689.450000	---	17.75	53.00	35.25	V	23.6
845.900000	26.24	---	63.00	36.76	V	24.9
848.800000	---	19.49	53.00	33.51	V	25.0
932.050000	27.07	---	63.00	35.93	V	25.6
999.850000	---	21.89	53.00	31.11	V	27.1

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Test - Radiated emission for 30 MHz to 200 MHz



Test setup - Radiated emission for 200 MHz to 1000 MHz

Test Setup

2.1.8 Test Location

This test was carried out in absorber lined chamber (1m).

2.2 Immunity to electromagnetic radiation

2.2.1 Specification Reference

Clause 4.2.15 of EN 15194:2017+A1:2023, Annex B 1.2.7

2.2.2 Equipment Under Test

TP6136N200

2.2.3 Date of Test

2026-06-02

2.2.4 Test Method

Immunity to bulk current injection (BCI)

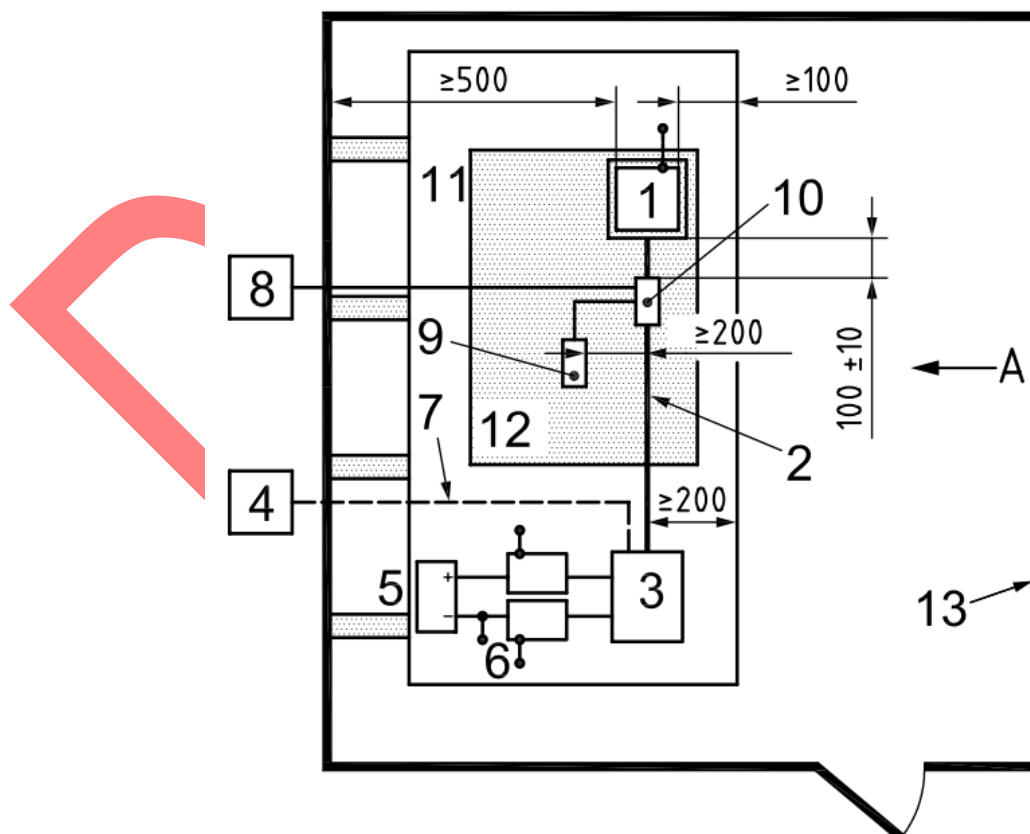
A harness of length 1 m, linear over its complete length shall be used. The test harness must be placed on a 50 mm thick insulating block.

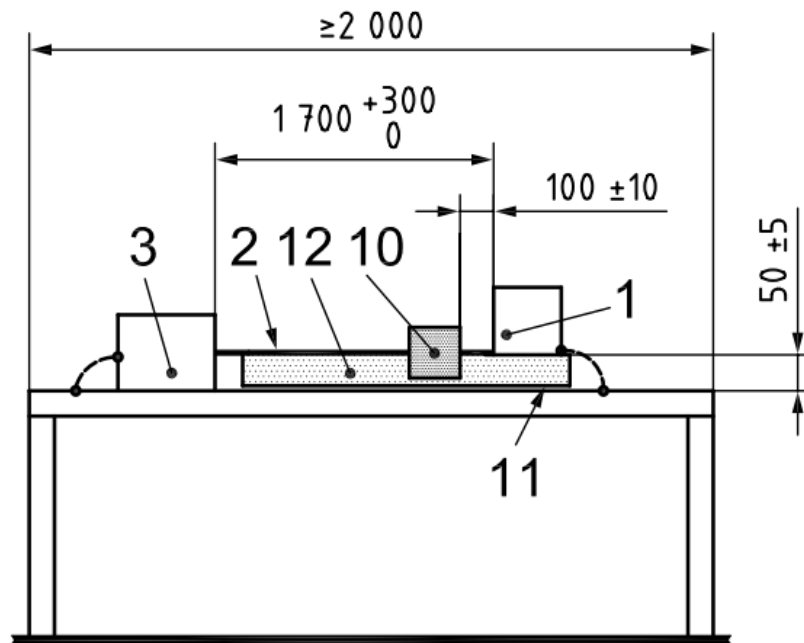
The EUT must be placed on a 50 mm thick insulating block. It is connected to the ground plane in conformity with its connections to the vehicle and no other ground is permitted.

Connect the injection probe at 150 mm, 450 mm and 750mm from the EUT connector, centred around all the harness wires including the power supply wires.

The main characteristics and test method are described in ISO 11452-4.

Top view





Side view

Dimensions in millimetres

Key

- | | |
|---|--|
| 1 DUT (connected to ground if specified in the test plan) | 7 optical fibres |
| 2 wiring harness | 8 high-frequency equipment |
| 3 load simulator (placement and ground connection according to 7.5) | 9 50 Ω load |
| 4 stimulation and monitoring system | 10 tubular wave coupler |
| 5 power supply | 11 ground plane (connected to the shielded room) |
| 6 AN | 12 low relative permittivity support ($\epsilon_r \leq 1,4$) |
| | 13 shielded room |

Test configuration – Immunity to bulk current injection (BCI)

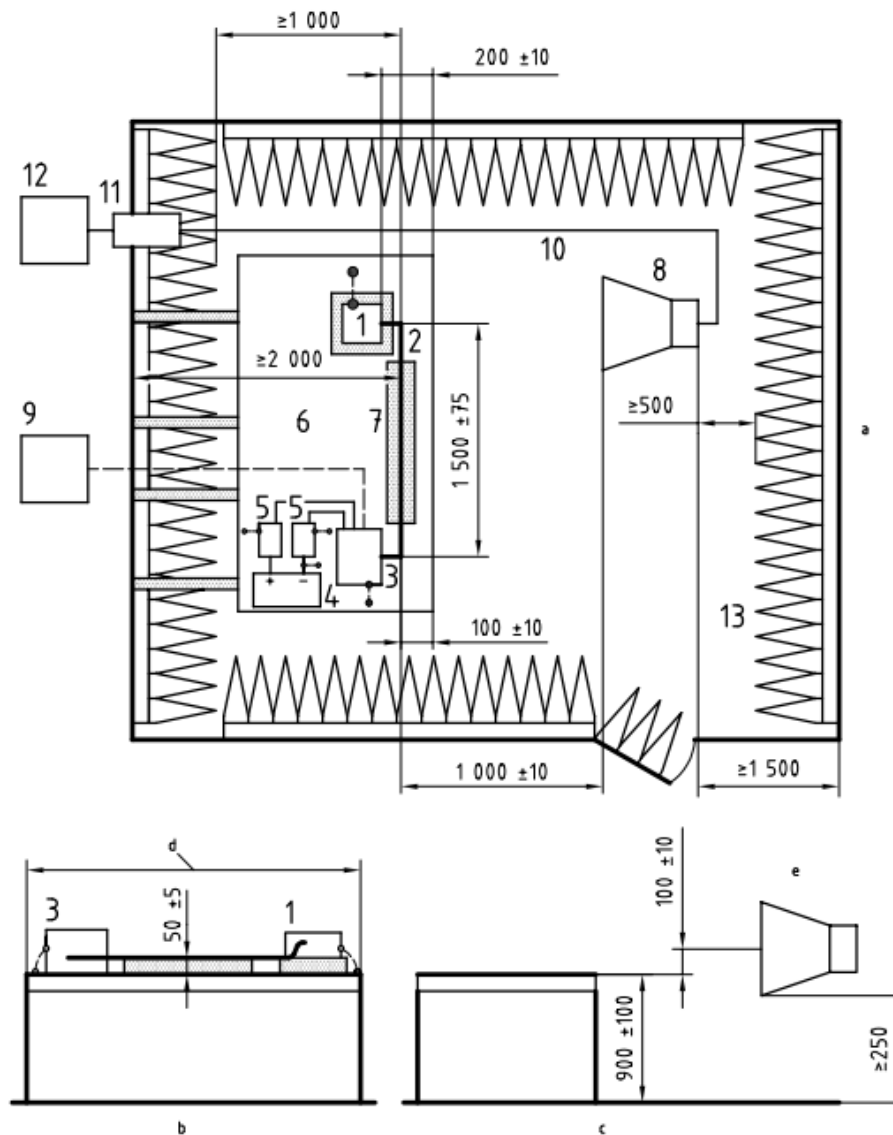
The main characteristics and test method are described in ISO 11452-2.

Key

- | | | |
|--|---|--|
| 1 DUT (grounded locally if required in test plan) | 6 ground plane (bonded to shielded enclosure) | 10 high quality double-shielded coaxial cable (50 Ω) |
| 2 test harness | 7 low relative permittivity support ($\epsilon_r \leq 1,4$) | 11 bulkhead connector |
| 3 load simulator (placement and ground: connection according to 7.5) | 8 log-periodic antenna | 12 RF signal generator and amplifier |
| 4 power supply (location optional) | 9 stimulation and monitoring system | 13 RF absorber material |
| 5 artificial network (AN) | | |
- a Upper view (horizontal polarisation).
 b Front view.
 c Side view.
 d See 7.1.
 e Vertical polarization.

Test configuration for below 1GHz— Immunity to radiated field

Dimensions in millimetres



Key

- | | |
|--|---|
| 1 DUT (grounded locally if required in test plan) | 7 low relative permittivity support ($\epsilon_r \leq 1,4$) |
| 2 test harness | 8 horn antenna |
| 3 load simulator (placement and ground: connection according to 7.5) | 9 stimulation and monitoring system |
| 4 power supply (location optional) | 10 high quality double-shielded coaxial cable (50 Ω) |
| 5 artificial network (AN) | 11 bulkhead connector |
| 6 ground plane (bonded to shielded enclosure) | 12 RF signal generator and amplifier |
| a Upper view (horizontal polarisation). | 13 RF absorber material |
| b Front view. | |
| c Side view. | |
| d See 7.1. | |
| e Vertical polarization. | |

Test configuration for above 1GHz— Immunity to radiated field

During this testing any anomalies in the equipment under tests performance was recorded.

2.2.5 Environmental Conditions

Ambient Temperature	23.5 °C
Relative Humidity	43.5 %
Atmospheric Pressure	1000 mbar

2.2.6 Specification Limits

Required Test Levels for Immunity to bulk current injection (BCI)						
Frequency range (MHz)	Test position (mm)	Test level (mA)	Modulation	Step Size (MHz)	Dwell (s)	Performance Criteria
20 to 200	150, 450, 750	60	AM (80 %, 1 kHz, CW)	5	2	A
200 to 400	150, 450, 750	60	AM (80 %, 1 kHz, CW)	10	2	A

Required Test Levels for Immunity to radiated field						
Frequency range (MHz)	Antenna polarization	Test level (V/m r.m.s.)	Modulation	Step Size (MHz)	Dwell (s)	Performance Criteria
400 to 800	Vertical	30	AM (80 %, 1 kHz, CW)	20	2	A
800 to 1000	Vertical	30	PM ($t_{on} = 577 \mu s$ and period = 4 600 μs , CW)	20	2	A
1000 to 2000	Vertical	30	PM ($t_{on} = 577 \mu s$ and period = 4 600 μs , CW)	40	2	A

Note:

"AM" = Sine wave amplitude modulated;

"PM" = Sine wave pulse modulated;

"CW" = Unmodulated sine wave

2.2.7 Test Results

Results for Configuration and Mode: Battery powered / Discharging

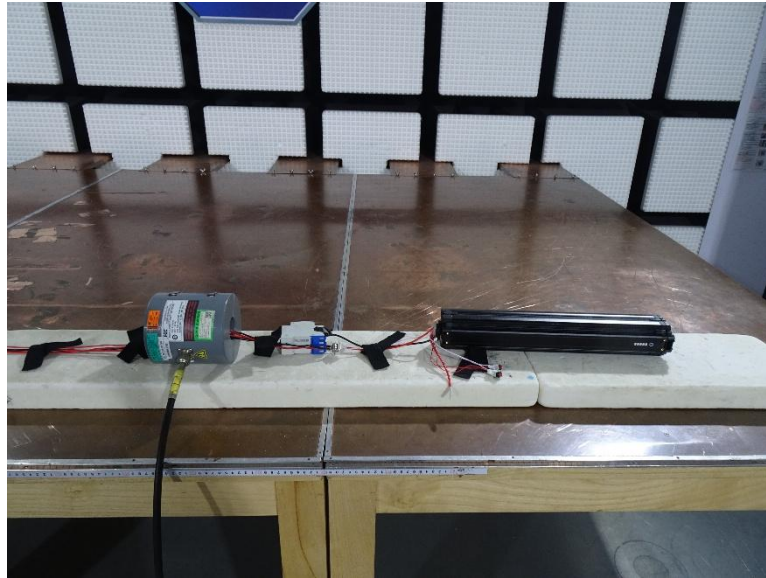
Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

Tabulated Results for Immunity to bulk current injection					
Frequency range (MHz)	Test position (mm)	Coupling to	Test level (mA)	Dwell (s)	Result
20 to 400	150	Wiring harness	60	2	Pass (A)
20 to 400	450	Wiring harness	60	2	Pass (A)
20 to 400	750	Wiring harness	60	2	Pass (A)

Tabulated Results for Immunity to radiated field					
Frequency range (MHz)	Antenna polarization	Coupling to	Test level (V/m r.m.s.)	Dwell (s)	Result
400 to 800	Vertical	Wiring harness	30	2	Pass (A)
800 to 1000	Vertical	Wiring harness	30	2	Pass (A)
1000 to 2000	Vertical	EUT	30	2	Pass (A)

"A": Met Performance Criteria A as defined in section 1.4.5.



Test setup - Immunity to bulk current injection



Test setup for below 1GHz - Immunity to radiated field



Test setup for above 1GHz - Immunity to radiated field

Test Setup

2.2.8 Test Location

This test was carried out in 1m anechoic chamber.

2.3 Immunity to electrostatic discharge

2.3.1 Specification Reference

Clause 4.2.15 of EN 15194:2017+A1:2023, Annex B.8

2.3.2 Equipment Under Test

TP6136N200

2.3.3 Date of Test

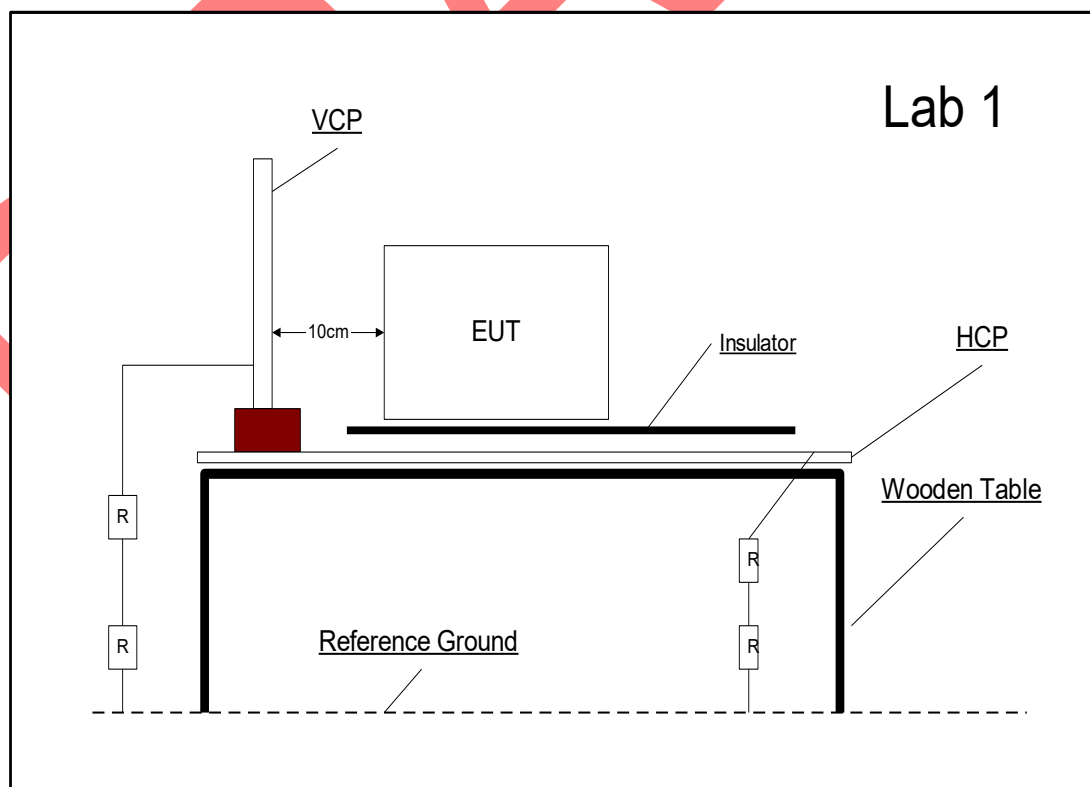
2026-06-03

2.3.4 Test Method

The equipment under test including associated cabling was configured on but insulated from, using a 0.5mm isolator, a horizontal coupling plane fitted to the top of a 0.8m non-conductive table for table-top equipment; and on a 0.1m insulated support for floor standing equipment; above a ground reference plane all within a test laboratory.

Using the air discharge method for non-metallic parts, contact discharge method for metallic parts with both vertical and horizontal couple plane discharge methods for the sides of the equipment under test, the required electrostatic discharge voltage levels in both voltage polarities were applied at the detailed pulse repartition rate.

During this testing any anomalies in the equipment under tests performance was recorded.



2.3.5 Environmental Conditions

Ambient Temperature	23.2 °C
Relative Humidity	37.1 %
Atmospheric Pressure	1010 mbar

2.3.6 Specification Limits

Required Test Levels				Performance Criteria
Discharge type	Discharge Level (kV)		Number of discharges per point (each polarity)	
	Positive	Negative		
Air – Direct	8	8	10	B
Contact – Direct	4	4	10	B
Contact – Indirect	4	4	10	B

2.3.7 Test Results

Results for Configuration and Mode: Battery powered / Discharging.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

Test Points	Discharge Mode	Results									
		2kV		4kV		6kV		8kV		15kV	
		+	-	+	-	+	-	+	-	+	-
HCP	Contact	N/A	N/A	A	A	N/A	N/A	N/A	N/A	N/A	N/A
VCP	Contact	N/A	N/A	A	A	N/A	N/A	N/A	N/A	N/A	N/A
Each conductive location touchable by hand	Contact	N/A	N/A	A	A	N/A	N/A	N/A	N/A	N/A	N/A
Each nonconductive location touchable by hand	Air	N/A	N/A	N/A	N/A	N/A	N/A	A	A	N/A	N/A
N/A	Not Applicable										
A	Met Performance Criteria A as defined in section 1.4.5.										



Test Setup

2.3.8 Test Location

This test was carried out in ESD room.

DRAFT

3 Test Equipment Information

3.1 General Test Equipment Used

Radiated Emissions (Board-band & Narrow-band) test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESW8	101289	1	2026-10-26
LISN	Rohde & Schwarz	ESH3-Z6	102106	1	2026-10-26
LISN	Rohde & Schwarz	ESH3-Z6	102107	1	2026-10-26
Biconical Antenna	Rohde & Schwarz	HK116E	101327	1	2026-12-26
Log-Periodic Broadband Antenna	Rohde & Schwarz	HL223	100919	1	2026-12-26
Semi-anechoic Chamber	TDK	SAC-1	/	3	2026-09-15
Test software	Rohde & Schwarz	EMC32	Version 10.60.10	N/A	/

Immunity to radiated field

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
Signal Generator	Rohde & Schwarz	SMB100B	101902	1	2026-10-27
OSP Open Switch and Control Unit	Rohde & Schwarz	OSP220	101638	/	/
Power Sensor	Rohde & Schwarz	NRP6AN	101428	1	2026-10-26
Power Sensor	Rohde & Schwarz	NRP6AN	101427	1	2026-10-26
Power Sensor	Rohde & Schwarz	NRP6AN	101426	1	2026-10-26
FIELD PROBE	ETS	HI6105USB	00230104	1	2026-11-20
LISN	Rohde & Schwarz	ESH3-Z6	102110	1	2026-10-26
LISN	Rohde & Schwarz	ESH3-Z6	102111	1	2026-10-26
Shielded Enclosure	SCHWARZBECK	HVSE8600	00095	/	/
Amplifier	Rohde & Schwarz	BBA150-BC1250	104083	1	2026-10-26
Termination load	/	WA1436-4	A3529	1	2026-10-27
Logarithmic-Periodic ANTENNA	SCHWARZBECK	STLP9128ES	3074	/	/
Amplifier	Rohde & Schwarz	BBA150-D200E100	104049	1	2026-10-26
HORN ANTENNA	AR	ATH800M6G	0355319	/	/
Semi-anechoic Chamber	TDK	SAC-1	/	3	2026-09-15
Test software	Rohde & Schwarz	EMC32	Version 10.60.10	/	/

Note 1: Verify the specific test level prior to the actual testing of the EUT.

Immunity to bulk current injection (BCI)

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
Signal Generator	Rohde & Schwarz	SMC100A	107721	1	2026-10-27
Power Sensor	Rohde & Schwarz	NRP6AN	101421	1	2026-10-26
Power Sensor	Rohde & Schwarz	NRP6AN	101422	1	2026-10-26
Power Sensor	Rohde & Schwarz	NRP6AN	101423	1	2026-10-26
Amplifier	Rohde & Schwarz	BBA150-AB125	104062	1	2026-10-26
Current Injection Probe	FCC	F-120-8	193397	1	2026-10-27
Load Resistor	/	150-T-FN	1475247	1	2026-10-27
Attenuator	/	150-A-FFN6	1474936	1	2026-10-27
Attenuator	/	100-AFFN20	1474932	/	2026-10-27
LISN	Rohde & Schwarz	ESH3-Z6	102108	1	2026-10-26
LISN	Rohde & Schwarz	ESH3-Z6	102109	1	2026-10-26
Shielding Room	TDK	BCI-R	/	3	2026-09-15
Test software	Rohde & Schwarz	EMC32	Version10.60.10	/	/

Note 1: Verify the specific test level prior to the actual testing of the EUT.

Immunity to electrostatic discharge

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
ESD Generator	EM TEST	ESD NX30	ESS2224425	1	2026-10-30
charge network 330pF/330 Ohm	EM TEST	RCN30 330330	80256	1	2026-10-30

4 Measurement Uncertainty

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

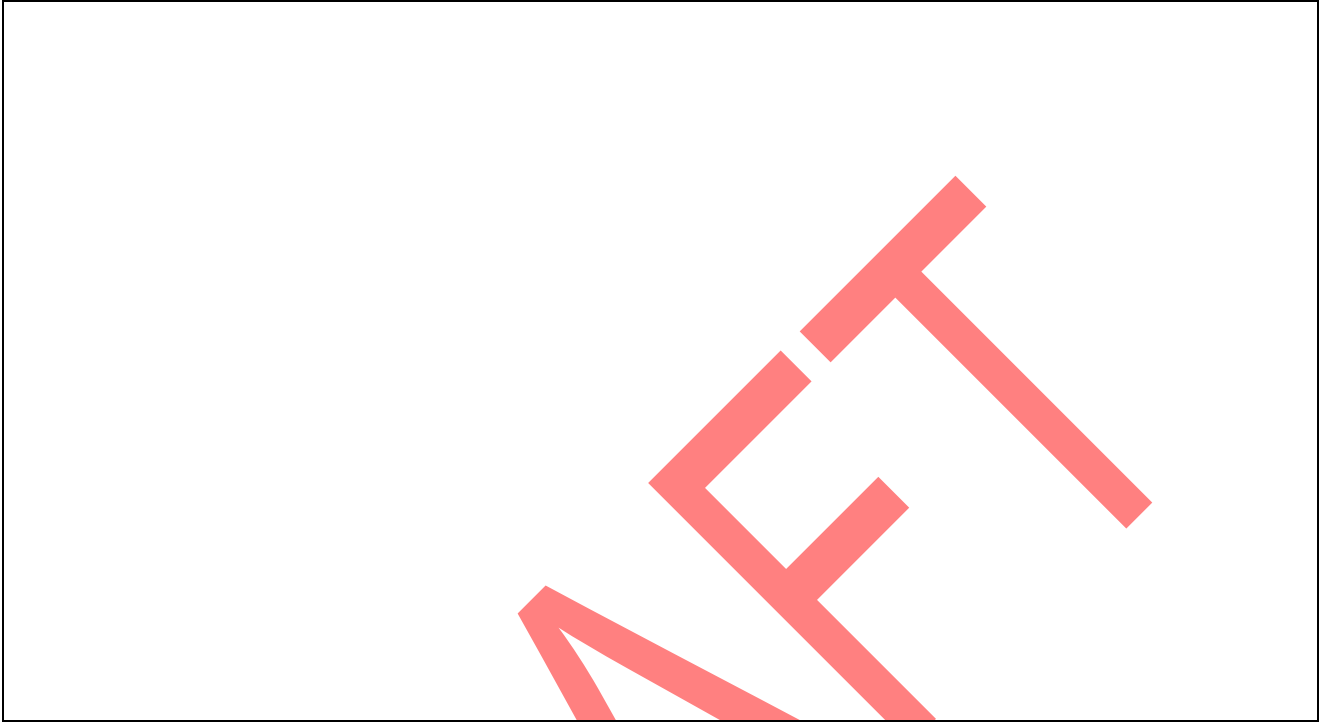
System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Radiated Broadband / Narrowband Disturbances Test 30MHz-200MHz	4.84dB Horizontal 4.95dB Vertical
Uncertainty for Radiated Broadband / Narrowband Disturbances Test 200MHz-1000MHz	4.95dB Horizontal 4.88dB Vertical
Uncertainty for ESD test	The immunity measurement system uncertainty is within standard requirement and is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95%.

Measurement Uncertainty Decision Rule

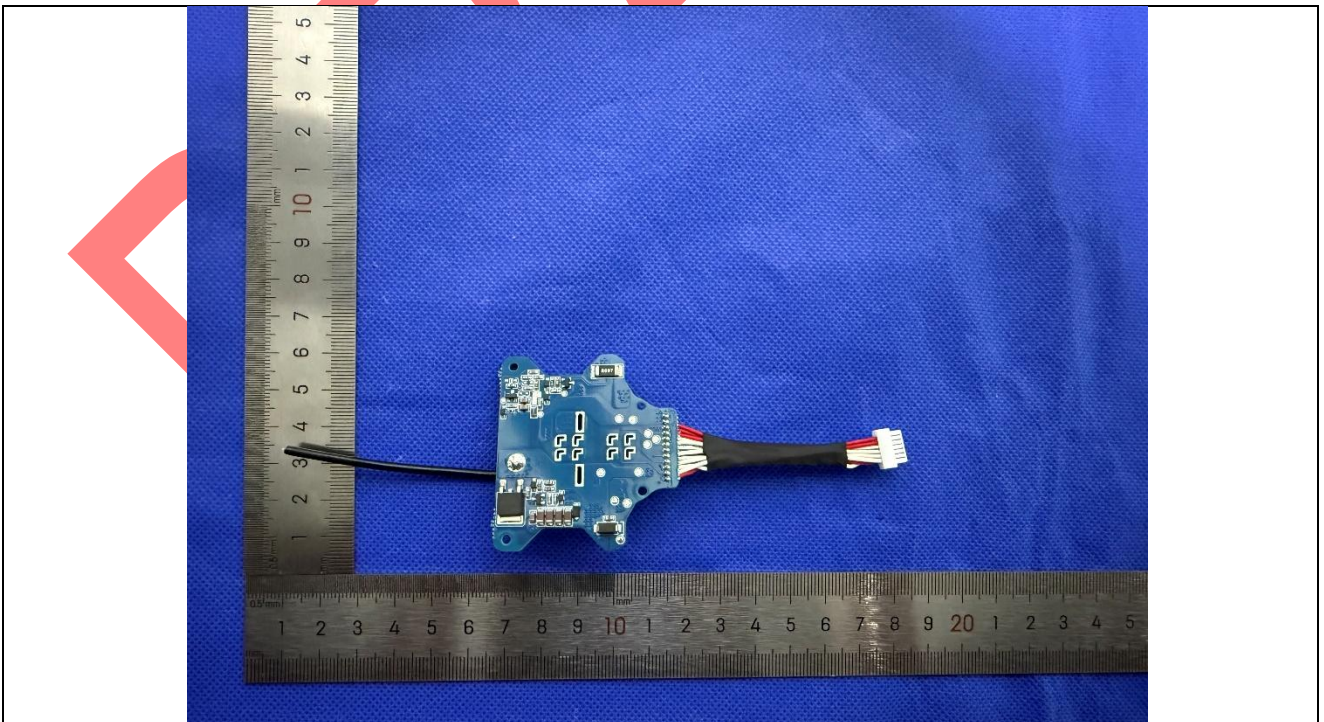
Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2023, clause 4.3.3 and 4.3.4.

5 Photographs

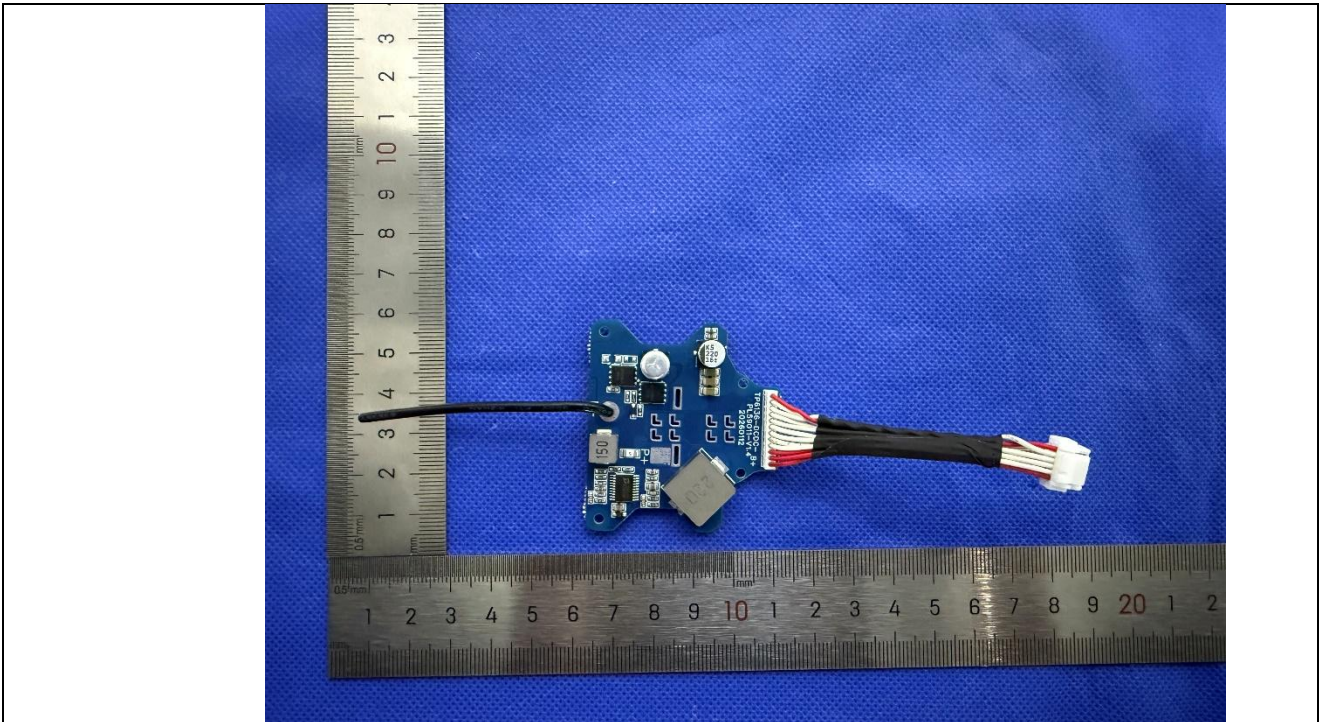
Details of: Overall view



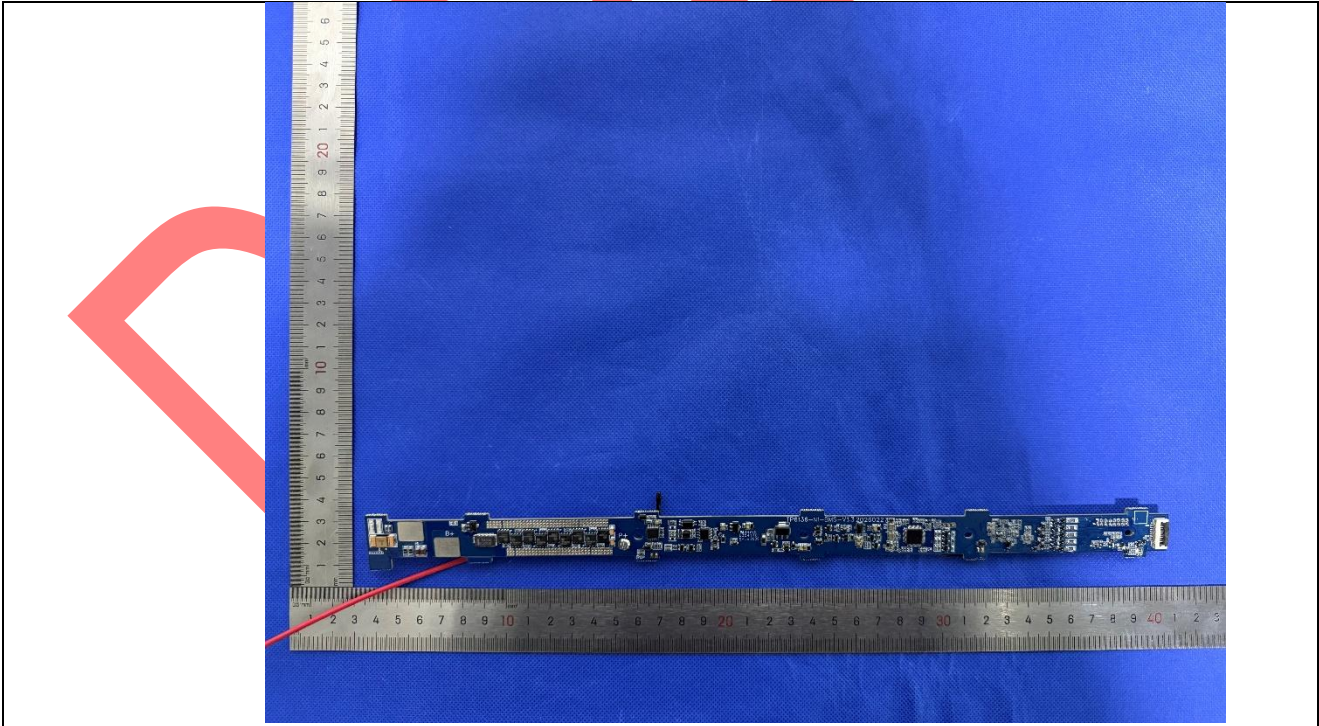
Details of: PCB view



Details of: PCB view

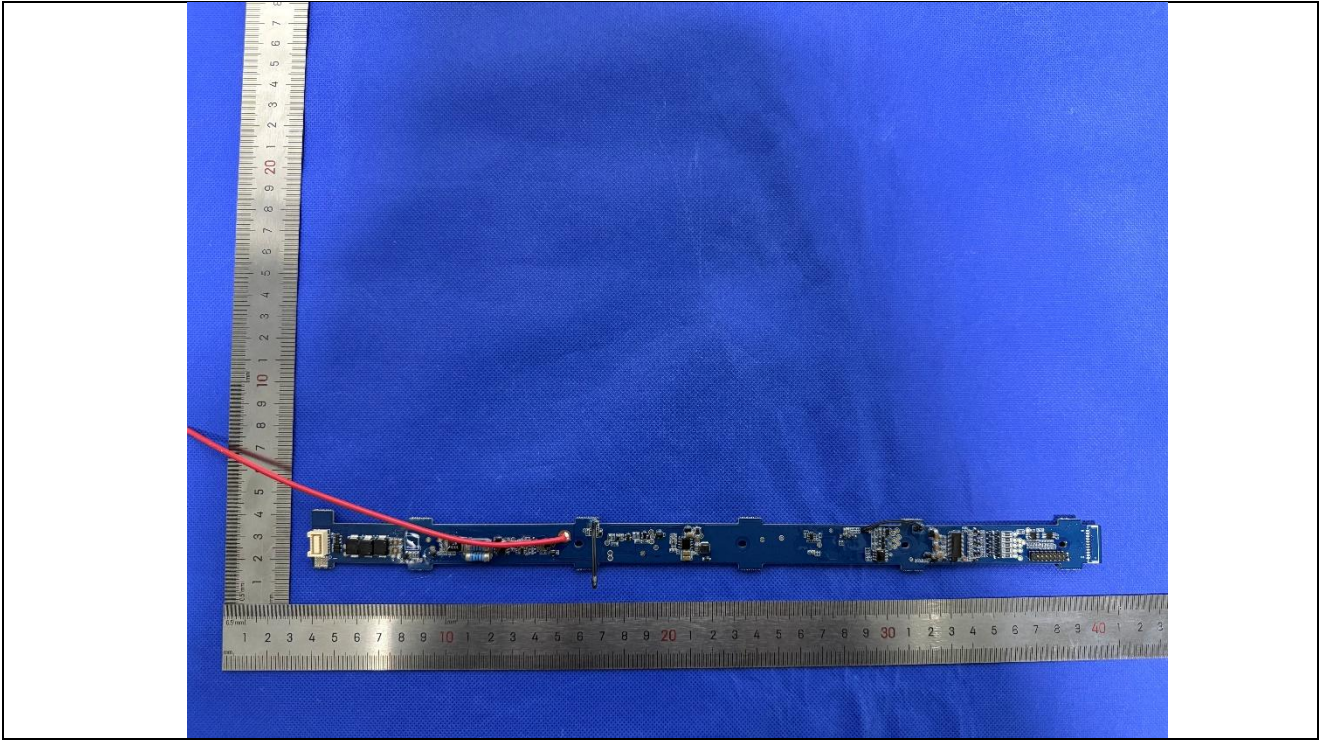


Details of: PCB view

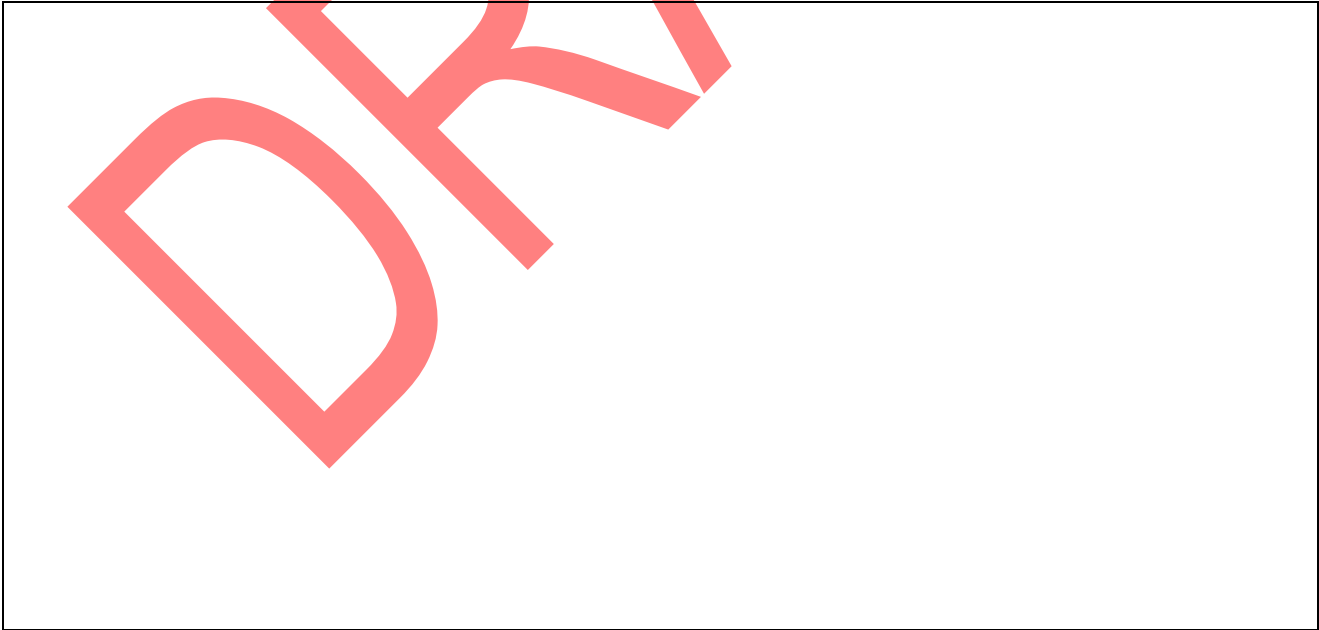




Details of: PCB view



Details of: Battery view



--END OF TEST REPORT--