



Test Report issued under the responsibility of:



<b>TEST REPORT</b> <b>IEC 60601-1-2</b> <b>Medical electrical equipment –</b> <b>Part 1-2: General requirements for basic safety and essential</b> <b>performance –</b> <b>Collateral Standard: ELECTROMAGNETIC disturbances – Requirements</b> <b>and tests</b>	
Report Number.....	T251-0045/24
Date of issue.....	2024-02-20
Total number of pages .....	134
Name of Testing Laboratory preparing the Report .....	SIQ Ljubljana <i>SIQ Ljubljana is accredited by Slovenian Accreditation with accreditation number LP-009 in the field of testing (SIST EN ISO/IEC 17025).</i>
Applicant's name .....	Traco Power Solutions Ltd.
Address.....	Whitemill Industrial Estate Wexford, Whitemill Road, Wexford Y35 YH66, Ireland
<b>Test specification:</b> Standard ..... IEC 60601-1-2:2014, IEC 60601-1-2:2014/AMD1:2020 Test procedure ..... CB Scheme Non-standard test method ..... N/A	
TRF template used .....	IECEE OD-2020-F1:2020, Ed.1.3
Test Report Form No. ....	IEC60601_1_2J_EMC
Test Report Form(s) Originator ....	CSA Group
Master TRF .....	Dated 2021-11-11
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<b>Test item description</b> ..... :	Power supply for building-in	
<b>Trade Mark</b> ..... :	<b>TRACO<sup>®</sup> POWER</b>	
<b>Manufacturer</b> .....	Traco Power Solutions Ltd. Whitemill Industrial Estate Wexford, Whitemill Road, Wexford Y35 YH66, Ireland	
<b>Model/Type reference</b> .....	<b>24 W models:</b> TMW 24-105, TMW 24-112, TMW 24-124 <b>36 W models:</b> TMW 36-112, TMW 36-124 * Models can be additionally marked with "P", where "P" indicates pin version ** models can be additionally marked with "xxxxxxx", where "x" or "a" can be any alphanumeric character, blank or dash (not EMC relevant)	
<b>Ratings</b> .....	<b>24 W models:</b> Input: 100-240 V a.c.; 50/60 Hz; 0,5-0,25 A Protection Class II Output: TMW 24-105: 5,1 V d.c.; 4,0 A TMW 24-112: 12 V d.c.; 2,0 A TMW 24-124: 24 V d.c.; 1,0 A <b>36 W models:</b> Input: 100-240 V a.c.; 50/60 Hz; 0,7-0,4 A Protection Class II Output: TMW 36-112: 12 V d.c.; 3,0 A TMW 36-124: 24 V d.c.; 1,5 A	
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	SIQ Ljubljana
<b>Testing location/ address</b> ..... :		Mašera-Spasičeva ulica 10, SI-1000 Ljubljana, Slovenia
<b>Tested by (name, function, signature)</b> ..... :		Žiga Selan (Service Provider)
<b>Approved by (name, function, signature)</b> ... :		Marjan Mak (Approved Signatory)
<b>Testing procedure: CTF Stage 1:</b>		
<b>Testing location/ address</b> ..... :		
<b>Tested by (name, function, signature)</b> ..... :		
<b>Approved by (name, function, signature)</b> ... :		
<b>Testing procedure: CTF Stage 2:</b>		
<b>Testing location/ address</b> ..... :		
<b>Tested by (name + signature)</b> .....		
<b>Witnessed by (name, function, signature) .:</b>		

<b>Approved by (name, function, signature)...</b>			
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 3:</b>		
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 4:</b>		
<b>Testing location/ address..... :</b>			
<b>Tested by (name, function, signature)..... :</b>			
<b>Witnessed by (name, function, signature) . :</b>			
<b>Approved by (name, function, signature)...</b>			
<b>Supervised by (name, function, signature) :</b>			

<b>List of Attachments (including a total number of pages in each attachment):</b> <b>1. Photos of test items (11 pages) – Enclosure No. 1</b>	
<b>Summary of testing:</b>	
<b>Tests performed (name of test and test clause):</b> Conducted emission (7.3) Radiated RF emission (7.3) Voltage fluctuations and flicker (7.2.2) Electrostatic discharges (8.9) Radiated RF EM fields (8.9) Proximity fields from RF wireless communications equipment (8.10) Electrical fast transients / burst (8.9) Surges (8.9) Conducted disturbances induced by RF fields (8.9) Rated power frequency magnetic fields (8.9) Voltage dips (8.9) Voltage interruptions (8.9) Proximity magnetic fields (8.11)	<b>Testing location:</b> SIQ Ljubljana Mašera-Spasičeva ulica 10, SI-1000 Ljubljana, Slovenia
<b>Summary of compliance with National Differences (List of countries addressed):</b> <input checked="" type="checkbox"/> The product fulfils the requirements of EN 60601-1-2:2015 + A1:2021.  <input checked="" type="checkbox"/> The product fulfils the requirements of: - IEC 60601-1-2:2014, IEC 60601-1-2:2014/AMD1:2020 - IEC 60601-1-11:2015, clause 12	

### Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

TMW 24-105:



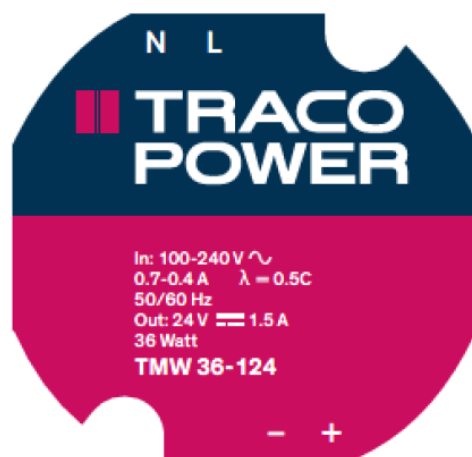
TMW 24-112:



TMW 24-124:



**TMW 36-112:**

**TMW 36-124:**


**Test item particulars:**
**Classification of installation and use.....:** Intended for building into end medical device.

**Emission limits to be considered:**
☐ Class A

☒ Class B

If the more stringent class B limits are passed, also the class A limits can be considered as fulfilled.

**The medical equipment is classified following based on CISPR 11 and IEC 60601-1-2:**
☒ Group I

☐ Group II

☒ PUBLIC MAINS NETWORK (e.g. home care ME equipment and ME equipment for doctor's offices in residential areas, should meet the requirements for CISPR 11 class B)

☐ Dedicated supply Systems (professional ME equipment e.g. in hospitals or doctor's offices, normally fed by separation transformers, also allowed to meet the requirements for CISPR 11 class A)

**Type of Applied Part.....:** N/A

**Possible test case verdicts:**

- test case does not apply to the test object.....: N/A

- test object does meet the requirement.....: P (Pass)

- test object does not meet the requirement.....: F (Fail)

**Testing.....:** N/A

**Date of receipt of test item .....** 2024-01-22

**Date (s) of performance of tests .....** 2024-01-24 – 2024-02-01

**General remarks:**

"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

The test items were tested in the condition as received.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

**Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60601-1-2:**

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....

☐ Yes

☒ Not applicable

**When differences exist; they shall be identified in the General product information section.**

**Name and address of factory (ies) .....** : 1) Traco Power Solutions Ltd.  
Whitemill Industrial Estate Wexford, Whitemill Road,  
Wexford Y35 YH66, Ireland

**General product information (GPI) and other remarks:**

**Product Description – Power supply for building-in.**

Power supply is provided with a single power output and with universal input voltage 100-240 Vac.

Power supply unit is intended for building-in within the end product.

Power supply is provided with plastic enclosure to cover all internal parts and additionally filled with insulation compound to improve rigidity of the enclosure.

Power supply unit can be provided in 2 different versions:

- Provided with input/output pins
- Provided with input/output wires

Two holes (diameter of 3,0 mm) provided for fixing of the power supply within the end product. See enclosed pictures of the unit for details.

Complete EMC testing has been performed on TMW 24-105 and TMW 36-112 models. Partial testing has been performed also for all other models to show similarities and compliance. See clause 2 (Verdict summary section) for details regarding tests performed.

**The risk management requirements and Instructions for use requirements of the standard were not addressed. The power supply tested in this test report is only component level power supply. Power supply is intended for building-in. Risk management shall be addressed with the end medical equipment.**

**History sheet**

Date	Report No.	Change	Revision
2024-02-20	T251-0045/23	Initial Test Report issued.	--



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# 1 General description of test item

Description .....	Power supply for building-in													
Serial number.....	TMW 24-105: 52233090604 / 51502001 TMW 24-112: 52212022437 / 51503001 TMW 24-124: 52212022916 / 51501001 TMW 36-112: 52212023457 / 51504001 TMW 36-124: 52212023958 / 51505001													
Brand name.....	TRACO POWER													
Prototype or production version.....	Production version													
Units tests and rationale for selected sample size	One representative sample of each model needed.  SIQ sample numbers tested: TMW 24-105: S202400341 TMW 24-112: S202400343 TMW 24-124: S202400345 TMW 36-112: S202400347 TMW 36-124: S202400349													
Intended use	Power supply is intended for building in into end medical device.													
Intended ENVIRONMENT	Home and professional healthcare environment.													
PORT.....	AC power port	<table border="1"> <thead> <tr> <th colspan="3">Cable</th> </tr> <tr> <th>Specified length [m]</th> <th>Attached during test</th> <th>Shielded</th> </tr> </thead> <tbody> <tr> <td>AC Mains</td> <td>/</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>			Cable			Specified length [m]	Attached during test	Shielded	AC Mains	/	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cable														
Specified length [m]	Attached during test	Shielded												
AC Mains	/	<input checked="" type="checkbox"/>	<input type="checkbox"/>											
PORT.....	DC power port	<table border="1"> <thead> <tr> <th colspan="3">Cable</th> </tr> <tr> <th>Specified length [m]</th> <th>Attached during test</th> <th>Shielded</th> </tr> </thead> <tbody> <tr> <td>/</td> <td>/</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>			Cable			Specified length [m]	Attached during test	Shielded	/	/	<input type="checkbox"/>	<input type="checkbox"/>
Cable														
Specified length [m]	Attached during test	Shielded												
/	/	<input type="checkbox"/>	<input type="checkbox"/>											
PORT.....	PATIENT COUPLING PORT	<table border="1"> <thead> <tr> <th colspan="3">Cable</th> </tr> <tr> <th>Specified length [m]</th> <th>Attached during test</th> <th>Shielded</th> </tr> </thead> <tbody> <tr> <td>/</td> <td>/</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>			Cable			Specified length [m]	Attached during test	Shielded	/	/	<input type="checkbox"/>	<input type="checkbox"/>
Cable														
Specified length [m]	Attached during test	Shielded												
/	/	<input type="checkbox"/>	<input type="checkbox"/>											
PORT.....	SIP / SOP PORT	<table border="1"> <thead> <tr> <th colspan="3">Cable</th> </tr> <tr> <th>Specified length [m]</th> <th>Attached during test</th> <th>Shielded</th> </tr> </thead> <tbody> <tr> <td>DC output</td> <td>0,2</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>			Cable			Specified length [m]	Attached during test	Shielded	DC output	0,2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cable														
Specified length [m]	Attached during test	Shielded												
DC output	0,2	<input checked="" type="checkbox"/>	<input type="checkbox"/>											
Supplemental information to the PORTS .....	---													

Rated power supply .....		<b>Voltage and frequency</b>	<b>1 ph/ PE</b>	<b>2 ph/N/PE</b>	<b>3 ph/N/PE</b>
	<input checked="" type="checkbox"/>	AC: 100–240 V~; 50/60 Hz	<input checked="" type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>
	<input type="checkbox"/>	DC: /			
Rated power .....	24 W or 36 W (output)				
Protection Class .....	II				
Other parameters .....	Max switching freq: 160 kHz (Information provided by applicant).				
Software version .....	Not applicable. (Information provided by applicant).				
Hardware version .....	TMW 024: MB-020UAB184/H, TMW 036: MB-030UAB184/F (Information provided by applicant).				
Dimensions (W x H x D).....	53,0 x 24,5 x 51,0 mm				
Mounting position:	<input type="checkbox"/>	Table top equipment			
	<input type="checkbox"/>	Wall/Ceiling mounted equipment			
	<input type="checkbox"/>	Floor standing equipment			
	<input type="checkbox"/>	Hand-held equipment			
	<input checked="" type="checkbox"/>	Other: For building-in. Treated as table top.			
Modules / parts.....	<b>Module / parts of test item</b>		<b>Type</b>	<b>Manufacturer</b>	
	Power supply for building-in		TMW 24-105	Traco Power Solutions Ltd.	
	Power supply for building-in		TMW 24-112		
	Power supply for building-in		TMW 24-124		
	Power supply for building-in		TMW 36-112		
	Power supply for building-in		TMW 36-124		
Operating modes.....	<b>No.</b>	<b>Operating mode of test item</b>	<b>Applied for testing</b>		
			<b>EMISSION</b>	<b>IMMUNITY</b>	
	1	Nominal load	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	2	No load	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Supplemental information to the operating modes .....	Op. mode 1: Used for all measurements. Op. mode 2: Used for conducted and radiated emission measurements.				
Supporting equipment (not part of the test item) .....	<b>Accessory / Auxiliary / Simulator</b>		<b>Type</b>	<b>Manufacturer</b>	
	Fixed resistive load for TMW 24-105		1,25 Ohm	SIQ	
	Fixed resistive load for TMW 24-112		6 Ohm	SIQ	
	Fixed resistive load for TMW 24-124		24 Ohm	SIQ	
	Fixed resistive load for TMW 36-112		4 Ohm	SIQ	
	Fixed resistive load for TMW 36-124		15,8 Ohm	SIQ	

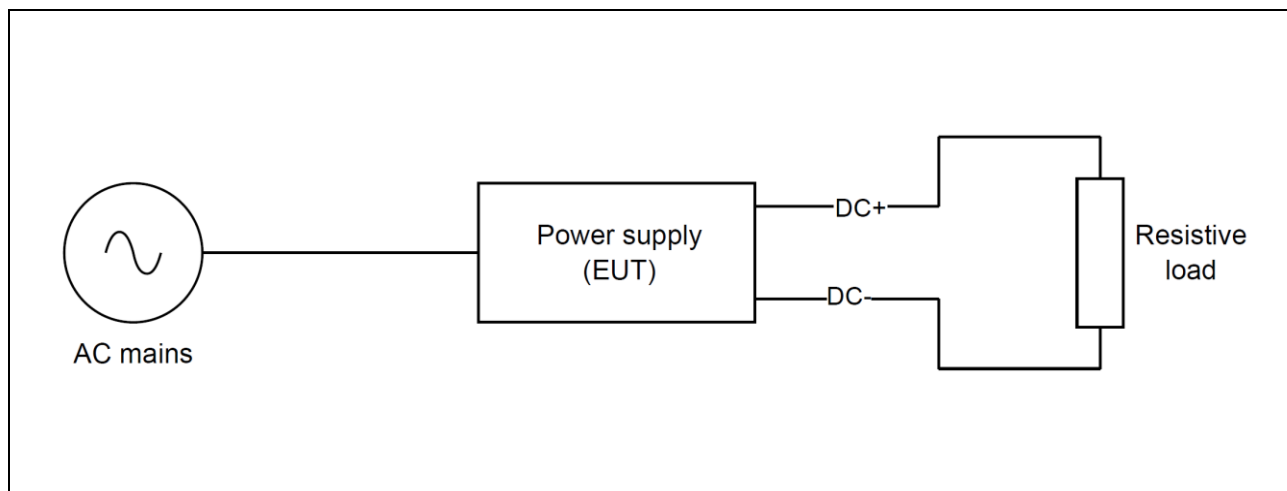
Documents as provided by the applicant.....:	Description	File name	Issue date
	EMC testplan	EMC_Medical_Test_plan_T_RACO_2024-01-16	2024-01-16
	Product specification	tmw24_datashheet	2023-09-20
	Product specification	tmw24p_datashheet	2023-09-20
	Product specification	tmw36_datashheet	2023-09-20
	Product specification	tmw36p_datashheet	2023-09-20

Modifications to the test item during testing.....:	<p>No modification made.</p> <p>A statement that they will all be incorporated into production units.</p> <p><input type="checkbox"/> Manufacturer provided declaration statement.</p> <p><input type="checkbox"/> Manufacturer did not provide declaration statement.</p>
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#### 1.1 Photos of the test item

Photo of test item .....	Refer to Enclosure No. 1.
--------------------------	---------------------------

## 1.2 Block diagram of the ME equipment and ME system and all peripherals and auxiliary equipment used



## 2 Verdict summary section

IEC 60601-1-2 referenced emission standards			
Clause	Requirement – Test case	Basic standard	Verdict
7.1	Terminal disturbance voltages	CISPR 11:2015 +A1:2016 + A2:2019	P *
7.1	Radiation disturbance	CISPR 11:2015 +A1:2016 + A2:2019	P *
7.1	Terminal disturbance voltages	CISPR 14-1:2016	N/A
7.1	Disturbance Power	CISPR 14-1:2016	N/A
7.1	Radiated disturbances	CISPR 14-1:2016	N/A
7.2.1	AC-Mains Harmonics	IEC 61000-3-2:2005 +A1:2008 +A2:2009	N/A
7.2.2	AC-Mains Voltage fluctuations and flicker	IEC 61000-3-3:2013	P **
IEC 60601-1-2 referenced immunity standards			
Clause	Requirement – Test case	Basic standard	Verdict
8.9	ELECTROSTATIC DISCHARGE	IEC 61000-4-2:2008	P ***
8.9	Radiated RF EM fields	IEC 61000-4-3:2006 +A1:2007 +A2:2010	P ***
8.9	Electrical fast transients / bursts	IEC 61000-4-4:2012	P ***
8.9	Surges	IEC 61000-4-5:2014+A1:2017	P ***
8.9	Conducted disturbances induced by RF fields	IEC 61000-4-6:2013	P ***
8.9	RATED power frequency magnetic fields	IEC 61000-4-8:2009	P ***
8.9	Voltage dips	IEC 61000-4-11:2004 + A1:2017	P ***
8.9	Voltage interruptions	IEC 61000-4-11:2004 + A1:2017	P ***
8.9	Electrical transient conduction along supply lines	ISO 7637-2: 2011	N/A
8.10	IMMUNITY to proximity fields from RF wireless communications equipment	IEC 60601-1-2:2014 Table 9	P ***
8.11	Immunity to proximity magnetic fields	IEC 61000-4-39:2017	P ***
<p>Supplementary information:</p> <ul style="list-style-type: none"> <li>- Terminal disturbance voltages &amp; Disturbance Power &amp; Radiated disturbances acc. to CISPR 14-1:2016: the device falls under CISPR 11</li> <li>- Electrical transient conduction along supply lines: ME equipment is not intended to be installed in passengers cars and light commercial vehicles including ambulances fitted with 12 V electrical systems</li> <li>- AC-Mains Harmonics test is not applicable due to rated power being less than 75 W.</li> </ul> <p>*: Test performed on all models. Test in “no load” condition performed only on TMW 24-105 and TMW 36-112.</p> <p>**: Test performed on TMW 24-112 and TMW 36-112.</p> <p>***: Test performed on TMW 24-105 and TMW 36-112.</p>			

### 3 Test conditions

#### 3.1 General

Environmental reference conditions .....	The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:		
	<b>Temperature</b>	<b>Humidity</b>	<b>Atmospheric pressure</b>
	15 °C to 35 °C	30 % to 60 %	86 kPa to 106 kPa
	If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report i.e. at the supplementary information of each test.		
Measurement uncertainties..... :	<p>For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in CISPR 16-4-2, IEC 61000-4 series or a product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards. See statement of measurement uncertainty at the end of the report.</p> <p>In all cases if the test laboratory uncertainty is larger than the value for <math>U_{CISPR}</math> given in CISPR 16-4-2 the uncertainty is included in the test report annex.</p> <p>In case the standards in the IEC 61000-4 series or the product standard requires the indication of the uncertainty in the report these uncertainty values are included in Section 11.</p>		

### 3.2 Specific test conditions for IEC 60601-1-2 BASIC SAFETY, ESSENTIAL PERFORMANCE

#### Description of BASIC SAFETY and ESSENTIAL PERFORMANCE

##### Basic safety:

Basic safety regarding EMC is ensured by output voltage.

##### Essential performance:

No essential performance.

#### Description how the BASIC SAFETY and ESSENTIAL PERFORMANCE were monitored during each test (Note: for some aspects of BASIC SAFETY this monitoring might be carried out before and after the test)

##### Basic safety:

Output voltage was monitored continuously with a digital voltmeter during the tests.

##### Essential performance:

No essential performance.



### 3.3 Specific test conditions for IEC 60601-1-2 TEST LEVELS for SPECIAL ENVIRONMENTS

☒ Not Applicable

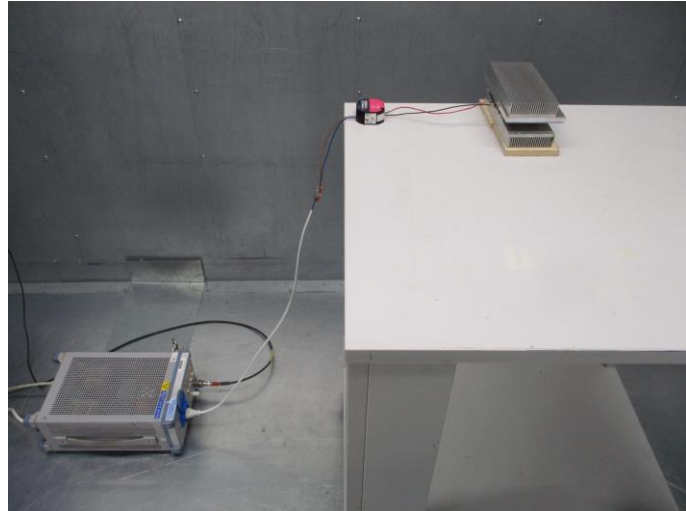
## 4 EMISSION

### 4.1 Disturbance Voltage

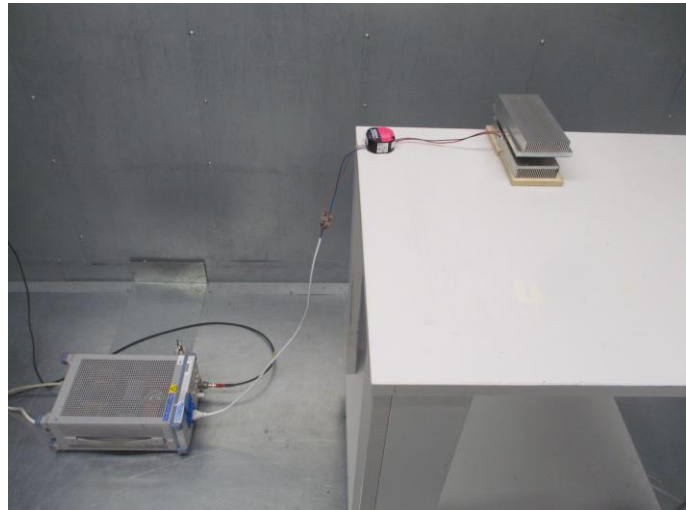
Tested by .....	Žiga Selan	
Test date .....	2023-01-25	
Test location (stand).....	Test room 1	
Applied limit class or ENVIRONMENT:	<input type="checkbox"/>	Class A according to applied standard
	<input checked="" type="checkbox"/>	Class B according to applied standard
	<input type="checkbox"/>	General Limits (CISPR 14-1 Table 5)
	<input type="checkbox"/>	Limits for mains port of tools (CISPR 14-1 Table 6)
	<input type="checkbox"/>	Other:
Applied limit group.....	<input checked="" type="checkbox"/>	Group 1 according to applied standard
	<input type="checkbox"/>	Group 2 according to applied standard
Test set-up description.....	<input checked="" type="checkbox"/>	Set-up Type A (40 cm distance to vertical ground plane, 80 cm over ground plane)
	<input type="checkbox"/>	Set-up Type B (40 cm distance to horizontal ground plane)
	<input type="checkbox"/>	Floor standing equipment set-up (10 cm over ground plane)
	<input type="checkbox"/>	Other:
	<input type="checkbox"/>	Artificial hand applied
Supplementary test set-up description .....	--	
Test method applied.....	<input checked="" type="checkbox"/>	Artificial mains network
	<input type="checkbox"/>	Artificial mains network used as voltage probe
	<input type="checkbox"/>	Voltage probe
	<input type="checkbox"/>	Current probe and capacitive voltage probe (CVP)
	<input type="checkbox"/>	ISN
	<input type="checkbox"/>	In situ CDN (150 Ohm and current probe)
	<input type="checkbox"/>	Other:
All used mains voltage and frequency .....	Voltage:	Frequency:
	100 V	60 Hz
	240 V	50 Hz
Supplementary information .....	--	

Test set-up photo .....:

TMW 24-105:



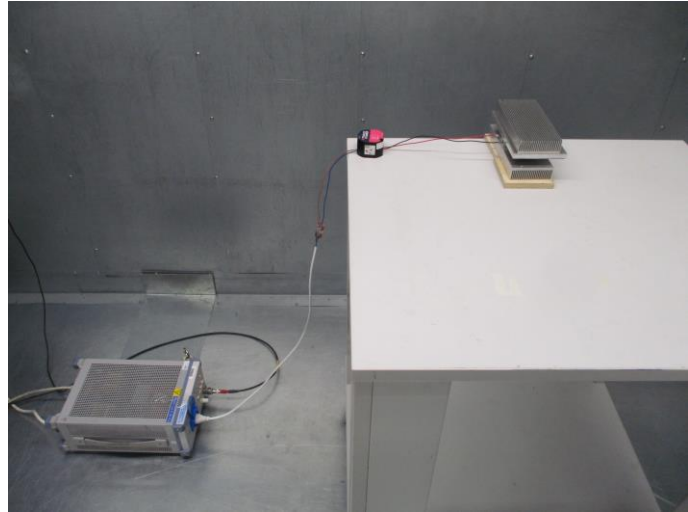
TMW 24-112:



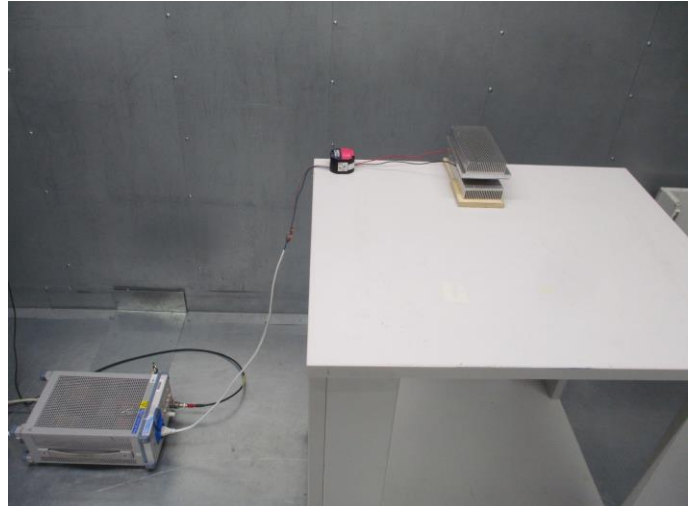
TMW 24-124:



TMW 36-112:



TMW 36-124:

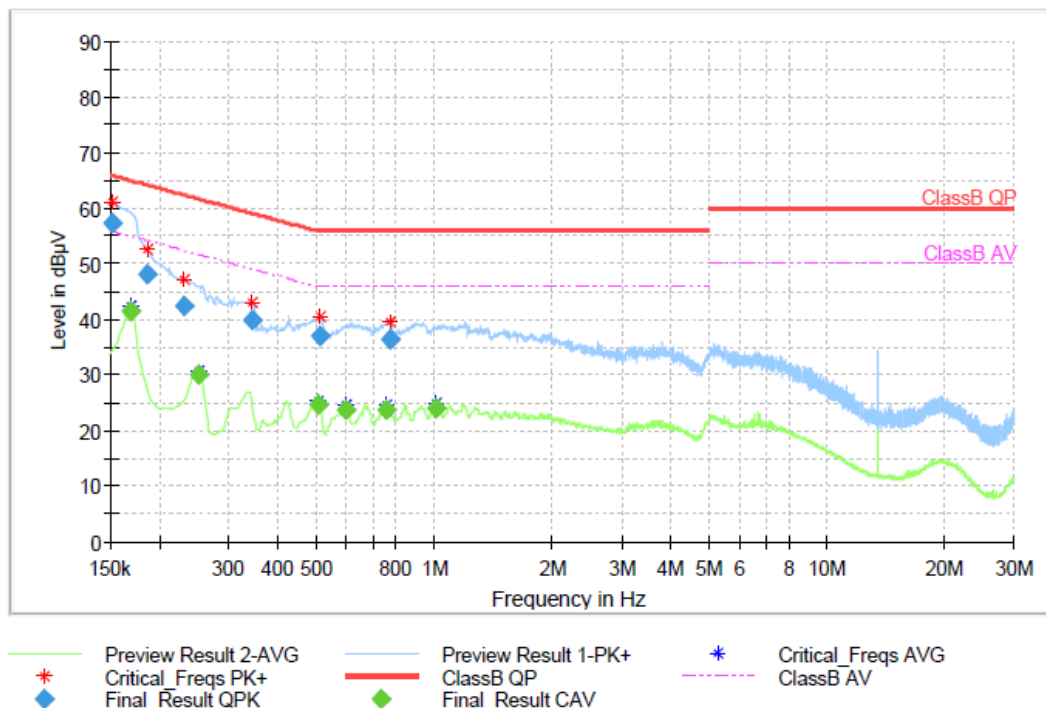


Test results:  
TMW 24-105:

## CONDUCTED EMISSION

### EUT Information

EUT: TMW 24-105  
Operating mode: Uin: 100 V, 60 Hz, DCout: 5.1 V / 4 A  
Line: L + N



### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.152250	57.40	---	65.88	8.47	1000.0	9.000	N	ON	9.9
0.168000	---	41.65	55.06	13.41	1000.0	9.000	N	ON	10.2
0.186000	48.05	---	64.21	16.16	1000.0	9.000	N	ON	10.0
0.514500	37.21	---	56.00	18.79	1000.0	9.000	N	ON	10.1
0.343500	39.88	---	59.12	19.24	1000.0	9.000	N	ON	10.0
0.771000	36.30	---	56.00	19.70	1000.0	9.000	N	ON	9.9
0.231000	42.34	---	62.41	20.07	1000.0	9.000	L1	ON	9.9
0.505500	---	24.75	46.00	21.25	1000.0	9.000	N	ON	10.1
0.251250	---	30.15	51.72	21.56	1000.0	9.000	N	ON	9.9
1.016250	---	24.04	46.00	21.96	1000.0	9.000	N	ON	9.8
0.757500	---	23.90	46.00	22.10	1000.0	9.000	N	ON	10.0
0.595500	---	23.79	46.00	22.21	1000.0	9.000	N	ON	10.1

## CONDUCTED EMISSION

### EUT Information

EUT:

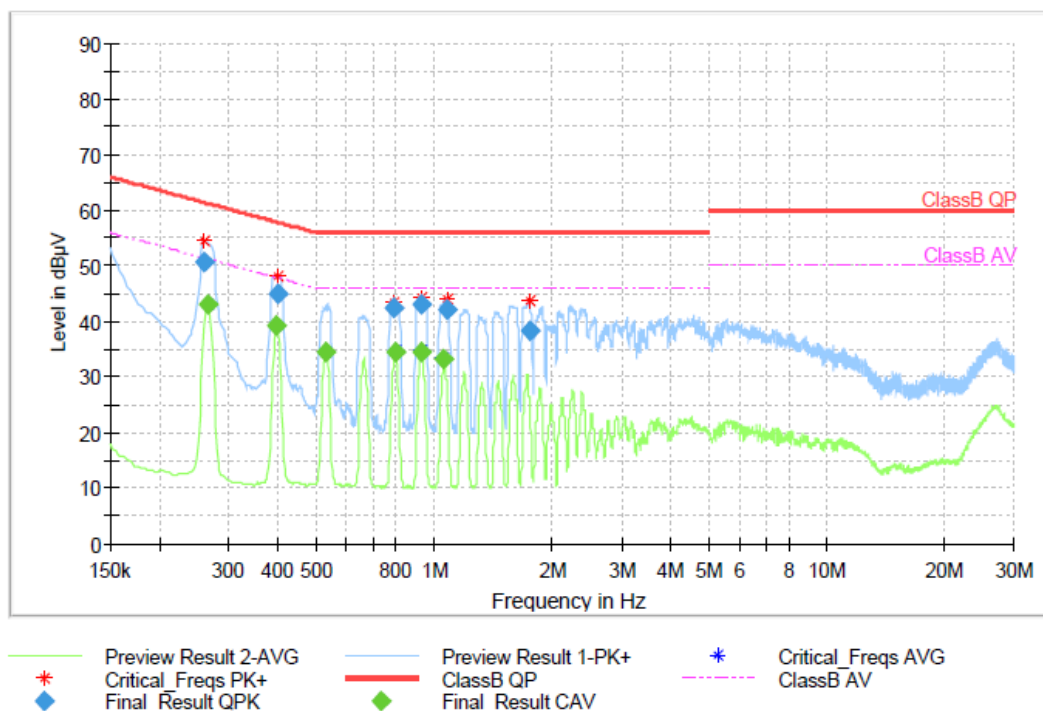
TMW 24-105

Operating mode:

Uin: 240 V, 50 Hz, DCout: 5.1 V / 4 A

Line:

L + N



### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.264750	---	43.10	51.28	8.18	1000.0	9.000	N	ON	9.9
0.397500	---	39.37	47.91	8.54	1000.0	9.000	N	ON	10.1
0.260250	50.68	---	61.42	10.74	1000.0	9.000	N	ON	9.9
0.928500	---	34.69	46.00	11.31	1000.0	9.000	N	ON	9.9
0.795750	---	34.68	46.00	11.32	1000.0	9.000	N	ON	9.9
0.530250	---	34.52	46.00	11.48	1000.0	9.000	N	ON	10.1
1.061250	---	33.29	46.00	12.71	1000.0	9.000	N	ON	9.8
0.399750	44.99	---	57.86	12.87	1000.0	9.000	N	ON	10.1
0.933000	42.99	---	56.00	13.01	1000.0	9.000	N	ON	9.9
0.791250	42.60	---	56.00	13.40	1000.0	9.000	N	ON	9.9
1.081500	42.19	---	56.00	13.81	1000.0	9.000	N	ON	9.8
1.761000	38.49	---	56.00	17.51	1000.0	9.000	N	ON	9.8

## CONDUCTED EMISSION

### EUT Information

EUT:

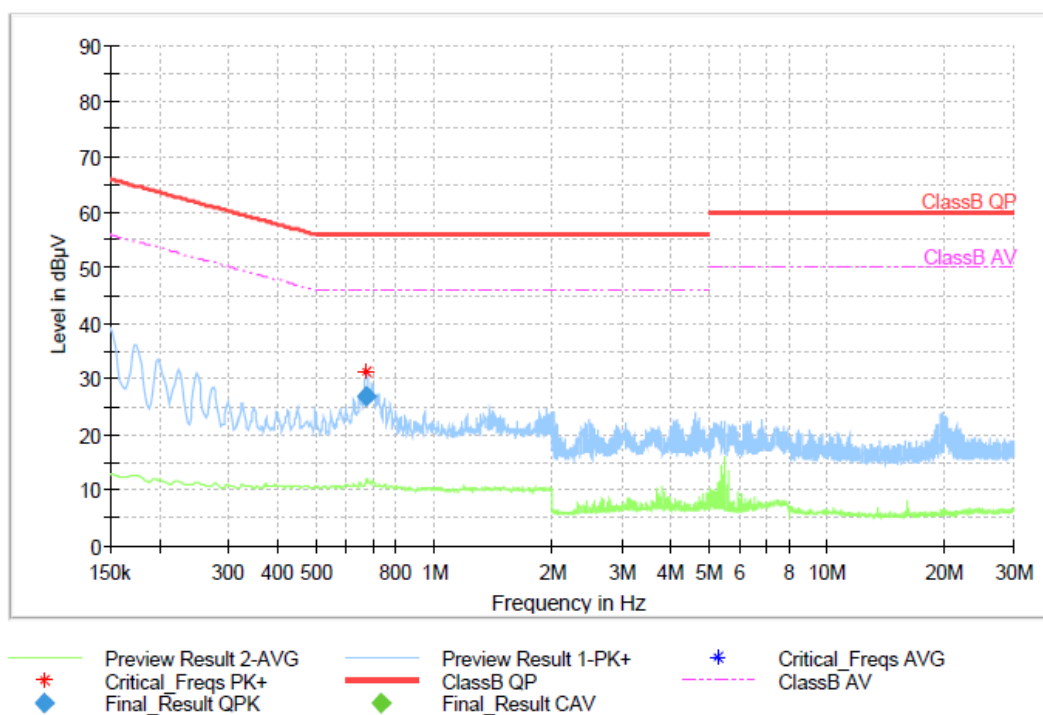
TMW 24-105

Operating mode:

Uin: 100 V, 60 Hz, DCout: 5.1 V / 0 A

Line:

L + N



### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.674250	26.82	---	56.00	29.18	1000.0	9.000	L1	ON	10.0

## CONDUCTED EMISSION

### EUT Information

EUT:

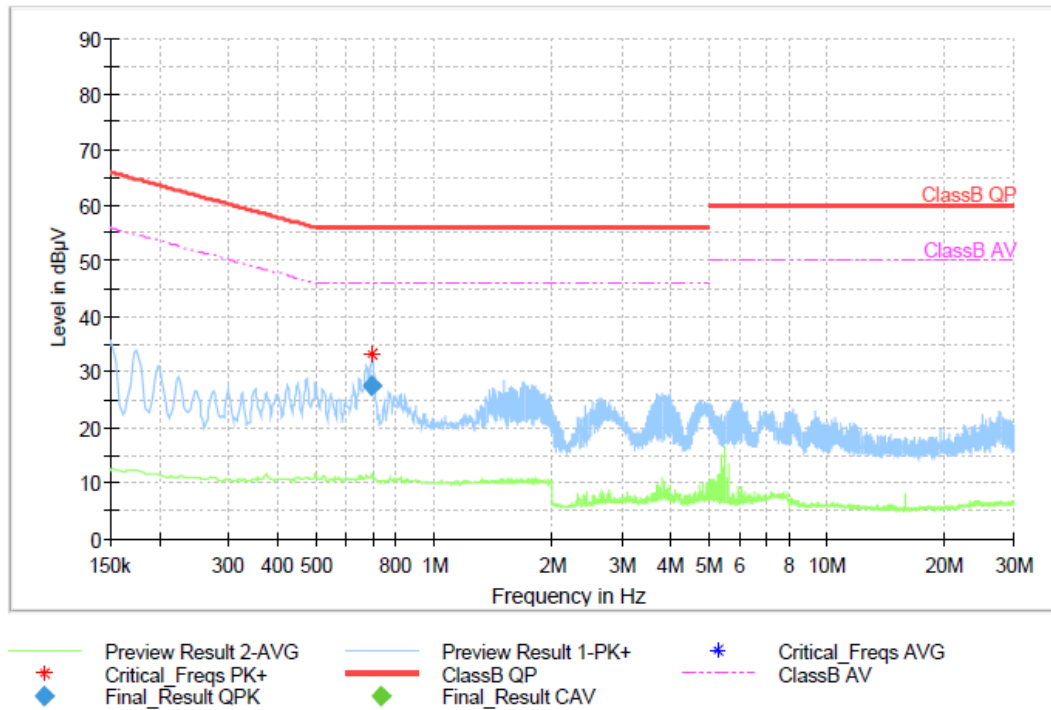
TMW 24-105

Operating mode:

Uin: 240 V, 50 Hz, DCout: 5.1 V / 0 A

Line:

L + N



### Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.696750	27.65	---	56.00	28.35	1000.0	9.000	N	ON	10.0



TMW 24-112:

## CONDUCTED EMISSION

### EUT Information

EUT:

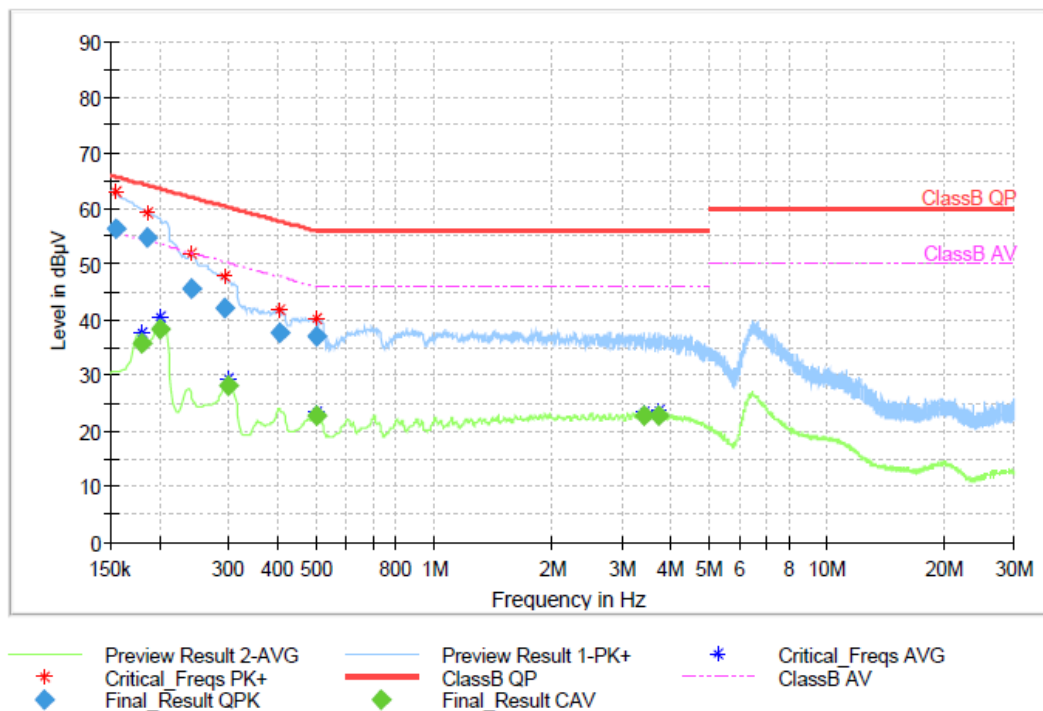
TMW 24-112

Operating mode:

Uin: 100 V, 60 Hz, DCout: 12 V / 2 A

Line:

L + N



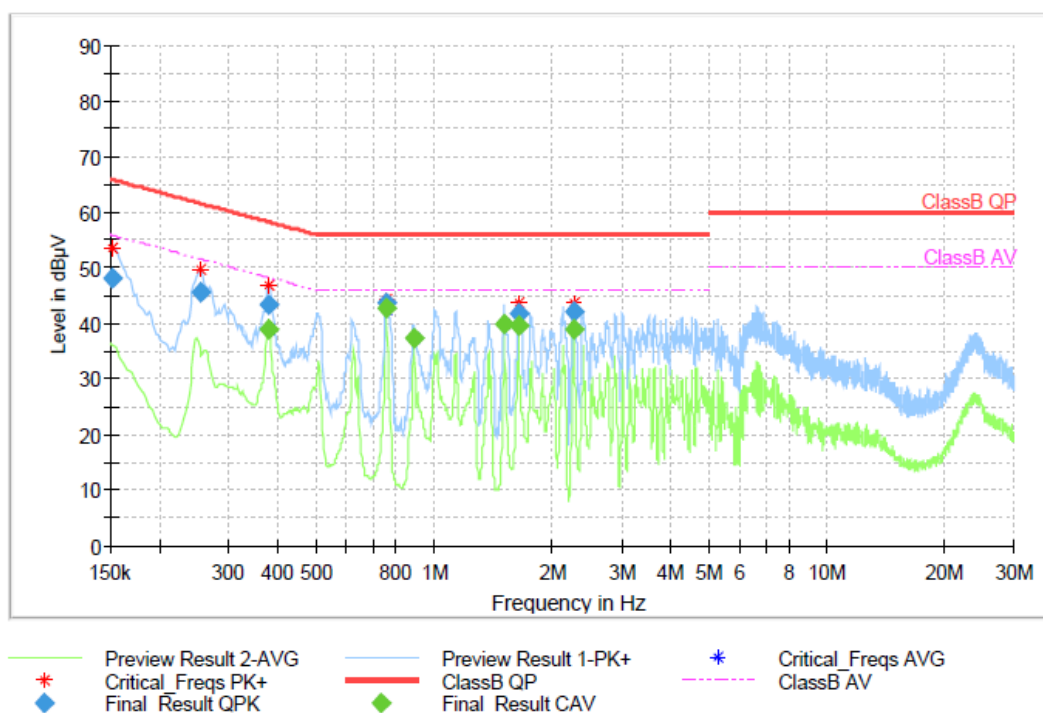
### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.186000	54.97	---	64.21	9.24	1000.0	9.000	N	ON	10.0
0.154500	56.32	---	65.75	9.43	1000.0	9.000	N	ON	9.9
0.201750	---	38.34	53.54	15.20	1000.0	9.000	N	ON	9.9
0.240000	45.51	---	62.10	16.58	1000.0	9.000	N	ON	9.9
0.291750	42.05	---	60.47	18.43	1000.0	9.000	N	ON	9.9
0.179250	---	35.83	54.52	18.69	1000.0	9.000	N	ON	10.1
0.503250	37.12	---	56.00	18.88	1000.0	9.000	N	ON	10.1
0.404250	37.82	---	57.77	19.95	1000.0	9.000	N	ON	10.1
0.300750	---	28.15	50.22	22.07	1000.0	9.000	N	ON	9.9
3.426000	---	22.97	46.00	23.03	1000.0	9.000	N	ON	9.8
3.745500	---	22.94	46.00	23.06	1000.0	9.000	N	ON	9.8
0.503250	---	22.75	46.00	23.25	1000.0	9.000	N	ON	10.1

## CONDUCTED EMISSION

### EUT Information

EUT: TMW 24-112  
Operating mode: Uin: 240 V, 50 Hz, DCout: 12 V / 2 A  
Line: L + N



### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.755250	---	42.71	46.00	3.29	1000.0	9.000	N	ON	10.0
1.511250	---	40.06	46.00	5.94	1000.0	9.000	N	ON	9.8
1.644000	---	39.74	46.00	6.26	1000.0	9.000	N	ON	9.8
2.265000	---	39.04	46.00	6.96	1000.0	9.000	N	ON	9.8
0.888000	---	37.34	46.00	8.66	1000.0	9.000	N	ON	9.9
0.379500	---	38.83	48.29	9.46	1000.0	9.000	N	ON	10.0
0.755250	43.72	---	56.00	12.28	1000.0	9.000	N	ON	10.0
2.267250	42.29	---	56.00	13.71	1000.0	9.000	N	ON	9.8
1.641750	41.84	---	56.00	14.16	1000.0	9.000	N	ON	9.8
0.379500	43.47	---	58.29	14.82	1000.0	9.000	N	ON	10.0
0.253500	45.64	---	61.64	16.00	1000.0	9.000	N	ON	9.9
0.152250	48.17	---	65.88	17.70	1000.0	9.000	N	ON	9.9

TMW 24-124:

## CONDUCTED EMISSION

## EUT Information

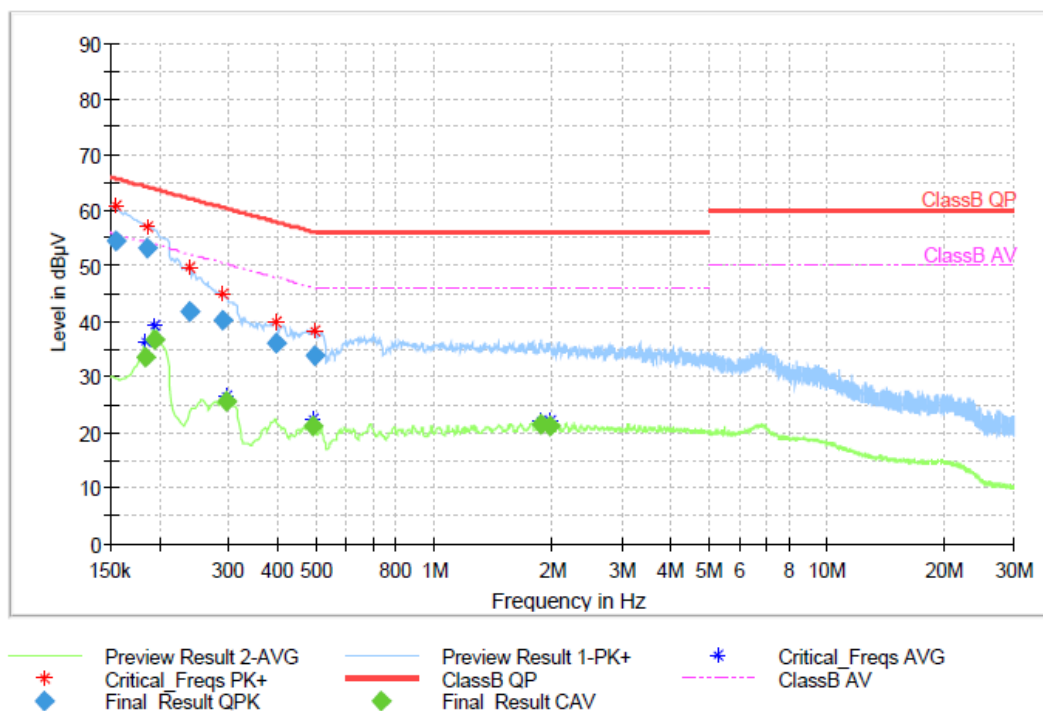
EUT:

Operating mode:

Line:

TMW 24-124

Uin: 100 V, 60 Hz, DCout: 24 V / 1 A

 $L + N$ 

## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.186000	53.23	---	64.21	10.98	1000.0	9.000	N	ON	10.0
0.154500	54.55	---	65.75	11.21	1000.0	9.000	N	ON	9.9
0.195000	---	36.89	53.82	16.93	1000.0	9.000	N	ON	9.9
0.289500	40.32	---	60.54	20.22	1000.0	9.000	N	ON	9.9
0.237750	41.91	---	62.17	20.26	1000.0	9.000	N	ON	9.9
0.183750	---	33.45	54.31	20.86	1000.0	9.000	N	ON	10.1
0.395250	36.05	---	57.95	21.90	1000.0	9.000	N	ON	10.1
0.498750	33.78	---	56.02	22.24	1000.0	9.000	N	ON	10.1
1.873500	---	21.53	46.00	24.47	1000.0	9.000	N	ON	9.8
1.974750	---	21.27	46.00	24.73	1000.0	9.000	N	ON	9.8
0.296250	---	25.60	50.35	24.75	1000.0	9.000	N	ON	9.9
0.489750	---	21.20	46.17	24.98	1000.0	9.000	N	ON	10.1

## CONDUCTED EMISSION

### EUT Information

EUT:

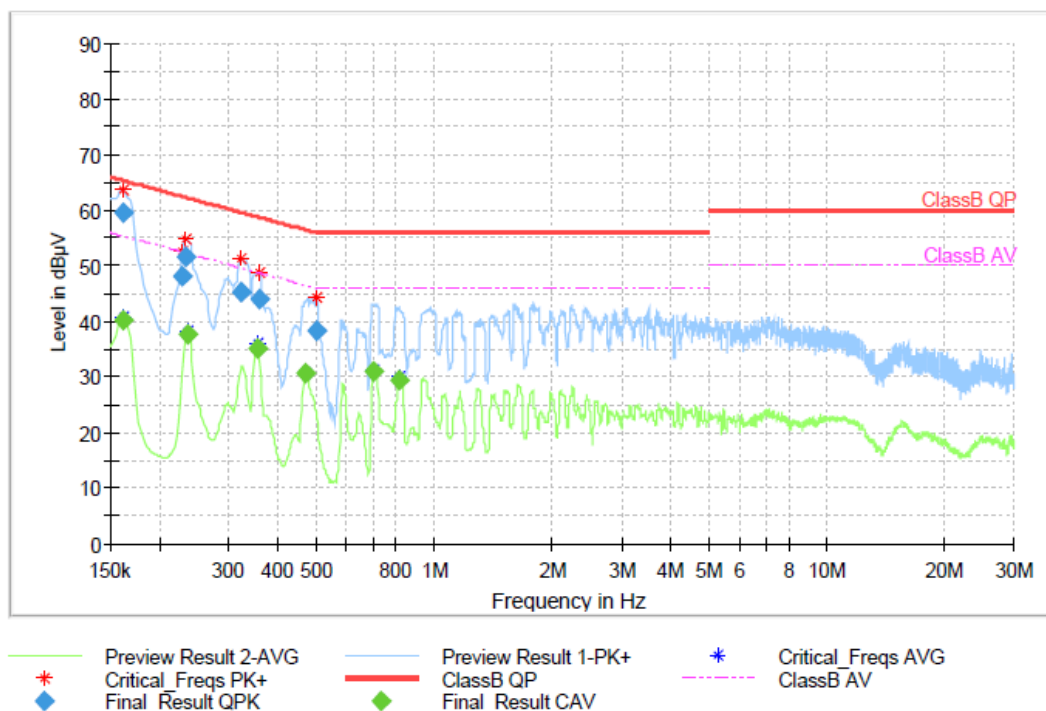
TMW 24-124

Operating mode:

Uin: 240 V, 50 Hz, DCout: 24 V / 1 A

Line:

L + N



### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.161250	59.55	---	65.40	5.85	1000.0	9.000	N	ON	10.1
0.233250	51.55	---	62.33	10.78	1000.0	9.000	N	ON	9.9
0.354750	---	35.29	48.85	13.56	1000.0	9.000	N	ON	10.0
0.323250	45.33	---	59.62	14.29	1000.0	9.000	N	ON	9.9
0.228750	48.04	---	62.50	14.45	1000.0	9.000	N	ON	9.9
0.235500	---	37.74	52.25	14.51	1000.0	9.000	N	ON	9.9
0.359250	44.01	---	58.75	14.73	1000.0	9.000	N	ON	10.0
0.703500	---	31.08	46.00	14.92	1000.0	9.000	N	ON	10.0
0.161250	---	40.20	55.40	15.20	1000.0	9.000	N	ON	10.1
0.471750	---	30.60	46.48	15.88	1000.0	9.000	N	ON	10.1
0.818250	---	29.44	46.00	16.56	1000.0	9.000	N	ON	9.9
0.501000	38.34	---	56.00	17.66	1000.0	9.000	N	ON	10.1

TMW 36-112:

## CONDUCTED EMISSION

### EUT Information

EUT:

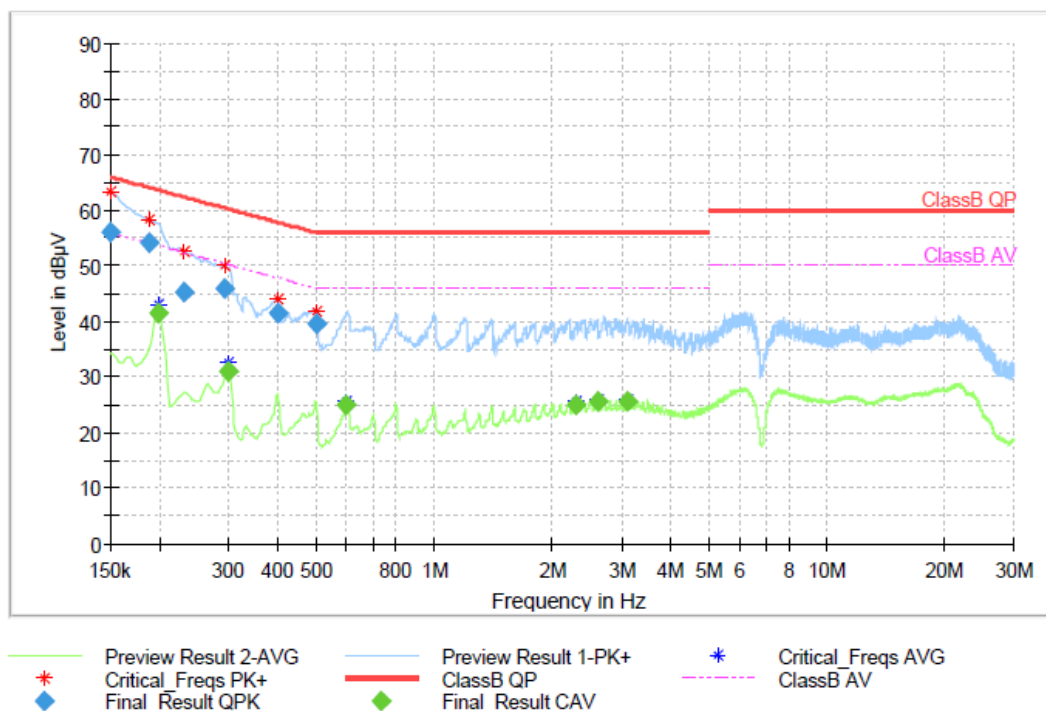
TMW 36-112

Operating mode:

Uin: 100 V, 60 Hz, DCout: 12 V / 3 A

Line:

L + N



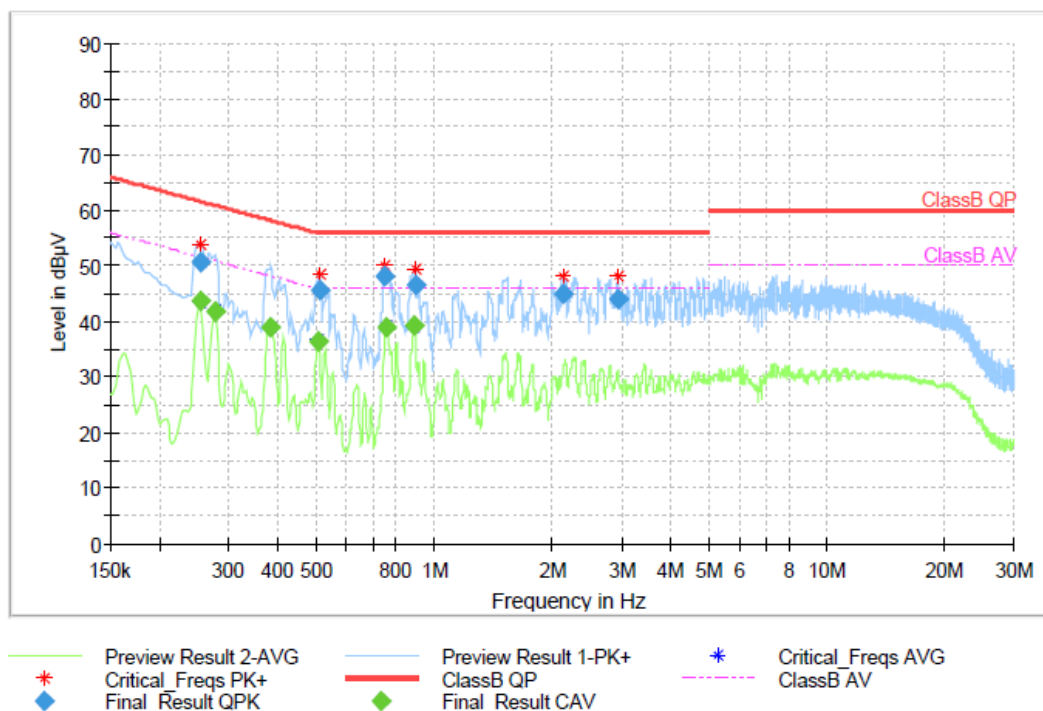
### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.188250	54.25	---	64.11	9.86	1000.0	9.000	L1	ON	10.0
0.150000	56.14	---	66.00	9.86	1000.0	9.000	N	ON	9.8
0.199500	---	41.65	53.63	11.98	1000.0	9.000	N	ON	9.9
0.291750	45.82	---	60.47	14.66	1000.0	9.000	N	ON	9.9
0.399750	41.64	---	57.86	16.22	1000.0	9.000	L1	ON	10.1
0.501000	39.69	---	56.00	16.31	1000.0	9.000	N	ON	10.1
0.231000	45.25	---	62.41	17.17	1000.0	9.000	N	ON	9.9
0.298500	---	31.10	50.28	19.18	1000.0	9.000	N	ON	9.9
3.106500	---	25.72	46.00	20.28	1000.0	9.000	N	ON	9.8
2.609250	---	25.67	46.00	20.33	1000.0	9.000	N	ON	9.8
2.312250	---	25.07	46.00	20.93	1000.0	9.000	N	ON	9.8
0.600000	---	25.01	46.00	20.99	1000.0	9.000	N	ON	10.1

## CONDUCTED EMISSION

### EUT Information

EUT: TMW 36-112  
Operating mode: Uin: 240 V, 50 Hz, DCout: 12 V / 3 A  
Line: L + N



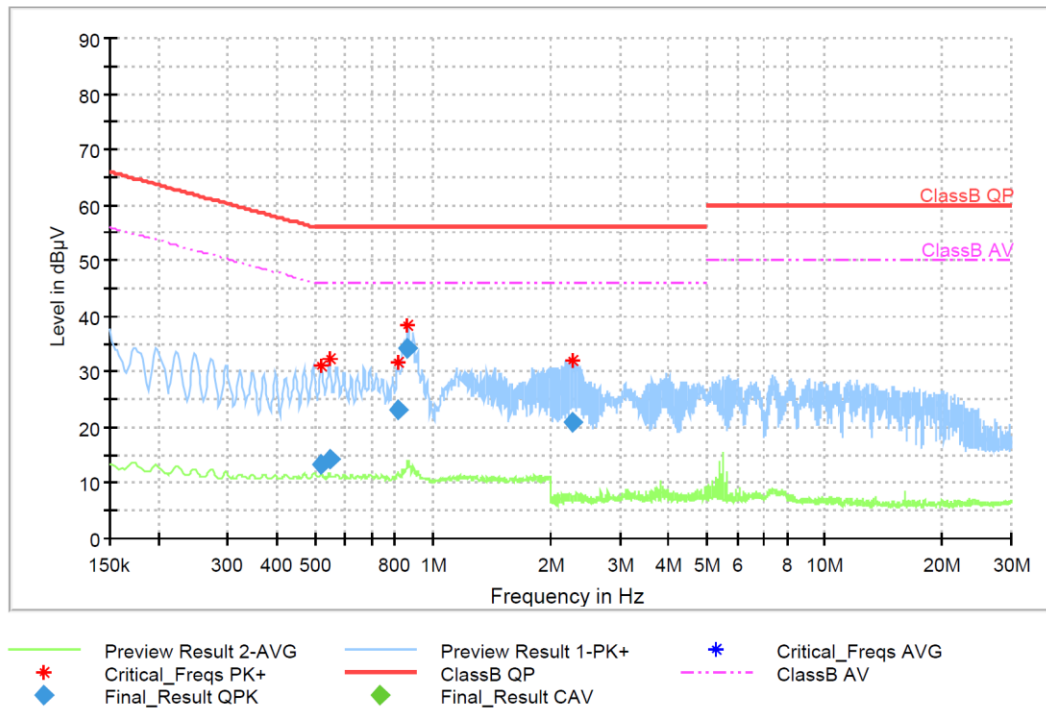
### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.890250	---	39.15	46.00	6.85	1000.0	9.000	N	ON	9.9
0.755250	---	38.88	46.00	7.12	1000.0	9.000	N	ON	10.0
0.748500	48.26	---	56.00	7.74	1000.0	9.000	N	ON	10.0
0.253500	---	43.68	51.64	7.96	1000.0	9.000	N	ON	9.9
0.276000	---	41.74	50.94	9.20	1000.0	9.000	N	ON	9.9
0.381750	---	38.96	48.24	9.28	1000.0	9.000	L1	ON	10.1
0.897000	46.68	---	56.00	9.32	1000.0	9.000	N	ON	9.9
0.507750	---	36.45	46.00	9.55	1000.0	9.000	L1	ON	10.1
0.512250	45.65	---	56.00	10.35	1000.0	9.000	L1	ON	10.1
0.253500	50.76	---	61.64	10.88	1000.0	9.000	N	ON	9.9
2.139000	44.85	---	56.00	11.15	1000.0	9.000	N	ON	9.8
2.942250	44.10	---	56.00	11.90	1000.0	9.000	N	ON	9.8

# CONDUCTED EMISSION

## EUT Information

EUT: TMW 36-112  
Operating mode: Uin: 100 V, 60 Hz, DCout: 12 V / 0 A  
Line: L + N



## Final Result

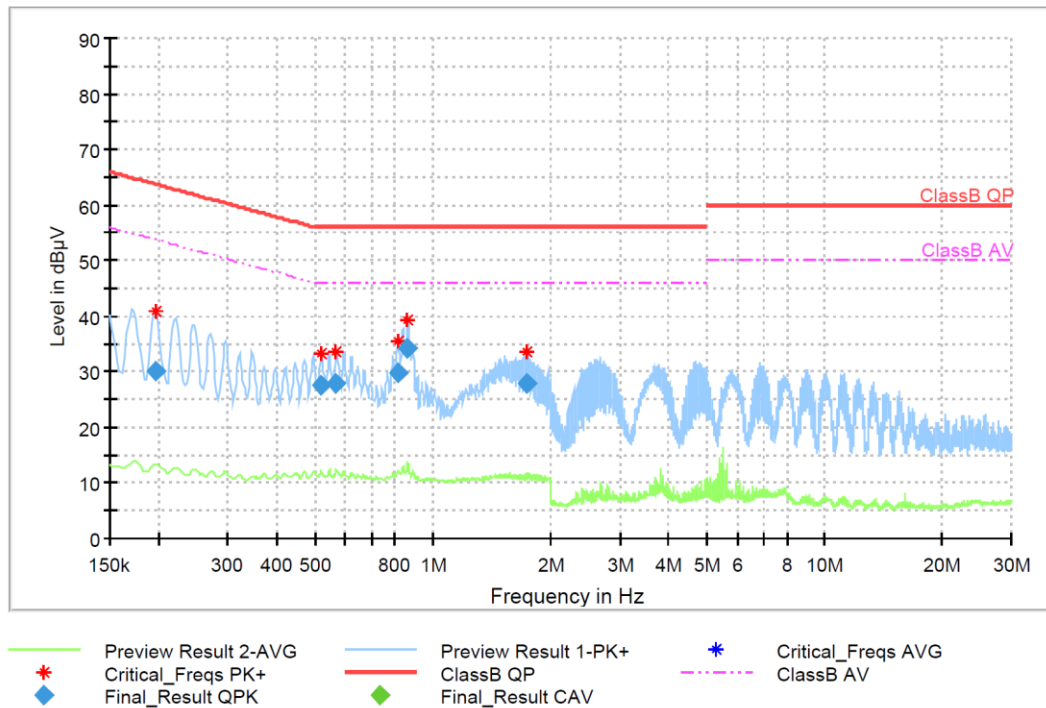
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.865500	34.18	---	56.00	21.82	1000.0	9.000	L1	ON	9.9
0.816000	23.16	---	56.00	32.84	1000.0	9.000	N	ON	9.9
2.265000	21.04	---	56.00	34.96	1000.0	9.000	N	ON	9.8
0.546000	14.22	---	56.00	41.78	1000.0	9.000	N	ON	10.1
0.519000	13.27	---	56.00	42.73	1000.0	9.000	N	ON	10.1



## CONDUCTED EMISSION

### EUT Information

EUT: TMW 36-112  
Operating mode: Uin: 240 V, 50 Hz, DCout: 12 V / 0 A  
Line: L + N



### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.865500	34.20	---	56.00	21.80	1000.0	9.000	L1	ON	9.9
0.816000	29.91	---	56.00	26.09	1000.0	9.000	L1	ON	9.9
0.568500	28.04	---	56.00	27.96	1000.0	9.000	N	ON	10.1
1.745250	27.75	---	56.00	28.25	1000.0	9.000	N	ON	9.8
0.521250	27.69	---	56.00	28.31	1000.0	9.000	N	ON	10.1
0.197250	30.25	---	63.73	33.47	1000.0	9.000	N	ON	9.9



TMW 36-124:

## CONDUCTED EMISSION

### EUT Information

EUT:

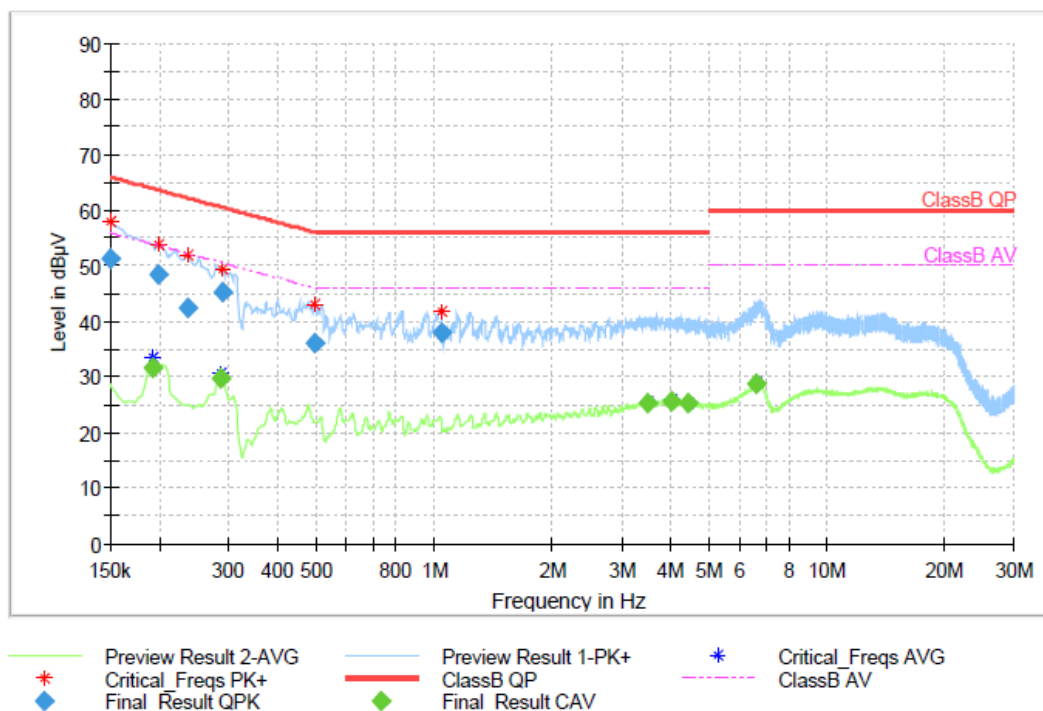
TMW 36-124

Operating mode:

Uin: 100 V, 60 Hz, DCout: 24 V / 1.5 A

Line:

L + N



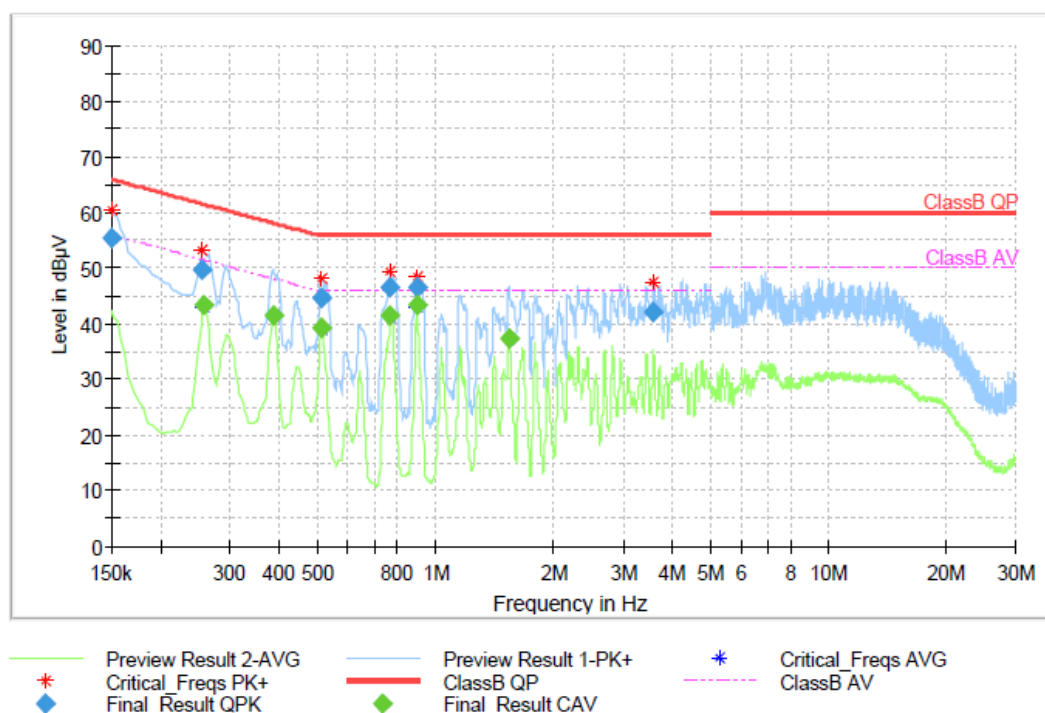
### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	51.21	---	66.00	14.79	1000.0	9.000	N	ON	9.8
0.289500	45.37	---	60.54	15.17	1000.0	9.000	L1	ON	9.9
0.199500	48.37	---	63.63	15.26	1000.0	9.000	L1	ON	9.9
1.041000	37.99	---	56.00	18.01	1000.0	9.000	L1	ON	9.8
0.235500	42.57	---	62.25	19.68	1000.0	9.000	L1	ON	9.9
0.498750	36.06	---	56.02	19.96	1000.0	9.000	L1	ON	10.1
4.042500	---	25.82	46.00	20.18	1000.0	9.000	N	ON	9.8
4.454250	---	25.37	46.00	20.63	1000.0	9.000	N	ON	9.8
3.513750	---	25.31	46.00	20.69	1000.0	9.000	N	ON	9.8
0.287250	---	29.64	50.60	20.96	1000.0	9.000	L1	ON	9.9
6.652500	---	28.98	50.00	21.02	1000.0	9.000	N	ON	9.7
0.192750	---	31.69	53.92	22.23	1000.0	9.000	L1	ON	10.0

# CONDUCTED EMISSION

## EUT Information

EUT: TMW 36-124  
 Operating mode: Uin: 240 V, 50 Hz, DCout: 24 V / 1.5 A  
 Line: L + N



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.897000	---	43.38	46.00	2.62	1000.0	9.000	L1	ON	9.9
0.768750	---	41.40	46.00	4.60	1000.0	9.000	L1	ON	9.9
0.386250	---	41.42	48.14	6.72	1000.0	9.000	L1	ON	10.1
0.514500	---	39.19	46.00	6.81	1000.0	9.000	N	ON	10.1
0.258000	---	43.32	51.50	8.17	1000.0	9.000	L1	ON	9.9
1.540500	---	37.50	46.00	8.50	1000.0	9.000	L1	ON	9.8
0.899250	46.71	---	56.00	9.29	1000.0	9.000	L1	ON	9.9
0.766500	46.57	---	56.00	9.43	1000.0	9.000	L1	ON	9.9
0.150000	55.40	---	66.00	10.60	1000.0	9.000	L1	ON	9.8
0.514500	44.68	---	56.00	11.32	1000.0	9.000	N	ON	10.1
0.255750	49.72	---	61.57	11.85	1000.0	9.000	N	ON	9.9
3.583500	42.15	---	56.00	13.85	1000.0	9.000	N	ON	9.8

Measurement time for prescan measurement	50 ms
Step size for prescan measurement	4 kHz
Preamplifier	OFF
Verdict	PASS

Discontinuous disturbances (clicks)

☒ Not Applicable

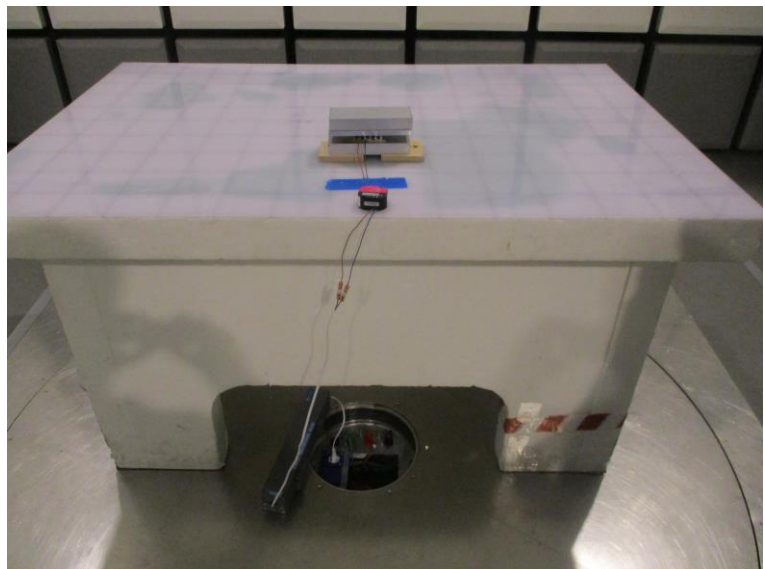
Disturbance power

☒ Not Applicable

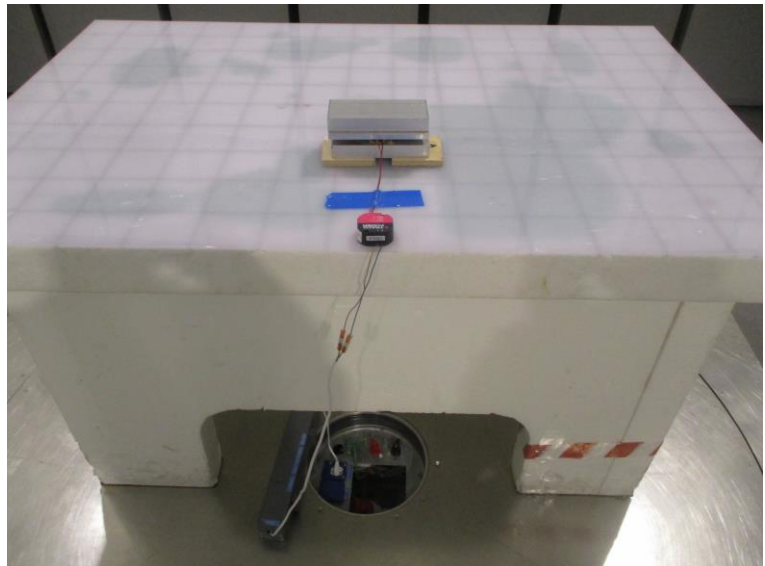
## 4.2 Radiation Measurements

Tested by .....	Žiga Selan	
Test date .....	2024-01-24	
Test location (stand).....	SAC 1	
Applied limit class.....	<input type="checkbox"/>	Class A according to applied standard
	<input checked="" type="checkbox"/>	Class B according to applied standard
	<input type="checkbox"/>	Other:
Applied limit Group.....	<input checked="" type="checkbox"/>	Group 1 according to applied standard
	<input type="checkbox"/>	Group 2 according to applied standard
	<input type="checkbox"/>	Other:
Test set up description .....	<input checked="" type="checkbox"/>	Equipment on a table 80 cm height
	<input type="checkbox"/>	Equipment on the floor (isolated from ground plane)
	<input type="checkbox"/>	Other:
Supplementary test set up description .....	CMAD has been used (AC mains cable).	
Test method applied.....	<input type="checkbox"/>	OATS with measurement distance [m]:
	<input checked="" type="checkbox"/>	SAC with measurement distance [m]: 3
	<input type="checkbox"/>	Alternative Test Site
Supplementary information .....	N/A	

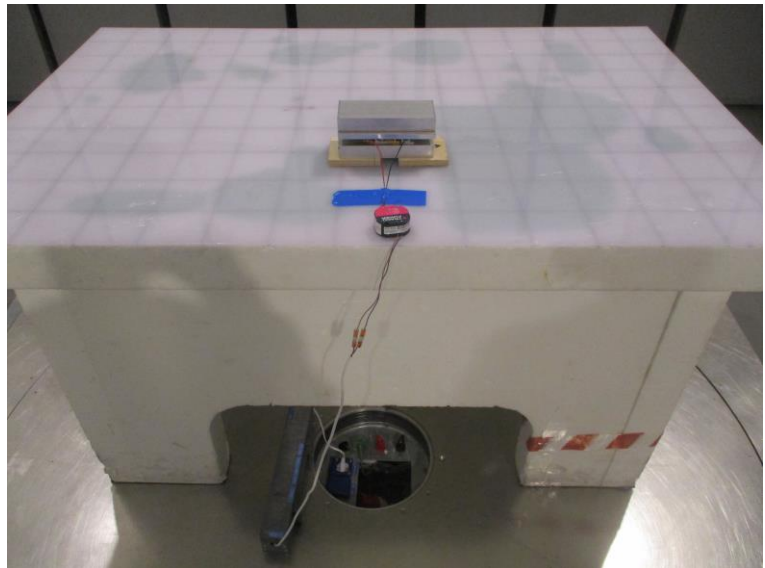
Test set-up photo ..... : TMW 24-105:



TMW 24-112:

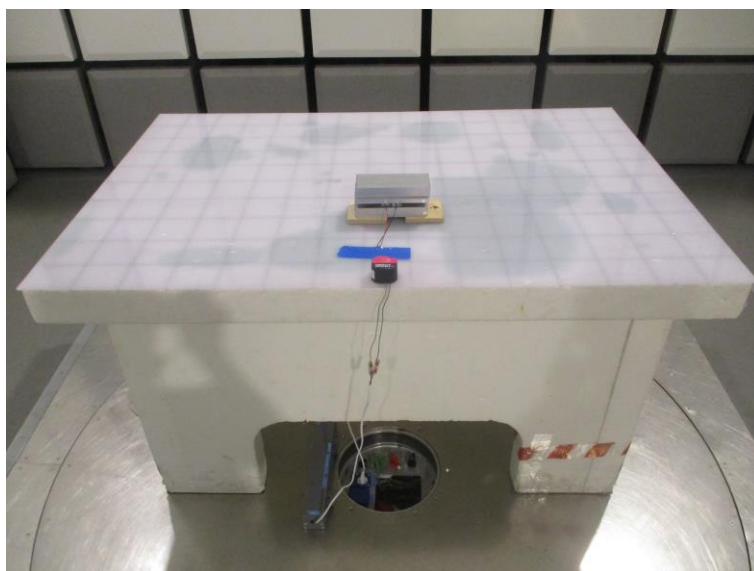


TMW 24-124:

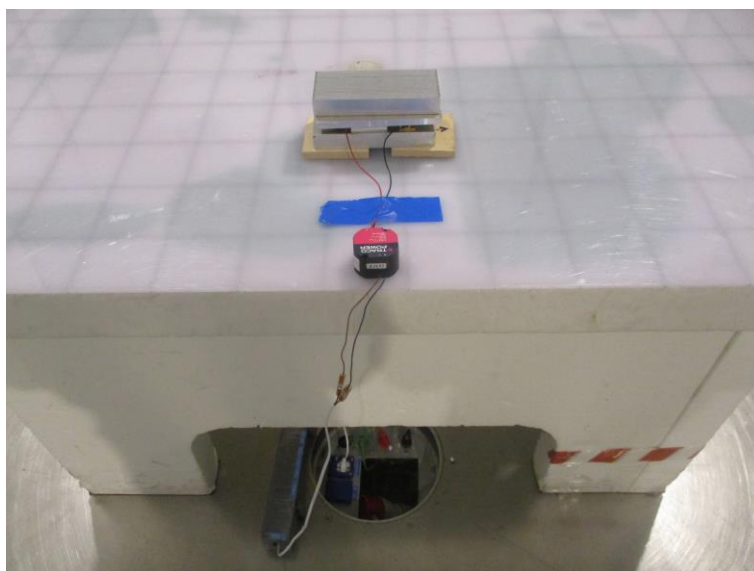




TMW 36-112:



TMW 36-124:



**Test results:**

TMW 24-105:

Preliminary measurements:

1 / 1

## Radiated emission

### EUT Information

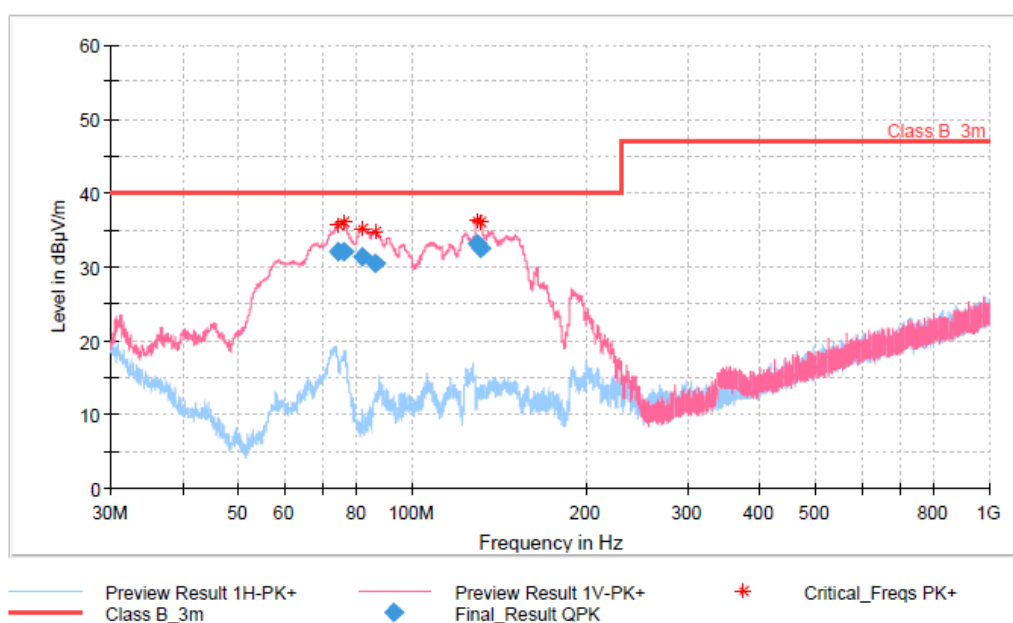
EUT:

TMW 24-105

Operating mode:

Uin: 100 V / 60 Hz; DCout: 5.1 V / 4 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
129.630000	33.24	40.00	6.76	1000.0	120.000	100.0	V	0.0	10.5
130.980000	32.40	40.00	7.60	1000.0	120.000	100.0	V	0.0	10.4
75.810000	32.00	40.00	8.00	1000.0	120.000	100.0	V	0.0	9.4
74.460000	31.94	40.00	8.06	1000.0	120.000	100.0	V	0.0	9.1
81.780000	31.23	40.00	8.77	1000.0	120.000	100.0	V	0.0	10.1
86.010000	30.47	40.00	9.53	1000.0	120.000	100.0	V	0.0	10.4

## Radiated emission

### EUT Information

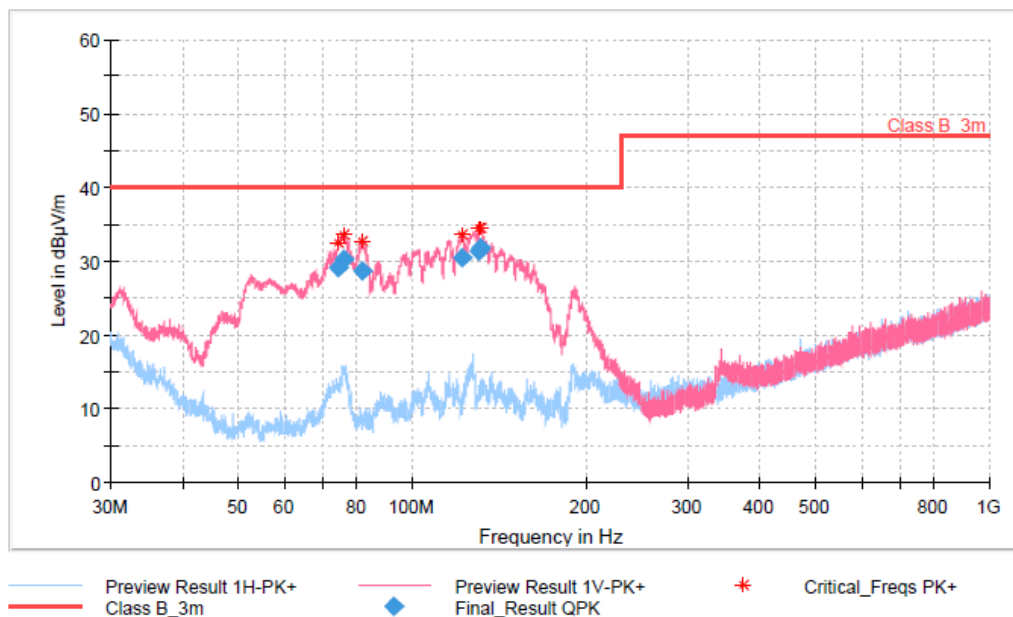
EUT:

TMW 24-105

Operating mode:

Uin: 240 V / 50 Hz; DCout: 5.1 V / 4 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
131.370000	31.75	40.00	8.25	1000.0	120.000	100.0	V	0.0	10.4
130.740000	31.37	40.00	8.63	1000.0	120.000	100.0	V	0.0	10.4
121.650000	30.39	40.00	9.61	1000.0	120.000	100.0	V	0.0	11.0
75.960000	30.30	40.00	9.70	1000.0	120.000	100.0	V	0.0	9.4
74.640000	29.12	40.00	10.88	1000.0	120.000	100.0	V	0.0	9.1
81.990000	28.55	40.00	11.45	1000.0	120.000	100.0	V	0.0	10.1

Final measurement:

1 / 1

## Radiated emission

### EUT Information

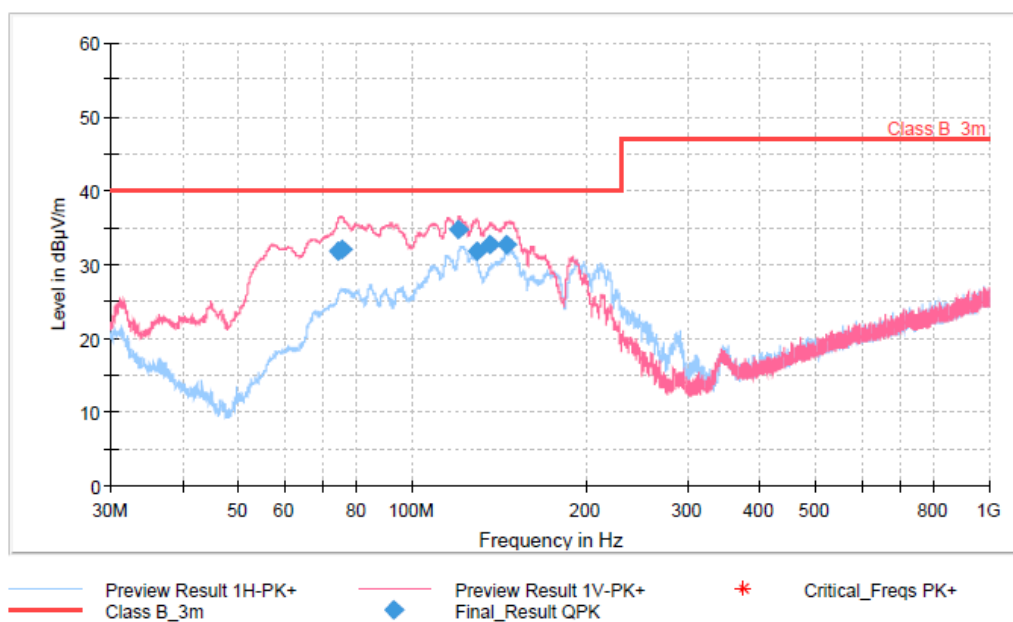
EUT:

TMW 24-105

Operating mode:

Uin: 100 V / 60 Hz; DCout: 5.1 V / 4 A

### Full Spectrum



### Final Result

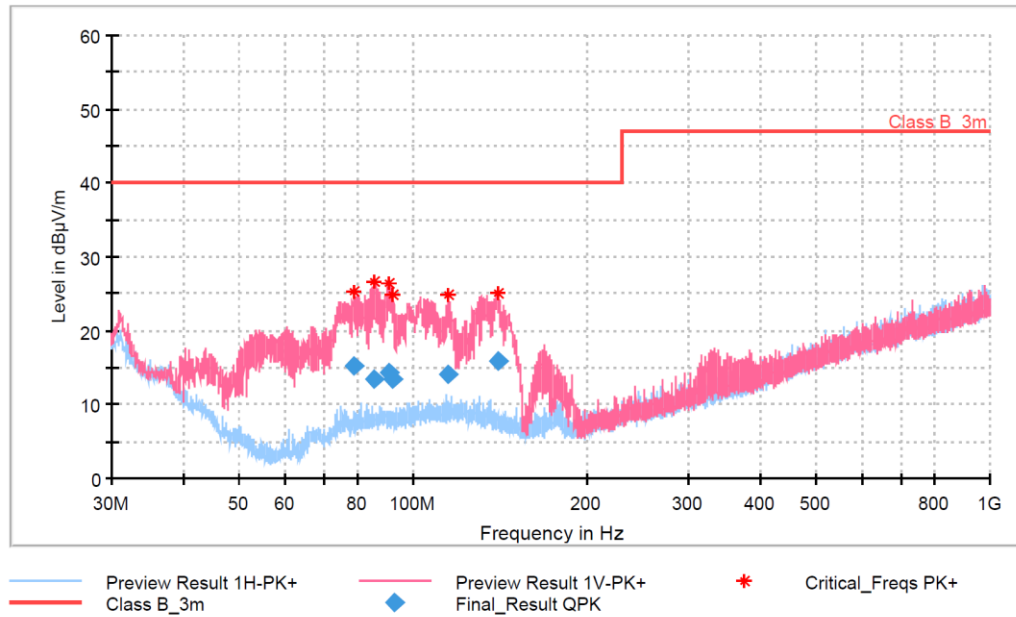
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
120.600000	34.70	40.00	5.30	1000.0	120.000	123.0	V	162.0	11.1
136.620000	32.62	40.00	7.38	1000.0	120.000	100.0	V	303.0	10.0
145.890000	32.60	40.00	7.40	1000.0	120.000	100.0	V	282.0	9.2
75.450000	31.98	40.00	8.02	1000.0	120.000	129.0	V	193.0	9.3
74.550000	31.79	40.00	8.21	1000.0	120.000	123.0	V	179.0	9.1
129.420000	31.78	40.00	8.22	1000.0	120.000	100.0	V	303.0	10.5

## Radiated emission

### EUT Information

EUT: TMW 24-105  
Operating mode: Uin: 100 V / 60 Hz; DCout: 5.1 V / 0 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
139.950000	15.79	40.00	24.21	1000.0	120.000	100.0	V	0.0	9.7
78.990000	15.19	40.00	24.81	1000.0	120.000	100.0	V	0.0	9.8
90.840000	14.33	40.00	25.67	1000.0	120.000	100.0	V	0.0	10.3
115.140000	14.00	40.00	26.00	1000.0	120.000	100.0	V	0.0	11.3
85.650000	13.50	40.00	26.50	1000.0	120.000	100.0	V	0.0	10.4
92.400000	13.44	40.00	26.56	1000.0	120.000	100.0	V	0.0	10.4

TMW 24-112:

Preliminary measurements:

1 / 1

## Radiated emission

### EUT Information

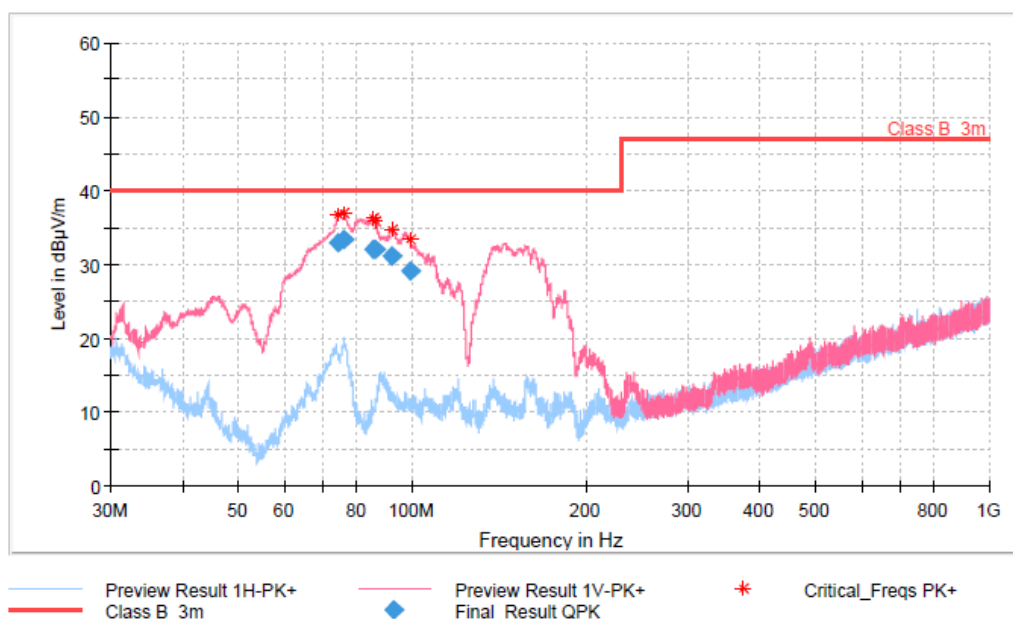
EUT:

TMW 24-112

Operating mode:

Uin: 100 V / 60 Hz; DCout: 12 V / 2 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
75.900000	33.40	40.00	6.60	1000.0	120.000	100.0	V	0.0	9.4
74.610000	32.95	40.00	7.05	1000.0	120.000	100.0	V	0.0	9.1
85.650000	32.07	40.00	7.93	1000.0	120.000	100.0	V	0.0	10.4
85.980000	32.06	40.00	7.94	1000.0	120.000	100.0	V	0.0	10.4
92.160000	31.13	40.00	8.87	1000.0	120.000	100.0	V	0.0	10.4
99.060000	29.11	40.00	10.89	1000.0	120.000	100.0	V	0.0	10.7

## Radiated emission

### EUT Information

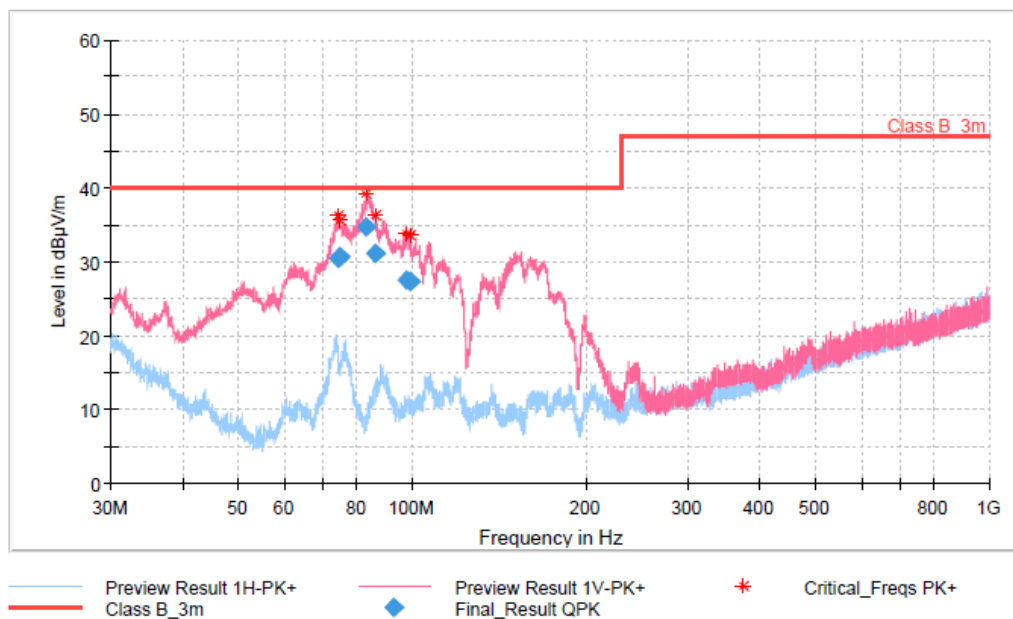
EUT:

TMW 24-112

Operating mode:

Uin: 240 V / 50 Hz; DCout: 12 V / 2 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
83.010000	34.78	40.00	5.22	1000.0	120.000	100.0	V	0.0	10.2
86.220000	31.18	40.00	8.82	1000.0	120.000	100.0	V	0.0	10.4
75.150000	30.66	40.00	9.34	1000.0	120.000	100.0	V	0.0	9.2
74.220000	30.53	40.00	9.47	1000.0	120.000	100.0	V	0.0	9.1
97.710000	27.45	40.00	12.55	1000.0	120.000	100.0	V	0.0	10.6
98.910000	27.21	40.00	12.79	1000.0	120.000	100.0	V	0.0	10.7



Final measurement:

1 / 1

## Radiated emission

### EUT Information

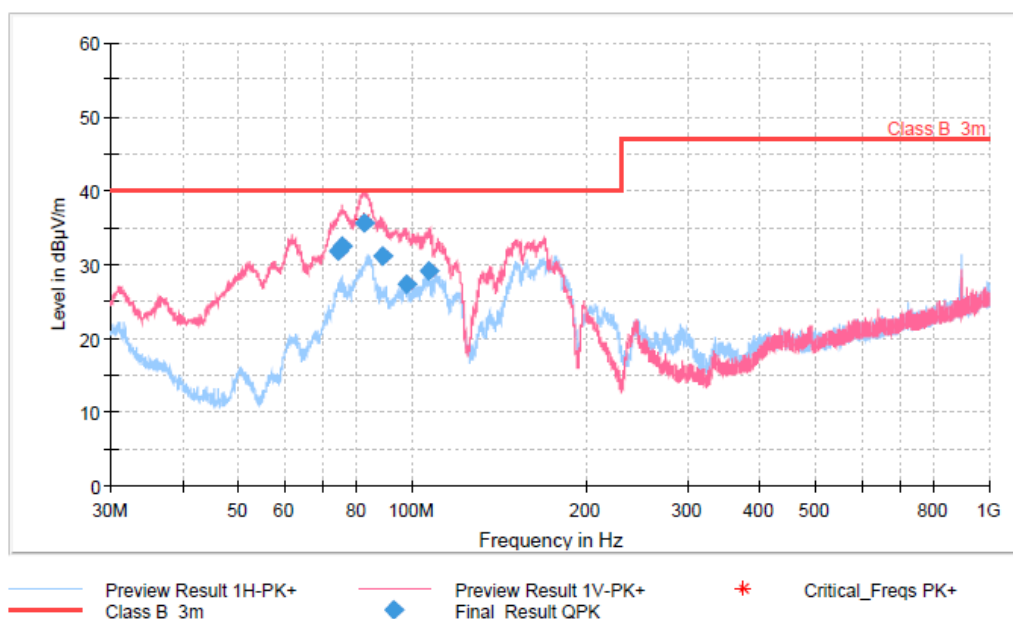
EUT:

TMW 24-112

Operating mode:

Uin: 240 V / 50 Hz; DCout: 12 V / 2 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
82.290000	35.70	40.00	4.30	1000.0	120.000	156.0	V	293.0	10.1
75.540000	32.55	40.00	7.45	1000.0	120.000	100.0	V	209.0	9.3
74.580000	31.90	40.00	8.10	1000.0	120.000	102.0	V	195.0	9.1
88.530000	31.09	40.00	8.91	1000.0	120.000	100.0	V	137.0	10.4
106.500000	29.01	40.00	10.99	1000.0	120.000	100.0	V	209.0	11.2
97.590000	27.28	40.00	12.72	1000.0	120.000	143.0	V	123.0	10.6

TMW 24-124:

Preliminary measurements:

1 / 1

## Radiated emission

### EUT Information

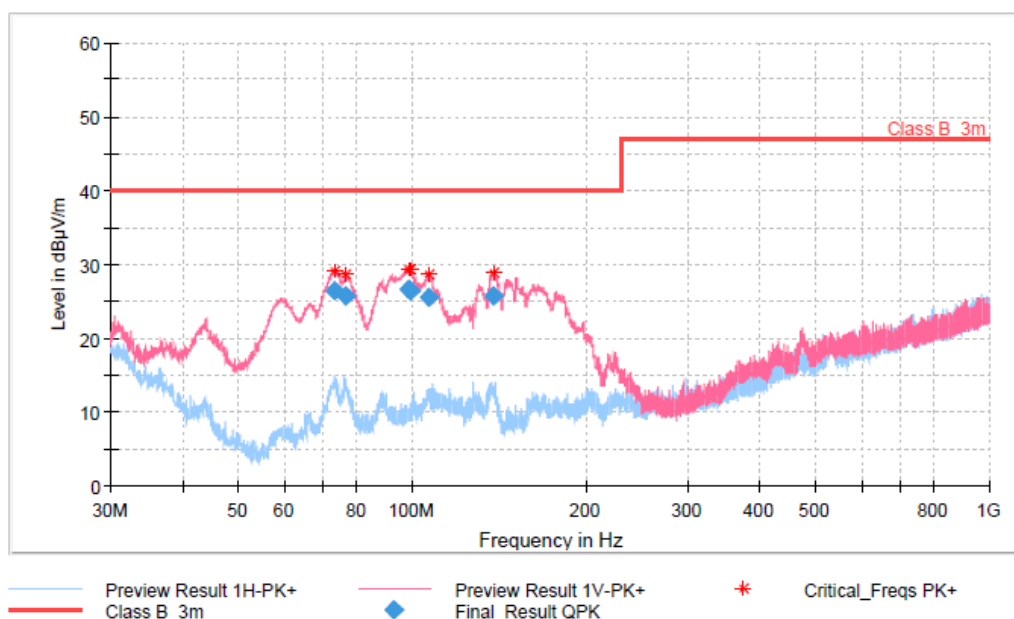
EUT:

TMW 24-124

Operating mode:

Uin: 100 V / 60 Hz; DCout: 24 V / 1 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
98.220000	26.55	40.00	13.45	1000.0	120.000	100.0	V	0.0	10.6
98.970000	26.49	40.00	13.51	1000.0	120.000	100.0	V	0.0	10.7
73.470000	26.32	40.00	13.68	1000.0	120.000	100.0	V	0.0	8.9
76.710000	25.83	40.00	14.17	1000.0	120.000	100.0	V	0.0	9.5
138.240000	25.66	40.00	14.34	1000.0	120.000	100.0	V	0.0	9.9
107.070000	25.51	40.00	14.49	1000.0	120.000	100.0	V	0.0	11.2

## Radiated emission

### EUT Information

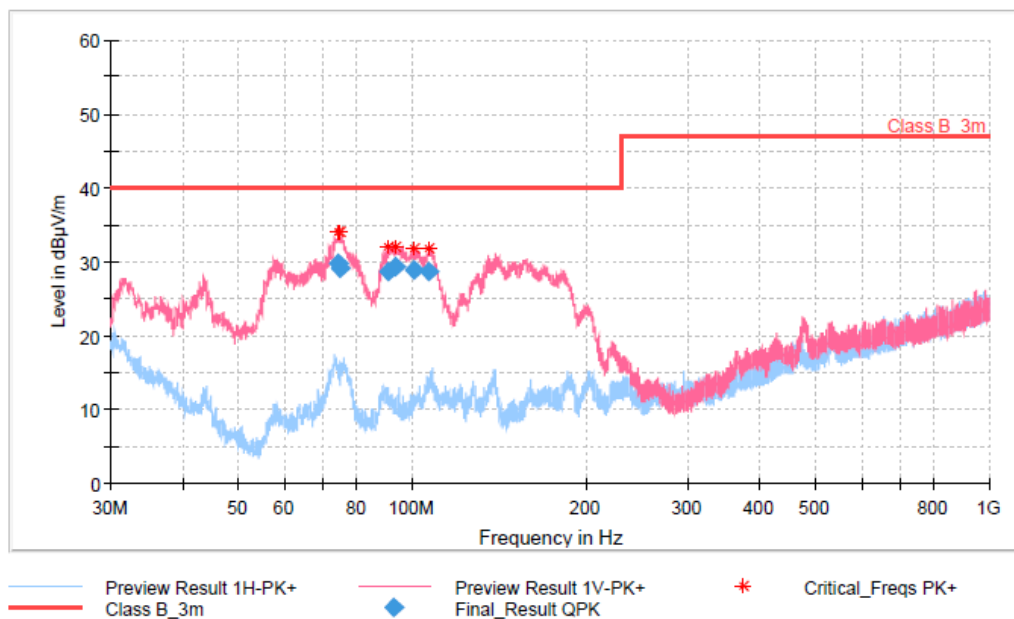
EUT:

TMW 24-124

Operating mode:

Uin: 240 V / 50 Hz; DCout: 24 V / 1 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
74.280000	29.74	40.00	10.26	1000.0	120.000	100.0	V	0.0	9.1
93.750000	29.28	40.00	10.72	1000.0	120.000	100.0	V	0.0	10.4
74.970000	29.14	40.00	10.86	1000.0	120.000	100.0	V	0.0	9.2
100.350000	28.78	40.00	11.22	1000.0	120.000	100.0	V	0.0	10.8
106.710000	28.67	40.00	11.33	1000.0	120.000	100.0	V	0.0	11.2
90.960000	28.63	40.00	11.37	1000.0	120.000	100.0	V	0.0	10.3

Final measurement:

1 / 1

## Radiated emission

### EUT Information

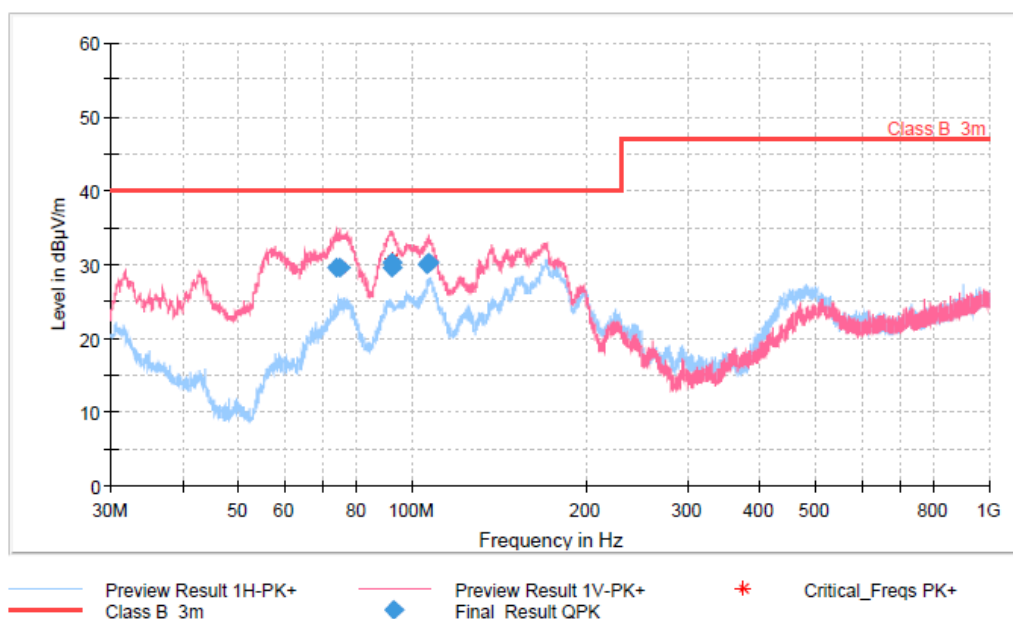
EUT:

TMW 24-124

Operating mode:

Uin: 240 V / 50 Hz; DCout: 24 V / 1 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
91.830000	30.24	40.00	9.76	1000.0	120.000	156.0	V	183.0	10.4
106.440000	30.19	40.00	9.81	1000.0	120.000	100.0	V	205.0	11.2
105.990000	29.95	40.00	10.05	1000.0	120.000	100.0	V	248.0	11.2
74.730000	29.59	40.00	10.41	1000.0	120.000	103.0	V	220.0	9.1
92.250000	29.48	40.00	10.52	1000.0	120.000	142.0	V	238.0	10.4
73.590000	29.46	40.00	10.54	1000.0	120.000	116.0	V	220.0	9.0

TMW 36-112:

Preliminary measurements:

1 / 1

## Radiated emission

### EUT Information

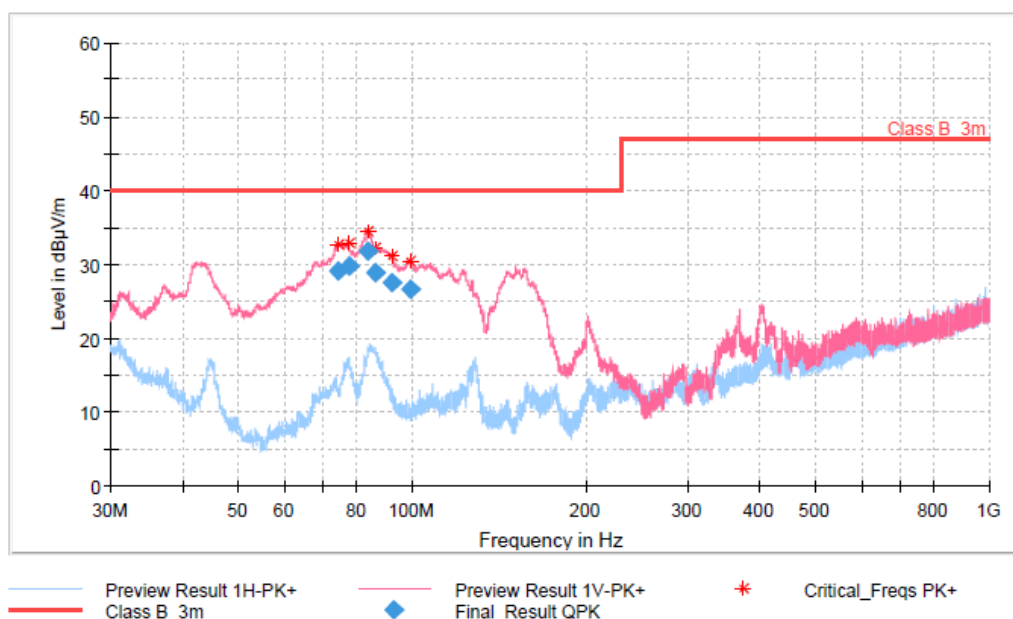
EUT:

TMW 36-112

Operating mode:

Uin: 100 V / 60 Hz; DCout: 12 V / 3 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
83.730000	31.70	40.00	8.30	1000.0	120.000	100.0	V	0.0	10.3
77.490000	29.81	40.00	10.19	1000.0	120.000	100.0	V	0.0	9.7
74.610000	29.17	40.00	10.83	1000.0	120.000	100.0	V	0.0	9.1
86.190000	28.80	40.00	11.20	1000.0	120.000	100.0	V	0.0	10.4
92.190000	27.43	40.00	12.57	1000.0	120.000	100.0	V	0.0	10.4
99.000000	26.62	40.00	13.38	1000.0	120.000	100.0	V	0.0	10.7

## Radiated emission

### EUT Information

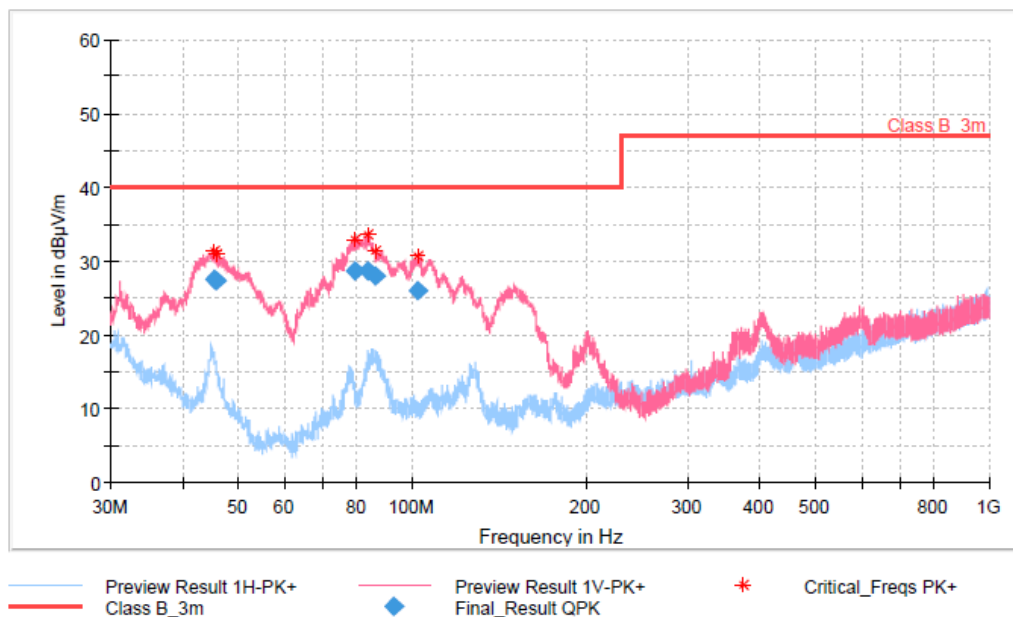
EUT:

TMW 36-112

Operating mode:

Uin: 240 V / 50 Hz; DCout: 12 V / 3 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
79.200000	28.70	40.00	11.30	1000.0	120.000	100.0	V	0.0	9.8
83.790000	28.56	40.00	11.44	1000.0	120.000	100.0	V	0.0	10.3
86.100000	27.93	40.00	12.07	1000.0	120.000	100.0	V	0.0	10.4
45.510000	27.47	40.00	12.53	1000.0	120.000	100.0	V	0.0	10.2
45.780000	27.26	40.00	12.74	1000.0	120.000	100.0	V	0.0	10.0
102.300000	25.88	40.00	14.12	1000.0	120.000	100.0	V	0.0	11.0

Final measurement:

1 / 1

## Radiated emission

### EUT Information

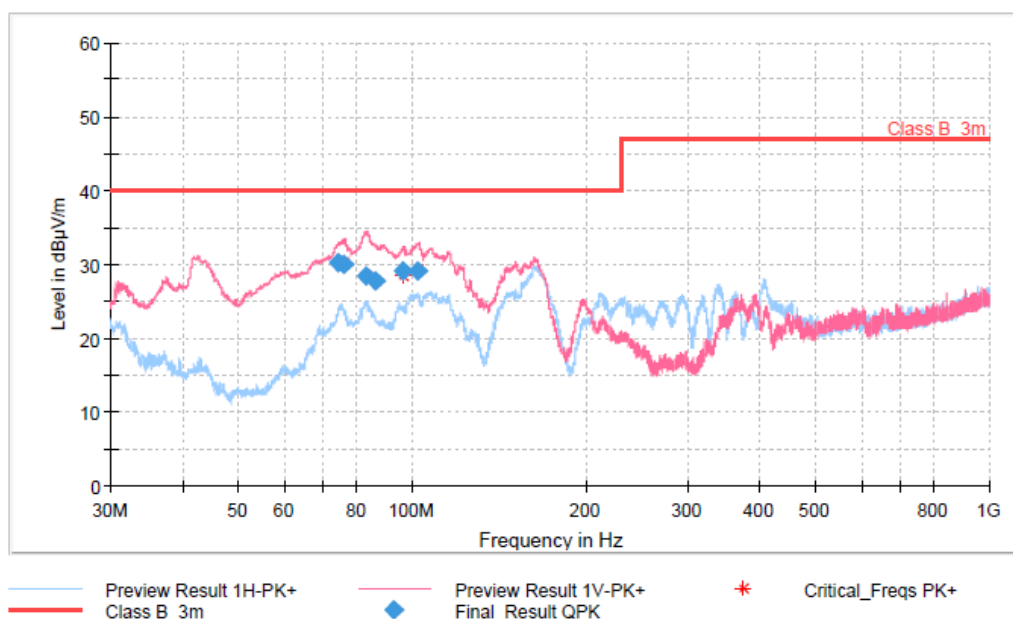
EUT:

TMW 36-112

Operating mode:

Uin: 100 V / 60 Hz; DCout: 12 V / 3 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
74.610000	30.30	40.00	9.70	1000.0	120.000	109.0	V	220.0	9.1
76.170000	29.97	40.00	10.03	1000.0	120.000	102.0	V	206.0	9.5
96.150000	29.12	40.00	10.88	1000.0	120.000	150.0	V	193.0	10.5
102.420000	29.09	40.00	10.91	1000.0	120.000	129.0	V	234.0	11.0
83.250000	28.36	40.00	11.64	1000.0	120.000	122.0	V	214.0	10.2
86.040000	27.78	40.00	12.22	1000.0	120.000	100.0	V	241.0	10.4

## Radiated emission

### EUT Information

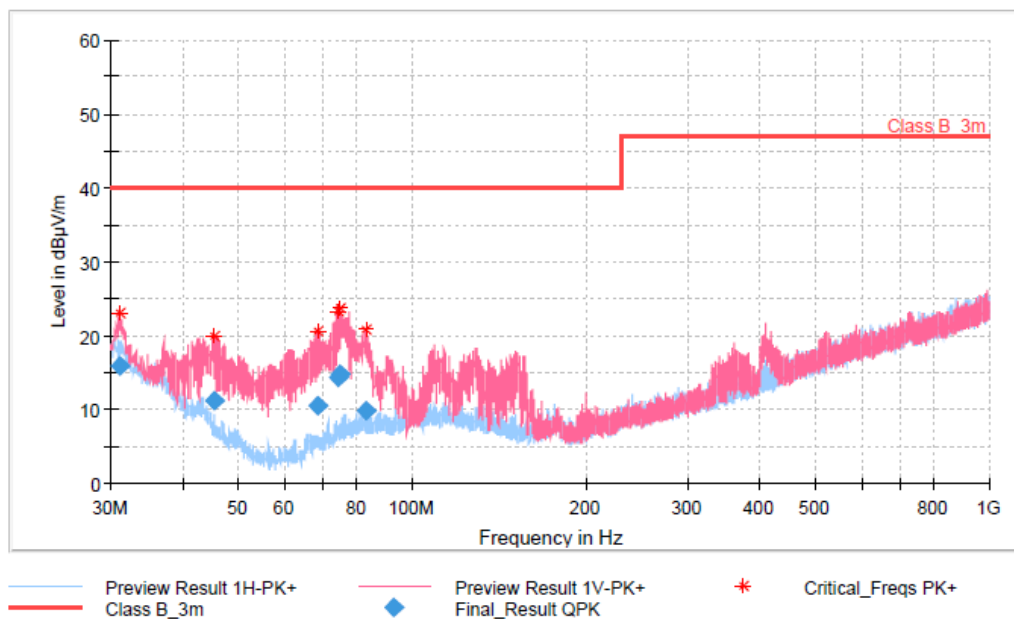
EUT:

TMW 36-112

Operating mode:

Uin: 100 V / 60 Hz; DCout: 12 V / 0 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.170000	15.87	40.00	24.13	1000.0	120.000	100.0	V	0.0	19.0
74.730000	14.78	40.00	25.22	1000.0	120.000	100.0	V	0.0	9.1
74.250000	14.33	40.00	25.67	1000.0	120.000	100.0	V	0.0	9.1
45.510000	11.13	40.00	28.87	1000.0	120.000	100.0	V	0.0	10.2
68.820000	10.61	40.00	29.39	1000.0	120.000	100.0	V	0.0	8.0
82.800000	9.78	40.00	30.22	1000.0	120.000	100.0	V	0.0	10.2



TMW 36-124:

Preliminary measurements:

1 / 1

## Radiated emission

### EUT Information

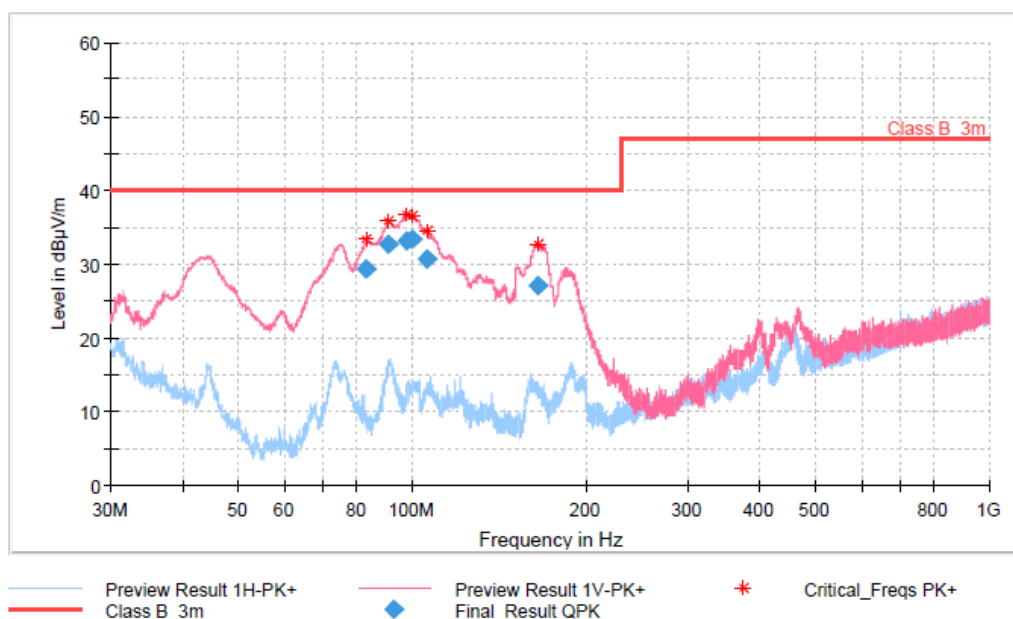
EUT:

TMW 36-124

Operating mode:

Uin: 100 V / 60 Hz; DCout: 24 V / 1.5 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
99.600000	33.39	40.00	6.61	1000.0	120.000	100.0	V	0.0	10.7
97.980000	33.12	40.00	6.88	1000.0	120.000	100.0	V	0.0	10.6
91.110000	32.65	40.00	7.35	1000.0	120.000	100.0	V	0.0	10.3
106.080000	30.69	40.00	9.31	1000.0	120.000	100.0	V	0.0	11.2
82.920000	29.43	40.00	10.57	1000.0	120.000	100.0	V	0.0	10.2
164.640000	27.14	40.00	12.86	1000.0	120.000	100.0	V	0.0	9.1

## Radiated emission

### EUT Information

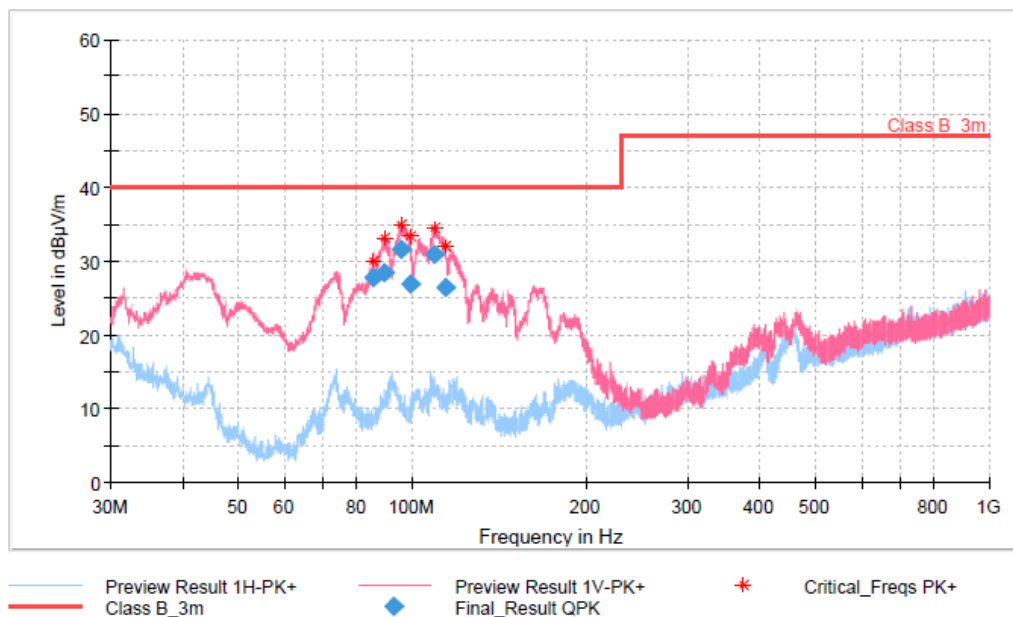
EUT:

TMW 36-124

Operating mode:

Uin: 240 V / 50 Hz; DCout: 24 V / 1.5 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
95.520000	31.59	40.00	8.41	1000.0	120.000	100.0	V	0.0	10.4
109.050000	30.98	40.00	9.02	1000.0	120.000	100.0	V	0.0	11.3
89.700000	28.38	40.00	11.62	1000.0	120.000	100.0	V	0.0	10.4
85.890000	27.86	40.00	12.14	1000.0	120.000	100.0	V	0.0	10.4
98.880000	26.86	40.00	13.15	1000.0	120.000	100.0	V	0.0	10.7
113.730000	26.52	40.00	13.48	1000.0	120.000	100.0	V	0.0	11.3

Final measurement:

1 / 1

## Radiated emission

### EUT Information

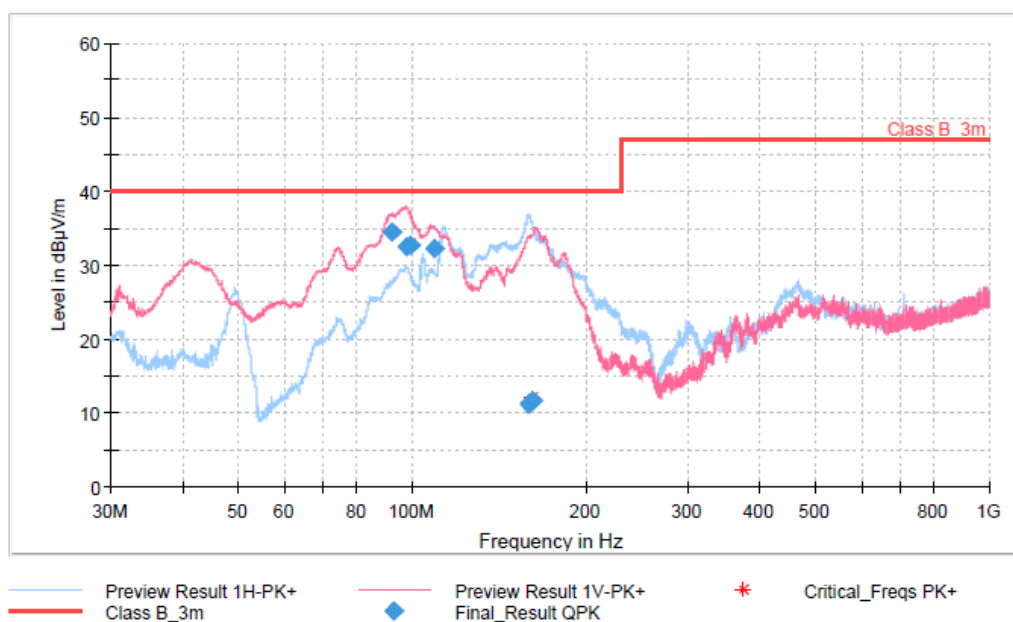
EUT:

TMW 36-124

Operating mode:

Uin: 100 V / 60 Hz; DCout: 24 V / 1.5 A

### Full Spectrum



### Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
91.860000	34.45	40.00	5.55	1000.0	120.000	123.0	V	207.0	10.4
98.850000	32.67	40.00	7.33	1000.0	120.000	143.0	V	217.0	10.7
97.620000	32.37	40.00	7.63	1000.0	120.000	144.0	V	224.0	10.6
108.960000	32.16	40.00	7.84	1000.0	120.000	100.0	V	187.0	11.3
161.520000	11.74	40.00	28.26	1000.0	120.000	178.0	H	349.0	9.0
158.910000	11.12	40.00	28.88	1000.0	120.000	191.0	H	349.0	8.9

Measurement time for prescan measurement	5 ms
Step size for prescan measurement	40 kHz
Preamp	ON/
Verdict	PASS

**5 Harmonics IEC 61000-3-2**

☒ Not Applicable. Rated power is less than 75 W.

## 6 Voltage fluctuation and flicker

Tested by .....	Žiga Selan	
Test date .....	2024-01-25	
Test Location (stand) .....	Test room 1	
Test set up description .....	Equipment on a table 80 cm height.	
Test method .....	<input checked="" type="checkbox"/>	4.2.2 Measurement with Flickermeter according IEC 61000-4-15
	<input type="checkbox"/>	4.2.3 Simulation
	<input type="checkbox"/>	4.2.4 Analytical method
	<input type="checkbox"/>	4.2.5 Use of $P_{st} = 1$ curve
Observation time selected .....	<input type="checkbox"/>	10 minutes
	<input type="checkbox"/>	120 minutes
	<input checked="" type="checkbox"/>	24 times switching according to annex B
Limit for $d_{max}$ applied .....	<input checked="" type="checkbox"/>	4 %
	<input type="checkbox"/>	6 %
	<input type="checkbox"/>	7 %
Supplementary information .....	---	

Test Report	
Test Object :	TMW 24-112
Test Standard :	IEC 61000-3-3 (Ed3) - Annex B - dmax voltage changes caused by manual switching (230V - 50Hz)
Test Date :	1/25/2024 12:52:48 PM

Result	
E.U.T. :	Test passed

Test Object / Product			
Name :	TMW 24-112	Operation Mode :	DCout: 12 V / 2 A
Serial Number :		Connection :	
Description :			

Software			
Name :	net.control	Version :	3.2.4.0

Flicker Results	
Standard Specific Results for IEC 61000-3-3 (Edition 3)	

Standard Group:	Industry
Standard Name:	IEC 61000-3-3 (Edition 3) Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16$ A per phase and not subject to conditional connection
Test Condition:	Measuring dmax voltage changes caused by manual switching
Analysis Status:	PASS

Flicker Measurements Settings	
Main Line:	230V, 50Hz
Flicker Meter:	230V / 50Hz
Flicker Impedance:	Zref
Observation Time:	24 × 1 min
Measurements:	24

Flicker Measurements for dmax Check	
Test Number	dmax

1	0,065	
2	0,109	
3	0,063	
4	0,060	
5	0,059	
6	0,126	(highest)
7	0,058	
8	0,124	
9	0,095	
10	0,065	
11	0,058	
12	0,063	
13	0,122	
14	0,077	
15	0,056	(lowest)
16	0,064	
17	0,058	
18	0,061	
19	0,059	
20	0,068	
21	0,093	
22	0,058	
23	0,061	
24	0,062	
Limit	4,000	
Average	0,073	
Lowest	0,056	
Highest	0,126	

Note: Only the summary table is taken into consideration for the Pass/Fail decision. The following tables of the single d<sub>max</sub> measurement are for information only.

Flicker Measurements					
	P <sub>It</sub>	Max P <sub>st</sub>	Max d <sub>c</sub>	Max d <sub>max</sub>	Max T <sub>max</sub>
Line 1:	0,028	0,028	0	< 0,2	0
Limits:	No Limit	No Limit	No Limit	4	No Limit
Results:				PASS	

Flicker Individual Measurements												
Measurement	P <sub>st</sub> [ ]			d <sub>c</sub> [%]			d <sub>max</sub> [%]			T <sub>max</sub> [s]		
	Value	Limit	Result	Value	Limit	Result	Value	Limit	Result	Value	Limit	Result
#1	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#2	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#3	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#4	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#5	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A

#6	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#7	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#8	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#9	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#10	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#11	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#12	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#13	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#14	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#15	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#16	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#17	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#18	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#19	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#20	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#21	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#22	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#23	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#24	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A



Pst Data									
Flicker (Line 1)									
Meas. No.	P0,1	P1s	P3s	P10s	P50s	Pst	dc [%]	dmax [%]	Tmax [s]
1	0	0	0	0,001	0,005	0,028	0	0,065	0
2	0	0	0	0,001	0,005	0,028	0	0,109	0
3	0	0	0	0,001	0,005	0,028	0	0,063	0
4	0	0	0	0,001	0,005	0,028	0	0,06	0
5	0	0	0	0,001	0,005	0,028	0	0,059	0
6	0	0	0	0,001	0,005	0,028	0	0,126	0
7	0	0	0	0,001	0,005	0,028	0	0,058	0
8	0	0	0	0,001	0,005	0,028	0	0,124	0
9	0	0	0	0,001	0,005	0,028	0	0,095	0
10	0	0	0	0,001	0,005	0,028	0	0,065	0
11	0	0	0	0,001	0,005	0,028	0	0,058	0
12	0	0	0	0,001	0,005	0,028	0	0,063	0
13	0	0	0	0,001	0,005	0,028	0	0,122	0
14	0	0	0	0,001	0,005	0,028	0	0,077	0
15	0	0	0	0,001	0,005	0,028	0	0,056	0
16	0	0	0	0,001	0,005	0,028	0	0,064	0
17	0	0	0	0,001	0,005	0,028	0	0,058	0
18	0	0	0	0,001	0,005	0,028	0	0,061	0
19	0	0	0	0,001	0,005	0,028	0	0,059	0
20	0	0	0	0,001	0,005	0,028	0	0,068	0
21	0	0	0	0,001	0,005	0,028	0	0,093	0
22	0	0	0	0,001	0,005	0,028	0	0,058	0
23	0	0	0	0,001	0,005	0,028	0	0,061	0
24	0	0	0	0,001	0,005	0,028	0	0,062	0

Test Report	
Test Object :	TMW 36-112
Test Standard :	IEC 61000-3-3 (Ed3) - Annex B - dmax voltage changes caused by manual switching (230V - 50Hz)
Test Date :	1/25/2024 12:20:08 PM

Result	
E.U.T. :	Test passed

Test Object / Product			
Name :	TMW 36-112	Operation Mode :	DCout: 12 V / 3 A
Serial Number :		Connection :	
Description :			

Software			
Name :	net.control	Version :	3.2.4.0

Flicker Results	
Standard Specific Results for IEC 61000-3-3 (Edition 3)	

Standard Group:	Industry
Standard Name:	IEC 61000-3-3 (Edition 3) Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16$ A per phase and not subject to conditional connection
Test Condition:	Measuring dmax voltage changes caused by manual switching
Analysis Status:	PASS

Flicker Measurements Settings	
Main Line:	230V, 50Hz
Flicker Meter:	230V / 50Hz
Flicker Impedance:	Zref
Observation Time:	24 × 1 min
Measurements:	24

Flicker Measurements for dmax Check	
Test Number	dmax

1	0,072	
2	0,077	
3	0,068	
4	0,088	
5	0,072	
6	0,075	
7	0,077	
8	0,080	
9	0,066	
10	0,072	
11	0,081	
12	0,110	
13	0,070	
14	0,131	
15	<del>0,157</del>	(highest)
16	0,098	
17	0,071	
18	0,139	
19	0,067	
20	0,068	
21	0,072	
22	<del>0,064</del>	(lowest)
23	0,148	
24	0,066	
Limit	4,000	
Average	0,085	
Lowest	0,064	
Highest	0,157	

Note: Only the summary table is taken into consideration for the Pass/Fail decision. The following tables of the single d<sub>max</sub> measurement are for information only.

Flicker Measurements					
	P <sub>It</sub>	Max P <sub>st</sub>	Max d <sub>c</sub>	Max d <sub>max</sub>	Max T <sub>max</sub>
Line 1:	0,028	0,034	0	< 0,2	0
Limits:	No Limit	No Limit	No Limit	4	No Limit
Results:				PASS	

Flicker Individual Measurements												
Measurement	P <sub>st</sub> [ ]			d <sub>c</sub> [%]			d <sub>max</sub> [%]			T <sub>max</sub> [s]		
	Value	Limit	Result	Value	Limit	Result	Value	Limit	Result	Value	Limit	Result
#1	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#2	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#3	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#4	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#5	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A

#6	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#7	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#8	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#9	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#10	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#11	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#12	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#13	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#14	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#15	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#16	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#17	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#18	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#19	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#20	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#21	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#22	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#23	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A
#24	0,03	-	N/A	0,00	-	N/A	< 0,2	4,00	PASS	0,00	-	N/A

Pst Data									
Flicker (Line 1)									
Meas. No.	P0,1	P1s	P3s	P10s	P50s	Pst	dc [%]	dmax [%]	Tmax [s]
1	0	0	0	0,001	0,005	0,028	0	0,072	0
2	0	0	0	0,001	0,005	0,028	0	0,077	0
3	0	0	0	0,001	0,005	0,028	0	0,068	0
4	0	0	0	0,001	0,005	0,028	0	0,088	0
5	0	0	0	0,001	0,005	0,028	0	0,072	0
6	0	0	0	0,001	0,005	0,028	0	0,075	0
7	0	0	0	0,001	0,005	0,028	0	0,077	0
8	0,014	0	0	0,001	0,005	0,034	0	0,08	0
9	0	0	0	0,001	0,005	0,028	0	0,066	0
10	0,012	0	0	0,001	0,005	0,033	0	0,072	0
11	0	0	0	0,001	0,005	0,028	0	0,081	0
12	0	0	0	0,001	0,005	0,028	0	0,11	0
13	0	0	0	0,001	0,005	0,028	0	0,07	0
14	0,011	0	0	0,001	0,005	0,033	0	0,131	0
15	0	0	0	0,001	0,005	0,027	0	0,157	0
16	0	0	0	0,001	0,005	0,028	0	0,098	0
17	0	0	0	0,001	0,005	0,028	0	0,071	0
18	0	0	0	0,001	0,005	0,028	0	0,139	0
19	0	0	0	0,001	0,005	0,028	0	0,067	0
20	0	0	0	0,001	0,005	0,028	0	0,068	0
21	0	0	0	0,001	0,005	0,028	0	0,072	0
22	0	0	0	0,001	0,005	0,028	0	0,064	0
23	0	0	0	0,001	0,005	0,027	0	0,148	0
24	0	0	0	0,001	0,005	0,028	0	0,066	0

## 7 IMMUNITY

### 7.1 Information specific for IEC 60601-1-2

IMMUNITY Pass/Fail Criteria		
Product Function related to Basic Safety and Essential performance	Pass/Fail Criteria description (see EMC test sections for any additional Part 2 P/F criteria)*	Part 2 reference (if applicable)
DC output voltage	<p>Performance criteria for continuous phenomena: A Performance criteria for transient phenomena: B</p> <p><u>Criteria A:</u> DC output voltage stays within acceptable deviation of 5 % during the test. The basic safety is ensured continuously.</p> <p><u>Criteria B:</u> DC output voltage is outside of acceptable deviation of 5 % during the test and recovers after the test without operator intervention. No permanent damage to the device. The basic safety is ensured continuously.</p>	/

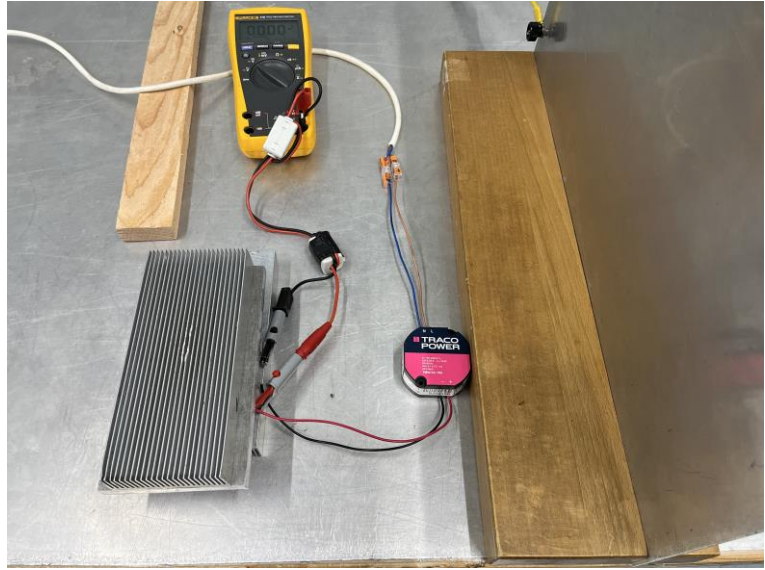
**Note:** Specific, detailed IMMUNITY pass/fail criteria, are based on applicable part two standards or RISK MANAGEMENT, for BASIC SAFETY and ESSENTIAL PERFORMANCE with regard to EM DISTURBANCES. These pass/fail criteria must be included in the RISK MANAGEMENT FILE

## 7.2 Electrostatic Discharge

Tested by .....	Žiga Selan		
Test date .....	2024-01-31		
Test location (Stand) .....	Test room 3		
Test set up .....	<input checked="" type="checkbox"/>	Table top equipment	
	<input type="checkbox"/>	Floor standing equipment	
	<input type="checkbox"/>	Wall or ceiling mounted equipment (Treated as table top)	
Supplementary test set up description .....	--		
Size of horizontal coupling plate ..	1,6 x 0,8 m		
Number of DISCHARGES for each test point .....	10 positive / 10 negative		
DISCHARGE interval .....	1 s		
Environmental conditions .....	Temperature:	27,7 °C	(Range: 15 °C to 35 °C)
	Humidity:	32 %	(Range: 30 % to 60 %)
	Atmospheric pressure:	102,3 kPa	(Range: 86 kPa to 106 kPa)
Supplementary information .....	Mains voltage / frequency: 230 V / 50 Hz. DC output terminals are not accessible during intended (Specified by manufacturer.)		

Test set-up photo .....

TMW 24-105:



TMW 36-112:

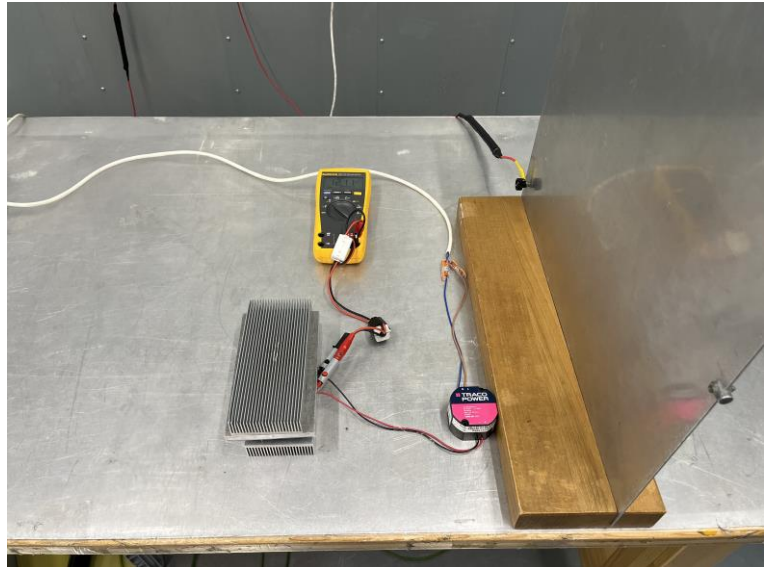
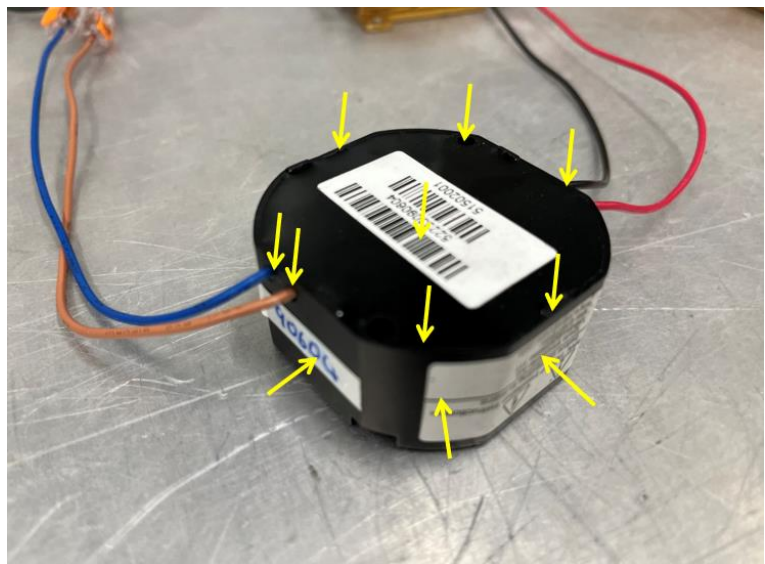
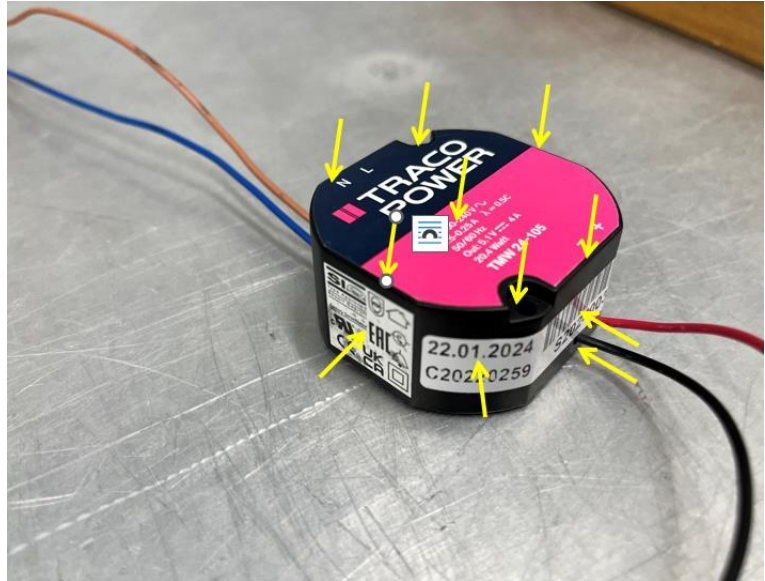


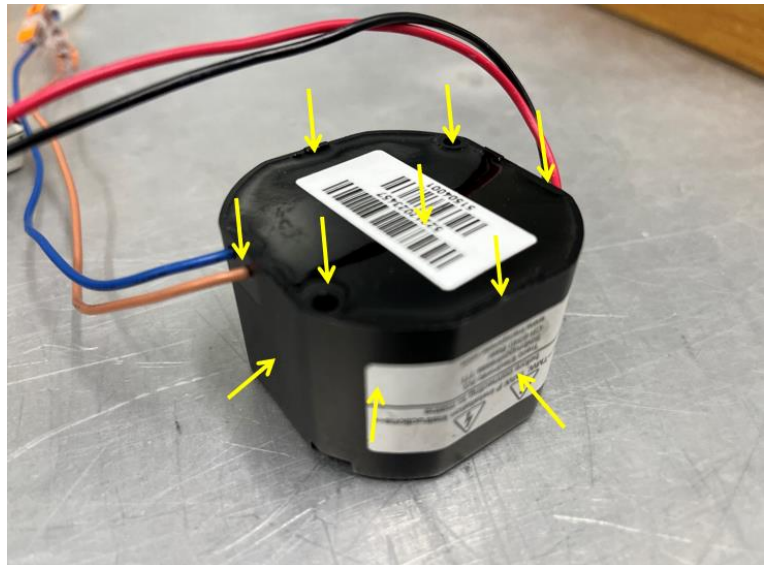
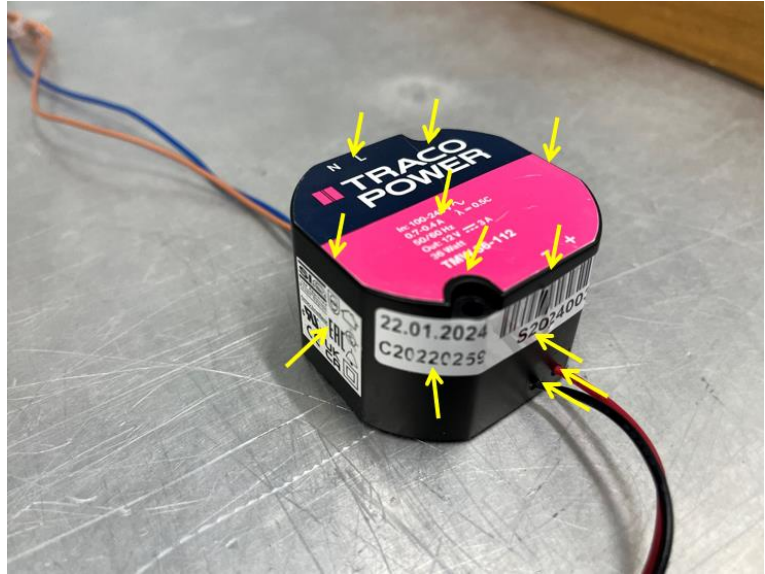


Photo or drawing of selected test points..... :

TMW 24-105:



TMW 36-112:



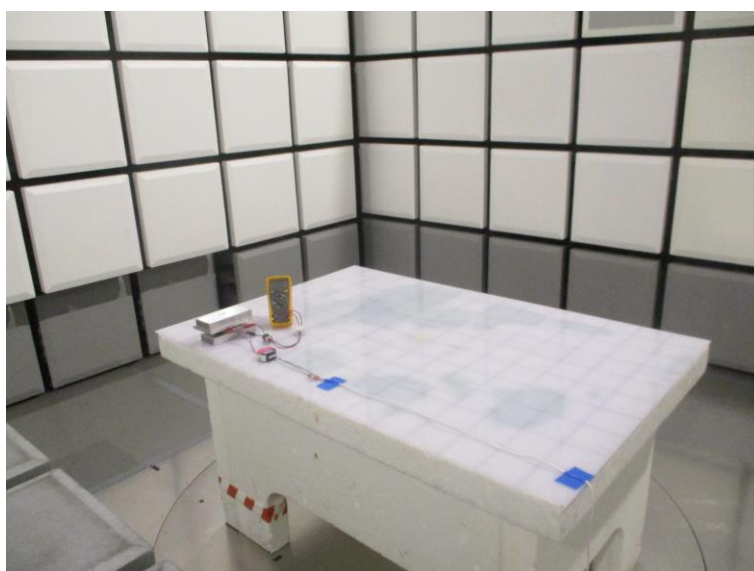
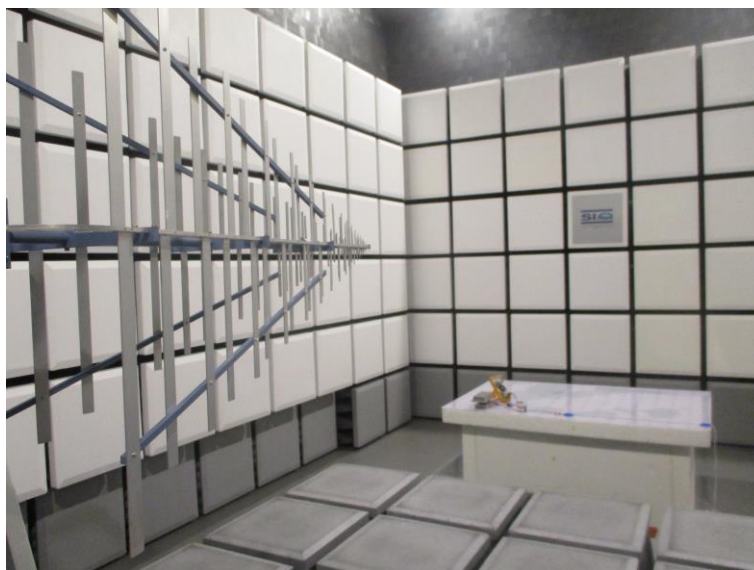
Test results for ELECTROSTATIC DISCHARGE – TMW 24-105						
No.	Location of DISCHARGE	Type	Polarity	TEST LEVEL [kV]	Operating mode	Observations
1	VCP	Con	P / N	8	1	1)
2	HCP	Con	P / N	8	1	1)
4	Enclosure	Air	P / N	2, 4, 8, 15	1	2)
HCP = Horizontal coupling plate; VCP = Vertical coupling plate N= Negative; P= Positive Con= Conducted Discharge; Air= Air Discharge						
Supplementary information: 1) No changes observed. Criteria A achieved. 2) No discharge observed. No changes observed. Criteria A achieved.						
<b>NOTE:</b> DC output terminals are not accessible during intended use and are therefore excluded from evaluation.						

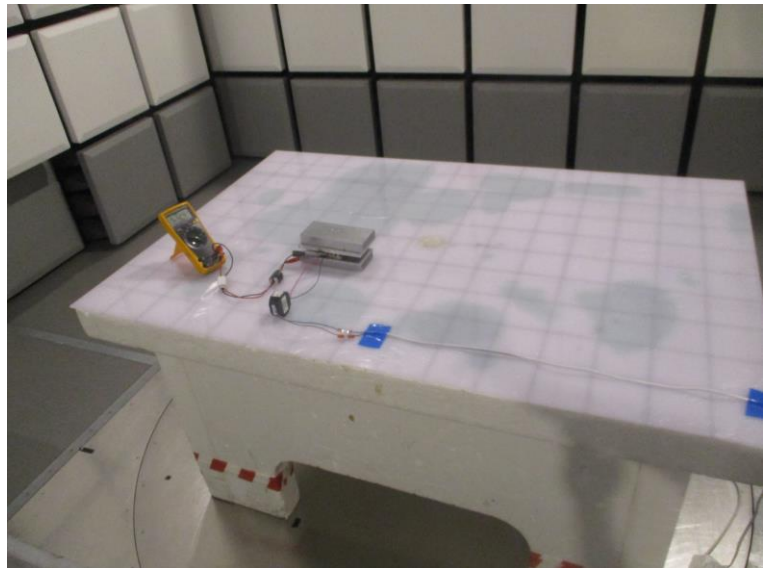
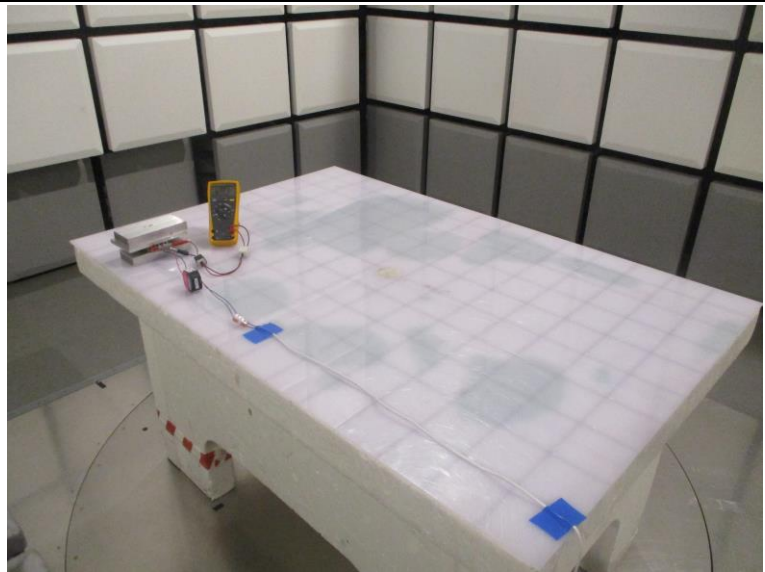
Test results for ELECTROSTATIC DISCHARGE – TMW 36-112						
No.	Location of DISCHARGE	Type	Polarity	TEST LEVEL [kV]	Operating mode	Observations
1	VCP	Con	P / N	8	1	1)
2	HCP	Con	P / N	8	1	1)
4	Enclosure	Air	P / N	2, 4, 8, 15	1	2)
HCP = Horizontal coupling plate; VCP = Vertical coupling plate N= Negative; P= Positive Con= Conducted Discharge; Air= Air Discharge						
Supplementary information: 1) No changes observed. Criteria A achieved. 2) No discharge observed. No changes observed. Criteria A achieved.						
<b>NOTE:</b> DC output terminals are not accessible during intended use and are therefore excluded from evaluation.						

## 7.3 Radiated RF EM fields

Tested by .....	Žiga Selan	
Test date .....	2024-01-25	
Test location (Stand) .....	SAC 1	
Test set-up .....	<input checked="" type="checkbox"/>	Equipment on the table (0,8 m height)
	<input type="checkbox"/>	Equipment standing on floor (0,05 – 0,15 m height)
Supplementary test set up description .....	--	
Exposed side of EUT .....	<input checked="" type="checkbox"/>	0 ° (Front)
	<input checked="" type="checkbox"/>	90 °
	<input checked="" type="checkbox"/>	180 ° (Rear)
	<input checked="" type="checkbox"/>	270 °
	<input checked="" type="checkbox"/>	Top
	<input checked="" type="checkbox"/>	Bottom
Reason for not exposing a side ...	--	
Distance Antenna to EUT .....	SAC1 – A2: 2,2 m	
Step size [%] .....	1 %	
Supplementary information .....	Mains voltage / frequency: 230 V / 50 Hz.	

Test set-up photo ..... : TMW 24-105:

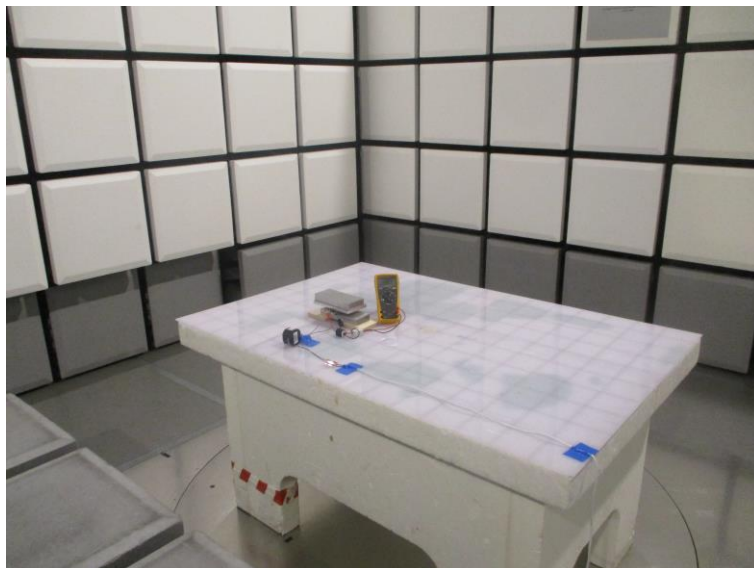
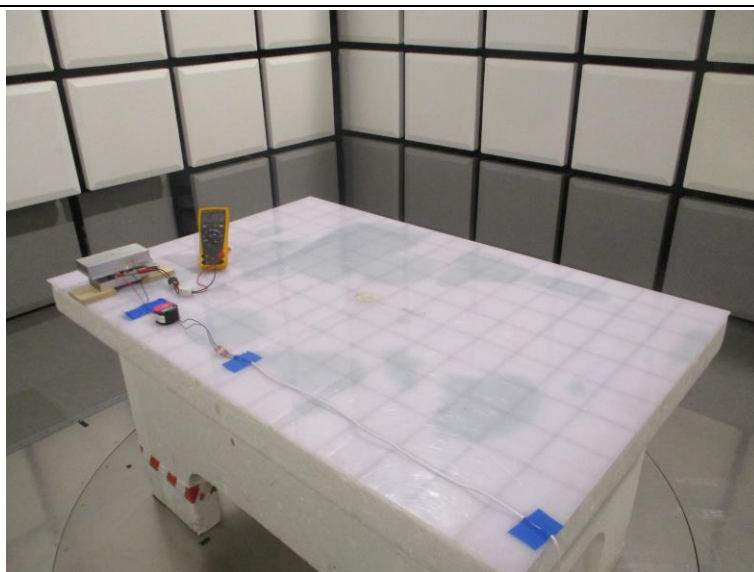






TMW 36-112:







Test results for Radiated RF EM fields - TMW 24-105						
Frequency range / discrete frequencies	TEST LEVEL [V/m]	Polarisation	Modulation	Operation mode	Dwell time [s]	Observations
80 – 1000 MHz	10	H	AM 1 kHz 80 %	1	1	1)
1,0 – 2,7 GHz	10	H	AM 1 kHz 80 %	1	1	1)
80 – 1000 MHz	10	V	AM 1 kHz 80 %	1	1	1)
1,0 – 2,7 GHz	10	V	AM 1 kHz 80 %	1	1	1)
Supplementary information: 1) No changes observed criteria A achieved						

Test results for Radiated RF EM fields - TMW 36-112						
Frequency range / discrete frequencies	TEST LEVEL [V/m]	Polarisation	Modulation	Operation mode	Dwell time [s]	Observations
80 – 1000 MHz	10	H	AM 1 kHz 80 %	1	1	1)
1,0 – 2,7 GHz	10	H	AM 1 kHz 80 %	1	1	1)
80 – 1000 MHz	10	V	AM 1 kHz 80 %	1	1	1)
1,0 – 2,7 GHz	10	V	AM 1 kHz 80 %	1	1	1)
Supplementary information: 1) No changes observed criteria A achieved						

#### 7.4 Proximity fields From RF wireless communications equipment

Tested by .....	Žiga Selan	
Test date .....	2024-01-25	
Test location (Stand) .....	SAC 1	
Test set-up .....	<input checked="" type="checkbox"/>	Equipment on the table (0,8 m height)
	<input type="checkbox"/>	Equipment standing on floor (0,05 – 0,15 m height)
Supplementary test set up description .....		
Exposed side of EUT .....	<input checked="" type="checkbox"/>	0 ° (Front)
	<input checked="" type="checkbox"/>	90 °
	<input checked="" type="checkbox"/>	180 ° (Rear)
	<input checked="" type="checkbox"/>	270 °
	<input checked="" type="checkbox"/>	Top
	<input checked="" type="checkbox"/>	Bottom
Reason for not exposing a side ... :	---	
Distance Antenna to EUT .....	SAC1 – A2: 2,5 m	
Supplementary information .....	Mains voltage / frequency: 230 V / 50 Hz.	
Test set-up photo .....	Refer to Radiated RF EM fields, Chapter 7.3.	

Test results for Proximity fields From RF wireless communications equipment – TMW 24-105						
Frequency range / discrete frequencies [MHz]	TEST LEVEL [V/m]	Polarisation	Modulation	Operation mode	Dwell time [s]	Observations
385	27	H	Pulse	1	3	1)
450	28	H	FM	1	3	1)
710 745 780	9	H	Pulse	1	3	1)
810 870 930	28	H	Pulse	1	3	1)
1720 1845 1970	28	H	Pulse	1	3	1)
2450	28	H	Pulse	1	3	1)
5240 5500 5785	9	H	Pulse	1	3	1)
385	27	V	Pulse	1	3	1)
450	28	V	FM	1	3	1)
710 745 780	9	V	Pulse	1	3	1)
810 870 930	28	V	Pulse	1	3	1)
1720 1845 1970	28	V	Pulse	1	3	1)
2450	28	V	Pulse	1	3	1)
5240 5500 5785	9	V	Pulse	1	3	1)
Supplementary information:						
1) No changes observed, criteria A achieved						

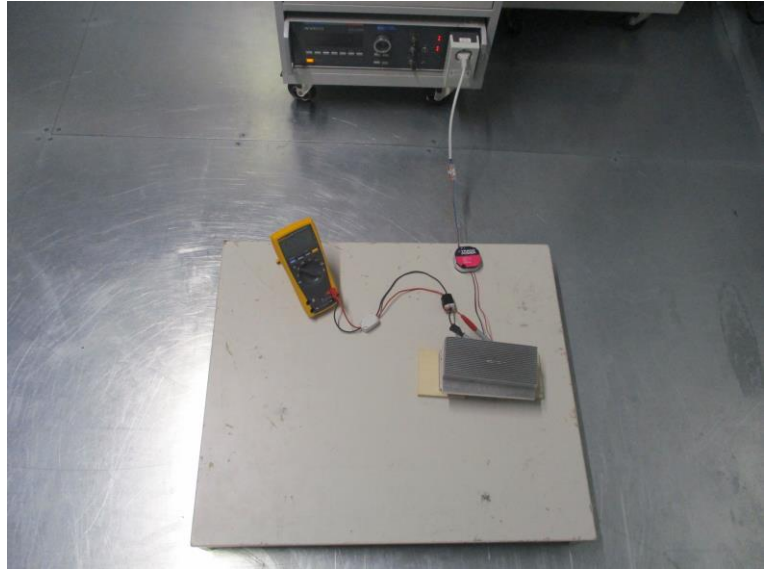
Test results for Proximity fields From RF wireless communications equipment – TMW 36-112						
Frequency range / discrete frequencies [MHz]	TEST LEVEL [V/m]	Polarisation	Modulation	Operation mode	Dwell time [s]	Observations
385	27	H	Pulse	1	3	1)
450	28	H	FM	1	3	1)
710 745 780	9	H	Pulse	1	3	1)
810 870 930	28	H	Pulse	1	3	1)
1720 1845 1970	28	H	Pulse	1	3	1)
2450	28	H	Pulse	1	3	1)
5240 5500 5785	9	H	Pulse	1	3	1)
385	27	V	Pulse	1	3	1)
450	28	V	FM	1	3	1)
710 745 780	9	V	Pulse	1	3	1)
810 870 930	28	V	Pulse	1	3	1)
1720 1845 1970	28	V	Pulse	1	3	1)
2450	28	V	Pulse	1	3	1)
5240 5500 5785	9	V	Pulse	1	3	1)
Supplementary information:						
1) No changes observed, criteria A achieved						

## 7.5 Electrical fast transients / burst

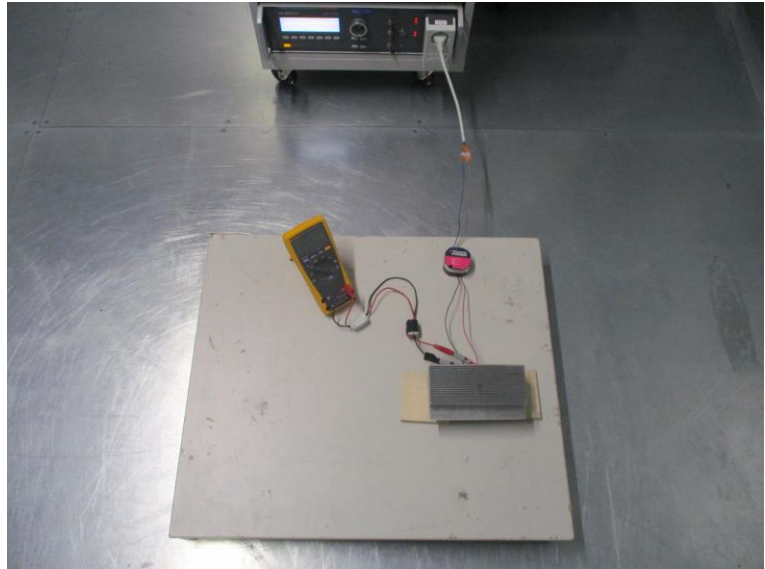
Tested by .....	Žiga Selan	
Test date .....	2024-01-26	
Test location (stand) .....	Test room 2	
Test set-up .....	<input checked="" type="checkbox"/>	Equipment on the table (0,1 ± 0,01) m above ground plane
	<input type="checkbox"/>	Equipment standing on floor at (0,1 ± 0,05) m above ground plane
	<input type="checkbox"/>	Artificial hand applied. Location see photo.
Supplementary test set up description.....	--	
Repetition frequency .....	100 kHz	
Test time .....	1 min	
Supplementary information .....	N/A	

Test set-up photo .....

TMW 24-105:



TMW 36-112:



Test results Electrical fast transients / bursts - TMW 24-105						
PORT	Coupling	Level [kV]	Polarity	Operating mode	Mains voltage / frequency	Observation
AC Mains	CDN	2	P / N	1	230 V / 50 Hz	1)
Supplementary information: 1) No changes observed, criteria A achieved.						

Test results Electrical fast transients / bursts - TMW 36-112						
PORT	Coupling	Level [kV]	Polarity	Operating mode	Mains voltage / frequency	Observation
AC Mains	CDN	2	P / N	1	230 V / 50 Hz	1)
Supplementary information: 1) No changes observed, criteria A achieved.						

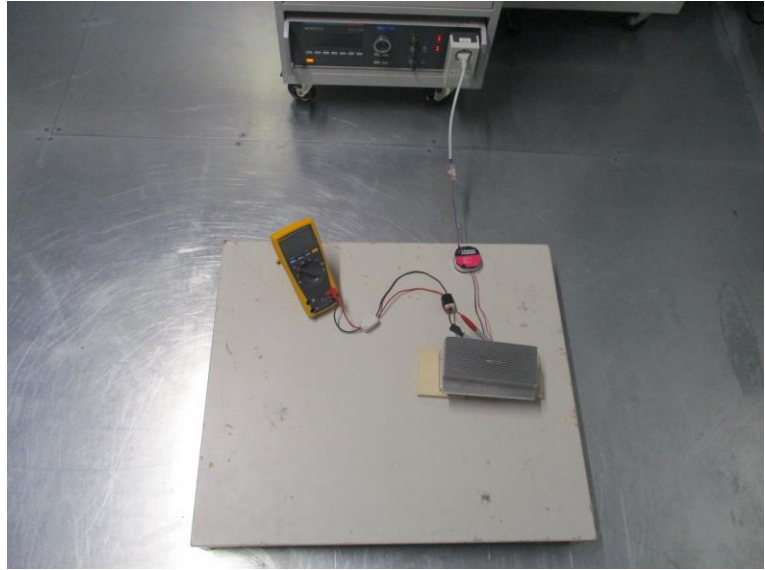
## 7.6 Surges Line-to-line, Surges Line-to-ground

Tested by .....	Žiga Selan
Test date .....	2024-01-26
Test location (Stand) .....	Test room 2
Test set up description .....	--
Repetition rate .....	6 / min
Number of pulses for each coupling .....	5
Supplementary information .....	N/A

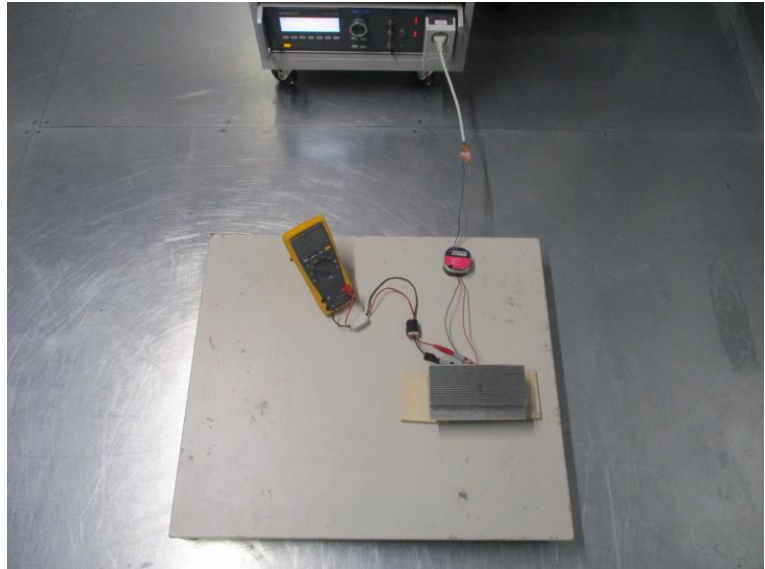


Test set-up photo ..... :

TMW 24-105:



TMW 36-112:



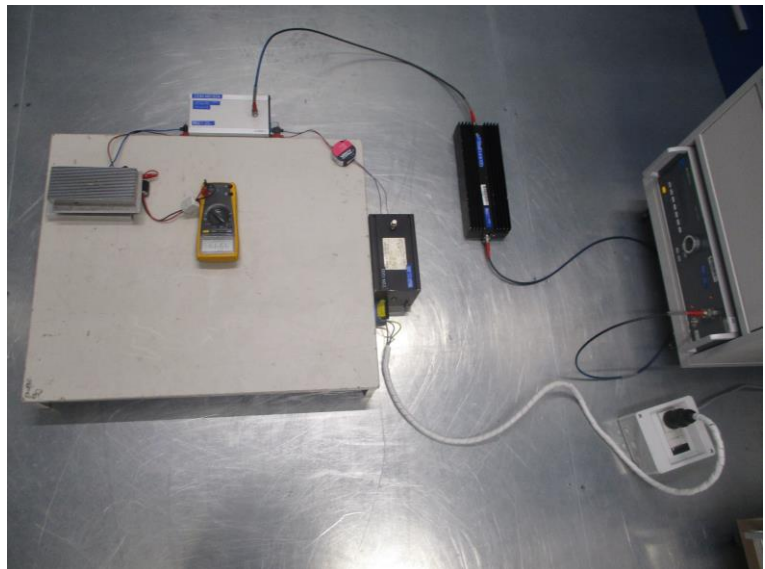
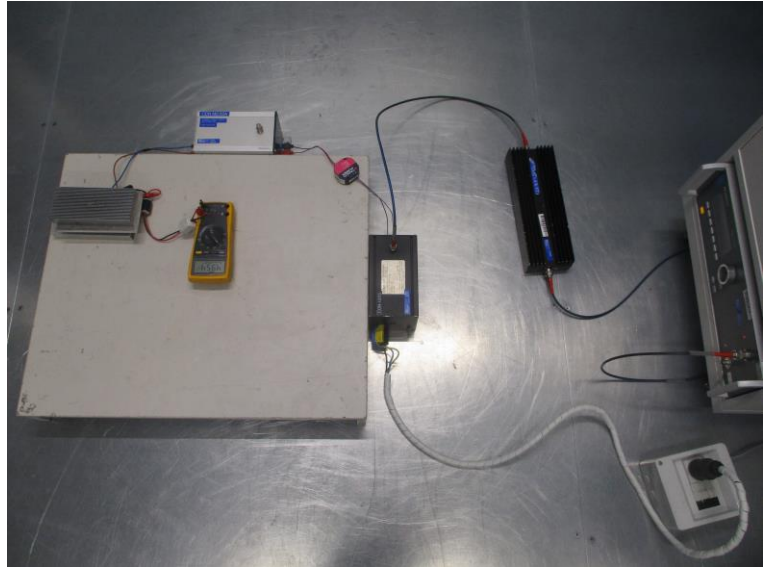
Test results for Surges Line-to-line, Surges Line-to-ground – TMW 24-105								
PORT	Coupling	CDN (figure no.)	Level [kV]	Polarity	Phase angles [°]	Operating mode	Mains voltage / frequency	Observation
AC Mains	L1 - N	Mains	1	P / N	0, 90, 180, 270	1	230 V / 50 Hz	1)
Lower TEST LEVELS .....			<input type="checkbox"/>	The lower TEST LEVELS are tested.				
			<input checked="" type="checkbox"/>	The lower TEST LEVELS are not tested (Table 5 table footnote j) applies.)				
Legend: Polarity: P = Positive, N = Negative CDN: Mains = Mains Coupling Network, Signal/Control: e.g. F9 = Figure No. 9 from IEC 61000-4-5								
Supplementary information: 1) No changes observed, criteria A achieved.								

Test results for Surges Line-to-line, Surges Line-to-ground – TMW 36-112								
PORT	Coupling	CDN (figure no.)	Level [kV]	Polarity	Phase angles [°]	Operating mode	Mains voltage / frequency	Observation
AC Mains	L1 - N	Mains	1	P / N	0, 90, 180, 270	1	230 V / 50 Hz	1)
Lower TEST LEVELS .....			<input type="checkbox"/>	The lower TEST LEVELS are tested.				
			<input checked="" type="checkbox"/>	The lower TEST LEVELS are not tested (Table 5 table footnote j) applies.)				
Legend: Polarity: P = Positive, N = Negative CDN: Mains = Mains Coupling Network, Signal/Control: e.g. F9 = Figure No. 9 from IEC 61000-4-5								
Supplementary information: 1) No changes observed, criteria A achieved.								

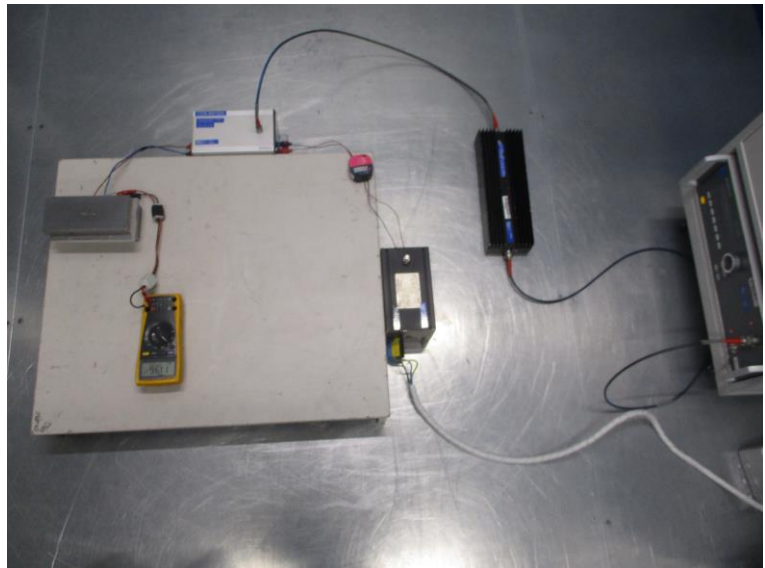
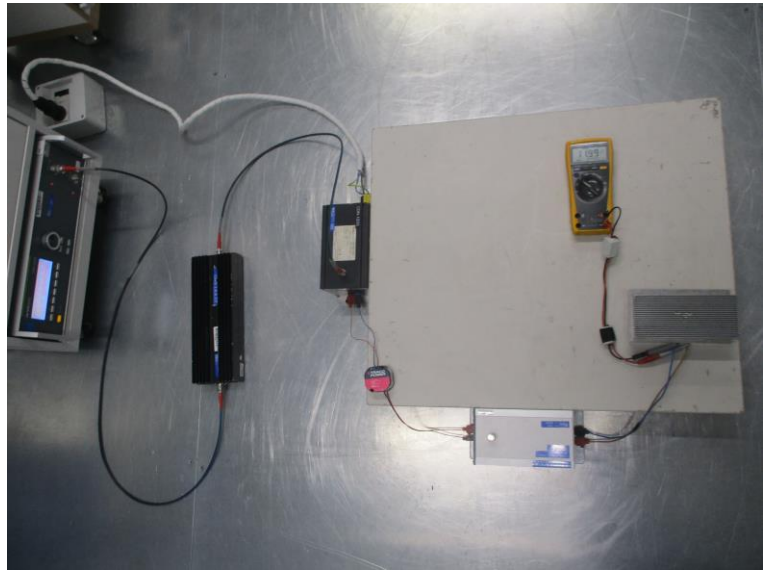
## 7.7 Conducted disturbances induced by RF Fields

Tested by .....	Žiga Selan	
Test date .....	2024-01-29	
Test location (Stand) .....	Test room 2	
Test set-up .....	<input checked="" type="checkbox"/>	Equipment located (0,1 ± 0,05) m above ground plane
	<input type="checkbox"/>	Elevated ground plane according to Annex F (IEC 61000-4-6)
	<input type="checkbox"/>	Artificial hand applied. Location see photo.
Supplementary test set up description .....	--	
Modulation .....	<input checked="" type="checkbox"/>	80 % AM with 1 kHz
	<input type="checkbox"/>	Other:
Step size .....	1 %	
Supplementary information .....	Mains voltage / frequency: 230 V / 50 Hz.	

Test set-up photo ..... : TMW 24-105:



TMW 36-112:
-------------



Test results for Conducted disturbances induced by RF Fields – TMW 24-105								
Frequency range / discrete frequencies	TEST LEVEL [V]	PORT under test	CDN type	Cable length used [m]	PORT with terminated CDN	Operating mode	Dwell time [s]	Observations
0,15 - 80 MHz	3	AC Mains	M2	0,2	DC output	1	1	1)
ISM bands between 0,15-80 MHz	6	AC Mains	M2	0,2	DC output	1	1	1)
Amateur radio bands between 0,15-80 MHz	6	AC Mains	M2	0,2	DC output	1	1	1)
0,15 - 80 MHz	3	DC output	M2	0,2	AC Mains	1	1	1)
ISM bands between 0,15-80 MHz	6	DC output	M2	0,2	AC Mains	1	1	1)
Amateur radio bands between 0,15-80 MHz	6	DC output	M2	0,2	AC Mains	1	1	1)
Supplementary information: 1) No changes observed, criteria A achieved.								

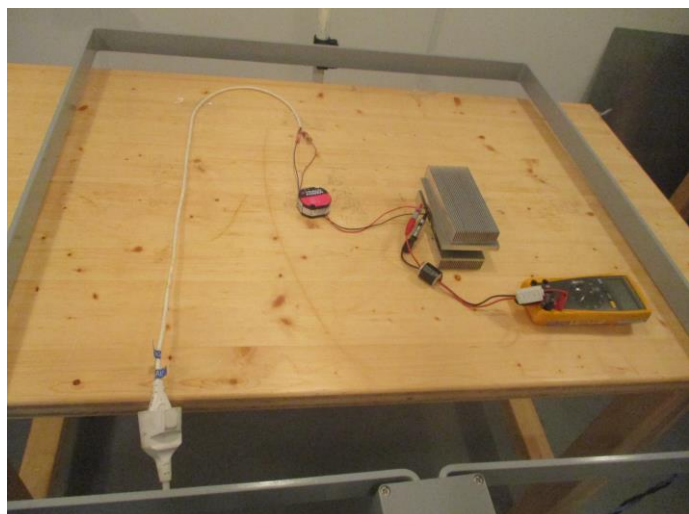
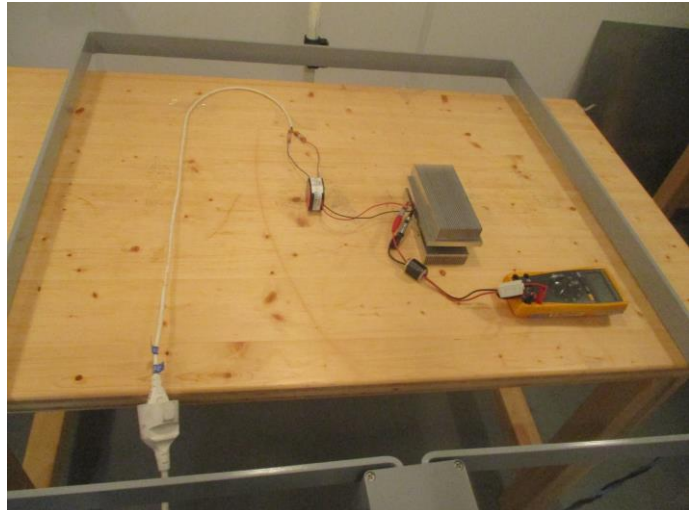
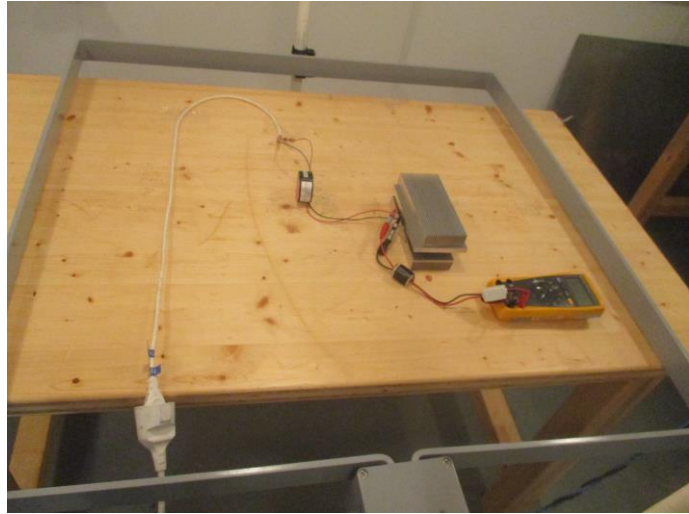
Test results for Conducted disturbances induced by RF Fields – TMW 36-112								
Frequency range / discrete frequencies	TEST LEVEL [V]	PORT under test	CDN type	Cable length used [m]	PORT with terminated CDN	Operating mode	Dwell time [s]	Observations
0,15 - 80 MHz	3	AC Mains	M2	0,2	DC output	1	1	1)
ISM bands between 0,15-80 MHz	6	AC Mains	M2	0,2	DC output	1	1	1)
Amateur radio bands between 0,15-80 MHz	6	AC Mains	M2	0,2	DC output	1	1	1)
0,15 - 80 MHz	3	DC output	M2	0,2	AC Mains	1	1	1)
ISM bands between 0,15-80 MHz	6	DC output	M2	0,2	AC Mains	1	1	1)
Amateur radio bands between 0,15-80 MHz	6	DC output	M2	0,2	AC Mains	1	1	1)
Supplementary information: 1) No changes observed, criteria A achieved.								

## 7.8 RATED power frequency magnetic fields

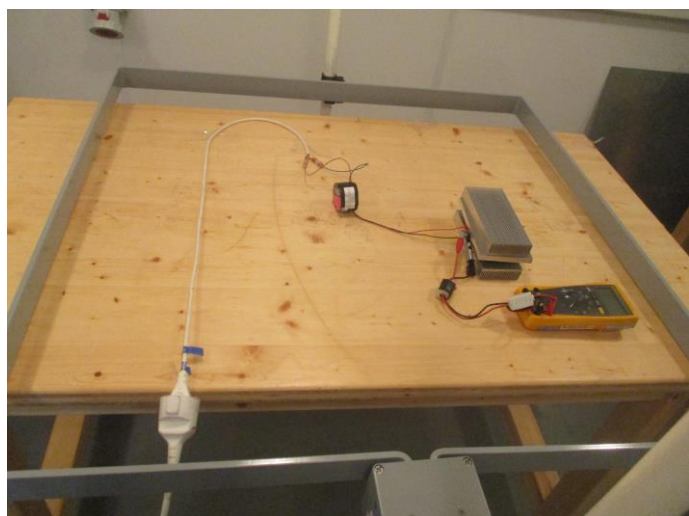
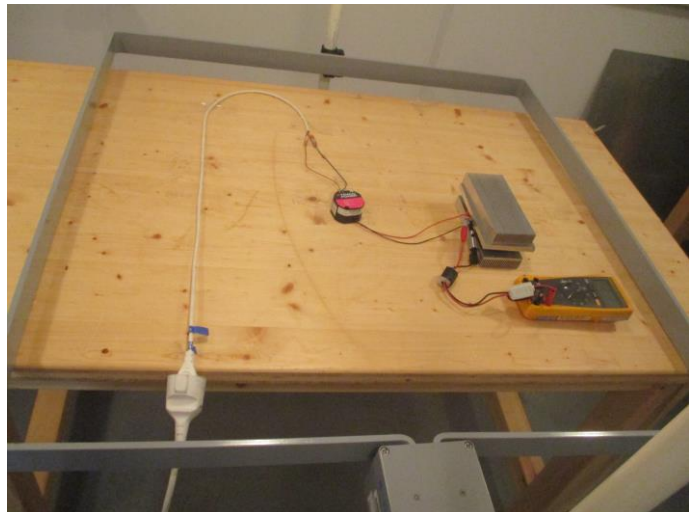
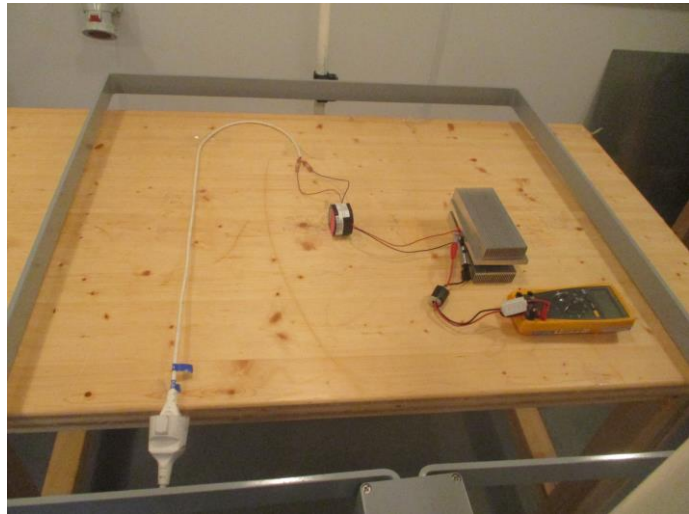
Tested by .....	Žiga Selan
Test date .....	2024-01-29
Test location (Stand) .....	Test room 3
Test set-up .....	<input type="checkbox"/> 0,1 m above metal surface (floor standing devices)
	<input type="checkbox"/> Homogeneous field (Helmholtz coil). Dimensions:
	<input checked="" type="checkbox"/> Single Coil. Dimensions: 1 x 1 m
	<input type="checkbox"/> Single Coil. Dimensions: 1 x 2,6 m
	<input type="checkbox"/> Other (Describe): /
Observations during test .....	None
Supplementary information .....	N/A



Test set-up photo ..... : TMW 24-105:



TMW 36-112:



Test results for RATED power frequency magnetic fields – TMW 24-105							
Test frequency	TEST LEVEL [A/m]	Test time [s]		Axis	Operating mode	Mains voltage / frequency	Observations
50 Hz	30	60		X	1	230 V / 50 Hz	1)
50 Hz	30	60		Y	1	230 V / 50 Hz	1)
50 Hz	30	60		Z	1	230 V / 50 Hz	1)
Supplementary information: 1) No changes observed, criteria A achieved.							

Test results for RATED power frequency magnetic fields – TMW 36-112							
Test frequency	TEST LEVEL [A/m]	Test time [s]		Axis	Operating mode	Mains voltage / frequency	Observations
50 Hz	30	60		X	1	230 V / 50 Hz	1)
50 Hz	30	60		Y	1	230 V / 50 Hz	1)
50 Hz	30	60		Z	1	230 V / 50 Hz	1)
Supplementary information: 1) No changes observed, criteria A achieved.							

## 7.9 Voltage dips and voltage interruptions

Tested by .....	Žiga Selan
Test date .....	2024-01-26
Test location (Stand) .....	Test room 2
Test set up description .....	--
Repetition rate .....	10 s
Number of dips or interruptions.....	3
Supplementary information .....	--

Test voltage requirements			
Supply Voltage Range	Difference of Max Voltage – Min Voltage	25 % of highest Rated input Voltage	Voltage Dips Test at Min/Max Voltages required (Y/N)
100-240 V	140 V	60	Y

Test set-up photo .....	Refer to Surges Line-to-line, Surges Line-to-ground, Chapter 7.6
-------------------------	--

**Test results – TMW 24-105:**

**Test results voltage dips for 0% of  $U_N$  for 0,5 cycles and phase angles of 0 °, 45 °, 90 °, 135 °, 180°, 225 °, 270° and 315 °**

$U_N$ [V]	Frequency [Hz]	TEST LEVEL $U_T$ [V]	Operating mode	Observations
240	50	0	1	1)
100	50	0	1	1)

Supplementary information:

1) No changes observed. Criteria A achieved.

**Test results voltage dips for 0% of  $U_N$  for 1 cycle and phase angles of 0 °**

$U_N$ [V]	Frequency [Hz]	TEST LEVEL $U_T$ [V]	Operating mode	Observations
240	50	0	1	1)
100	50	0	1	2)

Supplementary information:

1) No changes observed. Criteria A achieved.

2) DC output voltage drops from 5,124 V to 4,1 V during the dip and recovers after the test. Criteria B achieved.

**Test results voltage dips for 70% of  $U_N$  for 25 / 30 cycles and phase angles of 0 °**

$U_N$ [V]	Frequency [Hz]	TEST LEVEL $U_T$ [V]	Operating mode	Observations
240	50	168	1	1)
100	50	70	1	2)

Supplementary information:

1) No changes observed. Criteria A achieved.

2) DC output voltage drops from 5,124 V to 0 V during the dip and recovers after the test. Criteria B achieved.

**Voltage interruptions for 0% of  $U_N$  for 250 / 300 cycles**

$U_N$ [V]	Frequency [Hz]	TEST LEVEL $U_T$ [V]	Operating mode	Observations
100	50	0	1	1)

Supplementary information:

1) DC output voltage drops from 5,124 V to 0 V during the interruption and recovers after the test. Criteria B achieved.

**Test results – TMW 36-112:**

**Test results voltage dips for 0% of  $U_N$  for 0,5 cycles and phase angles of 0 °, 45 °, 90 °, 135 °, 180°, 225 °, 270° and 315 °**

$U_N$ [V]	Frequency [Hz]	TEST LEVEL $U_T$ [V]	Operating mode	Observations
240	50	0	1	1)
100	50	0	1	1)

Supplementary information:

1) No changes observed. Criteria A achieved.

**Test results voltage dips for 0% of  $U_N$  for 1 cycle and phase angles of 0 °**

$U_N$ [V]	Frequency [Hz]	TEST LEVEL $U_T$ [V]	Operating mode	Observations
240	50	0	1	1)
100	50	0	1	2)

Supplementary information:

1) No changes observed. Criteria A achieved.

2) DC output voltage drops from 12,10 V to 10,15 V during the dip and recovers after the test. Criteria B achieved.

**Test results voltage dips for 70% of  $U_N$  for 25 / 30 cycles and phase angles of 0 °**

$U_N$ [V]	Frequency [Hz]	TEST LEVEL $U_T$ [V]	Operating mode	Observations
240	50	168	1	1)
100	50	70	1	2)

Supplementary information:

1) No changes observed. Criteria A achieved.

2) DC output voltage drops from 12,10 V to 0 V during the dip and recovers after the test. Criteria B achieved.

**Voltage interruptions for 0% of  $U_N$  for 250 / 300 cycles**

$U_N$ [V]	Frequency [Hz]	TEST LEVEL $U_T$ [V]	Operating mode	Observations
100	50	0	1	1)

Supplementary information:

1) DC output voltage drops from 5,124 V to 0 V during the interruption and recovers after the test. Criteria B achieved.

## 7.10 Electrical transient conduction along supply lines

☒ Not Applicable

## 7.11 Proximity magnetic fields

Tested by .....	Žiga Selan
Test date .....	2024-02-01
Supplementary information .....	Mains voltage / frequency: 230 V / 50 Hz.

Magnetic field immunity 9 kHz to 150 kHz		
Test location (stand) .....	Test corner (SAC2)	
Test set up description .....	EUT placed on table 0,8 m above ground plane	
Selected window size	<input checked="" type="checkbox"/>	100 mm x 100 mm (maximum)
	<input type="checkbox"/>	Other: --
Test distance $d$ .....	<input checked="" type="checkbox"/>	$(50 \pm 3)$ mm
	<input type="checkbox"/>	Other: --
Frequencies applied .....	<input checked="" type="checkbox"/>	30 kHz
	<input checked="" type="checkbox"/>	134,2 kHz
Supplementary information.....	---	

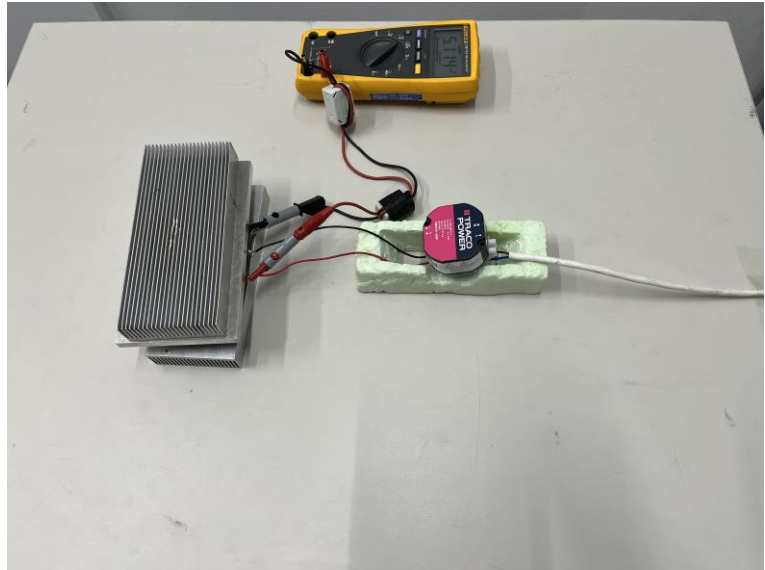


Magnetic field immunity 150 kHz to 26 MHz		
Test location (stand) .....	Test corner (SAC2)	
Test set up description .....	EUT placed on table 0,8 m above ground plane	
Selected windows size .....	<input checked="" type="checkbox"/>	80 mm x 80 mm (maximum)
	<input type="checkbox"/>	Other: e.g. Testing at selected points only (See result table)
Test distance $d$ .....	<input checked="" type="checkbox"/>	(50 $\pm$ 3) mm
	<input type="checkbox"/>	Other: --
Frequency applied .....	13,56 MHz	
Supplementary information.....	--	

Test results – TMW 24-105						
Frequencies	Test Level [A/m]	Point / Window	Modulation	Operating mode	Dwell time [s]	Observations
30 kHz	8	All sides of enclosure	CW	1	3	1)
134,2 kHz	65	All sides of enclosure	Pulse modulation 2,1 kHz	1	3	1)
13,56 MHz	7,5	All sides of enclosure	Pulse modulation 50 kHz	1	3	1)
Supplementary information: --						
1) No changes observed. Criteria A achieved.						

Test results – TMW 36-112						
Frequencies	Test Level [A/m]	Point / Window	Modulation	Operating mode	Dwell time [s]	Observations
30 kHz	8	All sides of enclosure	CW	1	3	1)
134,2 kHz	65	All sides of enclosure	Pulse modulation 2,1 kHz	1	3	1)
13,56 MHz	7,5	All sides of enclosure	Pulse modulation 50 kHz	1	3	1)
Supplementary information: --						
1) No changes observed. Criteria A achieved.						

Test set-up photo ..... : TMW 24-105:



TMW 36-112:

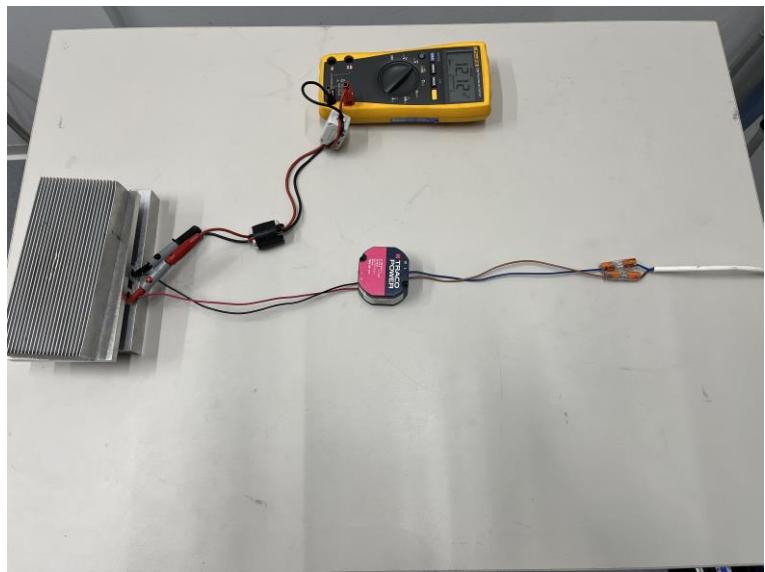
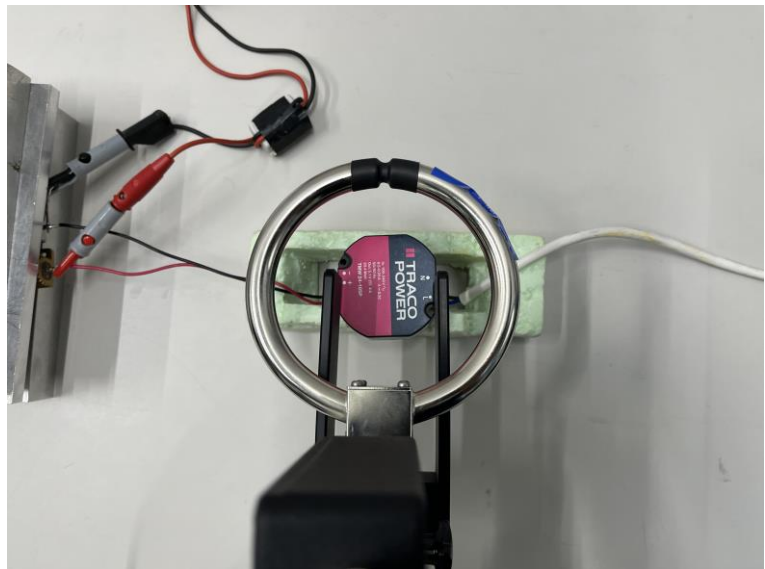
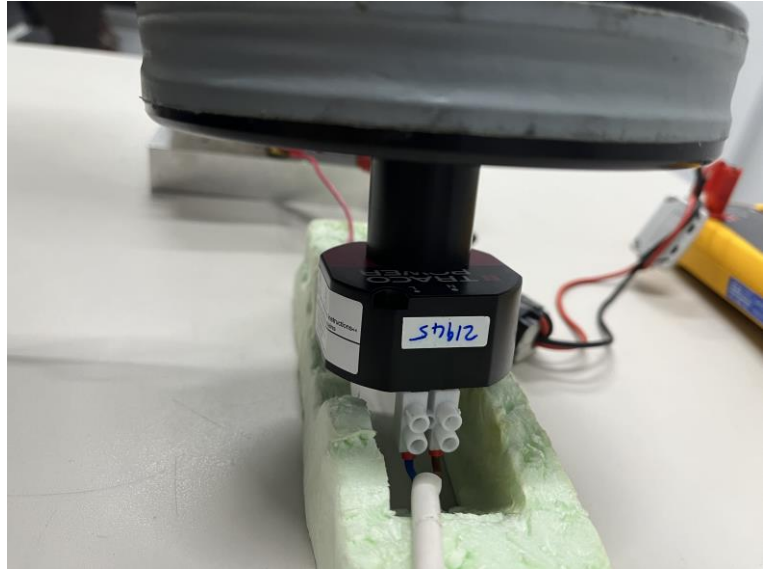
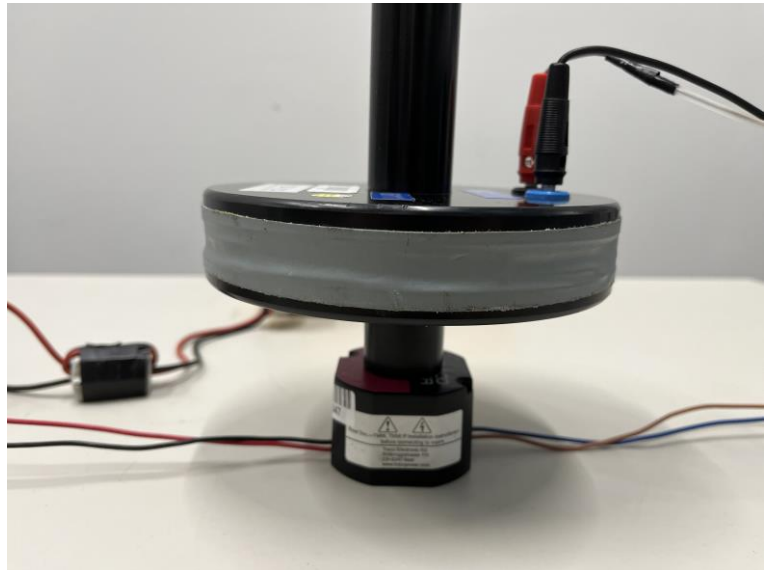


Photo or drawing of locations of application .....

TMW 24-105:



TMW 36-112:



## 7.12 Specialized Emissions and Immunity tests

☒ Not Applicable

## 8 Accompanying documents as required by IEC 60601-1-2

Clause	Requirement + Test	Result - Remark	Verdict
Note: For items that require a presence check of the RISK MANAGEMENT PROCESS or RISK MANAGEMENT FILE, use PC in the Verdict column when the item is confirmed as present in the associated documents.			
<b>4</b>	<b>GENERAL REQUIREMENTS</b>		
4.1	RISKS resulting from reasonably foreseeable ELECTROMAGNETIC DISTURBANCES shall be taken into account in THE RISK MANAGEMENT PROCESS.	RMF Reference Document: Shall be addressed with end medical product.	N/A
4.2	Non-ME EQUIPMENT used in an ME SYSTEM		
	Check 16.1 of general standard, checked by inspection of the RISK MANAGEMENT FILE and OBJECTIVE EVIDENCE of compliance with the respective EMC standards, or by the tests of this collateral standard	RMF Reference Document:	N/A
	Non- ME EQUIPMENT used in an ME SYSTEM shall comply with IEC and ISO EMC standards applicable to that equipment, checked by inspection of the RISK MANAGEMENT FILE and OBJECTIVE EVIDENCE of compliance with the respective EMC standards, or by the tests of this collateral standard	RMF Reference Document:	N/A
	Non- ME EQUIPMENT used in an ME SYSTEM for which the intended EM ENVIRONMENT could result in the loss of BASIC SAFETY or ESSENTIAL PERFORMANCE of the ME SYSTEM due to the non- ME EQUIPMENT shall be tested according to the requirements of this collateral standard, checked by inspection of the RISK MANAGEMENT FILE and OBJECTIVE EVIDENCE of compliance with the respective EMC standards, or by the tests of this collateral standard	RMF Reference Document:	N/A
4.3.1	Configurations		
	ME EQUIPMENT and ME SYSTEMS shall be tested in representative configurations, consistent with INTENDED USE, that are most likely to result in unacceptable RISK. as determined by the MANUFACTURER. This shall be determined using RISK ANALYSIS, experience, engineering analysis, or pretesting. Compliance is checked by inspection of the test report and the RISK MANAGEMENT FILE.	See appended Item 1 and RMF Reference Document: Shall be addressed with end medical product.  Test plan: EMC_Medical_Test_plan_TRACO_2024-01-16	P
4.3.3	Power input and frequencies	See appended Item 1	P

Clause	Requirement + Test	Result - Remark	Verdict
Note: For items that require a presence check of the RISK MANAGEMENT PROCESS or RISK MANAGEMENT FILE, use PC in the Verdict column when the item is confirmed as present in the associated documents.			
<b>5</b>	<b>IDENTIFICATION, MARKING AND DOCUMENTS</b>		
5.1	Additional requirements for marking on the outside of ME EQUIPMENT and ME SYSTEMS specified for use only in a shielded location SPECIAL ENVIRONMENT		
	ME EQUIPMENT and ME SYSTEMS specified for use only in a shielded location SPECIAL ENVIRONMENT shall be labelled with a CLEARLY LEGIBLE warning that they should be used only in the specified type of shielded location		N/A
5.2	ACCOMPANYING DOCUMENTS		
5.2.1	Instructions for use		
5.2.1.1	General		
a)	A statement of the ENVIRONMENTS for which the ME EQUIPMENT or ME SYSTEM is suitable. Relevant exclusions, as determined by RISK ANALYSIS, shall also be listed.	RMF Reference Document: Shall be addressed with end medical product.	N/A
b)	The ESSENTIAL PERFORMANCE of ME EQUIPMENT and a description of what the operator can expect if the ESSENTIAL PERFORMANCE is lost or degraded due to EM disturbances.	Shall be addressed with end medical product.	N/A
c)	A warning regarding stacking and location close to other equipment	Shall be addressed with end medical product.	N/A
d)	List of cables, transducers and accessories	Shall be addressed with end medical product.	N/A
e)	A warning that other cables and accessories may negatively affect EMC performance	Shall be addressed with end medical product.	N/A
f)	A statement that portable RF communications equipment. Including antennas, can effect ME EQUIPMENT. The warning should include a use distance such as "...be used no closer than 30 cm (12 inches) to any part of the [ME EQUIPMENT or ME SYSTEM], including cables specified by the manufacturer"	Shall be addressed with end medical product.	N/A
5.2.1.2	Requirements applicable to ME EQUIPMENT and ME SYSTEMS classified class A according to CISPR 11		

Clause	Requirement + Test	Result - Remark	Verdict
Note: For items that require a presence check of the RISK MANAGEMENT PROCESS or RISK MANAGEMENT FILE, use PC in the Verdict column when the item is confirmed as present in the associated documents.			
	<p>ME EQUIPMENT and ME SYSTEMS that are classified class A according to CISPR 11, the instructions for use shall include the following note:</p> <p>NOTE The EMISSIONS characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential ENVIRONMENT (for which CISPR 11 class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or re-orienting the equipment.</p>		N/A
5.2.2	Technical description		
5.2.2.1	Requirements applicable to all ME EQUIPMENT and ME SYSTEMS		
	The technical description shall describe precautions to be taken to prevent adverse events to the PATIENT and OPERATOR due to ELECTROMAGNETIC DISTURBANCES	Shall be addressed with end medical product.	N/A
a)	Compliance for each EMISSION and IMMUNITY standard or test specified by this collateral standard, e.g. EMISSIONS class and group and IMMUNITY TEST LEVEL	Shall be addressed with end medical product.	N/A
b)	Any deviations from this collateral standard and allowances used	Shall be addressed with end medical product.	N/A
c)	All necessary instructions for maintaining BASIC SAFETY and ESSENTIAL PERFORMANCE with regard to ELECTROMAGNETIC DISTURBANCES for the EXPECTED SERVICE LIFE	Shall be addressed with end medical product.	N/A
5.2.2.2	Requirements applicable to ME EQUIPMENT specified for use only in shielded location SPECIAL ENVIRONMENT		
	The technical description shall include the following information:		
a)	A warning to the effect that: WARNING: Failure to use this equipment in the specified type of shielded location could result in degradation of performance, interference with other equipment or interference with radio services		N/A
b)	Specifications for shielded location including: – minimum RF shielding effectiveness; – for each cable that enters or exits the shielded location, the minimum RF filter attenuation; and – the frequency range(s) over which the specifications apply	Reference Document:	N/A
c)	Test methods for measurement of RF shielding effectiveness and RF filter attenuation		N/A



Clause	Requirement + Test	Result - Remark	Verdict
Note: For items that require a presence check of the RISK MANAGEMENT PROCESS or RISK MANAGEMENT FILE, use PC in the Verdict column when the item is confirmed as present in the associated documents.			
d)	one or more of the following and a recommendation that a notice containing this information be posted at the entrance(s) to the shielded location: – a specification of the EMISSIONS characteristics of other equipment allowed inside the shielded location with the ME EQUIPMENT or ME SYSTEM; – a list of specific equipment allowed; – a list of types of equipment prohibited.	Reference Document:	N/A
5.2.2.3	Requirements applicable to ME EQUIPMENT that intentionally receive RF electromagnetic energy shall include the following information: - each frequency or frequency of reception - the preferred frequency or frequency band, if applicable, and - the bandwidth of the receiving section of the ME EQUIPMENT in those bands	Reference Document:	N/A
5.2.2.4	Requirements applicable to the ME EQUIPMENT that include RF transmitters the technical description shall include:  Frequency or frequency band of transmission, the type and frequency characteristics of the modulation and the EFFECTIVE RADIATED POWER	Reference Document:	N/A
5.2.2.5	Requirements applicable to PERMANENTLY INSTALLED LARGE ME EQUIPMENT and LARGE ME SYSTEMS		
	The technical description shall include the following information:		
a)	A statement that an exemption has been used and that the equipment has not been tested for radiated RF IMMUNITY over the entire frequency range 80 MHz to 6 GHz	Reference Document:	N/A
b)	A warning to the effect that "WARNING: This equipment has been tested for radiated RF IMMUNITY only at selected frequencies, and use nearby of emitters at other frequencies could result in improper operation"		N/A
c)	A list of the frequencies and modulations used to test the IMMUNITY of the ME EQUIPMENT or ME SYSTEM		N/A
5.2.2.6	Requirements applicable to ME EQUIPMENT that claim compatibility with HF SURGICAL EQUIPMENT		
	The technical description shall include in the technical description a statement of HF SURGICAL EQUIPMENT compatibility and the conditions of INTENDED USE during HF surgery	Reference Document:	N/A

Clause	Requirement + Test	Result - Remark	Verdict
<b>6.1</b>	<b>Documentation of tests - General</b>		
	The documentation of tests shall contain all information necessary to facilitate adequate planning (test plan) and execution of tests	See appended Item 1	P
<b>6.2</b>	<b>Test Plan</b>		
	Prior to the start of formal testing, a detailed test plan shall be provided to the test laboratory. Note: title / name / version of test plan in remark section.	EMC_Medical_Test_plan _TRACO_2024-01-16	P

<b>7</b>	<b>ELECTROMAGNETIC EMISSIONS requirements for ME EQUIPMENT and ME SYSTEMS</b>		
Clause	Requirement + Test	Result - Remark	Verdict
<b>7.1.1</b>	<b>Protection of radio services and other equipment - General</b>		
	Unless otherwise specified herein, ME EQUIPMENT and ME SYSTEMS shall comply with CISPR 11		P
<b>7.1.2</b>	<b>Operating modes</b>		
	During EMISSIONS testing, ME EQUIPMENT or ME SYSTEM shall be tested in the modes that maximize EMISSIONS. In addition to active modes, inclusion of standby mode should be considered. The operating modes selected for testing should be documented in the test plan and shall be documented in the test report	See appended Item 1	P
<b>7.1.3</b>	<b>Multimedia Equipment</b>		
	Multimedia equipment connected to ME EQUIPMENT or ME SYSTEM shall comply with CISPR 32. If CISPR 32 class A equipment is supplied as part of the ME SYSTEM, the ME SYSTEM shall be classified class A		N/A
<b>7.1.4</b>	<b>Subsystems</b>		
	Compliance with CISPR 11 may be demonstrated by testing each subsystem of an ME SYSTEM on a subsystem basis, provided the requirements of CISPR 11 for evaluation of equipment that interacts with other equipment to form a system are met		N/A
<b>7.1.5</b>	<b>ME EQUIPMENT and ME SYSTEMS specified for use only in a shielded location SPECIAL ENVIRONMENT</b>		
	For ME EQUIPMENT and ME SYSTEMS that are specified for use only in a shielded location SPECIAL ENVIRONMENT, the ELECTROMAGNETIC radiation disturbance limits of CISPR 11 may be increased, when tests are performed on a test site, by an amount up to the applicable specified value of minimum RF shielding effectiveness, provided the minimum RF shielding effectiveness specification		N/A

7	<b>ELECTROMAGNETIC EMISSIONS requirements for ME EQUIPMENT and ME SYSTEMS</b>		
Clause	Requirement + Test	Result - Remark	Verdict
	For ME EQUIPMENT and ME SYSTEMS that are specified for use only in a shielded location SPECIAL ENVIRONMENT, the mains terminal disturbance voltage limits of CISPR 11 may be increased, when tests are performed on a test site, by an amount up to the applicable specified value of minimum RF filter attenuation for all cables that enter or exit the shielded location, provided the minimum RF filter attenuation specification		N/A
a)	The specified RF shielding effectiveness and RF filter attenuation shall; - be expressed in dB; - be rounded to the nearest integer; and - be at least 20 dB.		N/A
b)	The RF shielding effectiveness and RF filter attenuation specification shall include the frequency range over which the RF shielding effectiveness and RF filter attenuation apply, and this frequency range shall be at least one decade in width	Reference to Document:	N/A
c)	The specified value(s) for minimum RF filter attenuation shall be identical to the specified value(s) for minimum RF shielding effectiveness in each frequency range for which they are specified	Reference to Document:	N/A
d)	In frequency ranges for which the minimum RF shielding effectiveness and RF filter attenuation are not specified or are specified to be less than 20 dB, the RF shielding effectiveness and RF filter attenuation shall be assumed to be 0 dB for the purpose of this collateral standard	Reference to Document:	N/A
7.1.6	ME EQUIPMENT and ME SYSTEMS that include radio equipment		
	ME EQUIPMENT and ME SYSTEMS that include radio equipment (e.g. RF transmitters, receivers, transceivers) and have been tested together with the radio equipment and found to comply with applicable national radio regulations are exempt from testing to CISPR ELECTROMAGNETIC DISTURBANCE requirements.		N/A
7.1.7	ME EQUIPMENT whose main functions are performed by motors and switching or regulating devices		
	ME EQUIPMENT whose main functions are performed by motors and switching or regulating devices may be classified in accordance with CISPR 14-1		N/A
7.1.8	ME EQUIPMENT and ME SYSTEMS containing X-ray generators		

7 ELECTROMAGNETIC EMISSIONS requirements for ME EQUIPMENT and ME SYSTEMS			
Clause	Requirement + Test	Result - Remark	Verdict
	For diagnostic X-ray generators and ME SYSTEMS that include X-ray generators operating in INTERMITTENT MODE, the quasi-peak limits to discontinuous radiated and conducted DISTURBANCES can be relaxed by 20 dB		N/A
7.1.12	PERMANENTLY INSTALLED LARGE ME EQUIPMENT and LARGE ME SYSTEMS		
	PERMANENTLY INSTALLED LARGE ME EQUIPMENT and LARGE ME SYSTEMS shall be TYPE TESTED by at least one of the following methods: <ul style="list-style-type: none"> <li>– on a test site as a system;</li> <li>– on a test site on a subsystem basis;</li> <li>– <i>in situ</i> as a system at the premises of a RESPONSIBLE ORGANIZATION</li> </ul>		N/A
	TEST METHOD SELECTED		
7.2	Protection of the PUBLIC MAINS NETWORK		
7.2.1	Harmonic distortion		
	If the ME EQUIPMENT OR ME SYSTEMS with a RATED a.c. mains network voltage greater than or equal to 220 V a.c. line-to-neutral and less than or equal to 16 A per phase is intended to be connected a PUBLIC MAINS NETWORK it shall comply with the requirements of IEC 61000-3-2  Compliance is checked by inspection of the ACCOMPANYING DOCUMENTS and the test report.	See Appended Item 5 Not applicable. $P_{\text{RATED}} < 75 \text{ W.}$	N/A
7.2.2	Voltage fluctuations and flicker		
	If the ME EQUIPMENT OR ME SYSTEMS with a RATED a.c. mains network voltage greater than or equal to 220 V a.c. line-to-neutral and less than or equal to 16 A per phase is intended to be connected a PUBLIC MAINS NETWORK it shall comply with the requirements of IEC 61000-3-3.  Compliance is checked by inspection of the ACCOMPANYING DOCUMENTS and the test report.	See Appended Item 6	P

Clause	Requirement + Test	Result - Remark	Verdict
Note: For items that require a presence check of the RISK MANAGEMENT PROCESS or RISK MANAGEMENT FILE, use PC in the Verdict column when the item is confirmed as present in the associated documents.			
<b>8</b>	<b>ELECTROMAGNETIC IMMUNITY requirements for ME EQUIPMENT and ME SYSTEMS</b>		
	For ME EQUIPMENT and ME SYSTEMS for which the INTENDED USE includes types of transportation or other locations as in the HOME HEALTHCARE ENVIRONMENT if additional IMMUNITY tests or IMMUNITY TEST LEVELS that are higher these additional tests to these higher IMMUNITY TEST LEVELS shall be documented	Reference to Document:	N/A
	ME EQUIPMENT or ME SYSTEMS intended for use in the EMERGENCY MEDICAL SERVICES ENVIRONMENT for the HOME HEALTHCARE ENVIRONMENT. If locations in the EMERGENCY MEDICAL SERVICES ENVIRONMENT are identified for which the specifications are for the HOME HEALTHCARE ENVIRONMENT are not adequate, then Annex E may be used to determine appropriate IMMUNITY TEST LEVELS	Document Reference:	N/A
	Before IMMUNITY testing begins, the MANUFACTURER shall determine specific, detailed IMMUNITY pass/fail criteria, based on applicable part two standards or RISK MANAGEMENT, for BASIC SAFETY and ESSENTIAL PERFORMANCE with regard to EM DISTURBANCES. The pass/fail criteria and the monitoring specification should be included in the test plan and shall be included in the test report and the RISK MANAGEMENT FILE	RMF Reference Document:  RMF shall be addressed with end medical product.  Testplan: EMC_Medical_Test_plan_TRACO_2024-01-16	P
8.2	PATIENT physiological simulation		
	If a PATIENT simulation is required to verify normal operation of the ME EQUIPMENT or ME SYSTEM, it shall be provided during IMMUNITY testing	Document reference to Type of patient stimulator or setup used:	N/A
	Prior to the beginning of the test, the amplitude of simulated PATIENT physiological signals shall be adjusted to be consistent with normal operation of the ME EQUIPMENT or ME SYSTEM, as specified by the MANUFACTURER	Document reference to Patient physiological settings used:	N/A
8.5	Subsystems		
	When subsystems are tested to demonstrate compliance, normal operating conditions are simulated		N/A
	The RISK MANAGEMENT PROCESS shall be used to determine whether subsystem testing is allowed.	RMF Reference Document:	N/A
8.6	Permanently installed LARGE ME EQUIPMENT and LARGE ME SYSTEMS		

Clause	Requirement + Test	Result - Remark	Verdict
Note: For items that require a presence check of the RISK MANAGEMENT PROCESS or RISK MANAGEMENT FILE, use PC in the Verdict column when the item is confirmed as present in the associated documents.			
<b>8</b>	<b>ELECTROMAGNETIC IMMUNITY requirements for ME EQUIPMENT and ME SYSTEMS</b>		
	PERMANENTLY INSTALLED LARGE ME EQUIPMENT and LARGE ME SYSTEMS shall be TYPE TESTED by at least one of the following methods:		N/A
	<ul style="list-style-type: none"> <li>– on a test site as a system;</li> <li>– on a test site on a subsystem basis;</li> <li>– <i>in situ</i> as a system at the premises of a RESPONSIBLE ORGANIZATION</li> </ul>		N/A
	Test Method selected	Test Method selected	N/A
8.7	Operating Modes		
	Operating Modes and settings	See appended Item 1 and RMF Reference Document: RMF shall be addressed with end medical product.  Testplan: EMC_Medical_Test_plan_TRACO_2024-01-16	P
8.8	Non- ME EQUIPMENT		
	Non- ME EQUIPMENT (e.g. ITE) that is a part of an ME SYSTEM shall fulfil the pass/fail criteria and IMMUNITY TEST LEVELS of Clause 8 if it has been determined, as a result of the RISK MANAGEMENT PROCESS, that the non-ME EQUIPMENT could affect the BASIC SAFETY or ESSENTIAL PERFORMANCE of the ME SYSTEM.  Compliance is checked by inspection of the test report and the RISK MANAGEMENT FILE.		N/A
8.9	IMMUNITY TEST LEVELS		
	IMMUNITY TEST LEVELS based on ENVIRONMENT location of INTENDED USE	See Appended Items 7.2 to 7.3 and 7.5 to 7.10 and RMF Reference Document: /	P
8.10	IMMUNITY to proximity fields from RF wireless communication equipment		
	ENCLOSURE PORT of ME EQUIPMENT and ME SYSTEMS shall, be tested as specified in Table 9 as per IEC 61000-4-3	See Appended Item Tables 7.4 and RMF Reference Document: /	P

## 9 List of test equipment

Equipment used					
Equipment	Type	Inventory number	Manufacturer	Last calibration	Calibration due date
<b>Test room 1 - 4.1 Disturbance Voltage</b>					
EMI test receiver	ESU8	105187	R&S	2022-11-18	2024-05-18*
Artificial main network	ENV216	109818	R&S	2021-08-25	2024-08-25*
<b>SAC 1 - 4.2 Radiation Measurements</b>					
EMI test receiver	ESR7	111549	R&S	2023-06-14	2024-12-14
SAC 1	SAC 3m	109070	Comtest Engineering	2022-04-14	2025-04-14*
Ultra Broadband Antenna (SAC1)	HL562E	109063	R&S	2023-06-27	2025-06-27*
Turn table (2 m diameter)	TT 2.0 SI	/	Maturo	N/A	
Bore-sight antenna mast	BAM-4.0-P	/	Maturo	N/A	
Multi-channel positioning equipment	Maturo NCD	/	Maturo	N/A	
Common mode absorption device	1-8H 11-200L	SN: 003	SIQ	2022-08-18	2025-08-18*
<b>Test room 1 - 5 Harmonics IEC 61000-3-2 and 6 Voltage fluctuation and flicker</b>					
3-phase harmonics and flicker system	DPA 503N with AIF503	106895	EM Test	2023-05-11	2024-11-11*
3-phase harmonics and flicker system	NETWAVE 20-400 with C-UNIT NETWAVE 20/30.x	106896	EM Test	2023-05-11	2024-11-11*
<b>Test room 3 - 7.2 Electrostatic Discharge</b>					
ESD Generator	Dito	108227	EM TEST	2023-03-09	2024-03-09
Digital Multimeter	179	108102	FLUKE	2023-06-09	2024-06-09
<b>SAC 1 - 7.3 Radiated RF EM fields and 7.4 Proximity fields From RF wireless communications equipment</b>					
SAC 1	SAC 3m	109070	Comtest Engineering	N/A	N/A
RF and Microwave Signal Generator (SAC1-A2)	SMB100A03	111926	R&S	2022-08-11	2024-02-11*
NRP18AN AVERAGE POWER SENSOR (SAC1-A2)	NRP18AN	111928	R&S	2022-08-11	2024-02-11*
NRP18AN AVERAGE POWER SENSOR	NRP18AN	111927	R&S	2022-08-11	2024-02-11*

(SAC1-A2)					
Dual Directional Coupler (SAC1-A2)	DDC25-E55	/	R&S	/	/
Dual Directional Coupler (SAC1-A2)	DDC25-D56	/	R&S	/	/
Dual Directional Coupler (SAC1-A2)	DDC25-BC59	/	R&S	/	/
Field Uniformity (SAC1 - A2, HL562E)	UFA	/	SIQ	2022-08-19	2025-08-19*
Broadband amplifier (SAC1-A2)	BBA150 / BC250	111615	R&S	N/A	N/A
Broadband amplifier (SAC1-A2)	BBA150 / D110	111615	R&S	N/A	N/A
Broadband amplifier (SAC1-A2)	BBA150 / E100	111615	R&S	N/A	N/A
Ultra Broadband Antenna (SAC1)	HL562E	109063	R&S	N/A	N/A
Digital Multimeter	179	108102	FLUKE	2023-06-09	2024-06-09
<b>Test room 2 - 7.5 Electrical fast transients / burst</b>					
Ultra Compact Simulator	UCS 500 N5	108360	EM Test	2023-03-24	2024-09-24*
Digital Multimeter	179	108102	FLUKE	2023-06-09	2024-06-09
<b>Test room 2 - 7.6 Surges Line-to-line, Surges Line-to-ground</b>					
Ultra Compact Simulator	UCS 500 N5	108360	EM Test	2023-03-24	2024-09-24*
Digital Multimeter	179	108102	FLUKE	2023-06-09	2024-06-09
<b>Test room 2 - 7.7 Conducted disturbances induced by RF Fields</b>					
Continuous Wave Simulator	CWS500N1.4	108175	EM Test	2023-11-16	2024-11-16
Attenuator	ATT6/80	/	EM TEST	N/A	N/A
Coupling/Decoupling Network	CDN-M2/32A	/	EM TEST	2023-08-28	2024-08-28
CDN M2/32A	M2/32A	SN: SIQ20075	SIQ	2022-04-26	2025-04-26
Digital Multimeter	179	108102	FLUKE	2023-06-09	2024-06-09
<b>Test room 3 - 7.8 RATED power frequency magnetic fields</b>					
Current transformer	MC 2630	106893	EM TEST	N/A	N/A
Magnetic field coil	MS100N	106892	EM Test	N/A	N/A
Current clamp	375FC	108101	FLUKE	2023-09-07	2024-09-07
Digital Multimeter	179	108101	FLUKE	2023-06-09	2024-06-09
<b>Test room 2 - 7.9 Voltage dips and voltage interruptions</b>					



Ultra Compact Simulator	UCS 500 N5	108360	EM Test	2023-03-24	2024-09-24*
Single phase tapped transformer for dips and short interruptions	V 4780	108361	EM Test	N/A	N/A
Digital Multimeter	179	108102	FLUKE	2023-06-09	2024-06-09
<b>Test corner (SAC2) - 7.11 Proximity magnetic fields</b>					
Signal Generator (SAC2)	SMBV100A	109070	R&S	2022-08-10	2024-02-10
Radiating loop	RL 120	106969	EM TEST	N/A	N/A
Loop sensor	LS 040	106970	EM TEST	2023-09-05	2026-09-05*
Passive loop antenna	HFRA 5164	111497	Schwarzbeck	N/A	N/A
Field monitoring loop	FESP 5134-1	111498	Schwarzbeck	2021-02-26	2024-02-26*
Continuous Wave Simulator – Attenuator only	CWS500N1.4	108175	EM Test	2023-11-16	2024-11-16
Matching network (13.56 MHz)	RC type	/	SIQ	N/A	N/A
Digital Multimeter	179	108102	FLUKE	2023-06-09	2024-06-09

\* Calibration interval extended based on sufficient calibration data and experience of use (see IEC60601-1:2015 clause 8.3)

## 10 Statement of Measurement Uncertainty

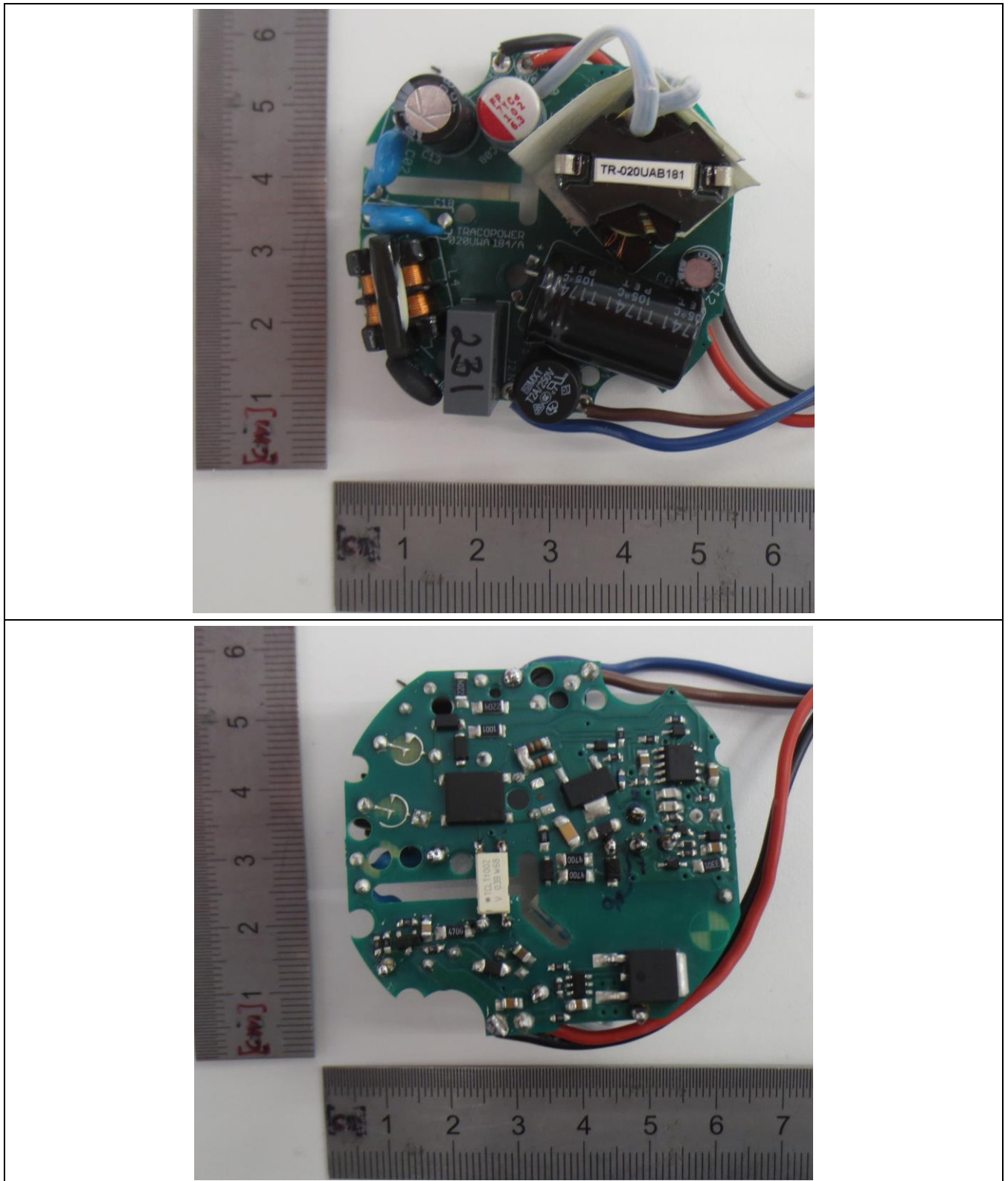
Statement concerning the uncertainty of the measurement systems used for the tests	
<input checked="" type="checkbox"/>	<p>Internal procedure used for type testing through which traceability of the measuring uncertainty has been established: Decision rule and measurement uncertainty, Document TN023-E, Issue version / date: 12 / 2021-04-16.</p> <p><b>Decision rule applicable for emission:</b></p> <pre> graph TD     A[Basic, general or product emission standard in question includes requirements for measurement uncertainty consideration for compliance assessment?] -- Yes --&gt; B[Guidance on measurement uncertainty is placed in CISPR 16-4-2 / EN 55016-4-2.]     A -- No --&gt; D[Measurement is under the limit (see Compliance assessment ULAB ≤ UCISPR) Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit.]     B --&gt; C[Laboratory measurement uncertainty ULAB ≤ UCISPR (see Table 1).]     C -- Yes --&gt; D     D -- No --&gt; E[Result = FAIL]     D -- Yes --&gt; F[Result = PASS]           </pre> <p><b>Decision rule applicable for immunity:</b></p> <pre> graph TD     G[Basic, general or product immunity standard in question includes requirements for measurement uncertainty consideration for compliance assessment?] -- YES --&gt; H[Device under test withstands required immunity level raised if necessary by uncertainty level according to standard in question?]     G -- NO --&gt; I[Device under test withstands required immunity level as per standard in question?]     H -- YES --&gt; J[Result = PASS]     H -- NO --&gt; K[Result = FAIL]     I -- YES --&gt; J     I -- NO --&gt; K           </pre> <p>Calculations leading to the reported values below are on file with the NCB and testing laboratory that conducted the testing. For MIU details for emission (according to CISPR 11 and CISPR 14-1) see table below.</p>
<input type="checkbox"/>	Statement not required by the standard used for type testing:
Supplementary information: N/A	

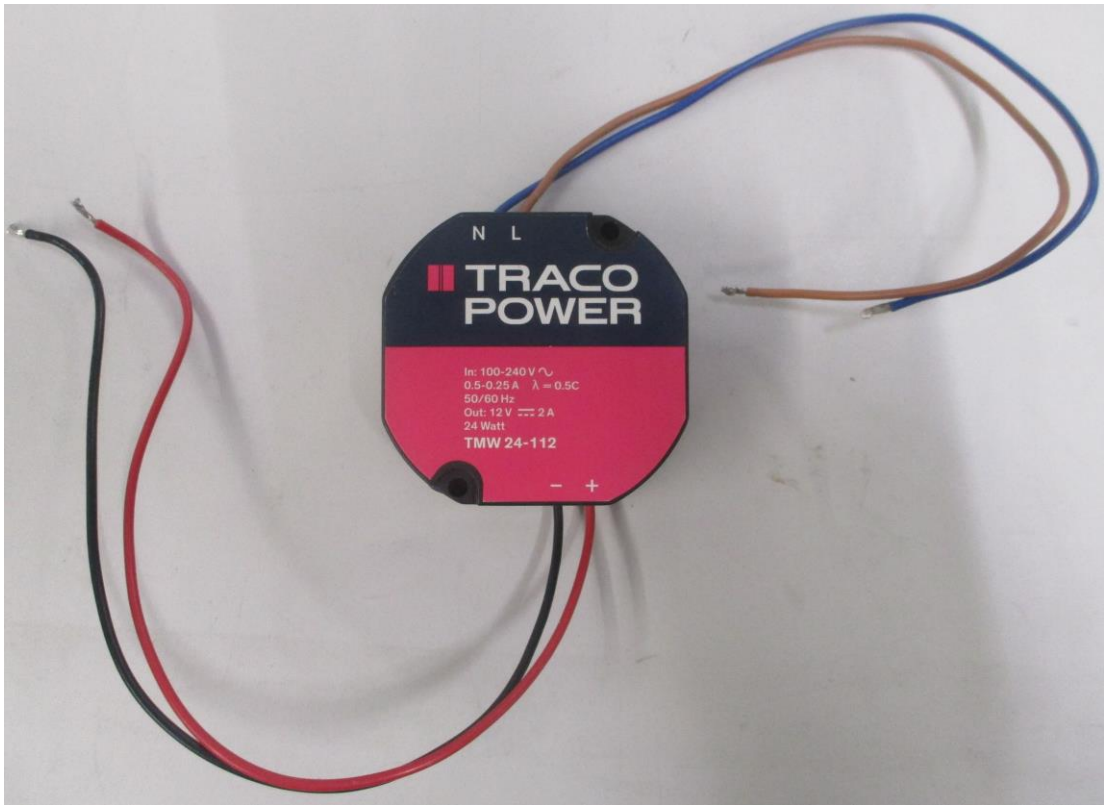
Parameter/ Measurement / test method	Requirement	Calculated U of M
Emission test	U <sub>CISPR</sub>	U <sub>lab</sub>
Conducted disturbance at mains port using AMN (0,15-30 MHz)	3,4 dB	2,7 dB
Radiated disturbance (electric field strength at an OATS or in a SAC) – (30-1000 MHz)	6,3 dB	5,3 dB
IEC/EN 61000-3-2 – (50-2000 Hz)	N/A	±0,0016 A
IEC/EN 61000-3-3	N/A	2,40%
Immunity test	Result (conclusion, dB)	
IEC/EN 61000-4-2	All required parameters comply with requirements of standard.	
IEC/EN 61000-4-3	2,2	
IEC/EN 61000-4-4	All required parameters comply with requirements of standard.	
IEC/EN 61000-4-5	All required parameters comply with requirements of standard.	
IEC/EN 61000-4-6	3,3	
IEC/EN 61000-4-8	All required parameters comply with requirements of standard.	
IEC/EN 61000-4-11	All required parameters comply with requirements of standard.	
IEC/EN 61000-4-39	1,2	

**End of Test report.**

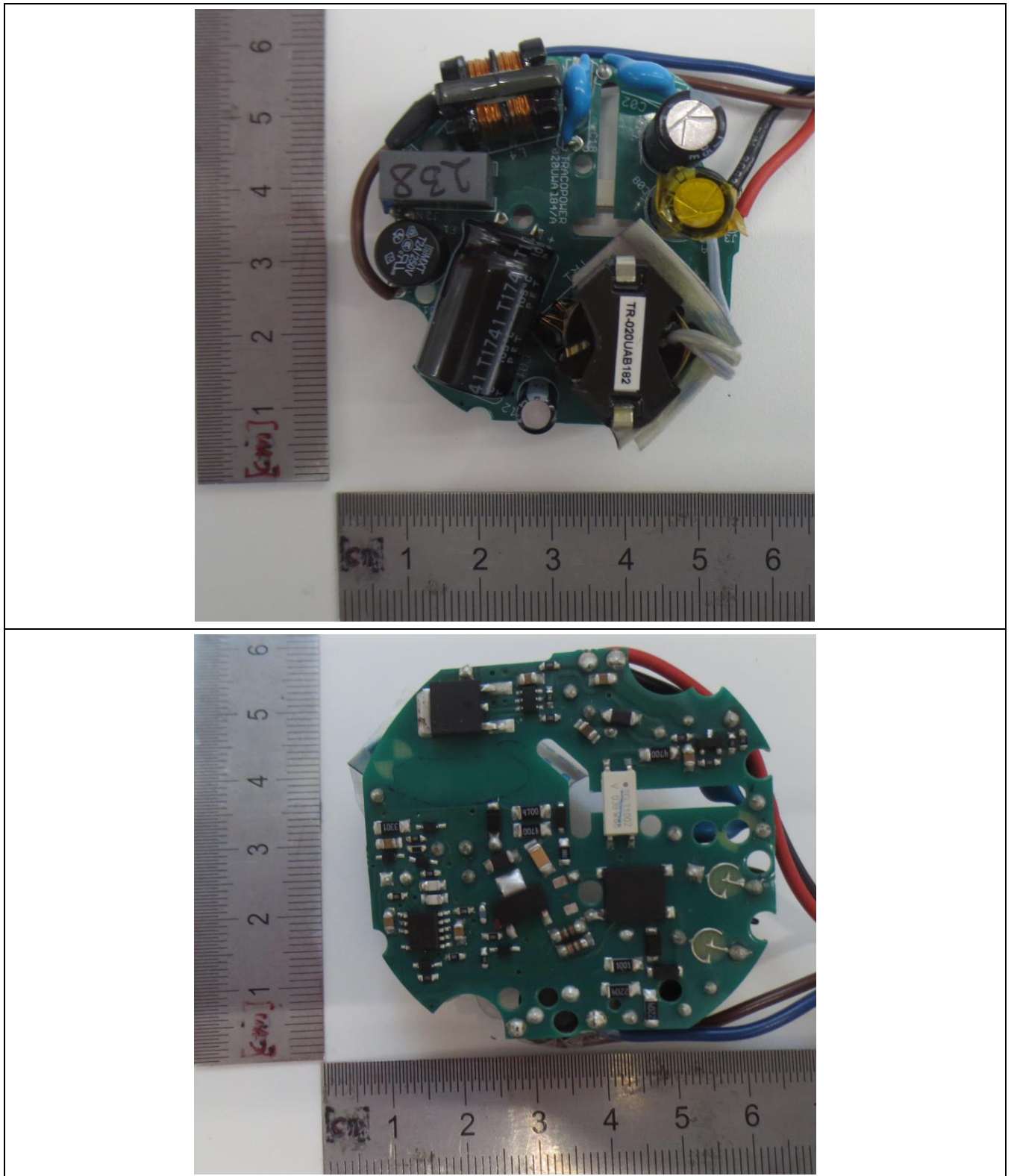
# Photos of test items – Enclosure No. 1

**Model: TMW 24-105**

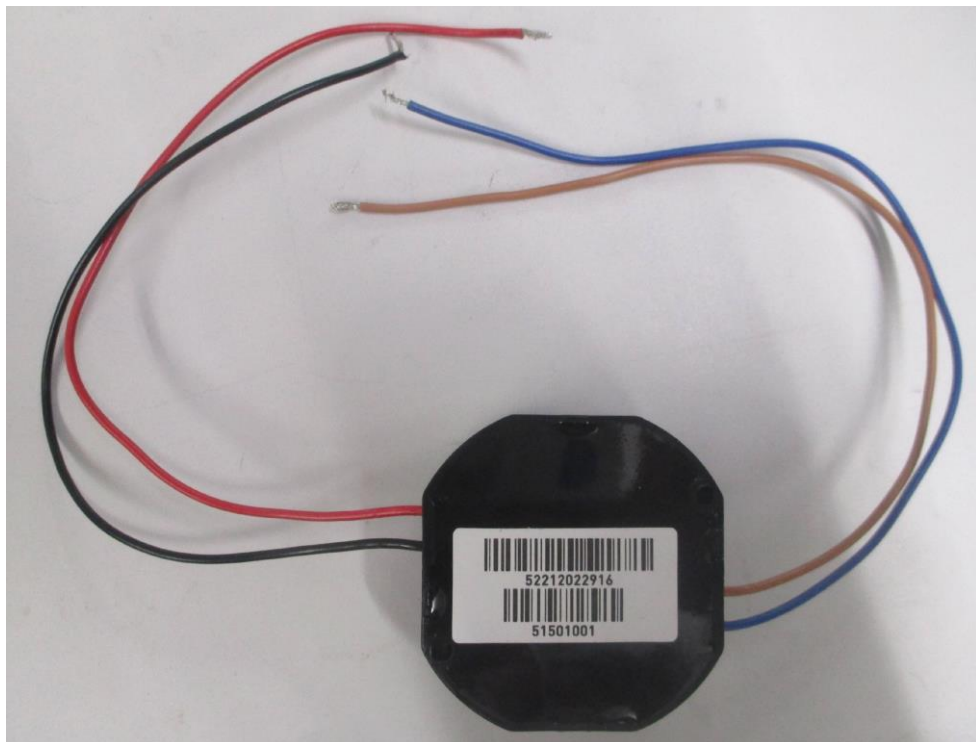
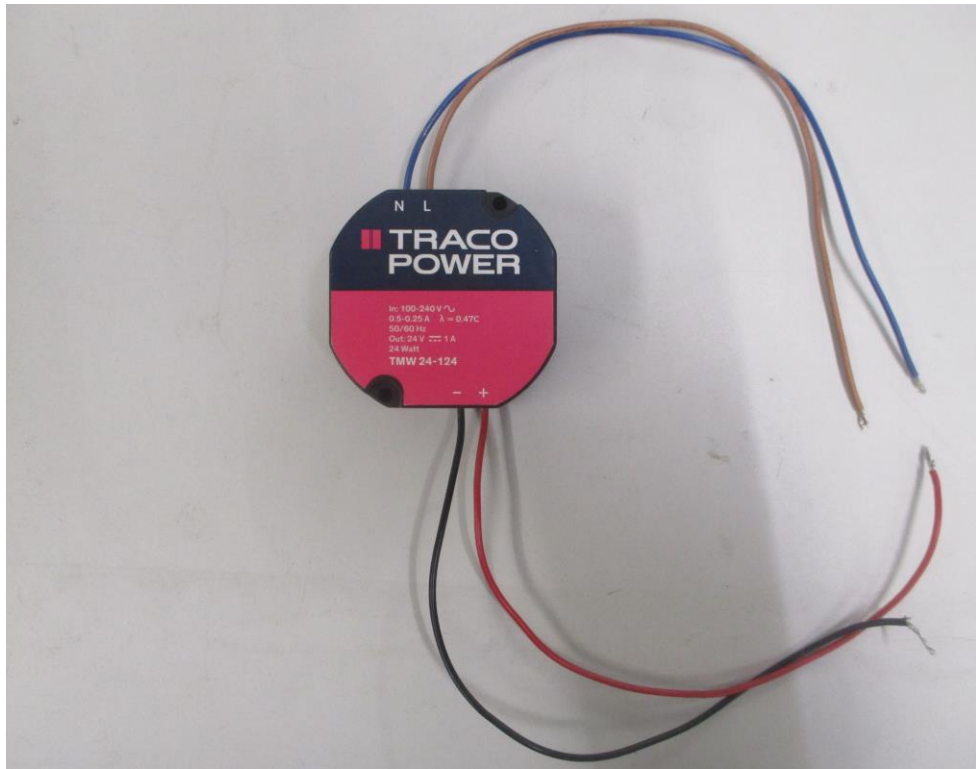



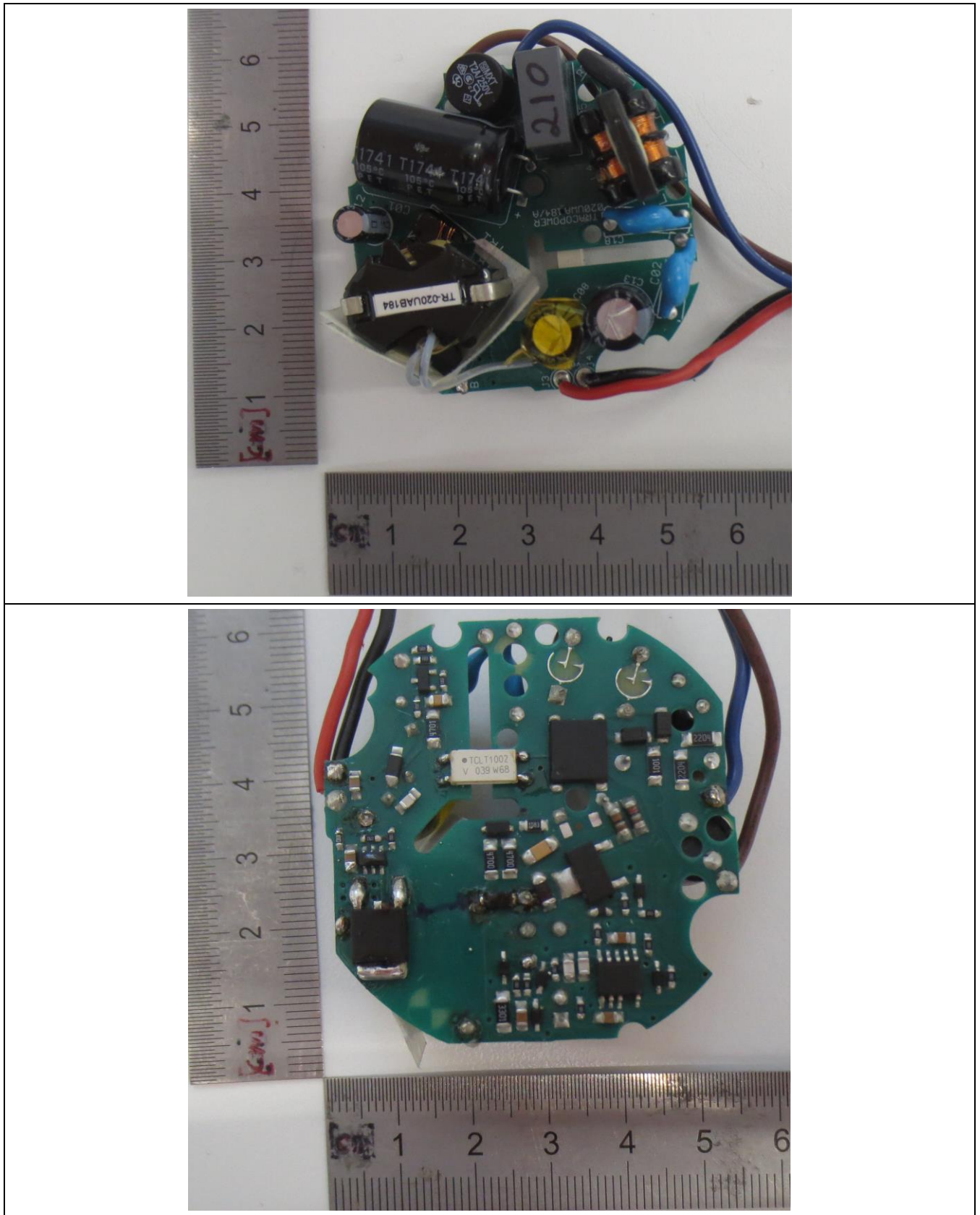
**Model: TMW 24-112**


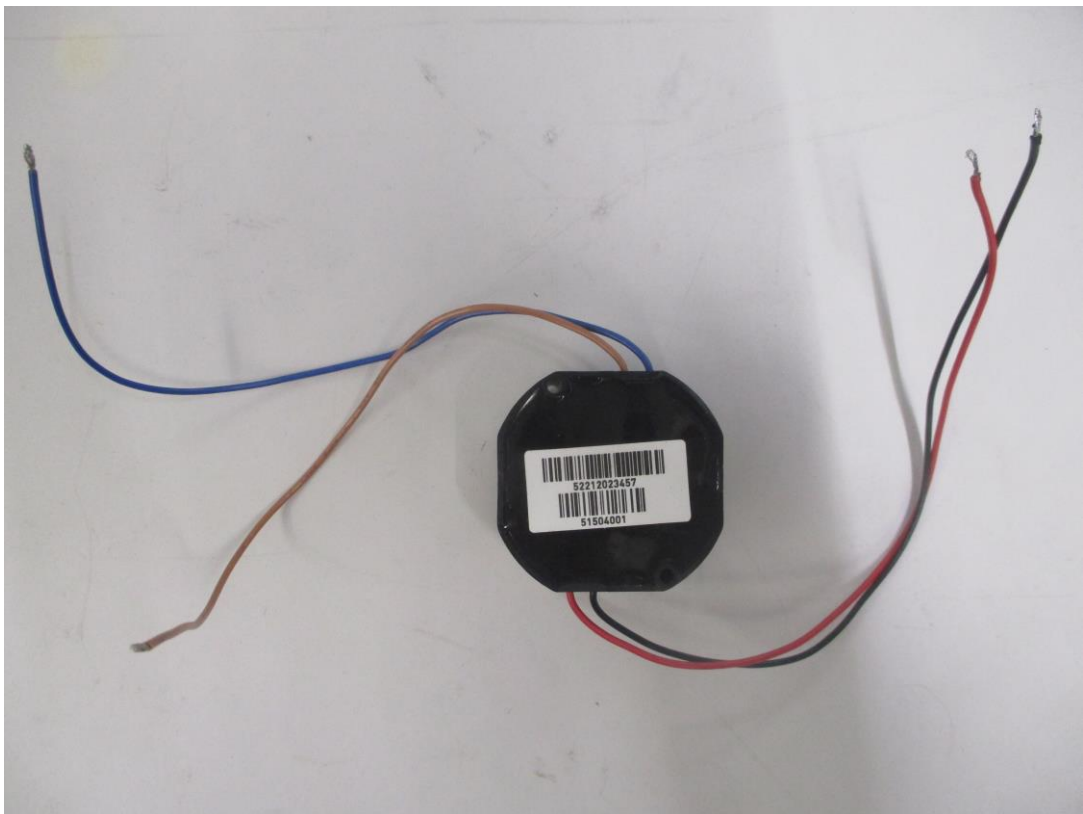
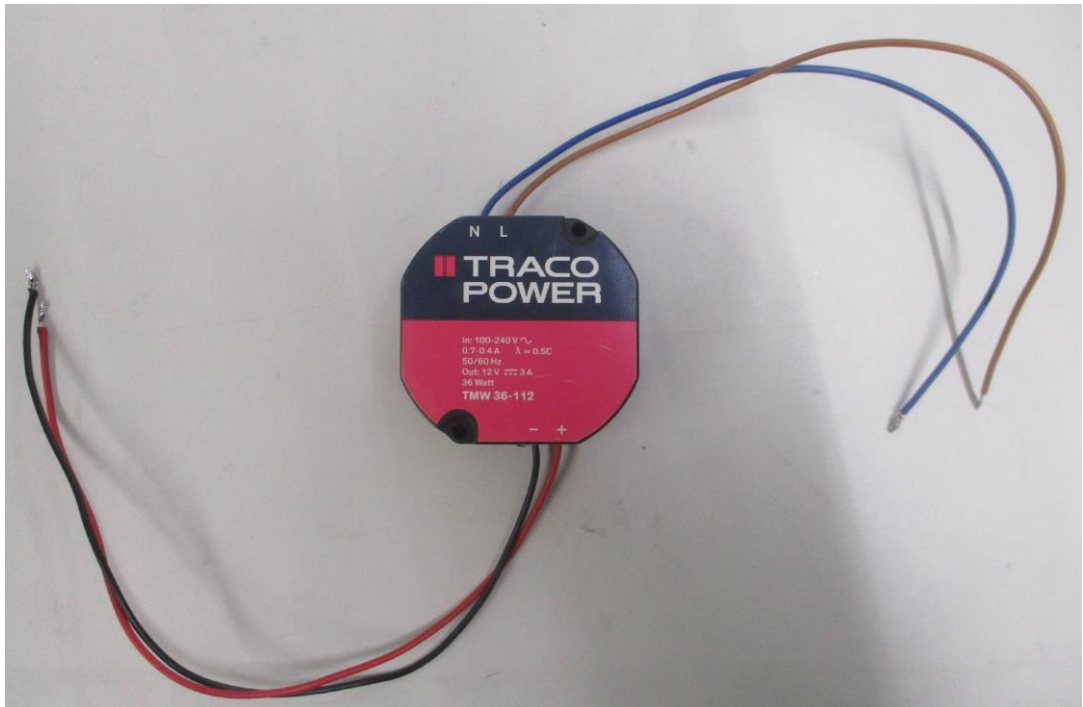




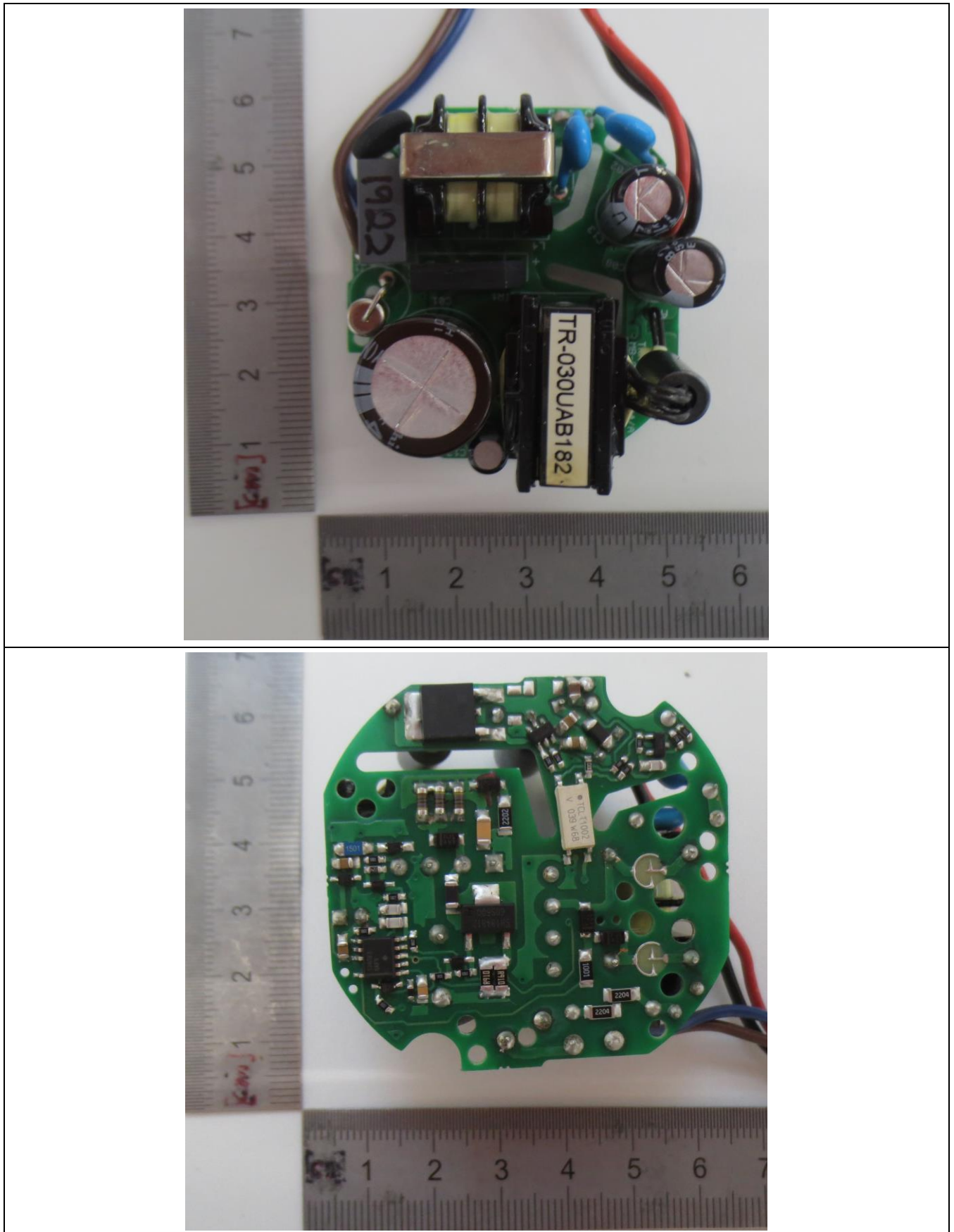


**Model: TMW 24-124**




**Model: TMW 36-112**






**Model: TMW 36-124**
