Test Report acc. to EN 61326-1 relating to D&S Steuerungssysteme GmbH EK/BK-UZ, EK/BK-M, EK/BK-M-2, EK/BK-2DA-DE, EK/BK-4-DA, EK/BK-4-DE, EK/BK-4

Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1 General requirements

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1. Test result summary

Clause	Enclosure	Test result			Report page number
7.1.1	Electrostatic discharge	**Pass**	~~Fail~~	~~N.t.~~*	10
7.1.2	Electromagnetic fields	**Pass**	~~Fail~~	~~N.t.~~*	12
7.1.3	Power frequency magnetic fields	~~Pass~~	~~Fail~~	**N.t.**[4]	13

Clause	AC power input ports	Test result			Report page number
7.2.1	Voltage dips and interruptions	~~Pass~~	~~Fail~~	**N.t.**[1]	14
7.2.2	Voltage interruptions	~~Pass~~	~~Fail~~	**N.t.**[1]	15
7.2.3	Fast transients	~~Pass~~	~~Fail~~	**N.t.**[1]	16
7.2.4	Surge voltages	~~Pass~~	~~Fail~~	**N.t.**[1]	16
7.2.5	Conducted RF signals	~~Pass~~	~~Fail~~	**N.t.**[1]	17

Clause	DC power input ports	Test result			Report page number
7.3.1	Fast transients	**Pass**	~~Fail~~	~~N.t.~~*	18
7.3.2	Surge voltages	**Pass**	~~Fail~~	~~N.t.~~*	18
7.3.2	Conducted RF signals	**Pass**	~~Fail~~	~~N.t.~~*	19

Clause	Input / output ports	Test result			Report page number
7.4.1	Fast transients	**Pass**	~~Fail~~	~~N.t.~~*	20
7.4.2	Surge voltages	**Pass**	~~Fail~~	~~N.t.~~*	20
7.4.3	Conducted RF signals	**Pass**	~~Fail~~	~~N.t.~~*	22

Clause	Input / output ports with a direct AC connection	Test result			Report page number
7.5.1	Fast transients	~~Pass~~	~~Fail~~	**N.t.**[1]	23
7.5.2	Surge voltages	~~Pass~~	~~Fail~~	**N.t.**[1]	23
7.5.3	Conducted RF signals	~~Pass~~	~~Fail~~	**N.t.**[1]	24

Clause	Limits for devices of class A	Test result			Report page number
7.6.1	Conducted emissions according to CISPR 11	~~Pass~~	~~Fail~~	**N.t.**[5]	25
7.6.2	Radiated emissions according to CISPR 11	~~Pass~~	~~Fail~~	**N.t.**[5]	26

Clause	Limits for devices of class B	Test result			Report page number
7.7.1	Conducted emissions according to CISPR 11	~~Pass~~	~~Fail~~	**N.t.**[1]	27
7.7.2	Conducted emissions according to IEC 61000-3-2 and IEC 61000-3-3	~~Pass~~	~~Fail~~	**N.t.**[1]	29 to 31
7.7.3	Radiated emissions according to CISPR 11	**Pass**	~~Fail~~	~~N.t.~~*	32

The equipment passed the conducted tests	**Yes**	~~No~~

Signature		
Name	**Mr. Roger Witze**	**Mr. Manfried Dudde**
Designation	**EMC Test Engineer**	**Laboratory Manager**
Date of issue	**2016-02-18**	**2016-02-18**

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Table of contents

Clause **Page**

1. Test result summary 2
2. Introduction 6
3. Testing laboratory 6
4. Applicant 7
5. Product and product documentation 7
6. Conclusions, observations and comments 8
7. Conformity assessment 9
7.1 Enclosure 9
7.1.1 Electrostatic discharge (ESD) 9
7.1.2 Electromagnetic fields 10
7.1.3 Power frequency magnetic fields 11
7.2 AC power input port 12
7.2.1 Voltage dips 12
7.2.2 Voltage interruptions 13
7.2.3 Fast transients 14
7.2.4 Surge voltages 14
7.2.5 Conducted RF signals 15
7.3 DC power input port 16
7.3.1 Fast transients 16
7.3.2 Surge voltages 17
7.3.3 Conducted RF signals 18
7.4 Input / output ports 19
7.4.1 Fast transients 19
7.4.2 Surge voltages 20
7.4.3 Conducted RF signals 21
7.5 Input / output ports with a direct AC connection 22
7.5.1 Fast transients 22
7.5.2 Surge voltages 22
7.5.3 Conducted RF signals 23
7.6 Limits for class A equipment 24
7.6.1 Conducted emissions according to CISPR 11 24
7.6.2 Radiated emissions according to CISPR 11 25
7.7 Limits for class B equipment 26
7.7.1 Conducted emissions according to CISPR 11 26
7.7.2 Conducted emissions according to IEC 61000-3-2 and IEC 61000-3-3 27
7.7.2.1 Conducted emissions according to IEC 61000-3-2 27
7.7.2.2 Conducted emissions according to IEC 61000-3-3 30

Table of contents

Clause **Page**

7.7.3 Radiated emissions according to CISPR 11 31
8. Additional information to the test report 32
9. List of test equipment 33
10. Cable list 47
11. List of rented test equipment and auxiliary means 52

2. Introduction

This test report **is not an expert opinion** and consists of:

- Test result summary
- List of contents
- Introduction and further information
- Detailed test information
- List of measurement equipment with calibration validity
- Photographs and further test results (plots, graphs, etc.)

All pages have been numbered consecutively and bear the m. dudde hochfrequenz-technik logo, the test report number, the date, the test specification in its current version as well as the type designation of the EUT. The total number of pages in this report is **78**.

The tests were carried out at:

- m. dudde hochfrequenz-technik, D-51429 Bergisch Gladbach
- Cetecom GmbH, Essen - Germany

in a representative assembly and in accordance with the test methods stated in:

EN 61326-1:2013

The sample of the product was received on:

- 2016-02-04

The tests were carried out in the following period of time:

- 2016-02-04 – 2016-02-16

3. Testing laboratory

m. dudde hochfrequenz-technik
Rottland 5a, 51429 Bergisch Gladbach, Germany

Phone: +49 - (0) 22 07 / 96 89-0
Fax: +49 - (0) 22 07 / 96 89-20

Accredited by:

DAkkS Deutsche Akkreditierungsstelle GmbH
DAkkS accreditation number: D-PL-12053-01

4. Applicant

Company name	: D&S Steuerungssysteme GmbH
Address	: St. Tönnis Str. 201 50769 Köln
Country	: Germany
Telephone	: +49(0)221 976557 12
Fax	: +49(0)221 976557 16
Email	: stanzick@ds-steuerungssysteme.de
Date of order	: 2016-01-25
References	: Mr. Gerhard Stanzick

5. Product and product documentation

Samples of the following apparatus were submitted for testing:

Manufacturer	: D&S Steuerungssysteme Köln GmbH
Trademark	: ERK/BSK-500
Type designation	: EK/BK-UZ, EK/BK-M, EK/BK-M-2 EK/BK-2DA-DE, EK/BK-4-DA, EK/BK-4-DE, EK/BK-4
Serial number	: ---
Hardware version	: ---
Software version	: ---
Type of equipment	: Bus system for controlling and monitoring of thermal and motorized fire and smoke dampers

For issuing this report the following product documentation was used:

Description	Date	Identifications
ERK-500 Systembeschreibung	---	---

6. Conclusions, observations and comments

The test report will be filed at m. dudde hochfrequenz-technik for a period of 10 years following the issue of this report. It may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of m. dudde hochfrequenz-technik.

The results of the tests as stated in this report are exclusively applicable to the EUT as identified in this report. m. dudde hochfrequenz-technik cannot be held liable for properties of the EUT that have not been observed during these tests.

m. dudde hochfrequenz-technik assumes the sample to comply with the requirements of EN 61326-1 for the respective test sector, if the test results turn out positive.

Comments:
This test report number 16010290 replaces the test report number 16010288!
The test report number 16010288 loses its validity!

Date	: 2016-02-18	Date	: 2016-02-18
Name	: Mr. Roger Witze	Name	: Mr. Manfried Dudde
Designation	: EMC Test Engineer	Designation	: Laboratory Manager
Signature	:	Signature	: .....

7. Conformity assessment

7.1 Enclosure

7.1.1 Electrostatic discharge (ESD)

Environmental conditions during the test		
Temperature: 19 °C	Air pressure: 968 hPa	Rel. humidity: 42 %
Operating mode		
Normal operating mode		

Test results evaluation for Electrostatic Discharge in accordance with EN 61000-4-2						
Electrostatic Discharge type	**Test Voltage [kV]**	**Test points**	**Numbers of discharge**	**Time interval**	**Performance criteria**	**Remarks**
Direct Contact discharge	**± 2**	See picture, page 76 - 77	**10**	1 sec	**A**	No reaction remarked
	± 4	See picture, page 76 - 77	**10**	1 sec	**A**	No reaction remarked
HCP Contact discharge	**± 2**	See picture, page 76 - 77	**40**	1 sec	**A**	No reaction remarked
	± 4	See picture, page 76 - 77	**40**	1 sec	**A**	No reaction remarked
VCP Contact discharge	**± 2**	See picture, page 76 - 77	**40**	1 sec	**A**	No reaction remarked
	± 4	See picture, page 76 - 77	**40**	1 sec	**A**	No reaction remarked
Air discharge	**± 2**	See picture, page 76 - 77	**10**	1 sec	**A**	No reaction remarked
	± 4	See picture, page 76 - 77	**10**	1 sec	**A**	No reaction remarked
	± 6	See picture, page 76 - 77	**10**	1 sec	**A**	No reaction remarked
	± 8	See picture, page 76 - 77	**10**	1 sec	**A**	No reaction remarked
Measurement uncertainty: < ± 3 %						
Test Remarks						

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~

Further test results are attached	**Yes**	~~No~~	Page no.: 76 - 77

Test equipment used: 112a, 265, 644

N.t.* See page no. 32

7.1.2 Electromagnetic fields

Environmental conditions during the test		
Temperature: 22 °C	Air pressure: 1002 hPa	Rel. humidity: 42 %
Operating mode		
Normal operating mode		

Test results evaluation for radio frequency electromagnetic fields in accordance with EN 61000-4-3							
Frequency range	**Test field [V/m]**	**Test side**	**Antenna polarisation**	**Dwell time [sec]**	**Modulation type**	**Performance criterion**	**Remarks**
80 – 1000	**10***	Front	**H**	**1.5**	**80 %, 1 kHz, AM modulation**	**A**	No reaction remarked
			V	**1.5**		**A**	No reaction remarked
		Right	**H**	**1.5**		**A**	No reaction remarked
			V	**1.5**		**A**	No reaction remarked
		Left	**H**	**1.5**		**A**	No reaction remarked
			V	**1.5**		**A**	No reaction remarked
		Rear	**H**	**1.5**		**A**	No reaction remarked
			V	**1.5**		**A**	No reaction remarked
1000 - 2700	**10***	Front	**H**	**1.5**	**80 %, 1 kHz, AM modulation**	**A**	No reaction remarked
			V	**1.5**		**A**	No reaction remarked
		Right	**H**	**1.5**		**A**	No reaction remarked
			V	**1.5**		**A**	No reaction remarked
		Left	**H**	**1.5**		**A**	No reaction remarked
			V	**1.5**		**A**	No reaction remarked
		Rear	**H**	**1.5**		**A**	No reaction remarked
			V	**1.5**		**A**	No reaction remarked
Test Remarks							
*: The test has been carried out with higher level as required according to EN 61000-4-3							

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~

Further test results are attached	**Yes**	~~No~~	Page no.: 65 - 66

Test equipment used: See equipment list

*The measurements were performed by our technician with the calibrated test equipment of the accredited test laboratory Cetecom GmbH, Essen. See also page no. 52.

N.t.* See page no. 32

7.1.3 Power frequency magnetic fields

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %

Requirements and evaluation for magnetic fields with energy technical frequency

Test specification	Units	Basic standard	Performance criterion
50, 60 30	Hz A/m	IEC 61000-4-8	A

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[4]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---

N.t.* See page no. 32

7.2 AC power input port

7.2.1 Voltage dips

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %
Operating mode		

Requirements and evaluation for voltage dips

Test specification	**Units**	**Basic standard**	**Performance criterion**
0 1	% residual voltage cycle	IEC 61000-4-11	A
40 10	% residual voltage cycle	IEC 61000-4-11	A
70 25 at 50 Hz	% residual voltage cycles	IEC 61000-4-11	A
Measurement uncertainty: < ± 2 %			

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[1]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---

N.t.* See page no. 32

7.2.2 Voltage interruptions

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %
Operating mode		

Requirements and evaluation for voltage interruptions

Test specification	Units	Basic standard	Performance criterion
0 250 at 50 Hz	% residual voltage cycles	IEC 61000-4-11	B
Measurement uncertainty: < ± 2 %			

Test result: ---

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[1]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---

N.t.* See page no. 32

7.2.3 Fast transients

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %
Operating mode		

Test results evaluation for fast transients on AC main ports in accordance with EN 61000-4-4			
Test voltage	**T_r/T_h**	**Repetition frequency**	**Performance**
kV	**ns**	**kHz**	**Criterion**
± 2	**5/50**	**5**	**A**
Measurement uncertainty: < ± 5 %			
Test Remarks			

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[1]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---

7.2.4 Surge voltages

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %
Operating mode		

Test results evaluation for surges on AC mains power input ports in accordance with EN 61000-4-5			
Test Voltage Level	**Test Voltage**	**T_s/T_r**	**Performance**
kV	**type**	**µs**	**Criterion**
±2	**Line to Ground**	**1.2/50**	**A***
±1	**Line to Line**	**1.2/50**	**A***
Measurement uncertainty: < ± 2 %.			

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[1]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---

N.t.* See page no. 32

7.2.5 Conducted RF signals

Requirements for radio frequency on AC mains power ports				
Frequency Range	**Test Voltage**	**Modulation Depth**	**Modulation**	**Test Method**
MHz	**V**	**%**	**Type**	**Basic Standard**
0.15 – 80	3	80 (1 kHz)	AM	EN 61000-4-6
Where this test is not carried out on any port because the manufacturer declares that it is not intended to be used with cables longer than 3 m, a list of ports, which were not tested for this reason, shall be included in the test report				

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %
Operating mode		

Test results evaluation for radio frequency on AC mains power input ports in accordance with EN 61000-4-6				
Frequency Range	**Test Voltage**	**Modulation Depth**	**Modulation**	**Performance**
MHz	**V**	**%**	**Type**	**Criterion**
0.15 – 80	**3**	**80 (1 kHz)**	**AM**	**A**
Measurement uncertainty: < ± 2 %.				
Test Remarks				

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[1]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---
Test cable used: ----

N.t.* See page no. 32

7.3 DC power input port

7.3.1 Fast transients

Environmental conditions during the test		
Temperature: 19 °C	Air pressure: 995 hPa	Rel. humidity: 46 %

Requirements and evaluation for fast transients

Test specification	Units	Basic standard	Performance criterion
±2 5/50 5	kV (charging voltage) T_r/T_h ns kHz repetition frequency	IEC 61000-4-4	B

Test result

Test specification	Units	Basic standard	Performance
±2 5/50 5	kV (charging voltage) T_r/T_h ns kHz repetition frequency	IEC 61000-4-4	B
Measurement uncertainty: < ± 2 %			
Test remarks			
During the test with all test level the Error LED on the EK-UZ was blinking. The EUT worked as intended and no change of operating mode or unwanted switching has been remarked			

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~ [1]

Further test results are attached	**Yes**	~~No~~	Page no.:

Test equipment used: 106, 46a, 644

N.t.* See page no. 32

7.3.2 Surge voltages

Environmental conditions during the test		
Temperature: 20 °C	Air pressure: 995 hPa	Rel. humidity: 46 %

Requirements and evaluation for surges

Test specification	Units	Basic standard	Performance criterion
~~Line to line 1~~ Line to earth (ground) 1	kV (open circuit voltage) kV (open circuit voltage)	IEC 61000-4-5	A
Measurement uncertainty: < ± 2 %			

Test result

Test Level	Number of pulse	Basic standard	Performance
±1 kV (Plus line to earth)	5	IEC 61000-4-5	A*
±1 kV (Minus line to earth)	5	IEC 61000-4-5	A*
Measurement uncertainty: < ± 2 %			
Test remarks:			
***: No reaction remarked**			

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~ [1]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test cable used: KEMV18a
Test equipment used: 106, 644, 522, 285

N.t.* See page no. 32

7.3.3 Conducted RF signals

Environmental conditions during the test		
Temperature: 20 °C	Air pressure: 995 hPa	Rel. humidity: 46 %

Requirements and evaluation for radio-frequency common mode

Test specification	Units	Basic standard	Performance criterion
0,15 to 80 3 80	MHz V (unmodulated, rms) % AM (1 kHz)	IEC 61000-4-6	A
Measurement uncertainty: < ± 2 %			

Test result

Test Frequency [MHz]	Test Level [V]	Modulation	Basic standard	Performance
0.15 to 80	3	80%, AM 1 kHz	IEC 61000-4-6	A*
Measurement uncertainty: < ± 2 %				
Test remarks				
***: No reaction remarked**				

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~ [1]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test cable used: K27, K35, K112
Test equipment used: 106, 264, 177, 162, 123, 136, 307

N.t.* See page no. 32

7.4 Input / output ports

7.4.1 Fast transients

Requirements for fast transients on signal and control ports			
Test Voltage	**T_r/T_h**	**Repetition Frequency**	**Test Method**
kV	**ns**	**kHz**	**Basic Standard**
± 1	5/50	5	EN 61000-4-4
Where this test is not carried out on any port because the manufacturer declares that it is not intended to be used with cables longer than 3 m, a list of ports, which were not tested for this reason, shall be included in the test report.			

Environmental conditions during the test		
Temperature: 20 °C	Air pressure: 995 hPa	Rel. humidity: 46 %
Operating mode		
Normal operation mode		

Test results evaluation for fast transients on signal and control ports in accordance with EN 61000-4-4				
Test port	**Test voltage**	**T_r/T_h**	**Repetition frequency**	**Performance**
---	**kV**	**ns**	**kHz**	**Criterion**
Bus 1	**± 1**	**5/50**	**5**	**B***
Bus 2	**± 1**	**5/50**	**5**	**B***
Cable ES4DA – EK4	**± 1**	**5/50**	**5**	**B***
Cable EK4 – EKM	**± 1**	**5/50**	**5**	**B***
Measurement uncertainty: < ± 5 %				
Test Remarks				
***: During the test with all test level, the Error LED on the EK-UZ was blinking. The EUT worked as intended and no change of operating mode or unwanted switching has been remarked**				

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: 46a, 106, 608
Test cable used: KEMV19a

N.t.* See page no. 32

7.4.2 Surge voltages

Requirements for surges on signal and control ports			
Test Voltage	**Test Voltage**	**T_s/T_r**	**Test Method**
kV	**type**	**µs**	**Basic Standard**
0.5*	line to ground	1.2/50	EN 61000-4-5
1**	line to ground	1.2/50	
* telecommunications ports, intended to be directly connected in telecommunication centres **telecommunications ports, intended to be directly connected to the telecommunications network			

Environmental conditions during the test		
Temperature: 21 °C	Air pressure: 966 hPa	Rel. humidity: 41 %
Operating mode		
Normal operation mode		

Test results evaluation for surges on signal and control ports in accordance with EN 61000-4-5				
Test port	**Test Voltage Level**	**Test Voltage**	**T_s/T_r**	**Performance**
	kV	**type**	**µs**	**Criterion**
Bus 1	±1	Each signal line to Ground* (shielded cable)	**1.2/50**	**A**
Bus 2	±1	Each signal line to Ground* (shielded cable)	**1.2/50**	**A**
ES4DA – EK4	±1	Each signal line to Ground* (shielded cable)	**1.2/50**	**A**
EK4 – EKM	±1	Each signal line to Ground* (shielded cable)	**1.2/50**	**A**
Measurement uncertainty: < ± 2 %.				
Test Remarks				
***: The shielded of the signal cable was connected to the ground. The test was performed between each signal line and the shielded cable**				

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: 106, 285, 522, 644
Test cable used: KEMV18a

N.t.* See page no. 32

7.4.3 Conducted RF signals

Requirements for radio frequency on signal and control ports				
Frequency Range	**Test Voltage**	**Modulation Depth**	**Modulation**	**Test Method**
MHz	**V**	**%**	**Type**	**Basic Standard**
0.15 – 80	3	80 (1 kHz)	AM	EN 61000-4-6
Where this test is not carried out on any port because the manufacturer declares that it is not intended to be used with cables longer than 3 m, a list of ports, which were not tested for this reason, shall be included in the test report				

Environmental conditions during the test		
Temperature: 19 °C	Air pressure: 966 hPa	Rel. humidity: 44 %
Operating mode		
Normal operation mode		

Test results evaluation for radio frequency signal and control ports in accordance with EN 61000-4-6					
Test port	**Frequency Range**	**Test Voltage**	**Modulation Depth**	**Modulation**	**Performance**
---	**MHz**	**V**	**%**	**Type**	**Criterion**
Bus 1	**0.15 – 80**	**3**	**80 (1 kHz)**	**AM**	**A***
Bus 2	**0.15 – 80**	**3**	**80 (1 kHz)**	**AM**	**A***
ES4DS – EK4	**0.15 – 80**	**3**	**80 (1 kHz)**	**AM**	**A***
EK4 - EKM	**0.15 – 80**	**3**	**80 (1 kHz)**	**AM**	**A***
Measurement uncertainty: < ± 2 %.					
Test Remarks					
***: During these tests no interferences are observed. The EUT operated as intended in the presence of a radio frequency electromagnetic on the telecommunication ports**					

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: 106, 177, 162, 123, 136, 307, 156, 264, 644
Test cable used: K27, K35, K112

N.t.* See page no. 32

7.5 Input / output ports with a direct AC connection

7.5.1 Fast transients

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %

Requirements and evaluation for fast transients

Test specification	Units	Basic standard	Performance criterion
1 5/50 5	kV (charging voltage) T_r/T_h ns kHz repetition frequency	IEC 61000-4-4	B
Measurement uncertainty: < ± 2 %			

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[1]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---

7.5.2 Surge voltages

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %

Requirements and evaluation for surges

Test specification	Units	Basic standard	Performance criterion
Line to line 0.5 Line to earth (ground) 1	kV (open circuit voltage) kV (open circuit voltage)	IEC 61000-4-5	B
Measurement uncertainty: < ± 2 %			

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[1]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---

N.t.* See page no. 32

7.5.3 Conducted RF signals

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %

Requirements and evaluation for radio-frequency common mode

Test specification	Units	Basic standard	Performance criterion
0,15 to 80 3 80	MHz V (unmodulated, rms) % AM (1 kHz)	IEC 61000-4-6	A
Measurement uncertainty: < ± 2 %			

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[1]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---

N.t.* See page no. 32

7.6 Limits for class A equipment

7.6.1 Conducted emissions according to CISPR 11

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %

Limits for conducted disturbance at power input/output ports

Frequency range MHz	**Limits** dB(µV)	
	Quasi-peak	**Average**
0,15 to 0,50	79	66
0,50 to 5	73	60
5 to 30	73	60
NOTE: The lower limit shall apply at the transition frequencies		

Test results for conducted disturbance at power input/output ports

Frequency MHz	**Values** dB(µV)	
	Quasi-peak	**Average**
---	---	---
---	---	---
---	---	---
---	---	---
---	---	---
---	---	---
---	---	---
---	---	---
---	---	---
---	---	---
Measurement uncertainty: < ± 2 dB		

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[5]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---

N.t.* See page no. 32

7.6.2 Radiated emissions according to CISPR 11

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %

Limits for radiated disturbance at a measuring distance of 10 m

Frequency range MHz	**Quasi-peak limits** dB(µV/m)
30 to 230	40
230 to 1000	47
NOTE: The lower limit shall apply at the transition frequencies.	

Test results for radiated disturbance at a measuring distance of 10 m

Frequency MHz	**Values** dB(µV/m)
---	---
---	---
---	---
---	---
---	---
---	---
---	---
---	---
---	---
---	---
Measurement uncertainty: < ± 4 dB	

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[5]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---

N.t.* See page no. 32

7.7 Limits for class B equipment

7.7.1 Conducted emissions according to CISPR 11

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %
Operating mode		

Limits for conducted disturbance at power input/output ports

Frequency range MHz	**Limits dB(µV)**	
	Quasi-peak	**Average**
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50
NOTE 1: The lower limit shall apply at the transition frequencies. NOTE 2: In the frequency range 0.15 MHz to 0.5 MHz the limits decrease linearly with the logarithm of the frequency.		

Test results:

Frequency MHz	**Values dB(µV) - (LAN port)**	
	Quasi-peak	**Average**
---	---	---
---	---	---
---	---	---
Measurement uncertainty: < ± 2 dB		

Test Line	**Frequency** MHz	**Values dB(µV)**	
		Quasi-peak	**Average**
N	---	---	---
N	---	---	---
N	---	---	---
L	---	---	---
L	---	---	---
L	---	---	---
Measurement uncertainty: < ± 2 dB			

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[1]

Further test results are attached	~~Yes~~	No	Page no.:

Test equipment used: ---
Test cable used: ---

N.t.* See page no. 32

7.7.2 Conducted emissions according to IEC 61000-3-2 and IEC 61000-3-3

7.7.2.1 Conducted emissions according to IEC 61000-3-2

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %
Operating mode		

Limits for class A equipment

Harmonics order n	Maximum permissible harmonic current A
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
$15 \leq n \leq 39$	0.15 x 15/n
Even harmonics	
2	1.08
4	0.43
8	0.30
$8 \leq n \leq 40$	0.23 x 8/n

Limits for class B equipment

Harmonics order n	Maximum permissible harmonic current A
Odd harmonics	
3	2.30 x 1.5
5	1.14 x 1.5
7	0.77 x 1.5
9	0.40 x 1.5
11	0.33 x 1.5
13	0.21 x 1.5
$15 \leq n \leq 39$	0.15 x 15/n x 1.5
Even harmonics	
2	1.08 x 1.5
4	0.43 x 1.5
8	0.30 x 1.5
$8 \leq n \leq 40$	0.23 x 8/n x 1.5

Limits for class C equipment

Harmonics order n	**Maximum permissible harmonic current, indicated in per cent of the basic current % **
2	2
3	30 λ*
5	10
7	7
9	5
11 ≤ n ≤ 39 (only odd harmonics)	3

* λ is the power factor of the circuitry

Limits for class D equipment

Harmonics order n	**Maximum permissible harmonic current per Watt mA/W**	**Maximum permissible harmonic current A**
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
13 ≤ n ≤ 39 (only odd harmonics)	3.85/n	0.15 x 15/n

Test results for class A equipment

Harmonics order n	Measured A	Limit A	Margin A
Odd harmonics			
3	**		
5	**		
7	**		
9	**		
11	**		
13	**		
15 ≤ n ≤ 39	**		
Even harmonics			
2	**		
4	**		
8	**		
8 ≤ n ≤ 40	**		
Measurement uncertainty: < ± 1.0 %			

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[1]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---

Test results for class C / D equipment

Harmonics Order n	Measured % / mA/W / A	Limit % / mA/W / A	Margin % / mA/W / A
Measurement uncertainty: < ± 1.0 %			

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[5]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---

N.t.* See page no. 32

7.7.2.2 Conducted emissions according to IEC 61000-3-3

Environmental conditions during the test		
Temperature: --- °C	Air pressure: --- hPa	Rel. humidity: --- %
Operating mode		

Limits for voltage fluctuations and flicker

The short term flicker value P_{st} may not exceed 1.0.
The long term flicker value P_{lt} may not exceed 0.65.
The value during a voltage fluctuation $d(t)$ may not exceed 3.3 % for more than 500 ms.
The relative steady voltage deviation d_c may not exceed 3.3 %.
The maximum relative voltage fluctuation d_{max} may not exceed 4 % without additional conditions
The maximum relative voltage fluctuation d_{max} may not exceed 6 % for equipment and facilities that either - are switched manually; or - are switched automatically more than twice a day and either have a delayed restart (the delay must not be less than a few 10 s) or that are switched on manually after interruption in the power supply;*
The maximum relative voltage fluctuation d_{max} may not exceed 7 % for equipment and facilities that either - are supervised during their operation (e.g. hair dryers, vacuum cleaners, kitchen appliances such as mixers, garden equipment such lawn mowers, portable tools such as electric drills); or - are turned on automatically or are intended to be switched on manually, not more than twice a day, having a delayed restart (the delay must not be less than a few 10 s), or that are switched on manually after interruption in the power supply.*
* Note: The operating cycle frequency is still limited by the P_{st} and P_{lt} limit.

Test results

Phenomenon	Measured values	Limit	Margin
Short term flicker	---	1.0 XX	
Long term flicker	---	0.65 XX	
Voltage fluctuation d(t)	---	3.3 % for more than 500 ms	
Relative steady voltage deviation dc	---	3.3 %	
Maximum relative voltage fluctuation d_{max}	---	4 % / 6 % / 7 %	
Measurement uncertainty: < ± 0.2 %			

The equipment passed the conducted tests	~~Yes~~	~~No~~	**N.t.**[1]

Further test results are attached	~~Yes~~	**No**	Page no.:

Test equipment used: ---

N.t.* See page no. 32

7.7.3 Radiated emissions according to CISPR 11

Environmental conditions during the test		
Temperature: 12 °C	Air pressure: 979 hPa	Rel. humidity: 71 %
Operating mode		
Normal operation mode		

Limits for radiated disturbance at a measuring distance of 10 m

Frequency range MHz	**Quasi-peak limits** dB(µV/m)
30 to 230	30
230 to 1000	37
NOTE: The lower limit shall apply at the transition frequencies.	

Test results for radiated disturbance at a measuring distance of 10 m

Frequency MHz	**Values** dB(µV/m)
192.0	26.6
201.1	16.1
232.6	11.0
232.8	21.0
275.0	13.7
325.0	18.1
Measurement uncertainty: < ± 4 dB	

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~

Further test results are attached	**Yes**	~~No~~	Page no.: 76 - 77

Test equipment used: 103, 166a, 171a, 406, 430
Test cable used: K1a, K40, K56, K83

N.t.* See page no. 32

8. Additional information to the test report

N.t.[1] Not tested, because the EUT has no corresponding port

N.t.[2] Not tested, because the EUT has no lines inside of a building > 30 m or lines leaving a building

N.t.[3] Not tested, because the EUT has no lines > 3 m

N.t.[4] Not tested, because the EUT is not magnetically sensitive

N.t.[5] Not tested, because the EUT is not Class A equipment

N.t.[6] Not tested, because the EUT is not Class B equipment

N.t.[7] Not tested, because not applicable for this type of device

N.t.[8] Not tested, because not ordered

9. List of test equipment

Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
Vacumeter - 0–1999 mbar |± 0.3 % ± 1 digit	Ebro - VM 2000	2a	09/17
LF-Generator - 0 – 25 MHz	Rohde & Schwarz - SPN	4a	03/18
Low Noise Signal Generator 10 kHz – 5.4 GHz | -144 dBm – +13 dBm	Marconi 2042	6	03/18
Power Meter 100 kHz – 50 GHz | -70 – +44 dBm (100 pW - 25W)	Hewlett Packard 436 A	12a	06/18
Measurement – Transceiver AM / FM | Ton Generator | Broadband discriminator	Schomandl FD530	13	---
Frequency Counter Accessory FD530 - 1 Hz - 12 MHz	Schomandl - FZ-1	13a	---
K-Band Attenuator - 18- 27 GHz	Philips - PM 7100QA	15b	---
Waveguide Power Sensor 26.5 GHz – 40 GHz | -70 – -20 dBm	Hewlett Packard HP R8486 A	16a	---
Modulation Meter 50 kHz–2.32 GHz | -25 – +30 dBm | 50Ω N	Marconi 2305	17	---
Field strength measuring Accessories 9 kHz –30MHz | 146 dBµV/m	Schwarzbeck FMZB 1516	23	05/16
Switch - 9 kHz –1000MHz | 0–100 dB	Auth Nachritent - 1S63	26a	11/18
DC Power Supply - 0–20 V | 0–10 A	Rohde & Schwarz - NGR 20	27	---
Programmable Power Supply	Fluke - PM 2813	28a	---
DC Power Supply	Heinzinger - TNs 15-300	29	---
DC Power Supply - 70V DC | max. 3.5A	Statron - 3206	30	---
AC Microvoltmeter 5 Hz – 600 kHz | -110 – + 10 dBm | Zi : 10 MΩ || 20 pF	Hewlett Packard 3410 A	31	---
Signal Generator 0.1 – 2060 MHz | +13 dBm – -143.5 dBm | <±1.5 dB	Hewlett Packard 8657B	32a	---
Insertion Unit 9 kHz – 2000 MHz | 10V | 50 Ω	Rohde & Schwarz URY-Z2	34a	02/17
Power Sensor - 10 MHz – 18 GHz | -30 – +20 dBm	Hewlett Packard - 8481 A	35	06/18
50 Ω – 75 Ω Impedance matching pad DC – 500 MHz | 5.7 ± 0.5 dB | VSWR: 1.35	Pasternack Ent. PE7028	36a	04/18
Impedance matching pad DC – 500 MHz | 5.7 ± 0.5 dB | VSWR: 1.35	Pasternack Ent PE7028	37a	04/18
AF Transformer	Rohde & Schwarz - TS8910	38a	---
Sound Generator	Schomandl - SG 1	40	---
Near Field Probe Set 100 kHz–3 GHz | N.F.: 3.5 dB | + 12 dBm	EMCO 7405	41	---
RF Current Probe 9 kHz – 30 MHz | CISPR 16- 1	Rohde & Schwarz ESH2-Z1	42	03/16
VHF- Current Probe 9 kHz – 600 MHz| –33 dBµA – +117 dBµA | 50 A | -20 dB	Rohde & Schwarz ESV-Z1	43	03/16
Active Voltage Probe 9 kHz – 30 MHz | –20 dBµV – +120 dBµV | 3 V/30 V	Rohde & Schwarz ESH2-Z2	44	03/16
Passive Test Probe - 9 kHz – 30 MHz	Dudde - VDE 0876	45	05/18
EFT / Burst – Generator - Up to 125 kHz | 5 kV	Schlöder GmbH - SFT 1400	46a	06/17

Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
Line Impedance Stabilization Network 9 kHz – 30 MHz | 50Ω | 50 µH / 250 µH | 10 A	EMCO 3810/2 LISN	49b	08/17
Coaxial Fixed Attenuator DC – 12.4 GHz | |3 ± 0.3 dB | Pin_max.: 2 Wavg / 100 Wp	Hewlett Packard 8491 A	54	06/18
Digital-Hygro-Thermometer -20 °C - +70.0 °C | %RH: 10 %RH- 95 %RH	Greisinger GFTH 95	57a	03/17
Passive Test Probe	RFT - TK 11	58a	05/18
Coaxial Fixed Attenuator DC – 1 GHz | 30 dB | 50Ω BNC | 1W	Texscan HFP50/30	59	04/18
Coaxial Fixed Attenuator DC – 1 GHz | 10 dB | 50Ω BNC | 1W	Texscan FP-50	60	09/17
Fixed Attenuator - DC – 12.4 GHz | 10 dB | 50Ω N | 2 W	Tektronix - 011-0085-00	61	01/17
Fixed Attenuator - DC – 4 GHz | 20 dB | 50Ω N | 10 W	Radiall	62	12/16
Fixed Attenuator - 0 – 500 MHz | 40 dB | 50Ω Coaxial | 1W	Mini-Circuits - CAT-40	63	04/18
Step Attenuator - DC – 12.4 GHz | 0 – 60 dB	Narda - Model 710	64	---
Bandpass Filter 41 0 MHz – 41 MHz | 30W | 54 MHz –1 GHz | 1W	Schomandl BN 86871	66	11/18
Bandpass Filter 174 0 MHz –174 MHz | 30W | 240 MHz – 1 GHz | 1W	Schomandl BN 86873	67	11/18
Bandpass Filter 470 0 MHz – 470 MHz | 30 W | 600 MHz – 1 GHz | 1W	Schomandl BN 86874	68	11/18
Notch Filter - 15 – 90 MHz	Schomandl - SF 1	69	---
Notch Filter - 210 W | 500 MHz	Schomandl - SF 3	70	---
8 Wire Impedance Stabilisation Network 150 kHz – 30 MHz | I.L. 1 – 2.5 dB | 150 Ω ± 20 Ω	Schwarzbeck CAT5 8158	71a	01/18
Artificial Mains Network 1 9 – 150 kHz / 150 kHz – 30 MHz | 10 dB	RFT NNB 11	72	08/16
Dual Artificial Mains Network - 9 kHz – 30 MHz	Dudde	73a	09/17
Noise Signal Generator 2 Hz – 200 kHz | 50Ω | 0 – -60 dB |	Robotron 03004	74a	---
Miniature Fixed Attenuator DC – 6 GHz | 6 dB | 50Ω SMA | VSWR : 1.2 | 2 W	Narda 4780-6	75a	04/18
Power Sensor 10 MHz – 18 GHz | 10nW – 500mW	Rohde & Schwarz NRV-Z2	76a	02/17
VHF-Half - Wave Tuned Dipole Antenna 30 –300 MHz | 10 W | N-Connector	Schwarzbeck VHA 9103	80	04/17
UHF- Half - Wave Tuned Dipole Antenna 300 – 1000 MHz | 10 W | N	Schwarzbeck UHA 9105	81	04/17
Double Ridged Broadband Horn Antenna 1.25 – 12 GHz | 6 – 16 dBi | 25 – 34dB/m	Schwarzbeck BBHA 9120-B	83	09/20
Test Sphere - 50 mm | 500 g	Dudde	84a	---
RF condenser Microphone - 1 Hz | Subsonic	Sennheiser - MKH 110	86	---
Temperature Chamber – -60 °C – +70.0 °C	Brabender - TTE 32/40H	87	04/17
Turntable - 0° – 360°	Dudde	89	---
DC-Block - 50 Ω | I.L. 0.1 dB | VSWR: 1.3	Microlab - HR-D18	90b	06/18
Dummy Load Antenna - 9 kHz – 1.5 GHz | 50 Ω	Spinner - BN 6944-00	91	02/17
Dummy Load Antenna - 60 Ω | 20 W	Spinner - BN 2766-B	92	---

Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
T-Section - 50 Ω	Rohde & Schwarz BN 42441/50	93	07/18
Tunable Band pass-Filter - N	Texscan - 5VF500/1000	97	---
Tunable Band pass-Filter	Rohde & Schwarz HA 70/1	98	---
Tunable Bandpass-Filter	Rohde & Schwarz HS 9041	99	---
Termaline Wattmeter - DC – 1.5GHz|50Ω|VSWR:1.2| ± 10%	BIRD	101	01/17
Open Area Test Site - 9 kHz – 1.0 GHz | CISPR 16	Dudde	103	09/17
Open Area Test Site - Substitution	Dudde	104	05/16
Digital Oscilloscope - BW: 1GHz – 1.9GHz | 4 Channel	LeCroy - LC534AL	105b	---
EMC Test Table	HAEFELY	106	---
Step Attenuator - DC – 1.0 GHz | 1dB –80dB	Texscan	107	---
XY Plotter - 5 – 500 mV /cm | ± 0.3% | Ri : 1 MΩ	Hewlett Packard - 7035 B	109	---
Measuring Terminators - 4 – 8 – 16 Ω	Dudde	111	---
ESD Simulator - Air: 0.2 – 16.5 kV | Contact: 0.2 – 9.0 kV	Schlöder GmbH - SESD 200	112a	11/17
Sweep Generator - 18 – 26.5GHz | 50 Ω | VSWR:2.0	Wiltron - 6636a	113a	---
RF-Power Amplifier 0.8 – 1000 MHz | 50 Ω BNC | G: 40 dB | Pout: 3 W	ENI Model 603L	114b	---
Capacitive - Coupling link	Schaffner - SL 400-071	115	---
Passive probe	RFT - TK 11	117a	05/18
Passive probe	RFT - TK 11	118a	05/18
Fitting Transformer - 10 – 150 kHz | 50Ω / 150Ω	RFT - TG11	119a	---
Digital Oszilloscope - 500 MHz	Hewlett Packard - 54520C	120a	03/16
Open Area Test Site - 1 – 6 GHz | CISPR 16	Dudde	122	05/17
RF-Power Amplifier 250 kHz – 150 MHz | G: 55± 1.5 dB | 100 W | VSWR: < 2.5	ENI Model 3100LA	123	---
Coupling-Decoupling Network	E Fiedler - CDN 801 R6 SP	126	---
AM / FM Signal Generator 10 kHz –1 GHz |50Ω N | -127 – + 6 dBm | VSWR : < 1.5	Marconi 2022	127	---
Dummy Load - 0 – 1000 MHz | 50Ω N | 30 W	Radiall	128b	09/17
T-Section - 600 Ω	Dudde	129	---
Microwave Frequency Counter	Hewlett Packard - 5351A	130	10/18
Digital Sound Level Meter - 30 Hz – 12 kHz | ± 2 dB	Chauvin Arnoux - CDA 830	133	---
Laboratory DC Power Supply 0 – 30 V DC | 0 – 6 A DC | BW: 5 Hz – 1 MHz	Sorensen LM 30-6	134a	---
Coupling Network (Mic-input)	Dudde	135	---
Signalgenerator - 0.1 – 1000 MHz | AM / FM	Rohde & Schwarz - SMG	136	03/16
Fixed Coaxial Attenuator - DC – 4 GHz | 3 dB | 5 W	SUHNER - 6803/17/A	137	02/16
RF Power Meter 30 kHz – 46 GHz | -70 dBm (100 pW) – +44 dBm (25W)	Marconi 6960B	139a	06/18
RF Power Sensor 10MHz –20.0GHz | 50Ω N | -30dBm – +20dBm	Marconi 6910	140	06/18
Thermocouple Power Sensor	Hewlett Packard	143b	06/18

Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
100 kHz – 2 GHz | 75 ⍰ N | 1 uW – 100 mW	8483A		
Digital Multimeter 1200 V / 20 A | Accuracy: 0.03% | Resl.: 10uV / 10nA /10MΩ	Goodwill Instek GDM-8045G	144	08/17
Coaxial Fixed Attenuator DC – 1 GHz | 10 dB | 50Ω BNC | 1W	Texscan FP-50	146	09/17
Attenuator 20 dB - 9 kHz – 1 GHz | 20 dB |10 W	Trilithic	148a	02/16
Fixed Attenuator 0 – 500 MHz | 40 dB | 50Ω Coaxial | 1W	Mini-Circuits CAT-40	149	04/18
Fixed Attenuator 0.01 – 3 GHz | 10 dB | 50Ω Coaxial | 5W	Narda 771-10	150	12/16
Fixed Attenuator - 9 kHz – 1 GHz | 3 dB | 60 W	Trilithic - HFP 560/3	152	01/17
Fixed Attenuator - 10 MHz – 1 GHz | 3 dB | 150 W	Trilithic - HFP 5150/3	153	01/17
Adjustable-Isolation Transformer - 0 - 250 V AC | 1.6 A	RFT - LTS 002	154a	---
Adjustable transformer	Schunt+Ben	155	---
RF Current Injection Clamp 0.15 – 1000 MHz | 150 Ω | k = -5dB	Lüthi GmbH EM 101	156	07/17
RF Current Transformer - 10 kHz – 30 MHz	RFT - SMZ 11	157	---
Unbalanced Voltage Supply - 8 ± 0.5 V DC | 12 – 18 mA	Sennheiser - MZN 16-x	158	---
Absorbing Clamp MDS 30MHz – 1GHz | 50Ω BNC | 628mm x 105mm x 105mm	Lüthi GmbH MDS-21	160	11/18
Volt & RF Power Meter Measurement range V: up to 3 GHz | RF Power up to 40 GHz	Rohde & Schwarz URV35	161	03/16
Insertion Unit 100 kHz – 3 GHz | 50 Ω | 2 mV – 100 V	Rohde & Schwarz URV5-Z4	162	03/16
Coaxial RF Termination - 0 – 1000 MHz | 50 Ω | 35 W	Telewave Inc. - TWL 35	164	11/18
Coaxial RF Termination - 0 – 1000 MHz | 50 Ω | 60 W	Telewave Inc. - TWL 60	165	11/18
Pre-amplifier - 100 kHz – 1.3 GHz | 50Ω | 22 dB	Hewlett Packard - 8447 E	166a	07/16
Bilog Antenna - 30 - 1000 MHz | 50Ω | 150W	CHASE - CBL6111	167	06/20
Double Ridged Broadband Horn Antenna 2 – 18 GHz | 10 – 16 dBi | 50 – 100 W	Schwarzbeck BBHA 9120-C	169	09/20
Fixed Attenuator - 9 kHz – 1 GHz | 10 dB | 10 W	Trilithic	170	02/16
Spectrum Analyzer - 9 kHz – 18 GHz | BW = 28 MHz	Rohde & Schwarz - FSL 18	171a	06/16
Broadband RF-Power Amplifier - 250 kHz – 300MHz | 3 W	ENI - Model 403L A	172	---
Automotive Artificial Mains Network - 0.15 – 80 MHz	Reimesch - NNB-1	173	---
Isotropic E-field Meter - 1.8 MHz – 30 MHz	Schwarzbeck - IEMH 1601	174	---
Eletro-Magnetic Fieldmeter 100 kHz – 2.5 GHz | E: 0.1 – 200 V/m | Pden: 0.1 – 2 mW/cm2	Chauvin-Arnoux C/A 43	175	---
Fixed Attenuator - DC – 1.5GHz | 50Ω N |6 dB | 100 W	Bird - Mod/ 8343-060	177	01/17
RF-Power Amplifier - 100 – 520 MHz | 50 W	EATON - Model 3552B	179	---
Burst – Generator 200V – 4,800 V | 50 Ω ± 20% | f : 0.1kHz – 1,000 kHz	EM – Test AG EFT 200	180	---
Micro Pulse Generator U = 50V – 1100V ± 10% | 2 Ω, 4 Ω, 10 Ω, 20 Ω, 30 Ω, 50	EM – Test AG MPG 200	181	09/17

Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
Ω			
Fixed Attenuator - 3 dB DC -12.4GHz	Narda - TB 50902-1	183a	11/17
Fixed Attenuator - 6 dB DC -12.4GHz	Narda - TB 50901-2	183b	11/17
Fixed Attenuator - 10 dB DC -12.4GHz	Narda	183c	11/17
Fixed Attenuator - 20 dB	Hewlett Packard - 8491a	183d	11/17
Rotary Step Attenuator DC – 2 GHz | BNC | 1 - 10 dB | Pmax: 1 Wavg / 500 WPeak	Texscan TA – 50	184	02/17
Signalgenerator 0.0002 Hz – 20 MHz | 30 Vp-p | AM / FM / PM / Sweep	Wavetek 148 A	185	---
Hand Held Programmer	GR Electronics Pocket VDU	187	---
Direct Reading Variable Attenuator 18 – 50 GHz | 0 – 20dB | VSWR: 1.2	Waveline 1005A	191b	---
Sweep Generator 26.5 – 40 GHz | Pout : > 1 mW | Full Sweep / CW modes	Wiltron 6640A	192a	---
Hand-held Component Tester - 0.1 pF-20 mF | 0.1 Ω – 20 MΩ	BK Precision - 815	193	---
Voltage Regulator - 0.5 kVA | Single-phase	Pro Star - TDGC2	196a	---
Sound Generators	Schomandl - 86110	197	---
RF Terminator - 9 kHz – 30 MHz | 50 Ω | 5 W	Schwarzbeck	198	09/17
Waveguide Mixer	Tektronix - WM 490-2	199a	---
Measurement Microphone	MB - MP NM 550	200a	---
Bias Network	Rohde & Schwarz - ZPV-Z6	202	---
Bias Network	Rohde & Schwarz - ZPV-Z6	203	---
Feed-Through Adapter	Rohde & Schwarz - ZPV-Z1	204	---
Feed-Through Adapter	Rohde & Schwarz - ZPV-Z1	205	---
Feed-Through Adapter	Rohde & Schwarz - ZPV-Z2	206	---
DC Power Supply - 0 – 40 V | 0 – 0.5 A	Hewlett Packard - 6102A	207	---
Variable Isolation Transformer - 250 V AC | 10A	RFT - LSS 010	209	---
General Purpose Oscilloscope BW:100 MHz | 2 ns /div | 2 Channels	Hewlett Packard 54600 A	210	---
Band Pass Filter 310 MHz | 0.3 dB	Digital Microwave DMC-110746-001	212	04/16
Signalgenerator 10 kHz – 2.4 GHz | 50Ω N | - 137 – +13 dBm |	Marconi 2024	213	01/18
Fixed Attenuator - 20 dB 2 W – 18 GHz	Spectrum - DG-0018-2051	214	11/17
Miteq Amplifier - 26.5 – 40 GHz | G: 32 dB	Miteq	223a	02/17
Coaxial Attenuator DC – 18 GHz | Pin: 0.5 – 2 W | I.L.: 3 / 6 / 10 / 20 dB	Spectrum DG-0018-2051	225	04/18
DC Power Supply - 0 – 60 V |0 – 10 A	Hewlett Packard - 6034L	226	---
2.4 GHz Notch Filter - 10 MHz – 8 GHz | @ 2. 4 GHz : 10 dB	Dudde	227	---
RF Power Sensor 10 MHz – 20 GHz|-70 – 0 dBm | Pi-max: 26 Avg./30Peak dBm	Marconi 6920	228	10/17
Radiocommunication Service Monitor	Rohde & Schwarz	229	06/17

Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
0.4 – 1000 MHz | +47 dB – -47 dBm | Span: 0 – 50 MHz	CMS 54		
Fixed Attenuator - 2 W – 18 GHz 10 dB	Spectrum - DG-0018-2051	230	01/17
Dummy Load - 0 – 1000 MHz | 5 W	TWL - TWL-5	231a	11/18
Positioning Controller - 0 – 360°	Rohde & Schwarz - HCC	232	---
Antenna Pole - 100 – 400 cm	Rohde & Schwarz - HCM	233	---
Attenuator Wave Gate - 0 – 95dB	Spinner - BN6686	234b	---
Immunity Test Probe - 0 – 4.8 kV	EM TEST - ITP	235	---
DC Power / Wattage Meter DC input: 5A, 1A, 75mV, 100V, 500V	H&B Wattavik	238	---
Multimeter	Metrawatt - Multiscript 2S	239	---
Analog Multimeter 100 mV – 1000 V | 30 µA – 10 A	Metrawatt Unigor A43P	240	---
Voltage Interruption Simulator AC/DC - Interruptions – Dips max. 280V / 360	Schlöder GmbH VIS 1700	241a	02/18
UHF Termination - DC – 2 GHz | 50Ω | 100 W	Rohde & Schwarz - RAU	243	01/17
Measuring Shunt Resistor - 50 mV | 50A DC	Metrix - HA0512	247	---
Dummy Load DC – 10 GHz | 50Ω BNC | 2 W | VSWR: ≤ 1.3	KDI T173CS	248	11/18
Dummy Load DC – 10 GHz | 50Ω BNC | 2 W | VSWR: ≤ 1.3	KDI T173CS	249	11/18
Dummy Load DC – 10 GHz | 50Ω BNC | 2 W | VSWR: ≤ 1.3	KDI T173CS	250	11/18
Dummy Load DC – 10 GHz | 50Ω BNC | 2 W | VSWR: ≤ 1.3	KDI T173CS	251	11/18
Dummy Load DC – 10 GHz | 50Ω BNC | 2 W | VSWR: ≤ 1.3	KDI T173CS	252	11/18
Dummy Load DC – 10 GHz | 50Ω BNC | 2 W | VSWR: ≤ 1.3	KDI T173CS	253	11/18
Attenuator: DC – 1 GHz | 5.7 dB | 50 – 75 Ω	Trilithic - ZM-57	254	---
Attenuator: DC – 1 GHz | 5.7 dB | 50 – 75 Ω	Trilithic - ZM-57	255	---
Pre-amplifier 100 kHz – 400 MHz | Gi: 20 dB | N.F.: < 7 dB	Hewlett Packard 8447 A	256	03/16
Power Sensor - 40 GHz	Marconi - 6914	258	06/18
Thermohygrometer – -10 – +60 °C | 0 – +100 %	Testo AG - testo 625	259a	08/17
Dummy Load DC – 10 GHz | 50Ω BNC | 2 W | VSWR: ≤ 1.3	KDI T173CS	260	11/18
Coupling Decoupling Network 0.1 MHz – 230 MHz | 150 Ω | 10 dB	MEB KEN-M 2 /M 3	262	10/18
0 Ω Adapter - 0.01 MHz – 230 MHz | 0 Ω N	MEB - 13148	263	01/18
Coupling Decoupling Network 0.1 MHz – 230 MHz | 150 Ω | 10 dB	MEB KEN-M 2 /M 3	264	10/17
Vertical Coupling Plate	Dudde	265	---
NF-Assessment Filter	H/W/Schulte	266	03/16
DC Power Supply - 0 – 20 V DC | 5 A DC	Hewlett Packard - 6632B	268a	---
WR22 Q-Band Mixer - 33-50 GHz | C.L. : 30 dB	Anritsu - MA2742A	269a	03/16
Artificial Hand - VDE 0876 Part 1	Dudde	270	---

Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
Volt & RF Power Meter Measurement range V: up to 3 GHz | RF Power up to 40GHz	Rohde & Schwarz URV35	271	05/17
Pulse Limiter 0 Hz – 30 MHz |10 dB	Rohde & Schwarz ESH3-Z2	272	02/16
Low Pass Filter DC – 520 MHz | 50Ω SMA | 0.5 W | VSWR: 1.7	Mini-Circuits SLP550	273	05/18
Low Pass Filter DC – 520 MHz | 50Ω SMA | 0.5 W | VSWR: 1.7	Mini-Circuits SLP550	274	05/18
Fixed Attenuator - DC – 18 GHz | 30 dB	MTS	275	11/17
Fixed Attenuator - DC – 18 GHz | 30 dB	MTS	276	01/17
Broadband Horn Antenna 14 – 40 GHz | 15 – 20 dBi | 10 – 25 W	Schwarzbeck BBHA 9170	280	08/17
Broadband Horn Antenna 14 – 40 GHz | 15 – 20 dBi | 10 – 25 W	Schwarzbeck BBHA 9170	281	08/17
RF Small Signal Power Amplifier 0.9 GHz - 2/8 GHz | Gi: 27 dB	Avantek SFT 84-2152	282	---
Harmonic Flicker Analyzer 600Vrms / 900Vpeak | L1 / L2 / L3	Schlöder GmbH HFA 3000	283	---
Double Ridged Broadband Horn Antenna 0.5 – 5.5 GHz | -6 – +13 dBi	Schwarzbeck BBHA 9120 A	284	09/20
I/O Lines Coupling-Decoupling Network 4 kV | 4 -8 I/O Lines | Max. 50 V / 1-4A	EM – Test AG CNV 504 - 508	285	---
Power Sensor 10MHz – 26.5GHz | -30dBm – +20dBm |VSWR: 1.4	Marconi 6913	286	10/17
Adjustable-Isolation Transformer - 0 – 250 V Ac | 1.6 A	RFT - LTS 002	287	---
LF-Power Amplifier 20 Hz – 20 kHz | 40 W | 8 Ω | THD: 0.08%	ONKYO A-9211	288	---
Coaxial T Connector - DC – 1000 MHz | 50 Ω N	Mera-Tronik - V40.31	291	---
V-Band Mixer - 50 – 75 GHz | C.L. 30 dB | WR15	Anritsu - MA2744A	295a	09/17
W-Band Mixer - 75 – 110 GHz | WR10	Anritsu - MA2746A	296a	03/16
Dummy-Load - 50Ω	Texscan	297	---
APC 3.5 Precision Termination DC – 34 GHz | 50 Ω Coaxial | 2.5 kW | R.L.: 26 dB	Amphenol	298	---
Fixed Attenuator - 0 – 18 GHz | 3 dB | 50Ω Coaxial | 2W	Suhner - 6603.19 AA	299	12/16
RF-Dummy Load - 50 Ω N	Spinner - BN5947	300	12/16
RF-Dummy Load - 50 Ω	Spinner - BN3924c	301	12/16
Passive Probe - 9 kHz – 30 MHz | 2.5 kΩ	RFT - TK 121	302	04/17
RF-Dummy Load - 50 Ω	Texscan	304	12/16
RF-Dummy Load - 50 Ω	Texscan	305	07/17
RF Coaxial Termination - DC – 12.4 GHz | 50 Ω N | 5 W	Sage Labs - 9200	306	---
Broadband Voltage, Level and Power Meter - 9 kHz – 3 GHz	Rohde & Schwarz - URY	307	03/16
Dummy Load 9 kHz – 1 GHz | 50 Ω | N	Hewlett Packard 1250-0256	308a	11/18
RF/Microwave Termination DC – 1 GHz | 50 Ω | Pin max: +30 dBm | VSWR: 1.15	Radiall 404011	309	11/18

Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
Calibration cable - 32 cm	Dudde	310	---
Calibration cable - 89 cm	Dudde	311	---
DC Block Adapter - DC – 2 GHz | 50 Ω	Anritsu - MA8601A	312	12/16
AC Power Source - 260 Vrms / 4.5 Arms | 1000 W | ± 1%	ELGAR - 1001B	314	---
Frequency Counter - 0 – 50 MHz | 1MΩ || 25 pF	Hewlett Packard - 5326A	316	09/17
Shunt - 300A	AEG - 4 90073	317	---
Digital Multimeter - 2 – 1000 V | 10 MΩ ||75 pF	Hameg - HM 8011-3	319	---
4- Way Branched Connector 0 – 1000 MHz | 50 Ω | I.L. 10 dB	Rohde & Schwarz 892228/20	320	10/18
Test Weight Block - 30 N	Dudde	321a	---
Test Weight Block - 250 N	Dudde	322a	---
Function Generator / Universal Counter 10 MHz |10 VSS | 50 Ω / 0 - 1.6 GHz | 20 - 30 mVrms	Hameg HM8030/HM8021	324	---
RF Amplifier - 0.9 – 2.3 GHz	Dudde	325	04/18
Ohmmeter 0 – 1000 MΩ	Holtzer-Cabot ZM-144 / PSM-2	326	---
Drop Test Surface	---	328a	---
Standard Gain Horn Antenna X Band 8.20 to 12.4 GHz | VSWR 1.15 | WR-90	Narda 640	329	09/18
Standard Gain Horn Antenna XN Band 5.4-8.20 GHz | VSWR 1.15 | WR-137	Narda 642	330	09/18
APC 3.5 Precision Termination DC – 34 GHz | 50 Ω Coaxial | 2.5 kW | R.L.: 26 dB	Amphenol	334a	---
Standard Gain Horn Antenna - 0.7 – 4.8 GHz	---	335	---
Standard Gain Horn Antenna - 0.7 – 4.8 GHz	---	336	---
Standard Gain Horn Antenna - 14.3 – 26.9 GHz	---	337	---
Coaxial Directional Coupler	Microwavegear - 519 D	338	---
Spectrum Analyzer - 9 kHz – 2.9 GHz | AC / DC coupled	Hewlett Packard - 8594E	341a	---
Terminator (Dummy Load) DC-18GHz | 25 W	Aeroflex / Weinschel BV 7017	342a	01/18
Dummy-Load - 2 – 18 GHz | 50 Ω | 40 W	Narda - MODEL 367NF	343	12/16
Fixed Attenuator - 0 – 18 GHz | 6 dB | 50Ω Coaxial | 2W	SUHNER - 606.19 AA	344	12/16
2 – 18 GHz | 50 Ω | 40 W - 1 GHz – 18 GHz | Gi : 23 dB	Narda	345	02/16
Dummy Load - DC – 18 GHz | 50 Ω | 10 W	Narda	346a	01/18
Impedance Converter - DC – 1.4 GHz | 50 – 75 Ω | 1 W	Suhner - 6001/01A	347	---
Wave Guide Mixer - 40 - 60 GHz | 3 dB Compression -10 dBm	Tektronix - WM490U	349	---
Resistance Load - 5 x 6.8 C | 1100 W	Dudde	350a	07/17
Wave Guide Mixer - 18 – 26.5 GHz | 3 dB Compression - 10 dBm	Tektronix - WM 490K	351	---
Wave Guide Mixer - 26.5 - 40 GHz | 3 dB Compression - 10 dBm	Tektronix - WM 490 A	352	---
Fixed Attenuator - 0 – 40 GHz | 10 dB | 50Ω Coaxial |	Parzich - 40 AH-10	353	10/18
Fixed Attenuator - 0 – 20 GHz | 20 dB | 50Ω Coaxial |	Parzich - 40 AH-20	354	10/18
Wave Guide - Coaxial Adapter - 26.5 – 40GHz	Parzich - SN/15	355	---

Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
DC Block Adapter - 0.045 – 26.5 GHz	Hewlett Packard - 11742A	356	04/18
Antenna Probe - 9 kHz – 1 GHz	Rohde & Schwarz	357	---
Voltage Regulator - 0.5 kVA | Single-phase	Pro Star - TDGC2	358a	---
Spectrum Analyzer 9 kHz – 40 GHz | 18 – 110 GHz (external mixers)	Anritsu MS2668C	359a	06/17
DC-BLOCK - DC – 18.0 GHz |50 Ω	Mini Circuits - BLK-18-S+	361	07/18
DC-BLOCK - DC – 18.0 GHz |50 Ω	Mini Circuits - BLK-18-S+	362	07/18
DC-BLOCK - DC – 6.0 GHz |50 Ω	Mini Circuits- BLK-6-N+	365	07/18
Coupling Filter	Haefely - FP 16/3-1	366	---
Insertion Unit 10V |9 kHz 1000 MHz	Rohde & Schwarz URV 5-Z2	367	03/16
RF Probe 0.02 – 1000 MHz | 15V AC	Rohde & Schwarz 395.2680.02	368	03/16
Single Rotary Attenuator DC – 1000 MHz | 0–10 dB | 2 W	JFW Industries Inc. 50R-028	369	02/16
Coaxial Directional Coupler 2– 4GHz | VSWR:1.2 |10 dB:25 dB/20 dB:27 dB/30 dB: 27 dB	Narda 3003-20	370	01/17
Circular Polarized Probe - 1– 12GHz	---	373	---
High Power Fixed Coaxial Attenuator DC – 8.5 GHz |N| 20 dB |Pmax: 150W_{Avg} /5 kW_{Peak} | VSWR:1.35	Weinschel 49-20-33	374	02/16
Medium Power Fixed Coaxial Attenuator - DC – 18 GHz | N |6 dB | Pmax: 10 WAvg /1 kWPeak | VSWR:1.35	Weinschel 23-6-34	375	01/17
Attenuator - DC – 8 GHz | 60dB	---	376	10/17
Attenuator - 0 – 18 GHz | 30 dB | 100 W	Weinschel - 6312-30	377	02/16
Oscilloscope - DC – 100 MHz | BW: 20 MHz | 2 Channels	Fluke - PM3082	380a	---
High Power Reactive Probe	Microlab - HZ-A22	382	---
Gain Horn Antenna	Dorado - GH-22-25	383	---
Gain Horn Antenna	Dorado - GH-15-25	384	---
Gain Horn Antenna	Dorado - GH-10-25	385	---
High Power Signal Generator	Philco - 470A-500	386	---
Precision Adapter - DC – 20 GHz | 50 Ω N | 1 W	Anritsu - 34AKNF50	387	---
Peak Power Sensor DC – 6 GHz | 0 – mW	Rohde & Schwarz NRV-Z31	391	02/17
Test Pattern Transmitter	Müter - CSG 5	392	---
Variable Attenuators - 0 – 10 MHz | 0 - 132 dB	Siemens - D110	393	---
EMF Tester	PCE Group - PCE-G28	394	---
Field Measurement Adapter 0.0 – 30000.0 V~/m | 0.0 – 300.0 µT	Gossen Metrawatt FMA1	395	---
Dummy Load - 18 GHz | 50 Ω	Narda	396	---
Dummy Load - 18 GHz | 50 Ω	Narda	397	---
Field Strength Measurement Kit - 500 kHz – 50 MHz	SAT-Service Schneider	398	02/17
RF Signal Generator 5 kHz – 3 GHz | -144 – +13 dBm | Resolution 0.1 Hz	Rohde & Schwarz SME03	399	02/18
Mini Infrared Thermometer -30°C – 500°C | ±1.5°C	Fluke - 62 Mini	403	---

Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
Absorbing clamp - 30 – 300 MHz | 50 Ω	Lüthi - MDS 20	404	11/18
Coaxial High Pass Filter 185 – 3000 MHz | 50 Ω N | 0.5 W | I.L. : < 1 dB	Mini-Circuits NHP-200	405	05/18
Tri-Log Broadband Antennas 25 MHz – 2 GHz | 50 Ω N | 10 W	Schwarzbeck VULB 9168	406	04/18
4-Way-Power Splitter DC – 2 GHz | 50 Ω SMA | 1 W | I.L.: 12 dB | VSWR: 1.3	Weinschel 6503	407	12/16
Band Pass Filter 310 MHz | 0.3 dB	Digital Microwave DMC-110746-001	412	04/16
Insertion Unit 9 kHz – 2000 MHz | 10 V	Rohde & Schwarz URY-Z2	416	09/17
Adapter 0.1 – 1000 MHz | 50 Ω	Rohde & Schwarz URY-Z50	419	---
BNC Adapter 0.1 – 1000 MHz | 50 Ω	Rohde & Schwarz N 241/1110/02I	420	---
Dummy Load	Amphenol	424	---
Dummy Load	Amphenol	425	---
High Voltage Probe - 6 kV	Fluke - 80k-6	427	01/16
Radio Interference Measuring Receiver 10 kHz – 30 MHz | SSB / CW	Schwarzbeck FMLK 1518	428	08/16
Panoramic Adapter for VUMA BW: 20 kHz	Schwarzbeck PAZ 1550	429	---
Interference Measuring Receiver 20 MHz – 1050 MHz | 50 Ω N | PK / AV / QP / CAV / CRMS	Schwarzbeck FCVU 1534	430	08/16
Standard Gain Horn Antenna - 17.6 – 26.5 GHz | Gi: 23 dBi	MBMT - K-235	431	09/18
Miteq Amplifier - 18 – 26 GHz	Miteq	433	02/17
Coaxial High Pass Filter 700 – 3000 MHz | 50 Ω N | 0.5 W | I.L.: < 1dB	Mini-Circuits NHP-700	435	05/18
Interference Coupler	Dudde	436	---
Inductive Coil - 660 µH	Dudde	437	---
Inductive Coil - 660 µH	Dudde	438	---
Wide Band Amplifier 1 – 2 GHz | 50 Ω SMA | Gi: 30 dB | Pout-max: +16 dBm	Watkins Johnson WJ-5201-77A	439	02/17
Microwave Broadband Amplifier 12 – 28 GHz | 50 Ω SMA | Pin_max.: -20 dBm	Schwarzbeck BBV 9719	443	01/16
Microwave Broadband Amplifier 0.5 – 20 GHz | 50 Ω N / SMA | Pin_max.: -30 dBm	Schwarzbeck BBV 9718	444	01/16
Microwave Log.-Per. Antenna 0.7 – 20 GHz | 50 Ω N | Pin_max.: 50 W | Gi: 8.6 dBi	Schwarzbeck STLP 9148	445a	10/18
IR Digital CCD Video Camera	Conrad - SE-906-1	446	---
Laptop-Power Supply Input 100-240V~ 50-60Hz | Output DC = 18-21V DC / 120W	Hama ACHG-07	450	---
Coaxial High Pass Filter 3900 – 9800 MHz | 50 Ω SMA | 7 W | I.L.: < 2 dB	Mini-Circuits VHF-3500+	451	05/18
Coaxial High Pass Filter 1220 – 4600 MHz | 50 Ω SMA | 7 W | I.L.: < 2 dB	Mini-Circuits VHF-1200+	452	05/18

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Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
Coaxial High Pass Filter 27.5 – 800 MHz | 50 Ω N | 0.5 W | I.L.: < 1 dB	Mini Circuits NHP-25+	455	05/18
Coaxial High Pass Filter 27.5 – 800 MHz | 50 Ω N | 0.5 W | I.L.: < 1 dB	Mini Circuits NHP-25+	456	05/18
Coaxial Low Pass Filter DC – 22 MHz | 50 Ω BNC | 0.5 W | I.L.: < 1 dB	Mini Circuits BLP-21/4+	457	05/18
Coaxial Low Pass Filter DC – 22 MHz | 50 Ω BNC | 0.5 W | I.L.: < 1 dB	Mini Circuits BLP-21/4+	458	05/18
Dummy Load - 100 Ω - BNC	Dudde	460	---
DC-BLOCK - DC – 6.0 GHz |50 Ω	Mini Circuits - BLK-6-N+	462	07/18
Fixed Attenuator - 20 dB | BNC	Spinner	465	04/18
4 Port Junction Box - 10 – 900 MHz | 50 Ω	---	470	---
Adapter	Hewlett Packard - P281B	471	---
Directional Coupler	Narda - 42468-20	472	---
Calibration Noise Source	Rohde & Schwarz BN 4519	473	---
Band Pass Filter 310 MHz | 0.3 dB	Digital Microwave DMC-110746-001	478	04/16
Attenuator - 20 dB SMA	Weinschel - 6500-20	482	04/18
Dummy Load - 50 Ω	---	485	11/18
Dummy Load - 50 Ω	TI-30D	486	11/18
Dummy Load - 50 Ω	TI-30D	487	11/18
Dummy Load - 50 Ω	TI-30D	488	11/18
Dummy Load - 50 Ω	---	489	11/18
Dummy Load - 50 Ω	KDI - T173CS	490	04/16
Dummy Load - 50 Ω SMA	HRM - 60I	491	01/19
Dummy Load - 50 Ω SMA	Suhner - 65SMA50-0-1	492	01/16
Dummy Load - 50 Ω SMA	---	493	01/19
Dummy Load - 50 Ω SMA	---	494	01/19
Dummy Load - 50 Ω SMA	OSM - 2001 6110/00	495	01/19
Dummy Load - 50 Ω SMA	OSM - 2001 6110/00	496	01/19
Dummy Load - 50 Ω SMA	SC 60-601-0000-31	497	01/19
Dummy Load - 50 Ω SMA	SC 60-601-0000-31	498	01/19
Dummy Load - 50 Ω BNC	Texscan	499	11/18
Dummy Load - 50 Ω BNC	Radiall - 404011	500	11/18
Harmonic Mixer 60 - 90 GHz | 1 dB compression: -7 dBm | Pin_max.: 0 dBm	Rohde & Schwarz FS-Z90	501	05/19
Signal & Spectrum Analyzer 10 Hz - 30 GHz | Level :–60 dBm - 0 dBm	Rohde & Schwarz FSV-30	502	01/19
PLC Test Box	Dudde	503	---
Fixed Attenuator - 0 – 40 GHz | 10 dB | 50Ω Coaxial |2W	Anritsu - 41KC-10	504	12/16
Fixed Attenuator - 0 – 40 GHz | 10 dB | 50Ω Coaxial |2W	Anritsu - 41KC-10	505	12/16
Fixed Attenuator - 0 – 40 GHz | 6 dB | 50Ω Coaxial |2W	Anritsu - 41KC-6	506	12/16
Fixed Attenuator - 0 – 40 GHz | 3 dB | 50Ω Coaxial |2W	Anritsu - 41KC-3	507	12/16

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Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
Broadband Horn Antenna 12.4 – 18 GHz | Gain 20 dB	Mid-Century Mic BH 18-SQB-xxx-C-20	508	---
Broadband Dipole Antenna 25 - 80 MHz | 50 Ω | K factor: 15 / 20 dB	Rohde & Schwarz HUF-Z1	509	---
Bit Error Rate Test Set Synchronous & Asynchronous | 0.075 – 19.2 kbps	Hewlett Packard 4925B	510	---
Gain Horn Antenna	Dorado - GH-15-20	511	---
Active Field strength measuring Accessory 10 kHz – 30 MHz | VLF Long-Medium-Short Waves	Schwarzbeck FMZL 1514	513	10/16
Standard Gain Horn Antenna - 1.7 – 2.6 GHz	Narda - Model 645	514	---
Harmonic Mixer 40-60 GHz | 1 dB compression: 0 dBm | Pin_max.: +16 dBm	Rohde & Schwarz FS-Z60	515	05/19
Active Probe BW: 2.5 GHz | 8 Vpk-pk | tr <140 ps | Rin :40 kΩ	Textronix P7225	517-1	---
Active Probe BW: 2.5 GHz | 8 Vpk-pk | tr <140 ps | Rin :40 kΩ	Textronix P7225	517-2	---
Active Probe BW: 2.5 GHz | 8 Vpk-pk | tr <140 ps | Rin :40 kΩ	Textronix P7225	517-3	---
Horn Antenna - 20 dB	Dorado - GH-19	518	---
Horn Antenna - 20 dB	Dorado - GH-28-20	519	---
GaAS FET Amplifier	Avantek - AMT-8006M	520	---
15 MHz Function / Arbitrary Waveform Generator DC – 15 MHz | AM , FM FSK , Burst | 50 Ω	Agilent 33120A	521	---
Surge / Hybrid Generator Voltage Pulse: 0.2 – 4.4 kV | 1.2 / 50 µs	Schlöder CWG 1500	522	01/17
Band Pass Filter 310 MHz | 0.3 dB	Digital Microwave DMC-110746-001	524	04/16
Electric Dummy Load	RA-NAV Laboratories DA-75U	526	01/17
Power Splitter / Combiner - 10 - 2000 MHz	Mini Circuits - ZESC-2-11	527	12/16
Dummy Load - 20 GHz | 50 Ω SMA	---	528	01/17
3 Way Power Splitter / Combiner 1 - 500 MHz | I.L.: 0.5 dB | Isolation: 30 dB	Mini Circuits ZFSC-3-1	529	02/17
3 Way Power Splitter / Combiner 1 - 500 MHz | I.L. : 0.5 dB | Isolation: 30 dB	Mini Circuits ZFSC-3-1	530	02/17
Band Pass Filter - 310 MHz | 0.3 dB	Digital Microwave	531	04/16
Standard Gain Horn Antenna - 26.5 - 40 GHz	Maury Microwave	532/826	09/20
Notch Filter - 10 MHz – 2 GHz	Dudde	533	05/18
Dual Display Handheld LCR Meter L/C/R/D/Q | Tolerance modes 1% / 5% / 10%	Agilent U1731B	535	---
Voltage Divider Probe - 70 dB	TK104	536	09/17
Analog-Digital Multimeter	Gossen Metrawatt METRAHIT ONE	538	08/17
Flexible, insulated plug-in sensor	Gossen Metrawatt	539	---
RF-Attenuator - 6 dB	Haefely	540	02/17
RF-Attenuator - 1– 120 MHz | 12 dB	Haefely	541	02/17
RF-Attenuator - 1– 120 MHz | 39 dB	Haefely	542	02/17

Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
Dummy Load - 0 –12.5 GHz | 50 Ω	---	543	09/17
Circulator - 428 – 430 MHz	Forem	544	---
Spectrum Analyzer Mixer 90 – 140 GHz | VSWR 1.5 | Pmax: 3 dBm | C.L. 35 dB	Radiometer Physics SAM-140	545	05/19
Spectrum Analyzer Mixer 140 – 220 GHz | VSWR 1.7 | Pmax: +3 dBm | C.L. 42 dB	Radiometer Physics SAM-220	546	02/19
Dual Mode Potter Horn Antenna 90 – 140 GHz	Radiometer Physics FH-PP-140-WR8	547	---
Dual Mode Potter Horn Antenna 140 – 220 GHz	Radiometer Physics FH-PP-220-WR5.1	548	---
Dual Mode Potter Horn Antenna 60-90 GHz	Radiometer Physics FH-PP-90-WR12	549	---
Line Impedance Stabilisation Network 9kHz – 30 MHz | 50 Ω | 50 µH + 5 Ω	Schwarzbeck NNLA 8120	551	10/17
Shunt Resistor - 2.5 mV | 50 A	---	556	12/15
Digital-Baro / Vacuum-Meter 0 - 1300 mbar | ± 0,1 % / ± 0,2 % f.s.	Greisinger GDH 12 AN	558	09/17
Laboratory Power Supply ISO 7637 Pulse 4 12 V / 24 V System	Elektro-Automation EA-PSI 8080-40-DT	560	03/18
Surge - Generator (Hybrid) 6 kV | 1.2 / 50 µs | 10/700µs	H & H MIG 0603 IN 2 S-T	561	02/18
Modular Oscilloscope Probe - 100:1 | 1500 Vp	Testec - TT-HV 150	564	---
Standard Gain Horn Antenna - 2.6 – 3.95 GHz	Flann - 1024-15	565	---
Standard Gain Horn Antenna - 3.42 – 6.0 GHz	Flann - 1224-15	566	---
HV Probe - 0-40 KV 1: 1000	Tektronix	567	04/18
Digital Storage Oscilloscope BW : 100 MHz | 2 Channels | FFT	Tektronix - TDS 2012C	568	03/18
APC Adapter Pair - 100 kHz – 40 GHz | 2.9 – 2.4 |I.L. < 0.5 dB	Weinschel	573	02/18
APC Adapter Pair - 100 kHz – 40 GHz | 2.9 – 2.4 |I.L. < 0.5 dB	Weinschel	574	02/18
Dummy Load - 0.009 MHz – 4400 MHz | 100 W	RELM - T44100	575	03/16
Automotive Line Impedance Stabilisation Network 9 kHz – 30 MHz | 5 – 50 Ω	Dudde NNB	580	---
Passive USB adapter (cable) - NRP-Z sensors	Rohde & Schwarz - NRP-Z4	582	---
Supraguard PC-strip with Mains Filter	REV Ritter - 1796	583	---
Supraguard PC-strip with Mains Filter	REV Ritter - 1796	584	---
Single Path Vehicle AMN (LISN) 0.1 – 150 MHz | 5 µH + 1Ω || 50Ω | 10 dB	Schwarzbeck 8125-1945	585	01/19
Single Path Vehicle AMN (LISN) 0.1 – 150 MHz | 5 µH + 1Ω || 50Ω | 10 dB	Schwarzbeck 8125-1945	586	01/19
Attenuator - DC – 50 GHz | 50Ω | 1 WAvg. | 100 WPeak	Agilent - 8490D	587 + 589	02/18
APC2.9 – APC2.4 Adapter Pair 100 kHz – 40 GHz | I.L. <0.5 dB | 2.9 mm – 2.4 mm	Jyebao	589	02/18
APC2.9 – APC2.4 Adapter Pair 100 kHz – 40 GHz | I.L. <0.5 dB | 2.9 mm – 2.4 mm	Jyebao	590	02/18
Spectrum Analyzer Mixer 220 – 325 GHz | VSWR 2.5 | Pmax: +3 dBm | C.L. 44 dB	Radiometer Physics SAM 325	591	02/19

Test equipment Specifications	Manufacturer Model Type	Internal Equipment No.	Calibration Validity
Dual Mode Potter Horn Antenna 220 - 325 GHz	Radiometer Physics FH-PP-325-WR2	592	---
Waveguide Adapter WR8 - WR10 75 – 140 GHz | VSWR 1.4 dB | I.L. 1.1 dB	Radiometer Physics	593	---
Coaxial Precision Fixed Attenuator 0.01 - 18 GHz | 20dB | 50Ω | 5W | VSWR 1.2	Mini Circuits BW-N20W5+	594	03/16
Coaxial Precision Fixed Attenuator 0.01 - 18 GHz | 30 dB | 50Ω | 5W | VSWR 1.2	Mini Circuits BW-N30W5+	595	03/16
Isolator - 7.2 - 9.0 GHz | I.L.: < 1 dB | Isolation : 40 dB	Alcatel - 60D117-06	596	03/17
Isolator 8.8 - 15.0 GHz | 50Ω | 1 W | I.L.: <0.5 dB | Isolation : 20 dB	Sky Microwave SMIS10A	597	03/17
Broadband Coaxial Isolator 10.0 - 15.0 GHz | I.L. 0.4 dB | Isolation 21 dB | VSWR 1.20	Trak T100150/DB	598	03/17
Step Attenuator - DC-18 GHz | 0 to 11 dB | I.L. : 0.6 dB | Pin_{max}: $1W_{Avg}$ / 100 W_{Peak}	Hewlett Packard 8494B	604	11/16
Digital-Hygro-/ Thermometer - 20 - 70 °C | 10 - 95 %RH	Greisinger - GFTH 95	605	03/17
Analyzer Reference System Harmonic / Flicker Analysis 90Vrms - 300Vrms	Spitzenberger & Spies Type ARS 16/1	606	03/17
Capacitive Coupling Clamp 5 kV (1.2/50 µs) | 100 pF – 1000 pF	Schlöder SFT 415	608	04/17
RF Probes for 50 Ω Receivers - Input Impedance: 1.5 kΩ	Schwarzbeck - TK 9416	612	07/17
Miniature Flat, Zero-Biased Schottky Detector 0.1– 18 GHz | SMA–BNC | VSWR < 1.6 | Pin_{max}: 100 mW	Narda 4503A-03	613	07/17
VHF-UHF Biconical Broadband Antenna 160 - 1100 MHz | Pin max: 5 W | Gi: -1.4 - +1.3 dBi	Schwarzbeck UBA 9116	614	07/17
Biconical Elements - 30-300 MHz | 50Ω N | 1.36 m	Schwarzbeck - BBA 9106	616	07/17
Diode Detector - 0.1 – 2.5 GHz	Spinner - BN 7545	617	08/17
Surface -Immersion Measurement Sensor PT100 Class A | IEC 751 | - 40 °C - + 600 °C	Gossen Metrawatt Z3409	618	---
Digital-Vacuum/ Barometer 0 - 11000 mbar ± 3 mbar| -25 - +50 °C | ± 0.3 % FS	Greisinger GDH 200-14	632	09/17
RF Vector Signal Generator CW : MHz- 6 GHz | I/Q: 80 MHz - 6 GHz	Rohde & Schwarz SGT100A	636	07/17
Impedance Matching Pad 50 Ω – 75 Ω | DC – 3.0 GHz	Mini Circuits UNMP-5075+	643	07/18
Dual Mode Potter Horn Antenna 78 – 110 GHz	Radiometer Physics	649	12/20

10. Cable list

Internal Cable Number	Connector Type	Frequency Range (MHz)	Cable Length (m)	Manufacturer
1	N	10 – 12000	14.50	M.Dudde
1a	N	10 – 18000	18.00	M. Dudde
1b	N	10 – 18000	14.00	Megaphase
3	N	10 – 12000	5.00	Kabelmetal
4	BNC	---	1.50	---
2a	BNC	---	0.50	Telemeter
3a	BNC	---	0.50	Telemeter
4a	BNC	10 – 1500	0.50	Telemeter
5a	N	10 – 20000	1.50	Telemeter
6a	N	---	1.50	Telemeter
7a	N	---	0.50	Telemeter
8a	N	10 – 2000	0.50	Telemeter
10a	BNC	---	1.00	Telemeter
11a	BNC	---	1.00	Telemeter
12a	N	10 – 26500	6.00	Huber+ Suhner
13a	N	10 – 6000	---	RG 213 M.Dudde
14a	BNC	10 – 1000	1.00	Telemeter
15a	BNC		1.00	Telemeter
17a	APC 3.5	10 – 26500	2.13	Huber + Suhner
18a	APC 3.5	10 – 26500	2.13	Huber + Suhner
19a	SMA	10 – 18000	3.00	Semi Rigid
20a	SMA	10 – 18000	3.00	Semi Rigid
21	BNC	---	3.00	---
22	BNC	10 – 1000	1.50	---
23	BNC	---	1.00	---
24	BNC	---	2.80	---
25	BNC	---	1.00	---
26	BNC	---	0.40	---
27	BNC	10 – 1000	1.00	Fabrica Milanese Cond.
28	BNC	---	5.00	---
29 No.1	APC	10 – 40000	1.00	Harbour Industries
29 No.2	APC	10 – 40000	1.00	Harbour Industries
29 No.3	APC	10 – 40000	1.00	Harbour Industries
29 No.4	APC	10 – 40000	1.00	Harbour Industries
29 No.5	APC	10 – 40000	1.00	Harbour Industries
30	BNC / N	10 – 500	1.80	Huber + Suhner
31	BNC / N	---	1.80	Huber + Suhner
32	BNC / N	---	1.80	Huber + Suhner
33	N	10 – 1000	2.00	---
34	N	---	0.50	F&G

Internal Cable Number	Connector Type	Frequency Range (MHz)	Cable Length (m)	Manufacturer
35	N	10 – 2000	1.10	Fujikura
36	N	10 – 6000	1.80	Filotex
37	N	10 – 6000	1.80	Filotex
38	N	10 – 6000	2.00	Dudde
39	N	10 – 6000	0.80	F&G
40	BNC	---	0.50	Aircell
41	N	10 – 12400	1.50	Huber + Suhner
42	N	---	1.50	Huber + Suhner
43	SMA	10 – 18000	0.50	Rosenberger
44	SMA	---	0.50	Huber + Suhner
45	SMA	10 – 18000	0.50	Huber + Suhner
46	N	10 – 18000	1.01	Huber + Suhner
47	SMA	10 – 18000	0.50	Huber + Suhner
48	SMA		0.50	Huber + Suhner
49	N	10 – 18000	1.00	Huber + Suhner
50	N	10 – 18000	1.00	Huber + Suhner
51	N	10 – 18000	1.00	Huber + Suhner
52	N	10 – 18000	1.00	Huber + Suhner
53	SMA	10 – 14000	0.34	---
54	BNC	10 – 3500	1.00	Aircell
55	BNC / N	---	0.50	Aircell
56	BNC / N	---	1.00	Aircell
57	N	---	12.00	Aircell
57a	---	10 – 12400	7.00	---
58	N	10 – 18000	2.00	Huber + Suhner
59	N	10 – 18000	1.00	Huber + Suhner
60	N	10 – 18000	2.00	Huber + Suhner
61	N	10 – 18000	1.00	Huber + Suhner
62	SMA	---	0.50	Huber + Suhner
63	SMA	10 – 18000	0.50	Huber + Suhner
64	SMA	10 – 18000	0.50	Huber + Suhner
65	APC 3.5	10 – 26500	0.60	---
66	APC 3.5	10 – 26500	0.60	---
67	APC 3.5	10 – 26500	0.60	---
68	APC 3.5	10 – 26500	0.60	---
69	SMA/N	10 – 14000	1.20	Huber + Suhner
70	SMA	---	7.00	---
71	BNC	---	7.00	---
72	BNC	---	0.40	---
73	BNC	---	0.40	---
74	N	10 – 18000	6.40	Huber + Suhner
75	N	10 – 18000	6.40	Huber + Suhner
76	SMA	10 – 30000	3.00	Gore

Internal Cable Number	Connector Type	Frequency Range (MHz)	Cable Length (m)	Manufacturer
77	SMA	10 – 20000	12.00	Huber + Suhner
78	SMA	10 – 20000	12.19	Huber + Suhner
79	BNC/N	10 – 1000	5.00	---
80	SMA	---	0.25	Huber + Suhner
81	---	---	---	---
82	N	---	13.00	Aircell 7
83	N	10 – 18000	8.00	Huber + Suhner
84	N	10 – 18000	10.00	Huber + Suhner
86	SMA	---	0.80	Flrst
87	SMA	10 – 18000	0.15	Huber + Suhner
88	SMA	10 – 18000	0.15	Huber + Suhner
89	SMA	10 – 18000	0.15	Huber + Suhner
90	SMA	10 – 18000	0.15	Huber + Suhner
91	SMA	---	1.50	Huber + Suhner
92	APC/SMA	---	0.20	---
92a	APC/SMA	10 – 20000	0.20	---
92b	APC/SMA	10 – 20000	0.20	---
92c	APC/SMA	10 – 20000	0.20	---
92d	APC/SMA	10 – 20000	0.20	---
92e	APC/SMA	10 – 20000	0.20	---
92 f	APC/SMA	10 – 20000	0.20	---
92 g	APC/SMA	10 – 20000	0.20	---
92 h	APC/SMA	10 – 20000	0.20	---
93	N	10 – 6000	0.35	---
94	BNC	---	1.10	---
95	BNC	---	0.80	---
96	BNC	---	0.80	---
97	BNC	---	0.25	---
98	SMA	10 – 18000	0.90	Flrst
99	N	10 – 12400	3.00	Gore & Asscoc.
100	N	10 – 26500	6.00	Rosenberg
102	SMA	10 – 18000	2.00	Huber + Suhner
103	N	---	1.20	---
104	N	---	1.20	---
105	N	---	1.20	---
106	N	---	1.20	---
107	N	---	1.20	---
108	N	---	1.20	---
109	N	---	1.20	---
110	N	---	1.20	---
111	BNC	10 – 1000	0.50	---
112	BNC	10 – 1000	0.50	---
113	SMA	10 – 20000	0.60	---

Internal Cable Number	Connector Type	Frequency Range (MHz)	Cable Length (m)	Manufacturer
114	SMA	10 – 18000	0.25	Huber + Suhner
115	SMA	---	0.60	---
116	SMA	10 – 18000	0.25	Huber + Suhner
117	---	---	0.90	75 Ohm
118	---	---	3.00	75 Ohm
119	N	10 – 20000	8.00	Jyebao
120	N	10 – 18000	14.00	Jyebao
121	SMA	10 – 18000	1.50	Huber + Suhner
122	SMA	10 – 18000	2.00	Huber + Suhner
123	SMA	10 – 18000	2.00	Huber + Suhner
124	SMA	10 – 20000	0.15	Jyebao
125	SMA	10 – 20000	0.15	Jyebao
126	SMA	10 – 20000	0.15	Jyebao
127	SMA	10 – 20000	0.15	Jyebao
128	SMA	10 – 20000	0.10	Jyebao
129	SMA	10 – 20000	0.10	Jyebao
130	SMA	10 – 20000	0.10	Jyebao
131	SMA	10 – 20000	0.10	Jyebao
132	SMA	10 – 20000	0.20	Jyebao
133	SMA	10 – 20000	0.20	Jyebao
134	SMA	---	0.20	Jyebao
135	SMA	10 – 20000	0.20	Jyebao
136	SMA	---	0.30	Jyebao
137	SMA	10 – 20000	0.30	Jyebao
138	SMA	10 – 20000	0.30	Jyebao
139	SMA	---	0.30	Jyebao
140	SMA	10 – 20000	0.50	Jyebao
141	SMA	10 – 20000	0.50	Jyebao
142	SMA	10 – 20000	0.50	Jyebao
143	SMA	10 – 20000	0.50	Jyebao
144	N	10 – 10000	15.00	Commscope
145	SMA	10 – 26500	8.00	Huber + Suhner
146	SMA	10 – 26500	8.00	Huber + Suhner
147	APC 3.5	10 – 40000	1.50	Jyebao
148	APC 3.5	10 – 40000	3.00	Jyebao
149	BNC	10 – 500	9.00	---
150	BNC	---	0.50	Huber + Suhner
151	SMA	10 – 18000	0.50	Rosenberger
152	SMA	10 – 18000	0.50	Rosenberger
153	BNC	---	1.40	---
154	BNC	10 – 1000	1.00	---
155	N / BNC	---	0.85	---
156	N	---	10.00	---

Internal Cable Number	Connector Type	Frequency Range (MHz)	Cable Length (m)	Manufacturer
157	BNC	---	0.50	---
158	SMA	10 – 26500	2.00	Huber + Suhner
159	SMA	10 – 18000	0.40	Nortel Networks
160	SMA	10 – 18000	0.40	Nortel Networks
EMV 1	BNC	---	2.00	Henn
EMV 2	BNC	10 – 1000	2.00	Henn
EMV 4	BNC	---	9.70	Henn
EMV 5	BNC	---	3.80	Henn
EMV 6	BNC/N	10 – 1000	5.00	Lüthi
EMV 7	BNC	10 – 1000	1.50	Henn
EMV 8	BNC	10 – 1500	1.70	Henn
EMV 9	BNC	10 – 1000	1.70	Henn
EMV 11	BNC	---	5.20	Hasselt
EMV 12	BNC	10 – 1000	2.40	Hasselt
EMV 13	BNC	10 – 1000	4.10	Hasselt
EMV 14	BNC	10 – 1000	2.50	Hasselt
EMV 15	BNC	---	0.90	Henn
EMV 16	Fischer	---	2.00	---
EMV 18a	Fischer	---	1.00	---
EMV 19a	Fischer	---	1.50	---
KISN2	BNC	10 – 2000	4.80	---

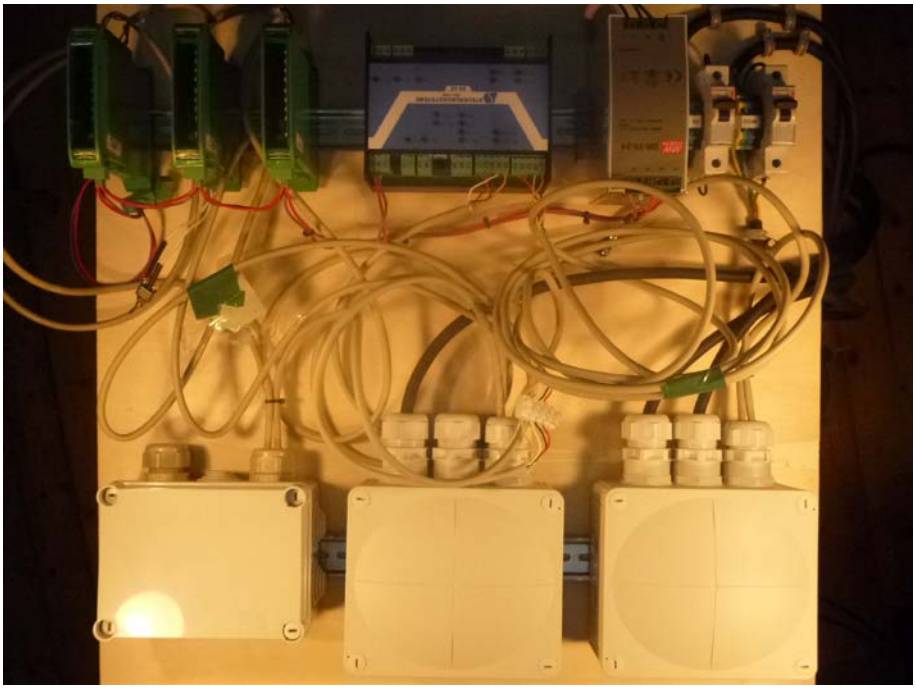
11. List of rented test equipment and auxiliary means

Cetecom GmbH, Essen - Germany

Electromagnetic fields (EN 61000-4-3)

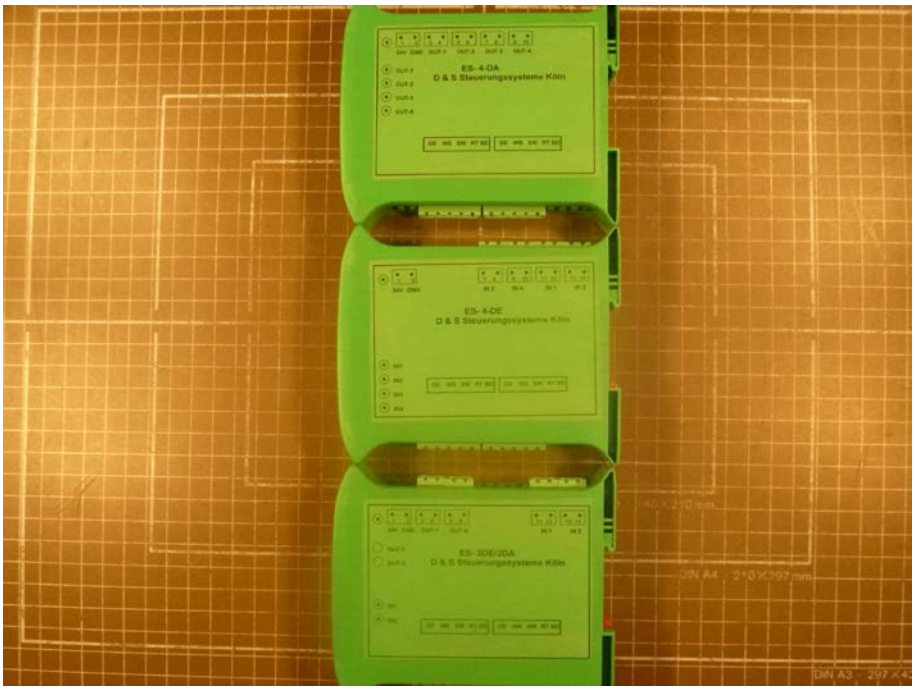
Ref. Nr.	Test equipment	Model Type	Serial number	Manufacturer	Cal.-type	Calibration Validity
374	Power Amplifier 0.8 - 3 GHz	60S1G3	306528	Amplifier Research	System	02.08.16
375	Directional Coupler	DC7144M1	306498	Amplifier Research	System	30.07.16
394	Power Amplifier 80 - 1000 MHz	BLWA 0810-250/200	045610	Bonn-Elektronik	System	30.07.16
466	Digital Multimeter	Fluke 112	89210157	Fluke USA	External	31.03.16
574	Biconilog Hybrid Ant.	BTA-L	980026L	Frankonia	External	31.03.16
389	Digital Multimeter	Keithley 2000	0583926	Keithley	External /inter	30.04.17
470	Thermometer/Hygrometer	WS-9400	-	distr. by Conrad	Internal	30.11.16
462	AF-Generator	MX-2020	-	Conrad	none	-
463	Universal source	HP3245A	2831A03472	Agilent	none	-
456	DC-Power supply 0 - 5 A	EA 3013 S	207810	Elektro Automatik	pre-	pre-m
500	Industry Acoustic System	MO2000 Set	100048	Sennheiser	pre-	pre-m
376	Horn Antenna 6 GHz	BBHA 9120 E	BBHA 9120 E 179	Schwarzbeck	External	30.04.16
482	filter matrix	Filter matrix SAR 1	-	CETECOM (Brl)	System	-
009	Power Meter (EMS-radiated)	NRV	863056/017	Rohde & Schwarz	External	30.04.17
378	Broadband RF Field Monitor	RadiSense III	03D00013SNO-08	DARE B.V.	External	25.05.16
369	insertion unit (SAR-EMS, Ch. A)	URV5-Z2	100301	Rohde & Schwarz	External /inter	30.04.17
370	insertion unit (SAR-EMS, Ch. B)	URV5-Z2	100302	Rohde & Schwarz	External /inter	30.04.17
696	Signal Generator	SME 03	830829/018	Rohde & Schwarz	External /inter	10.01.18
442	CTC-SAR-EMS	System EMS field (SAR)	-	ETS-Lindgren	System	30.07.16

1. Assembly of units or parts



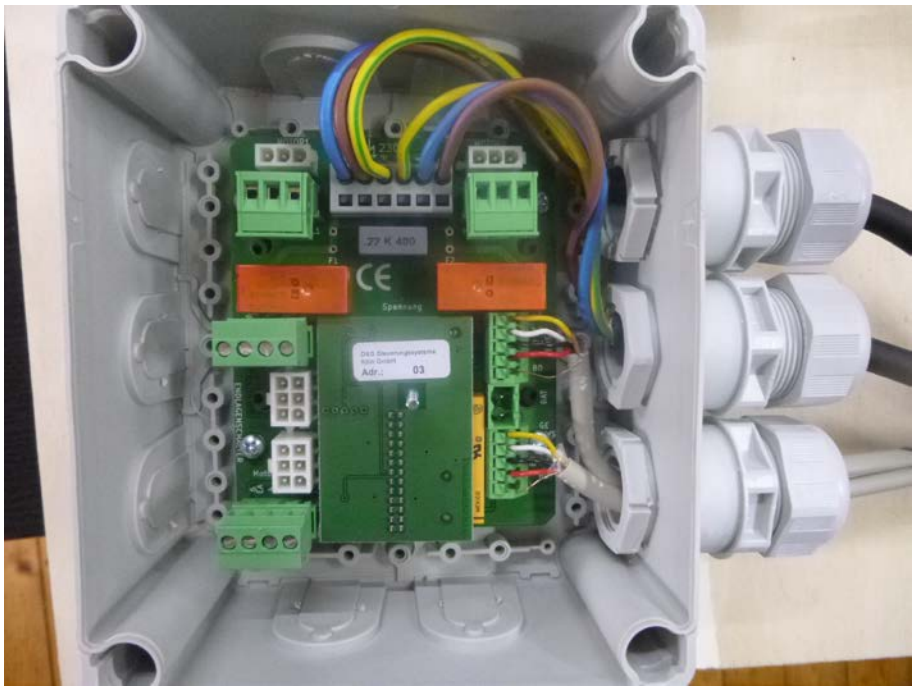
Power supply: DR-75-24:

Front side: EK-4-DE // EK-4-DA //EK-2-DA-DE



Rear side: EK-4-DE // EK-4-DA //EK-2-DA-DE

EK-M-2



EK-M

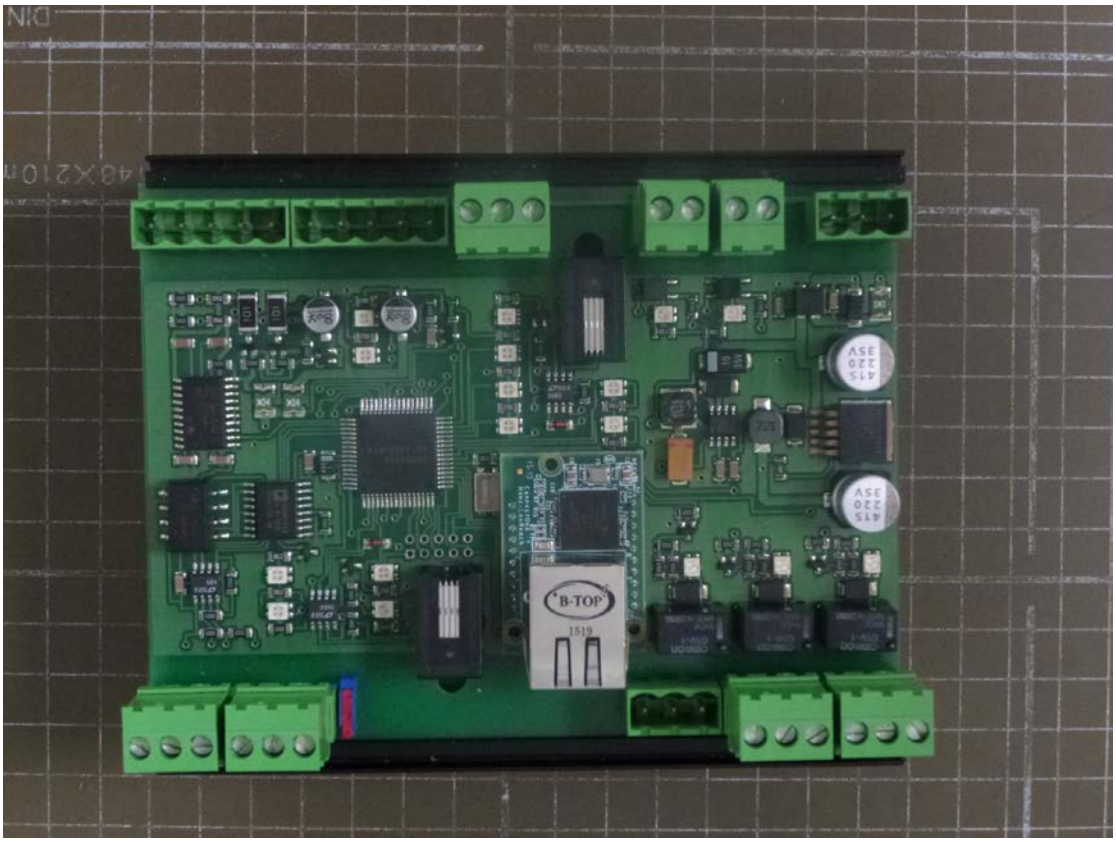
EK-4

2. Front of unit

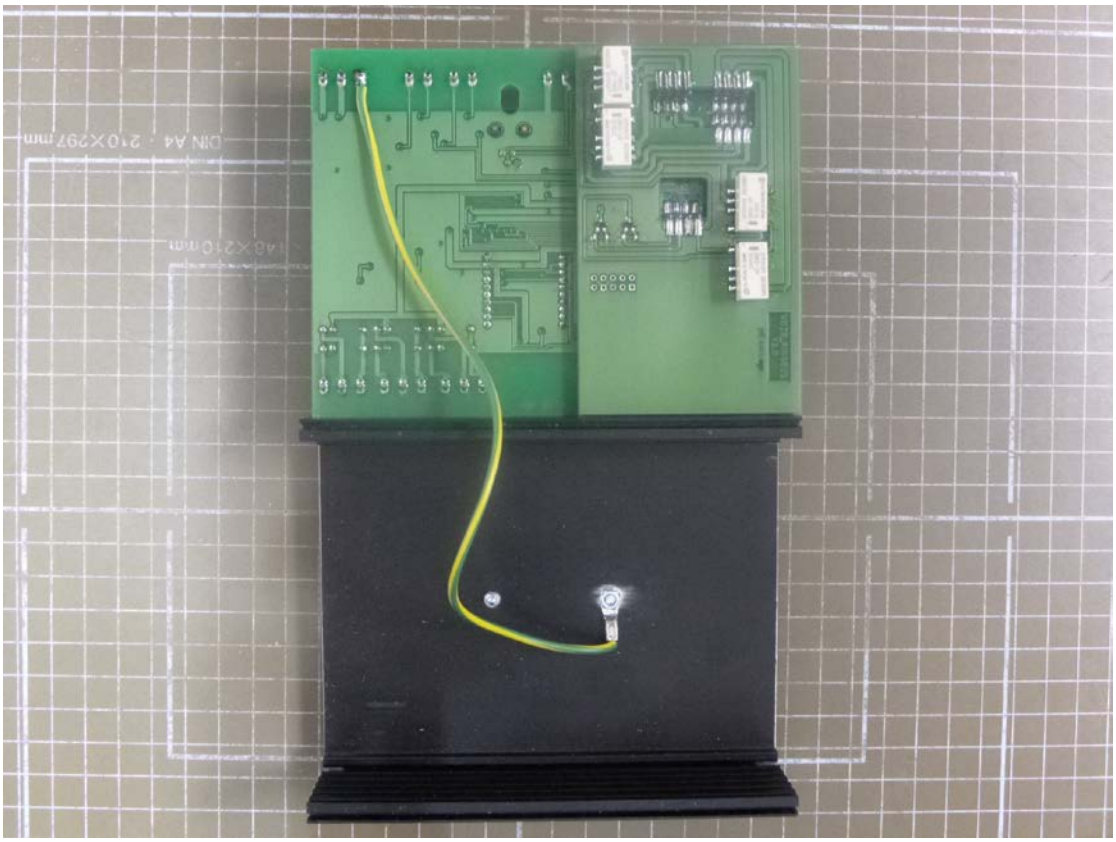
3. Rear of unit

4. If the label or identifying mark is affixed on a surface other than at 2. or 3. above, a photograph of this shall be provided.

5. The equipment (ONLY AFTER TYPE TESTING IS COMPLETED) shall be opened and photographs of the internal construction shall be made (upper side).

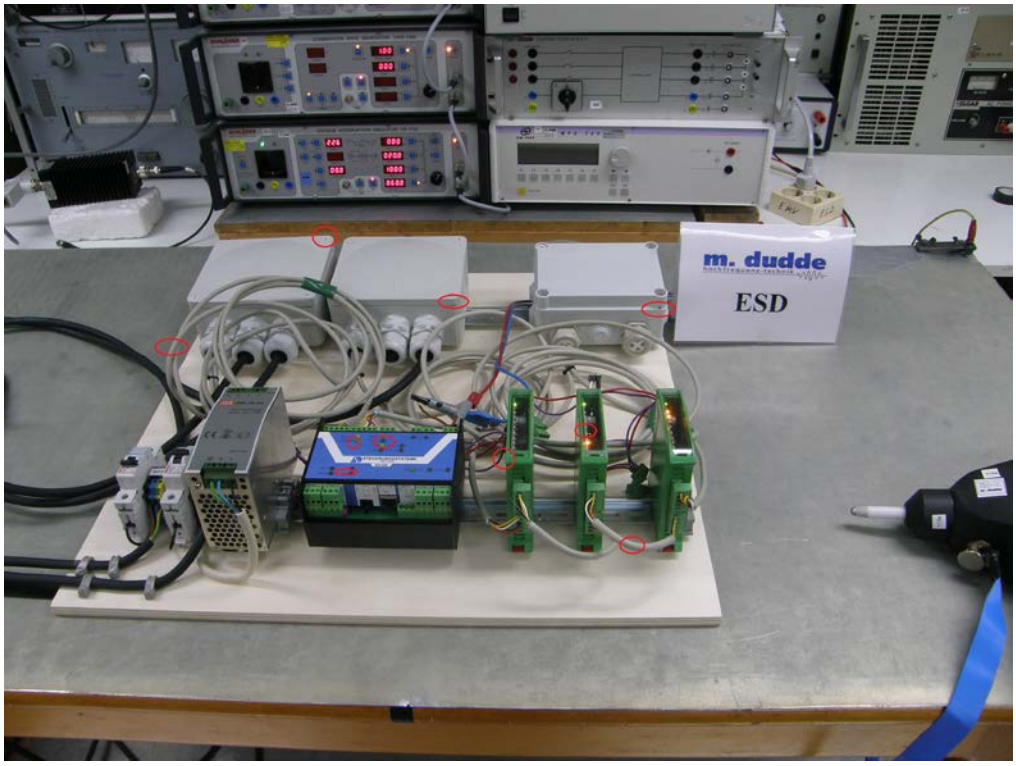


6. The equipment (ONLY AFTER TYPE TESTING IS COMPLETED) shall be opened and photographs of the internal construction shall be made (lower side).



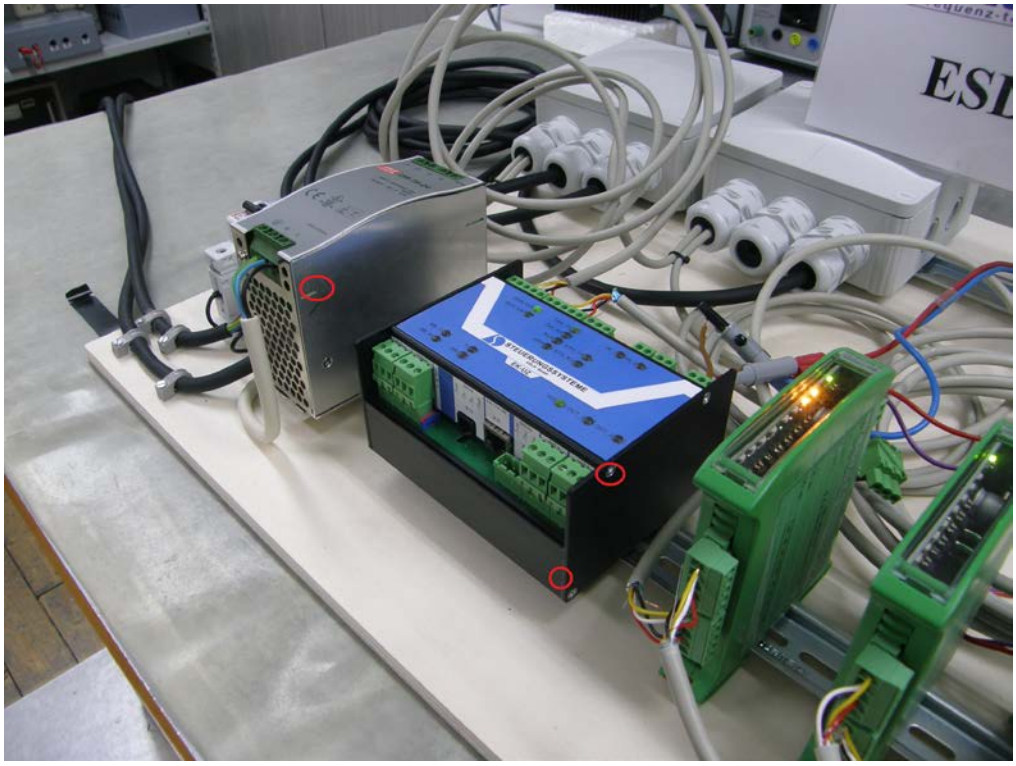
Photographs to the test: ESD, air discharge

Discharge points



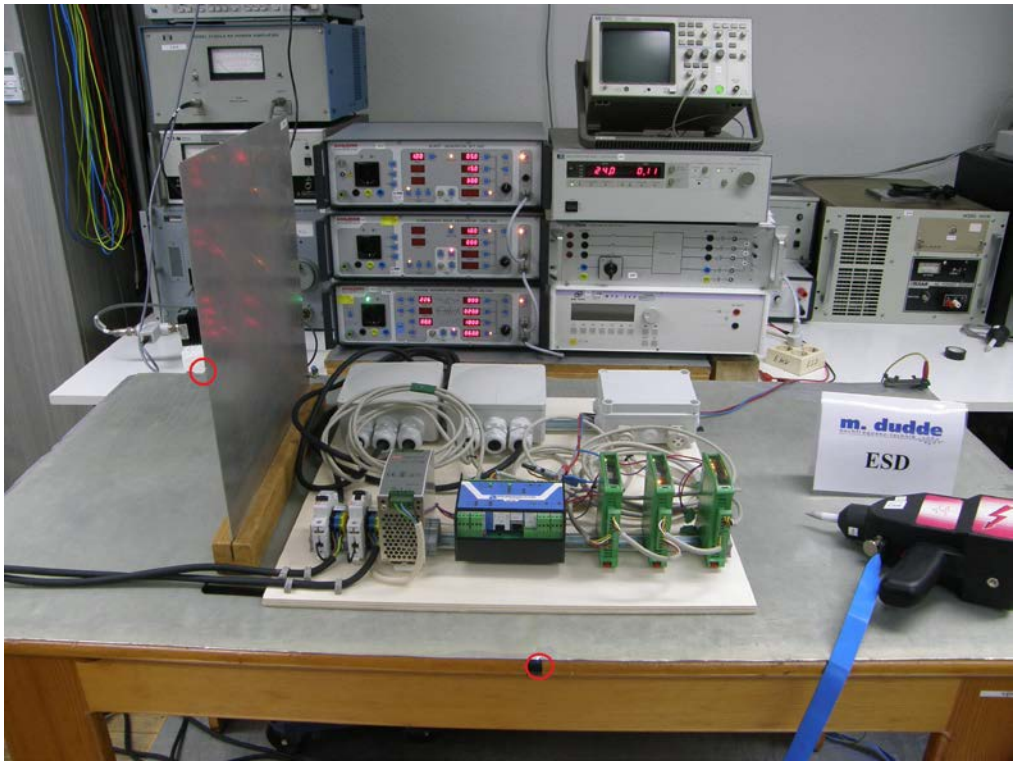
Photographs to the test: ESD, direct contact discharge

Discharge points



Photographs to the test: ESD, indirect contact discharge

Discharge points



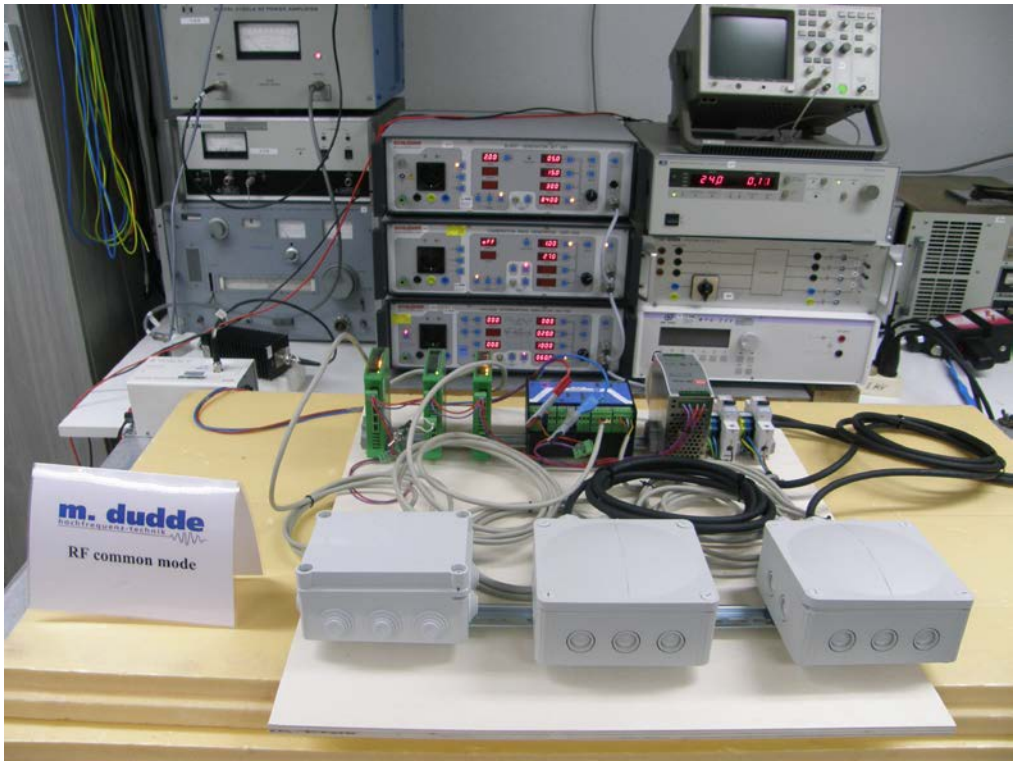
Photographs to the test: Electromagnetic fields - 1

Photographs to the test: Electromagnetic fields - 2

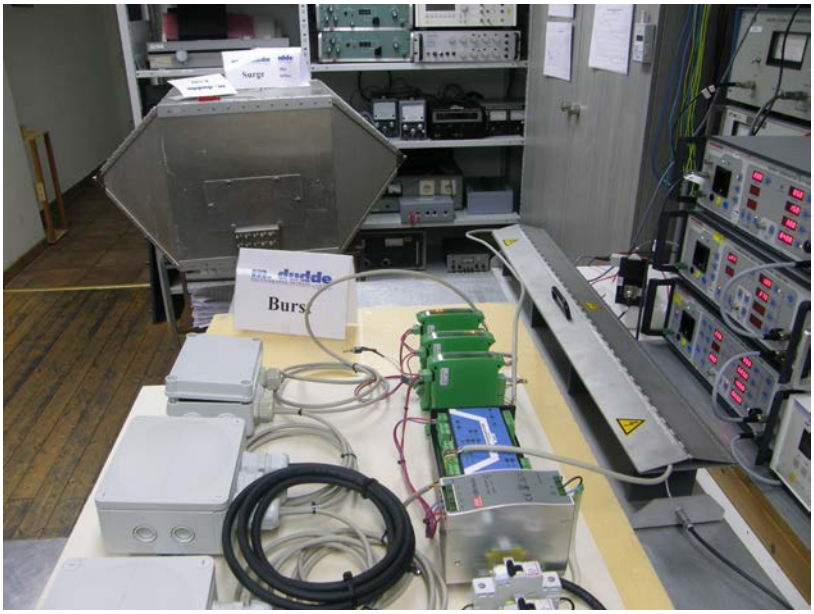
Photographs to the test: Fast transients, common mode – DC power input port

Photographs to the test: Surges – DC power input port

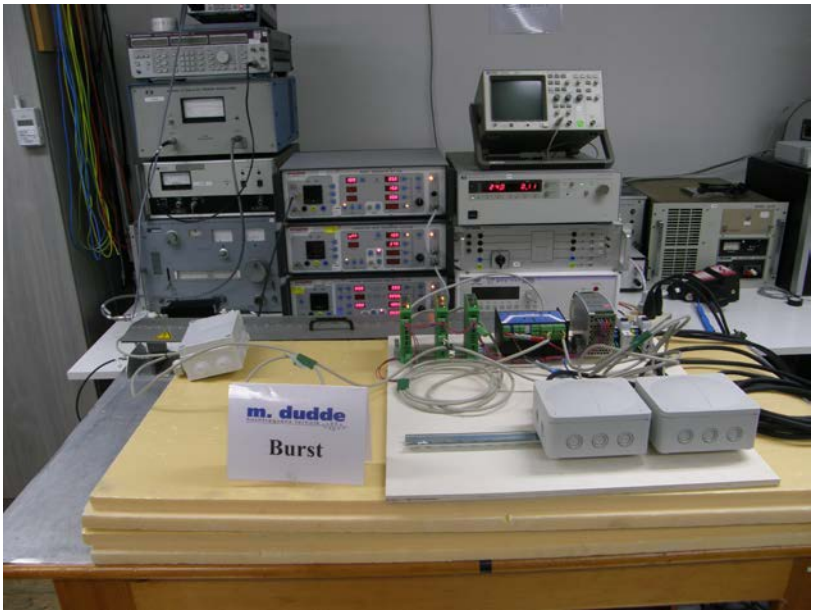
Photographs to the test: Radio frequency, common mode – DC power input

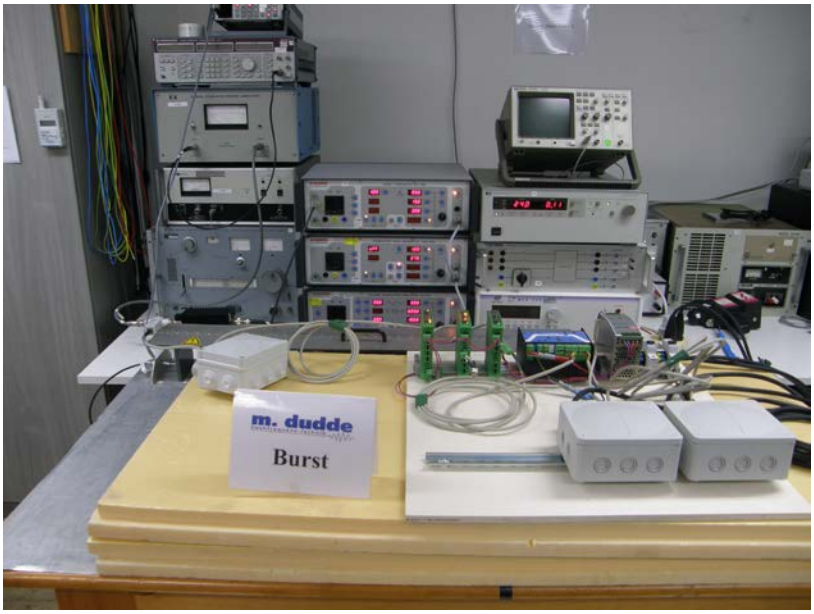


Photographs to the test: Fast transients, common mode Bus1 // bus2

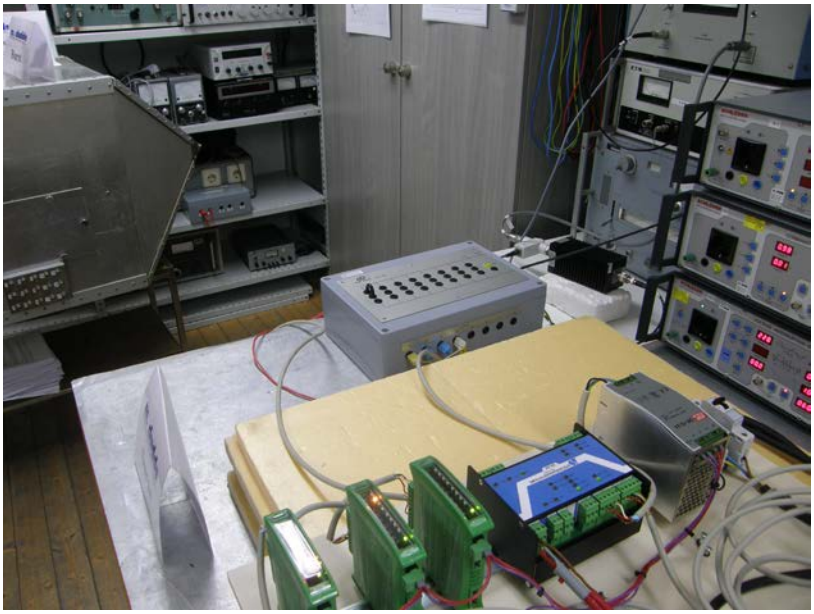


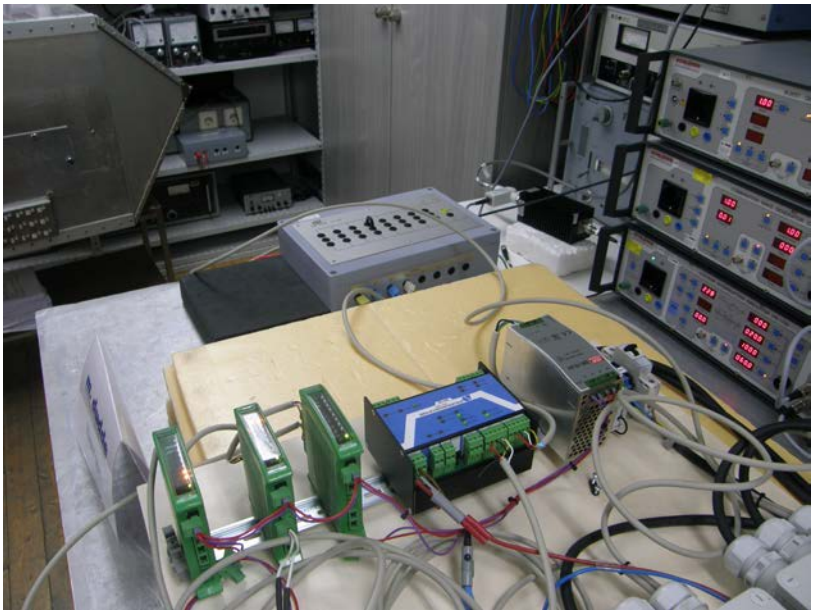
Fast transient: Signal lines ES4DA-EK4 //EK4-EKM



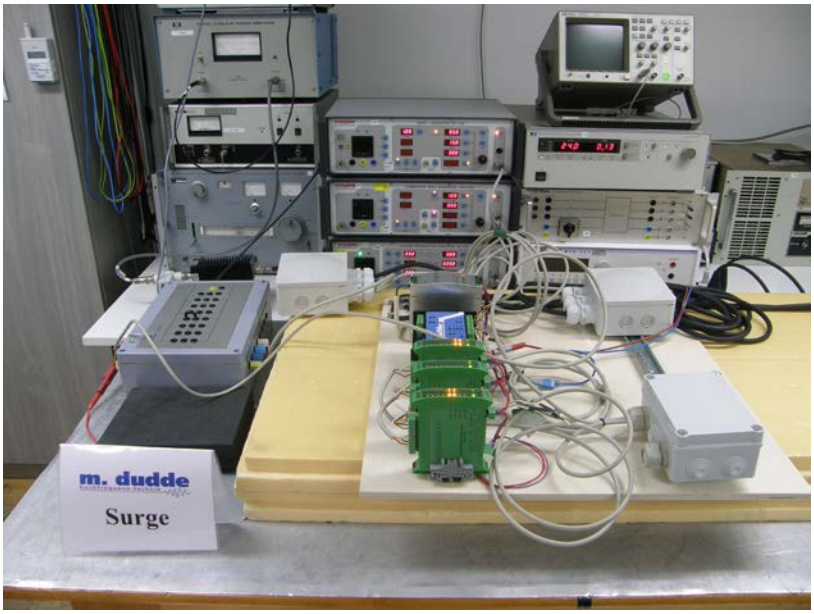


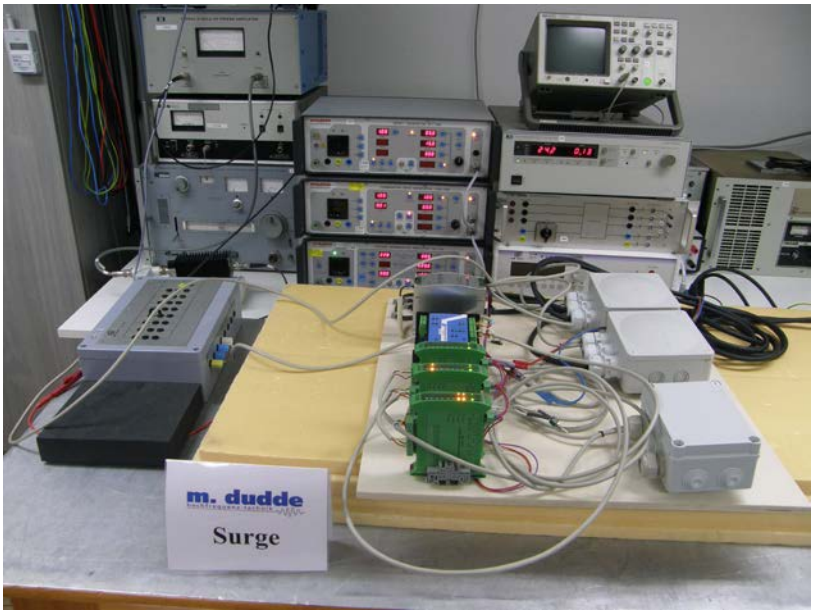
Photographs to the test: Surges, Bus1 // Bus2





Photographs to the test: Surges ES4 DA - EK4 // EK4 - EKMV



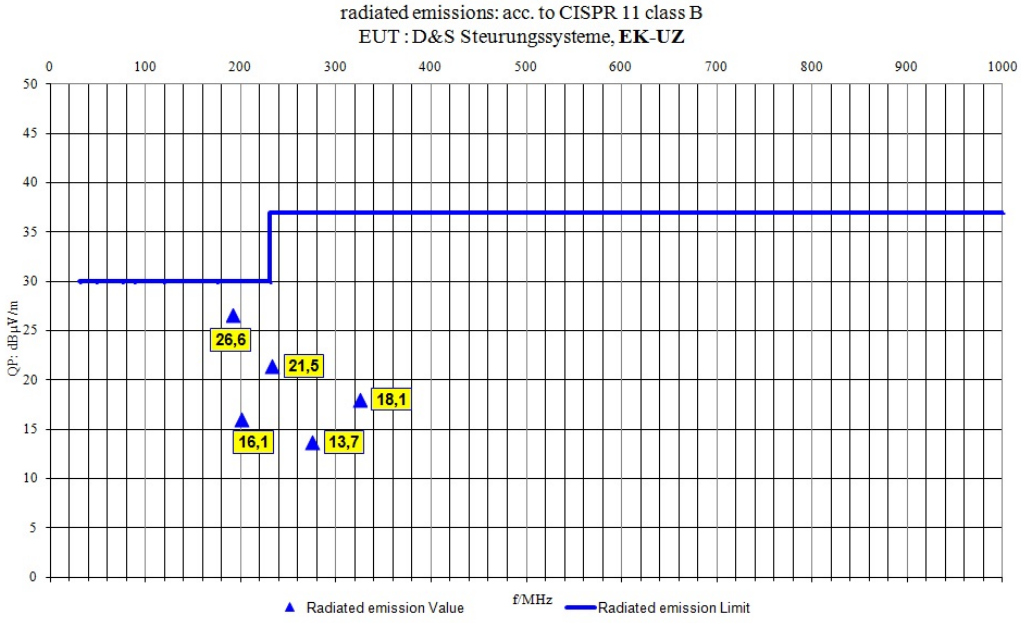


Photographs to the test: Radio frequency, common mode Bus 1 // Bus2

Photographs to the test: Radio frequency, EK4-EKM // ES4DA-EK4

Photographs to the test: Radiated emissions

Test result: Radiated emissions



End of test report