

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-17586-01-00
according to DIN EN ISO/IEC 17025:2005

Period of validity: 18.10.2017 to 17.10.2022

Date of issue: 18.10.2017

Holder of certificate:

RS-Simulatoren Testlabor GmbH
Fraunhofer Straße 1, 82256 Fürstfeldbruck

Tests in the fields:

temperature, relative humidity, salt spray, IP systems of protection (dust, penetration of water), vibration and mechanical shock as well as environmental simulation tests (qualification tests) in combination of those at technical products

Abbreviations used: see last page

Within the given examination field the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, the free choice of standard or equivalent testing methods. The listed testing methods are exemplary. The testing laboratory maintains a current list of all testing methods within the flexible scope of accreditation.

Characteristic test methods

DIN EN 60068-2-1 2008-01	Environmental testing - Part 2-1: Tests - Test A: Cold
DIN EN 60068-2-2 2008-05	Environmental testing - Part 2-2: Tests - Test B: Dry heat
DIN EN 60068-2-6 2008-10	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)
DIN EN 60068-2-11 2000-02	Environmental testing - Part 2: Tests - Test Ka: Salt mist
DIN EN 60068-2-14 2010-04	Environmental testing - Part 2-14: Tests - Test N: Change of temperature
DIN EN 60068-2-17 1995-05	Environmental testing - Part 2: Tests - Test Q: Sealing - Test method Qc
DIN EN 60068-2-18 2001-10	Environmental testing - Part 2-18: Tests - Test R and guidance: Water - Test method Rc 1
DIN EN 60068-2-27 2010-02	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock
DIN EN 60068-2-30 2006-06	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)
DIN EN 60068-2-38 2010-06	Environmental testing - Part 2-38: Tests - Test Z/AD: Composite temperature/humidity cyclic test
DIN EN 60068-2-50 2000-08	Environmental testing- Part 2: Tests - Tests Z/AFc: Combined cold/vibration (sinusoidal) tests for both heat-dissipating and non-heat-dissipating specimens
DIN EN 60068-2-52 1996-10	Environmental testing - Part 2: Tests - Test Kb: Salt mist, cyclic (sodium chloride solution)
DIN EN 60068-2-53 2011-02	Environmental testing - Part 2-53: Tests and guidance: Combined climatic (temperature/humidity) and dynamic (vibration/shock) tests
DIN EN 60068-2-64 2009-04	Environmental testing - Part 2-64: Tests - Test Fh: Vibration, broad-band random and guidance

DIN EN 60068-2-78 2002-09	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state
DIN EN ISO 6270-2 2005-07 + Correction 1 2007-10	Paints and varnishes - Determination of resistance to humidity - Part 2: Procedure for exposing test specimens in condensation-water atmospheres
DIN EN ISO 9227 2017-07	Corrosion tests in artificial atmospheres - Salt spray tests
ISO 16750-1 2006-08	Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 1: General
ISO/DIS 16750-3 2006-07	Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 3: Mechanical loads (here: <i>without 4.3, 4.4, 4.5</i>)
ISO 16750-3 2007-08	Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 3: Mechanical loads (here: <i>without 4.3, 4.4, 4.5</i>)
ISO 16750-4 2010-04	Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 4: Climatic loads (here: <i>without 5.8, 5.9</i>)
ISO 16750-5 2010-04	Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 5: Chemical loads
ISO 20567-1 2017-1	Paints and varnishes - Determination of stone-chip resistance of coatings - Part 1: Multi-impact testing
DIN 40050-9 1993-05	Road vehicles - Degrees of protection (IP-code) - Protection against foreign objects - Water and contact - Electrical equipment
VW 80101 2013-05	VW Group Standard - Electrical and Electronic Assemblies in Motor Vehicles - Test methods 4.1, 4.2, 4.3, 5.1, 5.2, 5.4, 5.5, 6, 7
BMW GS 95003-3 2013	BMW Group Standard - Electrical/Electronic Assemblies in Motor Vehicles - Mechanical requirement (here: <i>without 7</i>)
BMW GS 95003-4 2013	BMW Group Standard - Electrical/Electronic Assemblies in Motor Vehicles - Climatic Requirements (here: <i>without 6.4, 6.10</i>)

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BMW GS 95003-5 2013	BMW Group Standard - Electrical/Electronic Assemblies in Motor Vehicles - Chemical requirements (here: <i>only point 4</i>)
BMW PV 303.4 1998-12	Climate change testing for equipment parts
BMW PR 308.1 2000-01	Climate test for bonded joints on trim parts
MIL-STD-202 G 2003-07	US Department of Defense, test method standard, electronic and electrical component parts: Method 103 B Humidity (Steady State) Method 106 E Moisture Resistance Method 107 G Thermal Shock
MIL-STD-810 G 2008-10	US Department of Defense, test method standard for environmental engineering considerations and laboratory tests: Method 501.4 High Temperature Method 502.4 Low Temperature Method 503.4 Temperature Shock Method 507.4 Humidity Method 509.4 Salt Fog Method 514.5 Vibration
DIN 50016 1962-12	Testing of materials, structural components and equipment - Method of test in damp alternating atmosphere (<i>withdrawn document</i>)
DIN 50017 1982-10	Atmospheres and their technical application - Condensation water test atmospheres (<i>withdrawn document</i>)

The above-mentioned test methods are characterised by the measured values listed in the following table:

test field	measurand	measurement and test range		characteristic testing method
temperature test	temperature	-70 to 300	[°C]	e. g. DIN EN 60068-2-2
alternating climate test	temperature	20 to 80	[°C]	e. g. DIN EN 60068-2-38
	relative humidity	10 to 95	[% r.F.]	
temperature shock test	temperature	-40 to 150	[°C]	e. g. DIN EN 60068-2-14
	transferring time	10	[s]	
salt spray test	temperature	20 to 65	[°C]	e. g. DIN EN 60068-2-52
vibration with temperature	acceleration (sinusoidal)	to 100	[g]	e. g. DIN EN 60068-2-53
	effective acceleration	to 100	[g _{eff}]	
	frequency	5 to 5000	[Hz]	
	temperature	-40 to +120	[°C]	
	relative humidity	10 to 95	[% r.F.]	
mechanical shock test	acceleration	0 to 100	[g]	e. g. DIN EN 60068-2-27
	time	to 11	[ms]	
dust test	pressure	500 to 600	[kPa]	e. g. DIN EN 60068-2-68

abbreviations used:

BMW	BMW AG
IEC	International Electrotechnical Commission
MIL-STD	Military Standard
VW	Volkswagen AG