

# Deutsche Akkreditierungsstelle GmbH

## Annex to the Accreditation Certificate D-PL-19366-01-01 according to DIN EN ISO/IEC 17025:2018

**Valid from: 26.07.2019**

Date of issue: 26.07.2019

Holder of certificate:

**E & C Testlab GmbH (Engineering & Certification Testlab GmbH)  
Industriestraße 8, 78647 Trossingen**

Tests in the fields:

**Electromagnetic compatibility (EMC), Telecommunications**

**Within the scope of accreditation marked with\*, the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkKS, to use standards or equivalent testing methods listed here with different issue dates..**

**The testing laboratory maintains a current list of all testing procedures within the flexible scope of accreditation.**

| Department               | Standard / date of issue<br>In-house method/<br>version | Title of the Standard or the in-house method<br>(specify any deviations / modifications of<br>standard method)  | Test item /<br>Inspection item |
|--------------------------|---|---|--------------------------------|
| <b>Basic standards *</b> |   |   |                                |
| EMC                      | DIN EN 61000-3-2: 2015                                  | Electromagnetic compatibility (EMC) - Part 3-2:<br>Limits - Limits for harmonic current emissions<br>(equipment input current ≤ 16 A per phase) (IEC<br>61000-3-2:2014); German version EN 61000-3-<br>2:2014 |                                |

**This document is a translation. The definitive version is the original German annex to the accreditation certificate.**

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|-------------------|--|--|--|
| EMC               | IEC 61000-3-2: 2014<br>Edition 4.0                               | Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current $\leq 16$ A per phase)   |  |
| EMC               | DIN EN 61000-3-3: 2014   | Electromagnetic compatibility (EMC) – Part 3-3: Limits – 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 (IEC 61000-3-3:2013); German version EN 61000-3-3:2013 |  |
| EMC               | IEC 61000-3-3:2013<br>Edition 3.0                                | Electromagnetic compatibility (EMC) – Part 3-3: Limits – 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  |  |
| EMC               | DIN EN 61000-3-11: 2001  | Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems – Equipment with rated current $\leq 75$ A and subject to conditional connection (IEC 61000-3-11:2000); German version EN 61000-3-11:2000  |  |
| EMC               | IEC 61000-3-11: 2000<br>Edition 1.0                              | Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems – Equipment with rated current $\leq 75$ A and subject to conditional connection   |  |
| EMC               | DIN EN 61000-3-12: 2012  | Electromagnetic compatibility (EMC) – Part 3-12: Limits – Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current $>16$ A and $\leq 75$ A per phase (IEC 61000-3-12:2011); German version EN 61000-3-12:2011   | Max. 63A                               |

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|------------|---|--|--------------------------------|
| EMC        | IEC 61000-3-12: 2011<br>Edition 2.0                     | Electromagnetic compatibility (EMC) –<br>Part 3-12: Limits – Limits for harmonic<br>currents produced by equipment<br>connected to public low-voltage systems<br>with input current >16 A and ≤75 A per<br>phase   | Max. 63A                       |
| EMC        | DIN EN 61000-4-2:2009-<br>12                            | Electromagnetic compatibility (EMC) –<br>Part 4-2: Testing and measurement techniques –<br>Electrostatic discharge immunity test (IEC<br>61000-4-2:2008); German version EN 61000-4-<br>2:2009-12  | Up to 30 kV                    |
| EMC        | IEC 61000-4-2: 2008                                     | Electromagnetic compatibility (EMC) –<br>Part 4-2: Testing and measurement techniques<br>–<br>Electrostatic discharge immunity test  | Up to 30 kV                    |
| EMC        | DIN EN 61000-4-3: 2011                                  | Electromagnetic compatibility (EMC) –<br>Part 4-3: Testing and measurement techniques –<br>Radiated, radio-frequency, electromagnetic field<br>immunity test (IEC 61000-4-3:2006 + A1:2007 +<br>A2:2010); German version EN 61000- 4-3:2006 +<br>A1:2008 + A2:2010 |                                |
| EMC        | IEC 61000-4-3: 2010<br>Edition 3.2                      | Electromagnetic compatibility (EMC) –<br>Part 4-3: Testing and measurement<br>techniques – Radiated, radio-frequency,<br>electromagnetic field immunity test   |                                |
| EMC        | DIN EN 61000-4-4: 2013                                  | Electromagnetic compatibility (EMC) –<br>Part 4-4: Testing and measurement techniques –<br>Electrical fast transient/burst immunity test (IEC<br>61000-4-4:2012); German version EN 61000-4-<br>4:2012   |                                |
| EMC        | IEC 61000-4-4: 2012<br>Edition 3.0                      | Electromagnetic compatibility (EMC) –<br>Part 4-4: Testing and measurement techniques<br>–<br>Electrical fast transient/burst immunity test  |                                |
| EMC        | DIN EN 61000-4-5: 2015                                  | Electromagnetic compatibility (EMC) – Part 4-5:<br>Testing and measurement techniques – Surge<br>immunity test (IEC 61000- 4-5:2014); German<br>version EN 61000-4-5:2014  |                                |

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|-------------------|--|---|--|
| EMC               | IEC 61000-4-5: 2014<br>Edition 3.0                               | Electromagnetic compatibility (EMC) –<br>Part 4-5: Testing and measurement techniques –<br>Surge immunity test  |  |
| EMC               | DIN EN 61000-4-6: 2014   | Electromagnetic compatibility (EMC) – Part 4-6:<br>Testing and measurement techniques –<br>Immunity to conducted disturbances, induced by<br>radio-frequency fields (IEC 61000-4-6:2013);<br>German version EN 61000-4-6:2014   | Exclusive Tabelle<br>G.5 Tabelle G.6   |
| EMC               | IEC 61000-4-6: 2013<br>Edition 4.0                               | Electromagnetic compatibility (EMC) – Part 4-6:<br>Testing and measurement techniques –<br>Immunity to conducted disturbances, induced by<br>radio-frequency fields   | Exclusive Table<br>G.5 Table G.6       |
| EMC               | DIN EN 61000-4-8: 2010   | Electromagnetic compatibility (EMC) – Part 4-8:<br>Testing and measurement techniques – Power<br>frequency magnetic field immunity test (IEC<br>61000-4- 8:2009); German version EN 61000-4-<br>8:2010  | Exclusive<br>Chapter<br>5,<br>Table 2  |
| EMC               | IEC 61000-4-8: 2009<br>Edition 2.0                               | Electromagnetic compatibility (EMC) – Part 4-8:<br>Testing and measurement techniques – Power<br>frequency magnetic field immunity test   | Exclusive<br>Chapter<br>5,<br>Table 2  |
| EMC               | DIN EN 61000-4-11: 2005  | Electromagnetic compatibility (EMC) – Part 4-11:<br>Testing and measurement techniques – Voltage<br>dips, short interruptions and voltage variations<br>immunity tests (IEC 61000-4-11:2004); German<br>version EN 61000-4-11:2004  |  |
| EMC               | IEC 61000-4-11: 2004<br>Edition 2.0                              | Electromagnetic compatibility (EMC) – Part 4-11:<br>Testing and measurement techniques – Voltage<br>dips, short interruptions and voltage variations<br>immunity tests  |  |
| EMC               | DIN EN 61000-4-13: 2016  | Electromagnetic compatibility (EMC) – Part 4-13:<br>Testing and measurement techniques –<br>Harmonics and interharmonics including mains<br>signalling at a.c. power port, low frequency<br>immunity tests (IEC 61000-4-13:2002 + A1:2009<br>+ A2:2015); German version EN 61000- 4-<br>13:2002 + A1:2009 + A2 2016 |  |

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|-------------------|--|---|--|
| EMC               | IEC 61000-4-13: 2002<br>+ A1:2009 + A2: 2015                     | Electromagnetic compatibility (EMC) – Part 4-13:<br>Testing and measurement techniques –<br>Harmonics and interharmonics including mains<br>signalling at a.c. power port, low frequency<br>immunity tests  |  |
| EMC               | DIN EN 61000-4-14: 2010  | Electromagnetic compatibility (EMC) – Part 4-14:<br>Testing and measurement techniques – Voltage<br>fluctuation immunity test for equipment with<br>input current not exceeding 16 A per phase (IEC<br>61000- 4-14:1999 + A1:2001 + A2:2009);<br>German version EN 61000-4-14:1999 + A1:2004<br>+ A2:2009 |  |
| EMC               | IEC 61000-4-14: 2009<br>Edition 1.2                              | Electromagnetic compatibility (EMC) – Part 4-14:<br>Testing and measurement techniques – Voltage<br>fluctuation immunity test for equipment with<br>input current not exceeding 16 A per phase  |  |
| EMC               | DIN EN 61000-4-17: 2005<br>A2: 2009                              | Electromagnetic compatibility (EMC) – Part 4-17:<br>Testing and measurement techniques – Ripple<br>on d.c. input power port immunity test (IEC<br>61000-4- 17:1999/A2:2008); German version EN<br>61000-4-17:1999/A2:2009   |  |
| EMC               | IEC 61000-4-17: 2009<br>Edition 1.2                              | Electromagnetic compatibility (EMC) – Part 4-17:<br>Testing and measurement techniques – Ripple<br>on d.c. input power port immunity test   |  |
| EMC               | DIN EN 61000-4-27: 2009  | Electromagnetic compatibility (EMC) – Part 4-27:<br>Testing and measurement techniques –<br>Unbalance, immunity test for equipment with<br>input current not exceeding 16 A per phase (IEC<br>61000-4-27:2000 + A1:2009); German version<br>EN 61000-4-27:2000 + A1:2009                                  |  |
| EMC               | IEC 61000-4-27: 2009<br>Edition 1.1                              | Electromagnetic compatibility (EMC) – Part 4-27:<br>Testing and measurement techniques –<br>Unbalance, immunity test for equipment with<br>input current not exceeding 16 A per phase   |  |

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| EMC        | DIN EN 61000-4-27: 2009                                 | Electromagnetic compatibility (EMC) – Part 4-27: Testing and measurement techniques – Unbalance, immunity test for equipment with input current not exceeding 16 A per phase (IEC 61000-4-27:2000 + A1:2009); German version EN 61000-4-27:2000 + A1:2009  |                                |
| EMC        | IEC 61000-4-27: 2009<br>Edition 1.1                     | Electromagnetic compatibility (EMC) – Part 4-27: Testing and measurement techniques – Unbalance, immunity test for equipment with input current not exceeding 16 A per phase   |                                |
| EMC        | DIN EN 61000-4-27: 2009                                 | Electromagnetic compatibility (EMC) – Part 4-27: Testing and measurement techniques – Unbalance, immunity test for equipment with input current not exceeding 16 A per phase (IEC 61000-4-27:2000 + A1:2009); German version EN 61000-4-27:2000 + A1:2009  |                                |
| EMC        | IEC 61000-4-27: 2009<br>Edition 1.1                     | Electromagnetic compatibility (EMC) – Part 4-27: Testing and measurement techniques – Unbalance, immunity test for equipment with input current not exceeding 16 A per phase   |                                |
| EMC        | DIN EN 61000-4-28: 2009<br>+ A1: 2004<br>+ A2: 2009     | Electromagnetic compatibility (EMC) – Part 4-28: Testing and measurement techniques – Variation of power frequency, immunity test for equipment with input current not exceeding 16 A per phase (IEC 61000-4-28:1999 + A1:2001 + A2:2009); German version EN 61000-4-28:2000 + A1:2004 + A2:2009 |                                |
| EMC        | IEC 61000-4-28: 2009<br>Edition 1.2                     | Electromagnetic compatibility (EMC) – Part 4-28: Testing and measurement techniques – Variation of power frequency, immunity test for equipment with input current not exceeding 16 A per phase  |                                |
| EMC        | DIN EN 61000-4-29: 2001                                 | Electromagnetic compatibility (EMC) Part 4-29: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests (IEC 61000-4-29:2000); German version EN 61000-4-29:2000  |                                |

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|-------------------|--|---|--|
| EMC               | IEC 61000-4-29: 2000<br>Edition 1.0                              | Electromagnetic compatibility (EMC) Part 4-29:<br>Testing and measurement techniques – Voltage<br>dips, short interruptions and voltage variations<br>on d.c. input power port immunity tests     |  |
| EMC               | CISPR 16-2-1: 2014<br>AMD1:2017                                  | Specification for radio disturbance and immunity<br>measuring apparatus and methods - Part 2-1:<br>Methods of measurement of disturbances and<br>immunity - Conducted disturbance<br>measurements |  |
| EMC               | CISPR 16-2-2: 2010   | Specification for radio disturbance and immunity<br>measuring apparatus and methods - Part 2-2:<br>Methods of measurement of disturbances and<br>immunity - Measurement of disturbance power      |  |
| EMC               | CISPR 16-2-3: 2016   | Specification for radio disturbance and immunity<br>measuring apparatus and methods - Part 2-3:<br>Methods of measurement of disturbances and<br>immunity - Radiated disturbance measurements     |  |
| EMC               | CISPR 16-2-4: 2003   | Specification for radio disturbance and immunity<br>measuring apparatus and methods - Part 2-4:<br>Methods of measurement of disturbances and<br>immunity - Immunity measurements                 |  |
| EMC               | DIN EN 55016-2-1: 2014-<br>12                                    | Specification for radio disturbance and immunity<br>measuring apparatus and methods - Part 2-1:<br>Methods of measurement of disturbances and<br>immunity - Conducted disturbance<br>measurements |  |
| EMC               | DIN EN 55016-2-2: 2011-<br>09                                    | Specification for radio disturbance and immunity<br>measuring apparatus and methods - Part 2-2:<br>Methods of measurement of disturbances and<br>immunity - Measurement of disturbance power      |  |
| EMC               | DIN EN 55016-2-3: 2014-<br>11                                    | Specification for radio disturbance and immunity<br>measuring apparatus and methods - Part 2-3:<br>Methods of measurement of disturbances and<br>immunity - Radiated disturbance measurements     |  |
| EMC               | DIN EN 55016-2-4: 2005-<br>09                                    | Specification for radio disturbance and immunity<br>measuring apparatus and methods - Part 2-4:<br>Methods of measurement of disturbances and<br>immunity - Immunity measurements                 |  |

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|----------------------------------|---|--|--------------------------------|
| <b>Generic Standards *</b>       |   |  |                                |
| EMC                              | DIN EN 61000-6-1: 2007-10                               | Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1:2005); German version EN 61000-6-1:2007                              |                                |
| EMC                              | IEC 61000-6-1: 2005                                     | Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity for residential, commercial and light-industrial environments   |                                |
| EMC                              | DIN EN 61000-6-2: 2006-03                               | Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments (IEC 61000-6-2:2005); German version EN 61000-6-2:2005  |                                |
| EMC                              | IEC 61000-6-2: 2005                                     | Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments   |                                |
| EMC                              | DIN EN 61000-6-3: 2011 + A1: 2011                       | Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3:2006 + A1:2010); German version EN 61000-6-3:2007 + A1:2011 |                                |
| EMC                              | IEC 61000-6-3: 2011 Edition 2.1                         | Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments  |                                |
| EMC                              | DIN EN 61000-6-4: 2011 + A1: 2011                       | Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments (IEC 61000-6-4:2006 + A1:2010); German version EN 61000-6-4:2007 + A1:2011                                   |                                |
| EMC                              | IEC 61000-6-4: 2011 Edition 2.1                         | Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments  |                                |
| <b>Product family standard *</b> |   |  |                                |
| DIN EN 55011: 2018               | Industrial, scientific and medical equipment –          | No measurement with 30m  |                                |

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|---------------------------------------|--|--|--------------------------------|
|                                       | Radio-frequency disturbance characteristics – Limits and methods of measurement (CISPR 11:2015, modified + A1:2017); German version EN 55011:2016 + A1:2017                                  |  |                                |
| CISPR 11: 2015 + A1:2017<br>Edition 6 | Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement   | No measurement with 30m  |                                |
| DIN EN 55014-1: 2018-08               | Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission (CISPR 14-1:2016 + COR1:2016); German version EN 55014-1:2017 |  |                                |
| CISPR 14-1: 2016                      | Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission   |  |                                |
| EMC                                   | DIN EN 55014-2: 2016-01  | Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 2: Immunity – Product family standard (CISPR 14-2:2015); German version EN 55014-2:2015 |                                |

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|------------|---|---|--------------------------------|
| EMC        | CISPR 14-2: 2015<br>Edition 2.0                         | Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 2: Immunity – Product family standard  |                                |
| EMC        | DIN EN 55015: 2016                                      | Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment (CISPR 15:2013 + IS1:2013 + IS2:2013 + A1:2015); German version EN 55015:2013 + A1:2015 | No loop antenna, lamp replicas |
| EMC        | CISPR 15: 2013<br>+ A1: 2015<br>Edition 8.1             | Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment   | No loop antenna, lamp replicas |
| EMC        | DIN EN 55022: 2011                                      | Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement (CISPR 22:2008, modified); German version EN 55022:2010  |                                |
| EMC        | CISPR 22: 2008<br>Edition 6.0                           | Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement  |                                |
| EMC        | CISPR 24: 2010<br>+ AMD1: 2015                          | Information technology equipment – Immunity characteristics – Limits and methods of measurement   |                                |
| EMC        | DIN EN 55024: 2016-05                                   | Information technology equipment – Immunity characteristics – Limits and methods of measurement (CISPR 24:2010 + Cor.:2011 + A1:2015) German version EN 55024:2010 + A1:2015                                |                                |
| EMC        | DIN EN 55032: 2016-02                                   | Electromagnetic compatibility of multimedia equipment – Emission requirement (CISPR 32:2015); German version EN 55032:2015  | Exclusive Chapter C.4.1        |
| EMC        | CISPR 32: 2015<br>+ Cor: 2016                           | Electromagnetic compatibility of multimedia equipment – Emission requirement  | Exclusive Chapter C.4.1        |
| EMC        | DIN EN 61326-1: 2013                                    | Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements (IEC 61326-1:2012); German version EN 61326-1:2013                                       |                                |

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| EMC               | IEC 61326-1: 2012<br>Edition 2.0                                 | Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements   |  |
| EMC               | DIN EN 61326-2-1: 2013   | Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-1: Particular requirements – Test configurations, operational conditions and performance criteria for sensitive test and measurement equipment for EMC unprotected applications (IEC 61326-2-1:2012); German version EN 61326-2-1:2013                  |  |
| EMC               | IEC 61326-2-1: 2012<br>Edition 2.0                               | Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-1: Particular requirements – Test configurations, operational conditions and performance criteria for sensitive test and measurement equipment for EMC unprotected applications   |  |
| EMC               | DIN EN 61326-2-2: 2013   | Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-2: Particular requirements – Test configurations, operational conditions and performance criteria for portable test, measuring and monitoring equipment used in low-voltage distribution systems (IEC 61326-2-2:2012); German version EN 61326-2-2:2013 |  |
| EMC               | IEC 61326-2-2: 2012  | Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-2: Particular requirements – Test configurations, operational conditions and performance criteria for portable test, measuring and monitoring equipment used in low-voltage distribution systems  |  |
| EMC               | DIN EN 61326-2-3: 2013   | Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-3: Particular requirements – Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning (IEC 61326-2-3:2012); German   |  |

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|                 |   | version EN 61326-2-3:2013   |   |
| EMC             | IEC 61326-2-3: 2012<br>Edition 2.0                      | Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-3: Particular requirements – Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning   |   |
| EMC             | DIN EN 61326-2-4: 2013                                  | Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-4: Particular requirements – Test configurations, operational conditions and performance criteria for insulation monitoring devices according to IEC 61557-8 and for equipment for insulation fault location according to IEC 61557-9 (IEC 61326-2-4:2012); German version EN 61326-2-4:2013 |   |
| EMC             | IEC 61326-2-4: 2012<br>Edition 2.0                      | Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-4: Particular requirements – Test configurations, operational conditions and performance criteria for insulation monitoring devices according to IEC 61557-8 and for equipment for insulation fault location according to IEC 61557-9  |   |
| EMC             | IEC 62841-1: 2014<br>Edition 1.0                        | Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 1: General requirements  |   |
| EMC             | DNVGL-CG-0339<br>Edition November 2016                  | Environmental test specification for electrical, electronic and programmable equipment and systems  | Without Chapter 2, 3, 10, 11, 15, 16                          |
| Radio frequency | ETSI EN 300 330 V2.1.1:<br>2017-02                      | Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU   | SUB-Clause 4.3.4.<br>4.3.8.<br>4.3.9.<br>5.6.1.2<br>and 5.6.2 |
| Radio frequency | ETSI EN 301 489-1                                       | Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic   |   |

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|                                | V2.1.1: 2017-2  | Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements)   |  |
| Radio frequency                | ETSI EN 301 489-3<br>V2.1.1: 2019-03                    | Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz | A.2  |
| Radio frequency                | ETSI EN 301 489-17<br>V3.1.1: 2017-02                   | Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment; Part 17: Specific conditions for Broadband Data Transmission Systems  |  |
| <b>External requirements *</b> |   |   |  |
| EMC                            | DNV 2.4: 2006   | environmental test specification for instrumentation and automation equipment April 2006  | Only:<br>3.14.5, 3.14.6,<br>3.14.7, 3.14.8,<br>3.14.9, 3.14.10,<br>3.14.11,<br>3.14.12 |
| <b>Automotive *</b>            |   |   |  |
| EMC                            | ISO 10605: 2008<br>Second edition                       | Road vehicles - Test methods for electrical disturbances from electrostatic discharge   |  |
| EMC                            | ISO 11452-2:2019  | Road vehicles - Component test methods for electrical disturbances from narrowband radiated electromagnetic energy -- Part 2: Absorber-lined shielded enclosure   | Only Components  |
| EMC                            | ISO 11452-3: 2016 Third edition                         | Road vehicles -- Component test methods for electrical disturbances from narrowband radiated electromagnetic energy -- Part 3: Transverse electromagnetic (TEM) cell  | Only Components  |
| EMC                            | ISO 11452-4: 2011<br>Fourth edition                     | Road vehicles - Component test methods for electrical disturbances from narrowband radiated electromagnetic energy - Part 4: Harness excitation methods   | Only Components  |

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|-------------------|--|--|--|
| EMC               | ISO 11452-5: 2002<br>Second<br>edition                           | Road vehicles - Component test methods for electrical disturbances from narrowband radiated electromagnetic energy - Part 5: Stripline   | Only Components                        |
| EMC               | ISO 11452-8: 2015-06   | Road vehicles -- Component test methods for electrical disturbances from narrowband radiated electromagnetic energy -- Part 8: Immunity to magnetic fields   | Only Components                        |
| EMC               | ISO 11452-9: 2012<br>First edition                               | Road vehicles - Component test methods for electrical disturbances from narrowband radiated electromagnetic energy - Part 9: Portable transmitters   | Only Components                        |
| EMC               | ISO 11452-10: 2009<br>First edition                              | Road vehicles - Component test methods for electrical disturbances from narrowband radiated electromagnetic energy - Part 10: Immunity to conducted disturbances in the extended audio frequency range                               | Only Components                        |
| EMC               | DIN EN 55025: 2018   | Vehicles, boats and internal combustion engines – Radio disturbance characteristics – Limits and methods of measurement for the protection of on-board receivers (CISPR 25:2016 + COR1:2017); German version EN 55025:2017 + AC:2017 | Only Components                        |
| EMC               | CISPR 25: 2016-12<br>Edition 4.0                                 | Vehicles, boats and internal combustion engines – Radio disturbance characteristics – Limits and methods of measurement for the protection of on-board receiver  | Only Components                        |
| EMC               | ISO 7637-2: 2011<br>Third edition                                | Road vehicles - Electrical disturbances from conduction and coupling - Part 2: Electrical transient conduction along supply lines only   | Only Components                        |
| EMC               | ISO 7637-3: 2016<br>Third edition                                | Road vehicles - Electrical disturbances from conduction and coupling - Part 3: Electrical transient transmission by capacitive and inductive coupling via lines other than supply lines  | Only Components                        |

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| EMC                    | ISO 13766-1: 2018-04                                    | Earth-moving and building construction machinery - Electromagnetic compatibility (EMC) of machines with internal electrical power supply -- Part 1: General EMC requirements under typical electromagnetic environmental conditions     | Only Components   |
| EMC                    | DIN EN ISO 14982: 2001-12                               | Agricultural and forestry machinery -- Electromagnetic compatibility - Test methods and acceptance criteria   |   |
| EMC                    | ISO 16750-2: 2012-11<br>Fourth edition                  | Road vehicles – Environmental conditions and testing for electrical and electronic equipment – PART 2 loads   | Only Components   |
| <b>Airborne *</b>      |   |   |   |
| EMC                    | RTCA DO-160E: 2004                                      | Environmental Conditions and Test Procedures for Airborne Equipment   | Only tests according Chapter: 15, 16, 18, 19, 20 (Cabin equipment) and 21 |
| <b>Electrotechnics</b> |   |   |   |
| Electrotechnics        | DIN EN 60664-1: 2008                                    | Insulation coordination for equipment within low-voltage systems- Part 1: Principles, requirements and tests (IEC 60664-1:2007); German version EN 60664-1:2007   | Exclusive electric strength:<br>- AC<br>- DC<br>- Surge                   |
| Electrotechnics        | DIN EN 60990: 2017                                      | Methods of measurement of touch current and protective conductor current (IEC 60990:2016); German version EN 60990:2016   |   |
| Electrotechnics        | DIN EN 60512-3-1: 2003                                  | Connectors for electronic equipment - Tests and measurements – Part 5-1: Current-carrying capacity tests; Test 5a: Temperature rise (IEC 60512-5-1:2002); German version EN 60512-5-1:2002  |   |
| Electrotechnics        | DIN EN 60512-2-1: 2003-01                               | Connectors for electronic equipment - Tests and measurements – Part 2-1: Electrical continuity and contact resistance tests; Test 2a: Contact resistance; Millivolt level method (IEC 60512-2-1:2002); German version EN 60512-2-1:2002 |   |

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|-----------------|---|--|--|
| Electrotechnics | DIN EN 60512-2-2: 2004-01                               | Connectors for electronic equipment - Tests and measurements – Part 2-2: Electrical continuity and contact resistance tests – Test 2b: Contact resistance - Specified test current method (IEC 60512-2-2:2003); German version EN 60512-2-2:2003 |  |
| Electrotechnics | DNVGL-CG-0339: 2016                                     | Environmental test specification for electrical, electronic and programmable equipment and systems   | Exclusive:<br>cl. 12<br>insulation<br>resistance test<br>(Insulation<br>resistance) cl. 13<br>High voltage test<br>(electric strength) |
| Electrotechnics | VW 80000: 2017  | Electrical and electronic components in vehicles up to 3.5 t<br>General requirements, test conditions and tests  | Test E 18<br>electric strength<br>Test E 20<br>Insulation<br>resistance  |
| Electrotechnics | MBN LV 124-1: 2013                                      | Electrical and electronic components in passenger cars up to 3.5t - General requirements, test conditions and tests Part 1: Electrical requirements  | Test E 18<br>electric strength<br>Test E 20<br>Insulation<br>resistance  |
| Electrotechnics | GS 95024-3-1: 2013                                      | Electrical and electronic components in vehicles up to 3.5 t<br>General requirements, test conditions and tests  | Test E 18<br>electric strength<br>Test E 20<br>Insulation<br>resistance  |

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