

<b>STN</b>	<b>Vonkajšie elektrické vedenia so striedavým napätím nad 1 kV</b> <b>Časť 2-4: Národné normatívne hľadiská (NNA) pre NEMECKO (založené na EN 50341-1: 2012)</b>	<b>STN</b> <b>EN 50341-2-4</b>  33 3300
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Overhead electrical lines exceeding AC 1 kV - Part 2-4: National Normative Aspects (NNA) for GERMANY (based on EN 50341-1:2012)

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

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Overhead electrical lines exceeding AC 1 kV - Part 2-4: National  
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1:2012)

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CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

The following statements 1 to 6 are required from CLC/TC 11 for all NNAs; statement 7 was added by the German National Committee (NC).

- 1 The German National Committee is identified by the following address:

Deutsche Elektrotechnische Kommission im DIN und VDE (DKE)  
Stresemannallee 15 (VDE Haus)  
D-60596 Frankfurt/Main  
Germany  
phone ++49 69 6308-(0) 224  
Fax ++49 69 6312-925

Name of the relevant technical body: Komitee 421 (K 421) "Freileitungen" (Overhead power lines)

- 2 The German NC and its technical body K 421 "Overhead power lines" of Deutsche Elektrotechnische Kommission im DIN und VDE (DKE) prepared this Part 2-4 of EN 50341, listing the German National Normative Aspects (NNA) under its sole responsibility, and duly passed it through the CENELEC and CLC/TC 11 procedures.

NOTE The German NC also takes sole responsibility for the technically correct co-ordination of this EN 50341-2-4:2019 with EN 50341-1:2012. It performed the necessary checks in the frame of quality assurance/control. However, it is noted that this quality control was made in the framework of the general responsibility of a standards committee under the national laws/regulations.

- 3 This EN 50431-2-4, hereafter referred to as Part 2-4, is normative in Germany and informative in other countries.
- 4 This Part 2-4 shall be read in conjunction with EN 50341-1, hereafter referred to as Part 1. All clause numbers used in this NNA correspond to those of Part 1. Specific subclauses, which are prefixed "DE", shall be read as amendments to the relevant text in Part 1. Any necessary clarification regarding the application of this NNA in conjunction with Part 1 shall be referred to the German NC who will, in co-operation with CLC/TC 11, clarify the requirements.
- When no reference is made in this NNA to a specific subclause, then Part 1 applies.
- 5 In case of "boxed values" defined in Part 1, amended values, (if any) which are defined in Part 2-4 shall be taken into account in Germany.
- However, any "boxed value", whether in Part 1 or in this Part 2-4, shall not be amended in the direction of greater risk in a Project Specification.
- 6 The National German standards/regulations related to overhead electrical lines exceeding 1 kV AC are listed in 2.1 of this Part 2-4.

NOTE All national standards referred to in this Part 2-4 will be replaced by the relevant European Standards as soon as they become available and are declared by the German NC to be applicable and thus reported to the secretary of CLC/TC 11.

- 7 5.11.1/DE.1 is an "A-dev"  
4.3/DE.1, 4.4.1/DE.1, 4.5.2/DE.1, 5.2.1/DE.1, 5.4.5/DE.1, 5.6.3.2/DE.1, 5.6.3.3/DE.1, 5.6.4/DE.1, 5.6.5/DE.1, and 9.6.4/DE.1 are "snc".  
All other subclauses DE.X are "ncpt".

This second edition replaces the first edition published in 2016.

This edition includes the following changes with respect to the previous edition:

- the positions with a technical change have a vertical line in the left margin for identification and
- editorial changes were shaded words.



## 1 Scope

### 1.1 General

#### 1.1 DE.1 General

(ncpt) (Supplement to DIN EN 50341-1 (VDE 0210-1):2013-11, clause 1.1)

This EN applies to planning and installation of overhead lines with nominal voltages above AC 1 kV.

This EN needs not to be adopted to existing installations. Installations in the planning and construction stage may be completed adopting the standard edition valid at the beginning of planning.

### 1.2 Field of application

#### 1.2 DE.1 Application to conductors with components for telecommunication

(ncpt) (Supplement to DIN EN 50341-1 (VDE 0210-1):2013-11, 1.2)

In Germany this EN is applicable to all types of conductors (according to the information in clause 1.2) which contain components for telecommunication.

#### 1.2 DE.2 Application to installation of telecommunication equipment on supports

(ncpt) (Supplement to DIN EN 50341-1 (VDE 0210-1):2013-11, 1.2)

In Germany this EN is applicable to the installation of telecommunication equipment on overhead line supports. Reference is made to 4.11.1/DE.1 "Extension of utilization".

## 2 Normative references, definitions and symbols

### 2.1 Normative references

The following documents which are quoted partly or as a whole in this document are necessary for the application of this document. In case of dated reference only the referred edition is applicable. In case of non-dated references the last edition of the referred document (including all modifications) is applicable.

DAST 022<sup>1</sup>, *Guideline of DAST for hot-dip-zinc-coating of prefabricated load-bearing steel components*

*DAST-Richtlinie – Feuerverzinken von tragenden Stahlbauteilen*

DIN 1054:2010-12, *Subsoil – Verification of the safety of earthworks and foundations – Supplementary rules to DIN EN 1997-1:2009-09 + NA:2010-12*

*Baugrund – Sicherheitsnachweise im Erd- und Grundbau – Ergänzende Regelungen zu DIN EN 1997-1:2009-09 + NA:2010-12*

DIN 4102-7, *Fire behaviour of building materials and building components – Part 7: Roofing – Definitions, requirements and testing*

*Brandverhalten von Baustoffen und Bauteilen – Teil 7: Bedachungen – Begriffe, Anforderungen und Prüfungen*

DIN 48006-1, *Insulators for overhead lines – Part 1: Long-rod insulators LP with socket caps*  
*Isolatoren für Starkstrom-Freileitungen – Langstabisolatoren mit Pfannenkappen*

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<sup>1</sup> SOURCE: Stahlbau Verlags- und Service GmbH, Sohnstraße 65, 40237 Düsseldorf.

DIN 48006-2, *Insulators for overhead lines – Part 2: Long-rod insulators LG with clevis caps*  
*Isolatoren für Starkstrom-Freileitungen – Langstabisolatoren mit Gabelkappen*

DIN 48006-3, *Insulators for overhead lines – Part 3: solid-core insulators*  
*Isolatoren für Starkstrom-Freileitungen – Vollkernisolatoren VK*

DIN EN 338:2016-07, *Structural timber – Strength classes; German version EN 338:2016*  
*Bauholz für tragende Zwecke – Festigkeitsklassen; Deutsche Fassung EN 338:2016*

DIN EN 1090-1, *Execution of steel structures and aluminium structures – Part 1: Requirements for conformity assessment of structural components*  
*Ausführung von Stahltragwerken und Aluminiumtragwerken – Teil 1: Konformitätsnachweisverfahren für tragende Bauteile*

DIN EN 1090-2, *Execution of steel structures and aluminium structures – Part 2: Technical requirements for steel structures*  
*Ausführung von Stahltragwerken und Aluminiumtragwerken – Teil 2: Technische Regeln für die Ausführung von Stahltragwerken*

DIN EN 1991-1-4:2010-12, *Eurocode 1: Actions on structures – Part 1-4: General actions – Wind actions; German version EN 1991-1-4:2005 + A1:2010 + AC:2010*  
*Eurocode 1: Einwirkungen auf Tragwerke – Teil 1-4: Allgemeine Einwirkungen – Windlasten; Deutsche Fassung EN 1991-1-4:2005 + A1:2010 + AC:2010*

DIN EN 1991-1-4/NA:2010-12, *National Annex – Nationally determined parameters – Eurocode 1: Actions on structures – Part 1-4: General actions – Wind actions*  
*Nationaler Anhang – National festgelegte Parameter – Eurocode 1: Einwirkungen auf Tragwerke – Teil 1-4: Allgemeine Einwirkungen – Windlasten*

DIN EN 1992-1-1:2011-01, *Eurocode 2: Design of concrete structures – Part 1-1: General rules and rules for buildings; German version EN 1992-1-1:2004 + AC:2010*  
*Eurocode 2: Bemessung und Konstruktion von Stahlbeton- und Spannbetontragwerken – Teil 1-1: Allgemeine Bemessungsregeln und Regeln für den Hochbau; Deutsche Fassung EN 1992-1-1:2004 + AC:2010*

DIN EN 1992-1-1/NA:2013-04, *National Annex – Nationally determined parameters – Eurocode 2: Design of concrete structures – Part 1-1: General rules and rules for buildings*  
*Nationaler Anhang – National festgelegte Parameter – Eurocode 2: Bemessung und Konstruktion von Stahlbeton- und Spannbetontragwerken – Teil 1-1: Allgemeine Bemessungsregeln und Regeln für den Hochbau*

DIN EN 1993-1-1, *Eurocode 3: Design of steel structures – Part 1-1: General rules and rules for buildings*  
*Eurocode 3: Bemessung und Konstruktion von Stahlbauten – Teil 1-1: Allgemeine Bemessungsregeln und Regeln für den Hochbau*

DIN EN 1993-1-5, *Eurocode 3: Design of steel structures – Part 1-5: Plated structural elements*  
*Eurocode 3: Bemessung und Konstruktion von Stahlbauten – Teil 1-5: Plattenförmige Bauteile*

DIN EN 1993-1-6, *Eurocode 3: Design of steel structures – Part 1-6: Strength and stability of shell structures*  
*Eurocode 3: Bemessung und Konstruktion von Stahlbauten – Teil 1-6: Festigkeit und Stabilität von Schalen*

DIN EN 1995-1-1, *Eurocode 5: Design of timber structures – Part 1-1: General – Common rules and rules for buildings*

*Eurocode 5: Bemessung und Konstruktion von Holzbauten – Teil 1-1: Allgemeines – Allgemeine Regeln und Regeln für den Hochbau*

DIN EN 1995-1-2, *Eurocode 5: Design of timber structures – Part 1-2: General – Structural fire design*

*Eurocode 5: Bemessung und Konstruktion von Holzbauten – Teil 1-2: Allgemeine Regeln – Tragwerksbemessung für den Brandfall*

DIN EN 1997-1:2009-09, *Eurocode 7: Geotechnical design – Part 1: General rules; German version EN 1997-1:2004 + AC:2009*

*Eurocode 7: Entwurf, Berechnung und Bemessung in der Geotechnik – Teil 1: Allgemeine Regeln; Deutsche Fassung EN 1997-1:2004 + AC:2009*

DIN EN 1997-1/NA:2010-12, *National Annex – Nationally determined parameters – Eurocode 7: Geotechnical design – Part 1: General rules*

*Nationaler Anhang – National festgelegte Parameter – Eurocode 7: Entwurf, Berechnung und Bemessung in der Geotechnik – Teil 1: Allgemeine Regeln*

DIN EN 10025-1:2005-02, *Hot rolled products of structural steels – Part 1: General technical delivery conditions*

*Warmgewalzte Erzeugnisse aus Baustählen – Teil 1: Allgemeine technische Lieferbedingungen; Deutsche Fassung EN 10025-1:2004*

DIN EN 10025-2:2005-04, *Hot rolled products of structural steels – Part 2: Technical delivery conditions for non-alloy structural steels*

*Warmgewalzte Erzeugnisse aus Baustählen – Teil 2: Technische Lieferbedingungen für unlegierte Baustähle; Deutsche Fassung EN 10025-2:2004*

DIN EN 12385-4, *Steel wire ropes – Safety – Part 4: Stranded ropes for general lifting applications*

*Drahtseile aus Stahldraht – Sicherheit – Teil 4: Litzenseile für allgemeine Hebezwecke*

DIN EN 12843, *Precast concrete products – Masts and poles*

*Betonfertigteile – Maste*

DIN EN 14229, *Structural timber – Wood poles for overhead lines*

*Holzbauwerke – Holzmaste für Freileitungen*

DIN EN 50182:2001-12, *Conductors for overhead lines – Round wire concentric lay stranded conductors, Deutsche Fassung EN 50182:2001*

*Leiter für Freileitungen – Leiter aus konzentrisch verseilten runden Drähten, Deutsche Fassung EN 50182:2001*

DIN EN 50183, *Conductors for overhead lines – Aluminium-magnesium-silicon alloy wires for overhead line conductors*

*Leiter für Freileitungen – Drähte aus Aluminium-Magnesium-Silizium-Legierung*

DIN EN 50189, *Conductors for overhead lines – Zinc-coated steel wires for stranded conductors*

*Leiter für Freileitungen – Verzinkte Stahldrähte*

DIN EN 50341-1 (VDE 0210-1):2013-11, *Overhead electrical lines exceeding AC 1 kV – Part 1: General requirements – Common specifications; German version EN 50341-1:2012*

*Freileitungen über AC 1 kV – Teil 1: Allgemeine Anforderungen – Gemeinsame Festlegungen; Deutsche Fassung EN 50341-1:2012*

DIN EN 50413 (VDE 0848-1), *Basic standard on measurement and calculation procedures for human exposure to electric, magnetic and electromagnetic fields (0 Hz – 300 GHz)*  
*Grundnorm zu Mess- und Berechnungsverfahren der Exposition von Personen in elektrischen, magnetischen und elektromagnetischen Feldern (0 Hz bis 300 GHz)*

DIN EN 50443 (VDE 0845-8), *Effects of electromagnetic interference on pipelines caused by high voltage AC electric traction systems and/or high-voltage AC power supply systems*  
*Auswirkungen elektromagnetischer Beeinflussungen von Hochspannungswechselstrombahnen und/oder Hochspannungsanlagen auf Rohrleitungen*

DIN EN 50522 (VDE 0101-2):2011-11, *Earthing of power installations exceeding 1 kV AC, German version EN 50522:2010*  
*Erdung von Starkstromanlagen mit Nennwechselspannungen über 1 kV; Deutsche Fassung EN 50522:2010*

DIN EN 60038 (VDE 0175-1):2012-04, *CENELEC standard voltages (IEC 60038:2009, modified); German version EN 60038:2011*  
*CENELEC-Normspannungen (IEC 60038:2009, modifiziert); Deutsche Fassung EN 60038:2011*

DIN EN 60071-2 (VDE 0111-2):1997-09, *Insulation coordination – Part 2: Application guide (IEC 60071-2:1996); German version EN 60071-2:1997*  
*Isolationskoordination – Teil 2: Anwendungsrichtlinie (IEC 60071-2:1996); Deutsche Fassung EN 60071-2:1997*

DIN EN 60305 (VDE 0446-6), *Insulators for overhead lines with a nominal voltage above 1 kV – Ceramic or glass insulator units for a.c. systems – Characteristics of insulator units of the cap and pin type*  
*Isolatoren für Freileitungen mit einer Nennspannung über 1 000 V – Keramik- oder Glas-Kettenisolatoren für Wechselstromsysteme – Kenndaten von Kettenisolatoren vom Typ Kappenisolator*

DIN EN 60383-1 (VDE 0446-1), *Insulators for overhead lines with a nominal voltage above 1 kV – Part 1: Ceramic or glass insulator units for AC systems – Definitions, test methods and acceptance criteria*  
*Isolatoren für Freileitungen mit einer Nennspannung über 1 kV – Teil 1: Keramik- oder Glas-Isolatoren für Wechselspannungssysteme – Begriffe, Prüfverfahren und Annahmekriterien*

DIN EN 60865-1 (VDE 0103), *Short-circuit currents – Calculation of effects – Part 1: Definitions and calculation methods*  
*Kurzschlussströme – Berechnung der Wirkung – Teil 1: Begriffe und Berechnungsverfahren*

DIN EN 60889, *Hard-drawn aluminium wire for overhead line conductors*  
*Hartgezogene Aluminiumdrähte für Leiter von Freileitungen*

DIN EN 61109 (VDE 0441-100), *Insulators for overhead lines – Composite suspension and tension insulators for AC systems with a nominal voltage greater than 1 000 V – Definitions, test methods and acceptance criteria*  
*Isolatoren für Freileitungen – Verbund-Hänge- und -Abspannisolatoren für Wechselstromsysteme mit einer Nennspannung über 1 000 V – Begriffe, Prüfverfahren und Annahmekriterien*

DIN EN 61232, *Overhead lines – Aluminium-clad steel wires for electrical purposes*  
*Freileitungen – Aluminium-ummantelte Stahldrähte für die Elektrotechnik*

DIN EN 61284 (VDE 0212-1), *Overhead lines – Requirements and tests for fittings*  
*Freileitungen – Anforderungen und Prüfungen für Armaturen*

DIN EN 61466-1 (VDE 0674-103-1), *Composite string insulator units for overhead lines with a nominal voltage greater than 1 000 V – Part 1: Standard strength classes and end fittings*  
*Verbund-Kettenisolatoren für Freileitungen mit einer Nennspannung über 1 000 V – Teil 1: Genormte Festigkeitsklassen und Endarmaturen*

DIN EN 61466-2 (VDE 0441-5)<sup>2</sup>, *Composite string insulator units for overhead lines with a nominal voltage greater than 1 kV – Part 2: Dimensional and electrical characteristics*  
*Verbund-Kettenisolatoren für Freileitungen mit einer Nennspannung über 1 000 V – Teil 2: Maße und elektrische Kenngrößen*

DIN EN 61952 (VDE 0441-200), *Insulators for overhead lines – Composite line post insulators for A.C. systems with a nominal voltage greater than 1 000 V – Definitions, test methods and acceptance criteria*

*Isolatoren für Freileitungen – Verbund-Freileitungsstützer für Wechselstromsysteme mit einer Nennspannung über 1 000 V – Begriffe, Prüfverfahren und Annahmekriterien*

DIN EN 62004 (VDE 0212-303), *Thermal-resistant aluminium alloy wires for overhead line conductors*

*Wärmebeständige Drähte aus Aluminiumlegierung für Leiter von Freileitungen*

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*Blitzschutz – Teil 2: Risiko-Management – Beiblatt 1: Blitzgefährdung in Deutschland*

DIN EN ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel – Part 1: Bolts, screws and studs with specified property classes – Coarse thread and fine pitch thread*

*Mechanische Eigenschaften von Verbindungselementen aus Kohlenstoffstahl und legiertem Stahl – Teil 1: Schrauben mit festgelegten Festigkeitsklassen – Regelgewinde und Feingewinde*

DIN EN ISO 1461, *Hot-dip galvanized coatings on fabricated iron and steel articles – Specifications and test methods*

*Durch Feuerverzinken auf Stahl aufgebrachte Zinküberzüge (Stückverzinken) – Anforderungen und Prüfungen*

DIN EN ISO 12944 (all parts), *Paints and varnishes – Corrosion protection of steel structures by protective paint systems*

*Beschichtungsstoffe – Korrosionsschutz von Stahlbauten durch Beschichtungssysteme*

DIN EN ISO 12944-4, *Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Part 4: Types of surface and surface preparation*

*Beschichtungsstoffe – Korrosionsschutz von Stahlbauten durch Beschichtungssysteme – Part 4: Arten von Oberflächen und Oberflächenvorbereitung*

DIN IEC 60273 (VDE 0674-4), *Characteristics of indoor and outdoor post insulators for systems with nominal voltages greater than 1 000 V*

*Kenngrößen von Innenraum- und Freiluft-Stützisolatoren für Systeme mit Nennspannungen über 1 000 V*

<sup>2</sup> A consolidated version of IEC 61466-2, Ed. 1.2, was published 2018-05-09: IEC 61466-2:1998 + A1:2002 + A2:2018. The German standard DIN EN 61466-2 (VDE 0674-103-2) is in preparation.

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*Auswahl und Bemessung von Hochspannungsisolatoren für die Anwendung unter Verschmutzungsbedingungen – Teil 1: Begriffe, Informationen und allgemeine Grundlagen*

DIN IEC/TS 60815-2 (VDE V 0674-256-2), *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 2: Ceramic and glass insulators for a.c. systems*

*Auswahl und Bemessung von Hochspannungsisolatoren für die Anwendung unter Verschmutzungsbedingungen – Teil 2: Keramik- und Glasisolatoren für Wechselspannungssysteme*

DIN IEC/TS 60815-3 (VDE V 0674-256-3), *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 3: Polymer insulators for a.c. systems*

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DIN VDE 0100-442 (VDE 0100-442):2013-06, *Low-voltage electrical installations – Part 4-442: Protection for safety – Protection of low-voltage installations against temporary overvoltages due to earth faults in the high-voltage system and due to faults in the low-voltage system (IEC 60364-4-44:2007 (Clause 442), modified); German implementation HD 60364-4-442:2012*

*Errichten von Niederspannungsanlagen – Teil 4-442: Schutzmaßnahmen – Schutz von Niederspannungsanlagen bei vorübergehenden Überspannungen infolge von Erdschlüssen im Hochspannungsnetz und bei Fehlern im Niederspannungsnetz (IEC 60364-4-44:2007 (Abschnitt 442), modifiziert); Deutsche Übernahme HD 60364-4-442:2012*

DIN VDE 0105-100 (VDE 0105-100), *Operation of electrical installations – Part 100: General requirements*

*Betrieb von elektrischen Anlagen – Teil 100: Allgemeine Festlegungen*

DIN VDE 0105-115 (VDE 0105-115), *Operation of electrical installations – Part 115: Particular requirements for agricultural plants*

*Betrieb von elektrischen Anlagen – Besondere Festlegungen für landwirtschaftliche Betriebsstätten*

DIN VDE 0212-399 (VDE 0212-399), *Conductors for Overhead lines – Conductors of concentric stranded round galvanized steel wires*

*Leiter für Freileitungen – Leiter aus konzentrisch verseilten runden verzinkten Stahldrähten*

DIN VDE V 0212-490 (VDE V 0212-490), *Fittings for overhead lines – Part 490: Components for the protection of birds – Requirements and tests*

*Armaturen für Freileitungen – Teil 490: Bauteile für den Vogelschutz – Anforderungen und Prüfungen*

DIN VDE 0845-6-1 (VDE 0845-6-1) *Influence of high-voltage systems on telecommunication systems – Part 1: General, limits, calculation and measurement methods*

*Maßnahmen bei Beeinflussung von Telekommunikationsanlagen durch Starkstromanlagen – Teil 1: Grundlagen, Grenzwerte, Berechnungs- und Messverfahren*

DIN VDE 0845-6-2 (VDE 0845-6-2), *Electromagnetic influence of electric power supply on telecommunication systems – Part 2: Influence by three phase ac systems*

*Maßnahmen bei Beeinflussung von Telekommunikationsanlagen durch Starkstromanlagen – Teil 2: Beeinflussung durch Drehstromanlagen*

VDE-AR-N 4210-11 (VDE-AR-N 4210-11):2011-08<sup>3</sup>, *Protection of birds on medium voltage overhead lines*

*Vogelschutz an Mittelspannungsfreileitungen*

*Impregnated timber poles – Technical reference (FNN)*

*Imprägnierte Holzmasten – Technischer Hinweis (FNN)<sup>4</sup>*

*Twentysixth regulation on application of the German Federal Republic Emission Protection Law* (Regulation on electro-magnetic fields, version according to the announcement of August 14, 2013 (BGBl p. 3266)

*Sechszwanzigste Verordnung zur Durchführung des Bundes-Immissionsschutzgesetzes* (Verordnung über elektromagnetische Felder in der Fassung der Bekanntmachung vom 14. August 2013 (BGBl. I S. 3266) – 26. BImSchV)

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**

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<sup>3</sup> SOURCE: VDE-VERLAG GMBH

<sup>4</sup> SOURCE: VDE-InfoCenter – Verbandsgeschäftsstelle (actual version: version no. 6, 2011-10)