

International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

K.125

(07/2017)

SERIES K: PROTECTION AGAINST INTERFERENCE

**Dangerous effects and protective measures
against electromagnetic disturbances when an
Internet data centre is co-sited with a high-
voltage substation**

Recommendation ITU-T K.125



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Recommendation ITU-T K.125

Dangerous effects and protective measures against electromagnetic disturbances when an Internet data centre is co-sited with a high-voltage substation

Summary

Recommendation ITU-T K.125 specifies calculation methods for dangerous effects, tolerance limits of dangerous effects, tolerance limits of electromagnetic effects from a high-voltage substation, distance requirement and protection methods, protective measures, as well as requirements for the power frequency magnetic field immunity of servers when an Internet data centre is co-sited with a high-voltage substation.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T K.125	2017-07-29	5	11.1002/1000/13279

Keywords

Dangerous effect, electromagnetic disturbance, high-voltage substation, Internet data centre (IDC).

* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

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1 Scope

This Recommendation specifies calculation methods for dangerous effects, tolerance limits of dangerous effects, tolerance limits of electromagnetic effects from a high-voltage substation, distance requirement and protection methods, protective measures, as well as requirements for power frequency magnetic field immunity of servers when an Internet data centre (IDC) is co-sited with a high-voltage substation.

This Recommendation discusses co-sites for an IDC and a high-voltage substation while taking into account proximity, the co-earthing network, and shared accommodation.

This Recommendation is applicable to IDCs and large communication centres co-sited with high-voltage substations. It is possible that this Recommendation may not apply to small Internet data sites.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [ITU-T K.104] Recommendation ITU-T K.104 (2015), *Method for identifying the transfer potential of the earth potential rise from high or medium voltage networks to the earthing system or neutral of low voltage networks*.
- [ITU-T K.107] Recommendation ITU-T K.107 (2015), *Method for determining the impedance to earth of earthing systems*.
- [IEC 61000-4-8] IEC 61000-4-8:2009, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 common bonding network (CBN) [b-ITU-T K.27]: The CBN is the principal means for effecting bonding and earthing inside a telecommunication building. It is the set of metallic components that are intentionally or incidentally interconnected to form the principal bonding network (BN) in a building. These components include: structural steel or reinforcing rods, metallic plumbing, AC power conduit, protective conductors (PEs), cable racks and bonding conductors. The CBN always has a mesh topology and is connected to the earthing network.

3.1.2 earthing network [b-ITU-T K.27]: The part of an earthing installation that is restricted to the earth electrodes and their interconnections.