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**Guidance on measurement and numerical
prediction of electromagnetic fields for
compliance with human exposure limits for
telecommunication installations**

Recommendation ITU-T K.61



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Guidance on measurement and numerical prediction of electromagnetic fields for compliance with human exposure limits for telecommunication installations

Summary

Recommendation ITU-T K.61 helps telecommunication operators to verify compliance with exposure standards promulgated by local or national authorities. This Recommendation gives guidance on measurement methods that can be used to achieve a compliance assessment. It also provides guidance on the selection of numerical methods suitable for exposure prediction in various situations.

History

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

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In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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Introduction

This Recommendation helps telecommunication operators to verify compliance with exposure standards promulgated by local or national authorities. Indications on the need to perform an exposure assessment for a telecommunication installation such as a base station are provided in [ITU-T K.52]. Indications on the process for putting a telecommunication installation such as a base station into service are provided in [ITU-T K.100]. The assessment is based on the evaluation of the electromagnetic field and on accessibility considerations. The electromagnetic evaluation can be carried out by measurement or numerical prediction.

This Recommendation defines tools, methods and procedures that can be used to achieve a compliance assessment. The compliance with radio-frequency exposure standards can be achieved by measurement of electromagnetic field strength, provided that calibrated instruments are used and measurement uncertainty is correctly expressed.

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Recommendation ITU-T K.61

Guidance on measurement and numerical prediction of electromagnetic fields for compliance with human exposure limits for telecommunication installations

1 Scope

This Recommendation deals with measurements used for radio-frequency electromagnetic field strength evaluation to verify that human exposure limits are not exceeded by electromagnetic fields produced by telecommunication installations, such as base stations as defined in [IEC 62232], in the frequency range 9 kHz to 300 GHz. This Recommendation also gives guidance on computational methods that can be used to achieve a compliance assessment.

Contact current exposure due to conductive objects irradiated by an electromagnetic field is not covered in this Recommendation.

The exposure due to the use of mobile handsets or other radiating devices used in close proximity to the human body is not covered. Also, the exposure due to the use of cordless telephone systems and stationary sets intended for the use in wireless telecommunication networks such as digital enhanced cordless telecommunications (DECT), wireless local area network (WLAN), Bluetooth, etc. is not covered.

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.52] Recommendation ITU-T K.52 (2018), *Guidance on complying with limits for human exposure to electromagnetic fields.*
- [ITU-T K.70] Recommendation ITU-T K.70 (2018), *Mitigation techniques to limit human exposure to EMFs in the vicinity of radiocommunication stations.*
- [ITU-T K.100] Recommendation ITU-T K.100 (2018), *Measurement of radio frequency electromagnetic fields to determine compliance with human exposure limits when a base station is put into service.*
- [ITU-R BS.1698] Recommendation ITU-R BS.1698 (2005), *Evaluating fields from terrestrial broadcasting transmitting systems operating in any frequency band for assessing exposure to non-ionizing radiation.*
- [IEC 60657] IEC 60657:1979, *Non-ionizing radiation hazards in the frequency range from 10 MHz to 300 000 MHz.*
- [IEC 62232] IEC 62232:2017, *Determination of RF field strength, power density and SAR in the vicinity of radiocommunication base stations for the purpose of evaluating human exposure.*
- [IEC 62479] IEC 62479:2010, *Assessment of the compliance of low-power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz).*