



Recommendation ITU-R SM.2028
(09/2012)

**Protection distance calculation between
inductive systems and radiocommunication
services using frequencies below 30 MHz**

SM Series
Spectrum management



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Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

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SA	Space applications and meteorology
SF	Frequency sharing and coordination between fixed-satellite and fixed service systems
SM	Spectrum management
SNG	Satellite news gathering
TF	Time signals and frequency standards emissions
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Note: This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.

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RECOMMENDATION ITU-R SM.2028

Protection distance calculation between inductive systems and radiocommunication services using frequencies below 30 MHz

(2012)

Scope

This Recommendation addresses the compatibility between inductive systems operating at frequencies below 30 MHz and the existing radiocommunication services and provides a summary of a straightforward procedure to calculate the protection distance to protect radiocommunication services with regard to interference by inductive systems.

The ITU Radiocommunication Assembly,

considering

- a) that there is an increasing demand for the usage of inductive systems including induction cooking appliances which are operating at the frequency bands below 30 MHz;
- b) that there is interference potential of inductive systems to the existing radiocommunication services;
- c) that the protection distance of radiocommunication services should be established to assess the impact of interference from inductive systems,

noting

- a) that Recommendation ITU-R SM.1056 considers the latest edition of CISPR Publication 11, "Protection range calculation between inductive systems and radiocommunication services using below 30 MHz", as a guide for the application of limits and methods of measurements for ISM devices in order to protect radiocommunications;
- b) that Report ITU-R SM.2180 – Impact of industrial, scientific and medical (ISM) equipment on radiocommunication services, introduces applications of ISM equipment, characteristics of radiation and analysis of potential interference to emphasize on the protection of radiocommunication services from ISM equipment,

recommends

- 1 that administrations take all necessary precautions to ensure that inductive systems operating on frequency bands below 30 MHz should not cause interference to radiocommunication services;
- 2 that in establishing protection method of radiocommunication services, administrations should take into account a calculation procedure of protection distance between inductive system and radiocommunication services, as given in Annex 1.

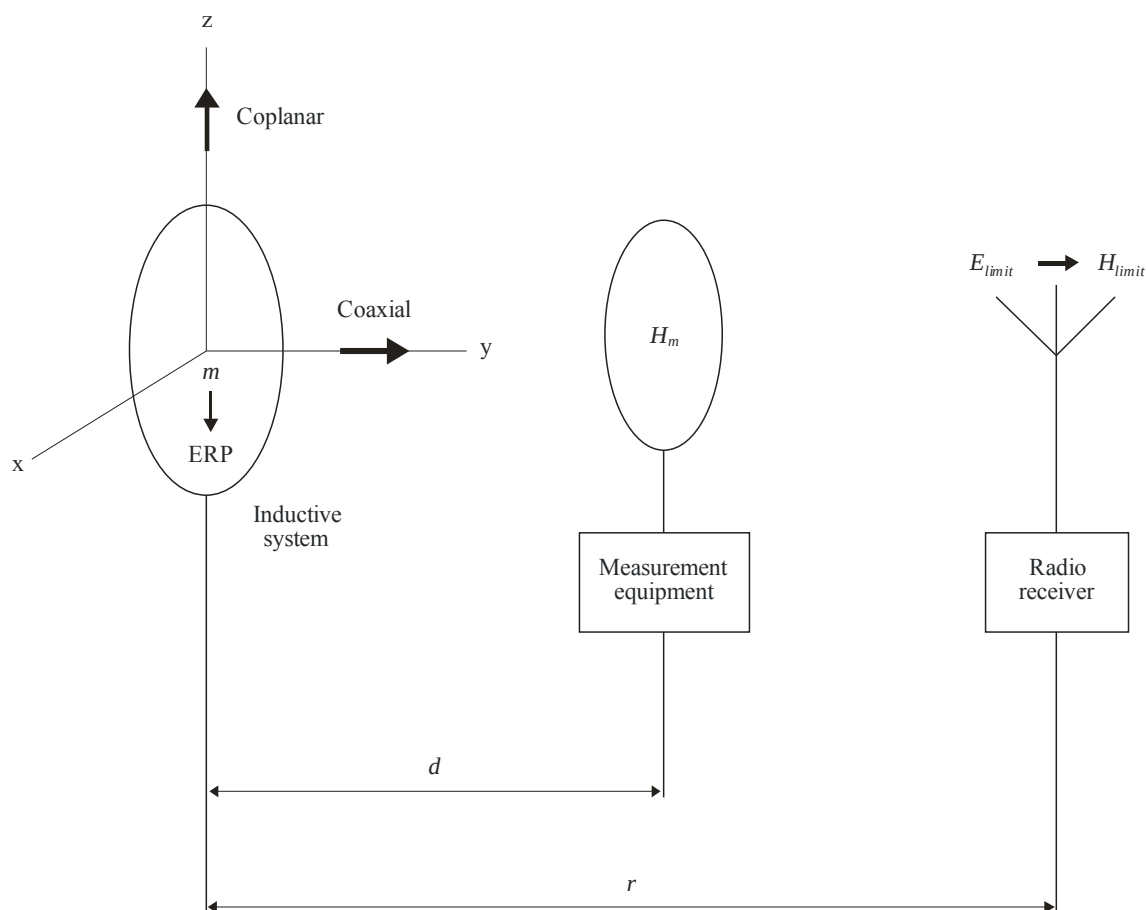
Annex 1

A method of protection distance calculation

1 Interference scenario model

In general, the effective radiated power level of inductive systems can be calculated from magnetic dipole moment. The magnetic dipole moment which is the product of the total current in the inductive loop multiplied by the surface area can be determined from the measured magnetic field strength at a certain distance by using Maxwell equations. The radiated power level can be applied to existing service as an interferer. The electric field strength of interference from inductive system should be less than the interference limit of electric field strength of victim service. Thereby it is required that the protection distance be defined to protect the existing service. The practical interference scenario is shown in Fig. 1.

FIGURE 1
Interference scenario model



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