



Recommendation ITU-R P.341-6
(09/2016)

**The concept of transmission
loss for radio links**

P Series
Radiowave propagation



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.

Policy on Intellectual Property Right (IPR)

ITU-R policy on IPR is described in the Common Patent Policy for ITU-T/ITU-R/ISO/IEC referenced in Annex 1 of Resolution ITU-R 1. Forms to be used for the submission of patent statements and licensing declarations by patent holders are available from <http://www.itu.int/ITU-R/go/patents/en> where the Guidelines for Implementation of the Common Patent Policy for ITU-T/ITU-R/ISO/IEC and the ITU-R patent information database can also be found.

Series of ITU-R Recommendations

(Also available online at <http://www.itu.int/publ/R-REC/en>)

Series	Title
BO	Satellite delivery
BR	Recording for production, archival and play-out; film for television
BS	Broadcasting service (sound)
BT	Broadcasting service (television)
F	Fixed service
M	Mobile, radiodetermination, amateur and related satellite services
P	Radiowave propagation
RA	Radio astronomy
RS	Remote sensing systems
S	Fixed-satellite service
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
V	Vocabulary and related subjects

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 P.341-6*

The concept of transmission loss for radio links**

(1959-1982-1986-1994-1995-1999-2016)

Scope

Recommendation ITU-R P.341-6 provides definitions and notations to be employed to describe the characteristics of a radio link involving a transmitter, a receiver, their antennas, the associated circuits and the propagation medium.

Keywords

Radio Link, antenna parameters, loss, environment influence

The ITU Radiocommunication Assembly,

considering

- a) that in a radio link between a transmitter and a receiver, the ratio between the power supplied by the transmitter and the power available at the receiver input depends on several factors such as the losses in the antennas or in the transmission feed lines, the attenuation due to the propagation mechanisms, the losses due to faulty adjustment of the impedances or polarization, etc.;
- b) that it is desirable to standardize the terminology and notations employed to characterize transmission loss and its components;
- c) that Recommendation ITU-R P.525 provides the free-space reference conditions for propagation,

recommends

that, to describe the characteristics of a radio link involving a transmitter, a receiver, their antennas, the associated circuits and the propagation medium, the following terms, definitions and notations should be employed:

1 Total loss (of a radio link)* (symbols: L_l or A_l)**

The ratio, usually expressed in decibels, between the power supplied by the transmitter of a radio link and the power supplied to the corresponding receiver in real installation, propagation and operational conditions.

NOTE 1 – It is necessary to specify in each case the points at which the power supplied by the transmitter and the power supplied to the receiver are determined, for example:

- before or after the radio-frequency filters or multiplexers that may be employed at the sending or the receiving end;

* This Recommendation should be brought to the attention of the Coordination Committee for Vocabulary (CCV).

** Throughout this Recommendation, capital letters are used to denote the ratios (dB) of the corresponding quantities designated with lower-case type, e.g. $P_t = 10 \log p_t$. P_t is the input power to the transmitting antenna (dB) relative to 1 W when p_t is the input power (W).

*** A graphical depiction of this and subsequent definitions is shown in Fig. 1.