



Recommendation ITU-R RS.1881
(02/2011)

**Protection criteria for arrival time difference
receivers operating in the meteorological
aids service in the frequency
band 9-11.3 kHz**

RS Series
Remote sensing systems



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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.

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.

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RA	Radio astronomy
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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
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 RS.1881

Protection criteria for arrival time difference receivers operating in the meteorological aids service in the frequency band 9-11.3 kHz*

(2011)

Scope

This ITU-R Recommendation characterizes the technical properties, operational characteristics and protection criteria of the arrival time difference (ATD) system operating in the meteorological aids service in the frequency range 9-11.3 kHz.

The ITU Radiocommunication Assembly,

considering

- a) that long-range lightning detection using observations near 10 kHz has been performed since 1987, using the time differences of signals received to derive strike locations;
- b) that maximum spectral emissions from lightning strikes centre between 9 to 20 kHz. At these frequencies the sky waves, reflected off the ionosphere, propagate for very large distances with relatively little attenuation. Thus, it is possible to receive the emissions from a lightning strike at thousands of kilometres from the stroke location;
- c) that although national and regional lightning detection systems operating at higher frequency bands currently exist, these require a higher number of receiver stations due to the substantial reduction in coverage area of each receiver. Detection with such systems over large areas of ocean and land mass where local infrastructure does not exist is normally difficult and highly costly to implement. Additionally coverage over large oceanic areas with these systems, such as the middle of the Atlantic, is not possible;
- d) that a primary benefit of the arrival time difference (ATD) system is the worldwide coverage provided by a limited number of receivers and these receivers provide a high level of accuracy regards to global detection;
- e) that the data provided by the ATD system is used by meteorological organizations worldwide and contributes towards safety of life, both in terms of forecasting for public safety and safety in forecasting aviation operations, especially over the oceans, and large areas of land, where national lightning detection systems do not exist. Additionally it has the potential to give a service in support of disaster risk reduction initiatives;
- f) that there is growing interest around the world in lightning detection capability for disaster mitigation, navigation and weather prediction purposes;

* The Radio Regulations (Edition 2008) allocated bands start at 9 kHz. However the system mentioned in the Recommendation operates between 8.3 and 11.3 kHz.