



Recommendation ITU-R SM.2097-0
(08/2016)

**On-site accuracy measurements
of a fixed DF system**

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.

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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On-site accuracy measurements of a fixed DF system

(2016)

Scope

This Recommendation provides guidance on standard methods of testing the bearing accuracy of a fixed direction finder in its final environment and reporting results. It may serve as part of a site acceptance test for monitoring services after the installation on site.

Keywords

Direction finder accuracy, on-site measurement, realistic environment

Related ITU Recommendations, Reports

Recommendation ITU-R SM.2060

Report ITU-R SM.2125

NOTE – In every case the latest edition of the Recommendation/Reports in force should be used.

The ITU Radiocommunication Assembly,

considering

- a) that ITU-R has published the typical specifications for direction finding (DF) accuracy¹ in the ITU Handbook on Spectrum Monitoring (Edition 2011);
- b) that the ITU Handbook on Spectrum Monitoring (Edition 2011) refers to Report ITU-R SM.2125 – Parameters of and measurement procedures on H/V/UHF monitoring receivers and stations, which defines the DF accuracy and provides some relevant test procedures;
- c) that the specification of DF accuracy strongly depends on the test procedures applied;
- d) that performance data in specifications of DF equipment usually reflects ideal test conditions and does not include the influences of obstructions, reflections and disturbing RF signals at the final installation site;
- e) that the accuracy of a DF system on site may be strongly influenced by these environmental conditions² as well as the nature of the signal (signal strength, signal modulation including phase and time variant signals, signal duty cycle, signal polarization and signal duration), and the integration time of the DF;
- f) that, depending on task requirements, one or more of these specific conditions may be more or less important, and in some cases, can be omitted;

¹ For purposes of the discussion in this Recommendation, “DF accuracy” is considered being the accuracy of a DF system’s bearings to signals coming in from the horizon, with no consideration of signals arriving at other elevation angles such as skywave.

² In actual operating environments, multipath conditions can be simple or complex; they may be static or time-varying, and they will be different for different surrounding environments. These conditions will also change for different DF antenna heights at the same location.