International Telecommunication Union

ITU-R

Radiocommunication Sector of ITU

Recommendation ITU-R M.1678

(05/2004)

Adaptive antennas for mobile systems

M Series

Mobile, radiodetermination, amateur and related satellite services

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.*

Electronic Publication
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RECOMMENDATION ITU-R M.1678*

Adaptive antennas for mobile systems

(Question ITU-R 224/8)

(2004)

Scope

This Recommendation addresses the use of adaptive antenna technology in the mobile service with the objective to improve spectrum efficiency significantly, improve the ability of mobile systems to coexist and facilitate cross-border and adjacent band sharing, and facilitate the deployment of new wireless networks, including broadband wireless access and radio local area network systems.

The ITU Radiocommunication Assembly,

considering

a) that mobile, and particularly cellular, radiocommunication systems are growing at a rapid rate globally;

b) that the radio spectrum available for such systems is limited;

c) that spectrally efficient technologies are essential to the continued growth in capacity of land mobile systems and increased numbers of mobile terminals;

d) that control of radiation patterns is a desirable capability which can also become an important design tool;

e) that adaptive antenna technology has been developed for both base stations and terminal stations;

f) that adaptive antennas provide significant spectral efficiency benefits when implementing and operating mobile communication systems;

g) that adaptive antennas can be used with a variety of air interfaces, including those adopted in Recommendation ITU-R M.1073 – Digital cellular land mobile telecommunication systems, and Recommendation ITU-R M.1033 – Technical and operational characteristics of cordless telephones and cordless telecommunication systems, among others;

h) that adaptive antennas can reduce the interference generated to and received from adjacent radio systems, thereby improving their ability to coexist and facilitating cross-border and adjacent band sharing;

j) that the use of adaptive antenna systems can facilitate the deployment of new wireless networks, including broadband wireless access and radio local area network systems,

noting

a) that an analysis of adaptive antennas is provided in Report ITU-R M.2040 – Adaptive antennas concepts and key technical aspects;

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* Radiocommunication Study Group 5 made editorial amendments to this Recommendation in 2008 in accordance with Resolution ITU-R 44.

b) that the technology has already been successfully demonstrated and deployed in operational systems,

recommends

1 that adaptive antenna technology should be considered in the development of new radio interfaces and in the further enhancement of existing radio interfaces to increase spectral efficiency and improve spectral utilization;

2 that, where practical, adaptive antenna systems should be incorporated into the deployment of new and existing land mobile networks to enhance their spectral efficiency and as a method to reduce interference from other radio systems.