



Recommendation ITU-R F.1099-5
(02/2013)

**Radio-frequency channel arrangements for
high- and medium-capacity digital fixed
wireless systems in the upper 4 GHz
(4 400-5 000 MHz) band**

F Series
Fixed service



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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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RECOMMENDATION ITU-R F.1099-5

Radio-frequency channel arrangements for high- and medium-capacity digital fixed wireless systems in the upper 4 GHz (4 400-5 000 MHz) band

(Question ITU-R 247/5)

(1994-1995-1997-1999-2007-2013)

Scope

This Recommendation provides radio-frequency channel arrangements for fixed wireless systems (FWSs) operating in the upper 4 GHz band (4 400-5 000 MHz), which may be used for high- and medium-capacity fixed systems, based on a 10 MHz common pattern. Annexes 1 and 2 provide channel arrangements in line with the main body provisions, with 20, 40, 80 MHz. Annex 3 provides an alternative arrangement with 28 MHz channels. Both co-channel and alternated arrangements are provided as well as information on multi-carrier transmission based on these arrangements.

The ITU Radiocommunication Assembly,

considering

- a) that high-capacity digital fixed wireless systems (FWSs) of 90 Mbit/s or higher rates conveying plesiochronous or synchronous digital hierarchy (PDH or SDH) signals are required in the 5 GHz radio-frequency (RF) bands;
- b) that the centre gaps of the individual channel arrangements and the guard spacing at the edges of the band can be chosen by non-occupancy of a suitable number of RF-channel positions in a homogeneous basic pattern;
- c) that the uniform basic pattern spacing should not be unjustifiably small nor so large as to jeopardize efficient use of the available spectrum;
- d) that the absolute frequencies of the basic pattern should be defined by a single reference frequency;
- e) that single- and multi-carrier digital FWS are both useful concepts to achieve the best technical and economic trade-off in the system design,

recommends

- 1 that the preferred RF channel arrangement for high-capacity digital FWS of 90 Mbit/s or higher rates conveying PDH or SDH signals (see Note 1), operating in the 5 GHz band, should be selected from a homogeneous pattern with the following characteristics.

Centre frequencies f_p of the RF channels within the basic pattern:

$$f_p = 5\,000 - 10p \quad \text{MHz}$$

p : integral 1, 2, 3 ... (see Note 2);

- 2 that all the go channels should be in one half of the band and all the return channels should be in the other half of the band;
- 3 that the channel spacing X_S , the centre gap Y_S , the guard spaces Z_1S and Z_2S at the edges of the band and the antenna polarization should be agreed between the administrations concerned;
- 4 that the alternated or co-channel arrangement plan should be used, examples of which are shown in Fig. 1;