



Recommendation ITU-R F.749-4
(02/2022)

**Radio-frequency channel arrangements for
systems of the fixed service operating in
sub-bands in the 36-40.5 GHz band**

F Series
Fixed service



International
Telecommunication
Union
Documents
Document Sharing Hub

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 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
Geneva, 2022

© ITU 2022

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without written permission of ITU.

RECOMMENDATION ITU-R F.749-4

Radio-frequency channel arrangements for systems of the fixed service operating in sub-bands in the 36-40.5 GHz band

(Question ITU-R 247-1/5)

(1992-1994-2001-2012-2022)

Scope

This Recommendation provides specifications for radio-frequency channel arrangements for systems in the fixed service with channel separations ranging from 2.5 to 224 MHz in the bands 36-37 GHz, 37.0-39.5 GHz, 38.6-40 GHz and 39.5-40.5 GHz. Annex 3 includes block-based arrangements with bandwidths of 50 MHz and 60 MHz in the frequency range 38.06 to 40 GHz.

Keywords

Fixed service, point-to-point, channel bandwidth, channel arrangement, 38 GHz

Abbreviations / Glossary

BWA Broadband wireless access

CEPT European Conference of Postal and Telecommunications Administrations

RF Radio-frequency

Related ITU Recommendations and Reports

Recommendation ITU-R F.746 – Radio-frequency arrangements for fixed service systems

The ITU Radiocommunication Assembly,

considering

- a) that the band 36.0-40.5 GHz is allocated to the fixed and mobile services and that the propagation characteristics of this band are ideally suited to short-range digital and analogue radio system applications;
- b) that differing applications of various administrations may require different radio-frequency (RF) channel arrangements;
- c) that the band may also be used for broadband wireless access (BWA) systems in the fixed service;
- d) that several services with various transmission signal characteristics and capacities may be in simultaneous use in this frequency band;
- e) that lower and upper limits of the bands are not uniform and vary internationally;
- f) that the applications in this frequency band may require differing channel bandwidths;
- g) that a high degree of compatibility between radio-frequency channels of different arrangements can be achieved by selecting channel centre frequencies within a homogeneous basic pattern;
- h) that the differing digital hierarchies used in various countries or regions may require the use of homogeneous basic patterns with differing intervals;

i) that allocation of frequency blocks to BWA systems allows flexible deployment of various technologies including provisions for intersystem/services operation and overall spectrum efficiency,

recognizing

that Recommendation ITU-R SM.1540 provides guidelines for managing the unwanted emissions in the out-of-band domain falling into adjacent allocated bands,

recommends

1 that the preferred RF channel arrangements for the band 36.0-40.5 GHz should be based on homogeneous patterns;

2 that the homogeneous pattern with a preferred 3.5 MHz interval be defined by the relation:

$$f_p = f_r + 1 + 3.5 p \quad \text{MHz}$$

where:

$$1 \leq p \leq 1\,285$$

f_r : reference frequency of the homogeneous pattern;

3 that the homogeneous pattern with a preferred 2.5 MHz interval be defined by the relation:

$$f_p = f_r + 2.5 p \quad \text{MHz}$$

where:

$$1 \leq p \leq 1\,799$$

f_r : reference frequency of the homogeneous pattern;

4 that the reference frequency of the homogeneous pattern for international connections should be 36 000 MHz;

5 that all go channels should be in one half of any bidirectional band, and all return channels in the other;

6 that the channel spacings, X_S , the centre gap, Y_S , and the distance to the lower and upper-band limits, Z_1S and Z_2S , should be agreed by the administrations concerned, dependent on the application and channel capacity envisaged (see Recommendation ITU-R F.746 for definitions of X_S , Y_S and Z_S);

7 that allocated blocks should result from aggregation of contiguous channels in accordance with the homogeneous patterns.

NOTE 1 – Examples of RF channel arrangements based on *recommends* 2 and 3 are described in Annexes 1 and 2.

NOTE 2 – Due regard has to be taken that, in certain countries, a 3.5 MHz homogeneous pattern, interleaved by 1.75 MHz from that referred in *recommends* 2, is used in conjunction with the main pattern.

NOTE 3 – Examples of BWA system block (sub-band) arrangements are described in Annex 3.