



Recommendation ITU-R F.636-5
(11/2019)

**Radio-frequency channel arrangements
for fixed wireless systems operating
in the 14.4-15.35 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, 2019

© ITU 2019

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

RECOMMENDATION ITU-R F.636-5

**Radio-frequency channel arrangements for fixed wireless systems
operating in the 14.4-15.35 GHz band*, ****

(Question ITU-R 247-1/5)

(1986-1990-1992-1994-2012-2019)

Scope

This Recommendation provides radio frequency (RF) channel arrangements for fixed wireless systems operating in the 15 GHz (14.4-15.35 GHz) band. The main text of this Recommendation presents RF channel arrangements with separations of 3.5, 7, 14, 28, 56 and 112 MHz. Annexes 1 and 2 present arrangements with a separation of 2.5, 5, 10, 20, 30, 40 and 50 MHz based on a homogeneous 2.5 MHz pattern.

Keywords

Channel arrangement, channel bandwidth, fixed service, point to point, 15 GHz

Related ITU Recommendations and Reports

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

Abbreviations

RF Radio frequency

The ITU Radiocommunication Assembly,

considering

- a) that the band 14.4-15.35 GHz is allocated to the fixed service and that in some countries only the band 14.5-15.35 GHz is used for fixed wireless systems;
- b) that, at these frequencies, fixed wireless systems for digital transmissions are feasible with repeater spacing and other features chosen according to rainfall conditions;
- c) that in various countries there are restrictions on the use of various portions of the whole band 14.4-15.35 GHz;
- d) that the continuously capacity growing request as part of the evolution to IMT-2020 has been increasingly addressed in recent years,

recommends

- 1** that the preferred radio-frequency channel arrangement for digital fixed wireless systems operating with a 28 MHz channel spacing should be derived as follows:

Let N_{28} be the number of RF channels;

* *Note by the Secretariat:* Following a comment received, an error has been identified in *recommends* 4 that would generate inconsistencies when applying channel separation of 112 MHz. In consultation with Working Party 5C management, the error has been corrected in this version so that the Recommendation can be used appropriately.

** The structure and format of this Recommendation may need to be revised in the future to include the detailed technical information from the *recommends* part to a separate Annex.

then the frequencies (MHz) of individual channels are expressed by the following relationships:

$$\text{lower half of the band: } f_n = f_r + a + 28 n \quad \text{MHz}$$

$$\text{upper half of the band: } f'_n = f_r + 3\,626 - 28 (N_{28} - n) \quad \text{MHz}$$

where:

f_r : reference frequency

$a = 2\,688$ MHz for the band 14.4-15.35 GHz and

$a = 2\,786$ MHz for the band 14.5-15.35 GHz

$n = 1, 2, \dots, N_{28}$, with $N_{28} \leq 16$ for the band 14.4-15.35 GHz

and $N_{28} \leq 15$ for the band 14.5-15.35 GHz.

The channel arrangement with $f_r = 11\,701$ MHz and a frequency spacing of 28 MHz is illustrated in Fig. 1;

2 that the preferred radio-frequency channel arrangement for digital fixed wireless systems operating with a 14 MHz channel spacing should be derived as follows:

Let N_{14} be the number of RF channels;

$$\text{lower half of the band: } f_n = f_r + a + 14 n \quad \text{MHz}$$

$$\text{upper half of the band: } f'_n = f_r + 3\,640 - 14 (N_{14} - n) \quad \text{MHz}$$

where:

f_r : reference frequency

$a = 2\,702$ MHz for the band 14.4-15.35 GHz, and

$a = 2\,800$ MHz for the band 14.5-15.35 GHz

$n = 1, 2, \dots, N_{14}$ with $N_{14} \leq 32$ for the band 14.4-15.35 GHz

and $N_{14} \leq 30$ for the band 14.5-15.35 GHz.

The channel arrangement with $f_r = 11\,701$ MHz and a frequency spacing of 14 MHz is illustrated in Fig. 2;

3 that the preferred radio-frequency channel arrangement for medium-capacity digital fixed wireless systems operating with a 56 MHz channel spacing should be derived as follows:

Let N_{56} be the number of RF channels;

then the frequencies (MHz) of individual channels are expressed by the following relationships:

$$\text{lower half of the band: } f_n = f_r + a + 56 n \quad \text{MHz}$$

upper half of the band: two options are possible for maintaining a common duplex separations with lower size channels arrangements:

$$\text{Option 1: } f'_n = f_r + 3\,612 - 56 (N_{56} - n) \quad \text{MHz}$$

$$\text{Option 2: } f'_n = f_r + 3\,584 - 56 (N_{56} - n) \quad \text{MHz}$$

Option 1 should be used when corresponding 28 MHz arrangement provides $N_{28} =$ even number of channels, or when no lower channel arrangements are used.

Option 2 should to be used when corresponding 28 MHz arrangement provides $N_{28} =$ odd number of channels,

where: