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| **Recommendation ITU-R F.1496-1**  **(02/2002)** |
| **Radio-frequency channel arrangements for fixed wireless systems operating in the band 51.4-52.6 GHz** |
| **F Series**  **Fixed service** |

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.

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| 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 |

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| ***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.1496-1[[1]](#footnote-1)\*

Radio-frequency channel arrangements for fixed wireless systems   
operating in the band 51.4‑52.6 GHz

(2000-2002)

Scope

This Recommendation specifies radio-frequency channel arrangements for fixed wireless systems with channel separations of 3.5, 7, 14, 28 and 56 MHz in the band 51.4-52.6 GHz, which has been identified for use for high density applications in the fixed service (HDFS).

The ITU Radiocommunication Assembly,

considering

a) that the band 51.4-52.6 GHz is allocated to the fixed and mobile services on a primary basis;

b) the band 51.4-52.6 GHz is available for high-density applications in the fixed service (FS);

c) that ITU-R should develop radio-frequency channel arrangements in order to make the most effective use of the spectrum available;

d) that the propagation characteristics of the 51.4-52.6 GHz band are ideally suited for use of short-range digital point-to-point radio links in high-density applications in the FS networks;

e) that in the frequency range a high antenna directivity is achievable even with small size antennas, increasing the density of equipment and further reducing risk of interference with same and other radio services;

f) that differing applications licensed by various administrations may require different radio‑frequency channel arrangements;

g) that the applications in this frequency band may require differing channel bandwidths;

h) that several radio services with various transmission signal characteristics and capacities may be in simultaneous use in this frequency band;

j) 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,

recommends

**1** that administrations should consider the channel arrangement given in Annex 1 for FS system deployment in the frequency range 51.4-52.6 GHz.

Annex 1  
  
Radio-frequency channel arrangement in the band 51.4-52.6 GHz

The radio-frequency channel arrangement for channel separations of 56 MHz, 28 MHz, 14 MHz, 7 MHz and 3.5 MHz shall be derived as follows:

Let  be the reference frequency of 51 412 MHz,

 be the centre frequency (MHz) of the radio-frequency channel in the lower half of the band,

 be the centre frequency (MHz) of the radio-frequency channel in the upper half of the band,

Tx/Rx separation  616 MHz,

band separation  112 MHz,

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

a) for systems with a channel separation of 56 MHz:

lower half of the band: *fr* 56 *n*

upper half of the band: *fr*  616  56 *n*

where:

*n*  1, 2, … 9

b) for systems with a channel separation of 28 MHz:

lower half of the band: *fr*  14  28 *n*

upper half of the band: *fr* + 630  28 *n*

where:

*n*  1, 2, 3, … 18

c) for systems with a channel separation of 14 MHz:

lower half of the band: *fr*  21  14 *n*

upper half of the band: *fr* + 637  14 *n*

where:

*n*  1, 2, 3, … 36

d) for systems with a channel separation of 7 MHz:

lower half of the band: *fr*  24.5  7 *n*

upper half of the band: *fr*  640.5  7 *n*

where:

*n*  1, 2, 3, … 72

e) for systems with a channel separation of 3.5 MHz:

lower half of the band: *fr*  26.25  3.5 *n*

upper half of the band: *fr*  642.25  3.5 *n*

where:

*n*  1, 2, 3, … 144.

Annex 2

TABLE 1

Calculated parameters according to Recommendation ITU-R F.746

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *XS* (MHz) | *n* | *f*1 (MHz) | *fnmax* (MHz) | (MHz) | (MHz) | *Z*1*S* (MHz) | *Z*2*S* (MHz) | *YS* (MHz) | *DS* (MHz) |
| 56 | 1, ... 9 | 51 468 | 51 916 | 52 084 | 52 532 | 68 | 68 | 168 | 616 |
| 28 | 1, ... 18 | 51 454 | 51 930 | 52 070 | 52 546 | 54 | 54 | 140 | 616 |
| 14 | 1, ... 36 | 51 447 | 51 937 | 52 063 | 52 553 | 47 | 47 | 126 | 616 |
| 7 | 1, …72 | 51 443.5 | 51 940.5 | 52 059.5 | 52 556.5 | 43.5 | 43.5 | 119 | 616 |
| 3.5 | 1, …144 | 51 441.75 | 51 942.25 | 52 057.75 | 52 558.25 | 41.75 | 41.75 | 115.5 | 616 |
| *XS*: separation between centre frequencies of adjacent channels  *YS*: separation between centre frequencies of the closest go and return channels  *Z*1*S*: separation between the lower band edge and the centre frequency of the first channel  *Z*2*S*: separation between centre frequencies of the final channel and the upper band edge  *DS*: duplex spacing | | | | | | | | | |

1. \* Radiocommunication Study Group 5 made editorial amendments to this Recommendation in December 2009 in accordance with Resolution ITU-R 1. [↑](#footnote-ref-1)