



Recommendation ITU-R F.1497-2
(02/2014)

**Radio-frequency channel arrangements
for fixed wireless systems operating
in the band 55.78-66 GHz**

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)

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Series of ITU-R Recommendations

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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.1497-2

**Radio-frequency channel arrangements for fixed wireless systems
operating in the band 55.78-66 GHz**

(Question ITU-R 247/5)

(2000-2002-2014)

Scope

This Recommendation specifies radio-frequency channel arrangements for fixed wireless systems (FWS) using TDD (time division duplex) or FDD (frequency division duplex) with channel separations of 3.5, 7, 14, 28, 30, 50 and 56 MHz in the range 55.78-66 GHz, the portions of which have been identified for use for high-density applications in the fixed service (HDFS).

Keywords

Fixed service, radio-frequency channel arrangement, oxygen absorption, frequency division duplex (FDD), time division duplex (TDD), guard band.

The ITU Radiocommunication Assembly,

considering

- a) that the frequency range 55.78-66 GHz is allocated worldwide to the fixed service and to a number of other services sharing different portions of that band on a co-primary basis;
- b) that the bands 55.78-59 GHz and 64-66 GHz are as being available for high-density applications in the fixed service (FS);
- c) that in the frequency range 55.78-66 GHz high antenna directivity is achievable even with small size antenna, increasing the density of equipment and further reducing the risk of interference with the same and other radio services;
- d) that the propagation characteristics in this frequency range are significantly affected by additional attenuation due to oxygen absorption and, in particular, the central 57-64 GHz portion of the band exhibits the higher attenuation, which facilitate the deployment of a large number of short-range digital fixed links also in an uncoordinated manner;
- e) that ITU-R should develop radio-frequency channel arrangements in order to make the most effective use of the spectrum available;
- f) that differing applications licensed by various administrations may require different radio-frequency channel arrangements;
- g) that the applications in this frequency range 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 range;
- j) that, due to different propagation behaviour and different sharing conditions, different portions of the whole 55.78-66 GHz may require different regulatory considerations for their use;
- k) 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,

recognizing

that, in the band 55.78-56.26 GHz, in order to protect stations in the Earth exploration-satellite service (passive), the maximum power density delivered by the transmitter to the antenna of a fixed service station is limited to -26 dB(W/MHz) in the Radio Regulations,

noting

- a) that frequency division duplex (FDD) and time division duplex (TDD) systems may be used simultaneously in the same geographical area providing sufficient measures are put in place to allow successful coordination;
- b) that the high additional attenuation due to oxygen absorption, effectively limits the achievable path length and interference level;
- c) that, also in absence of coordination, equipment may listen for a free channel before transmission to recognize existing transmissions in order to minimize interference problems and to ensure continued operation of existing transmissions,

recommends

- 1 that administrations should consider the channel arrangement given in Annex 1, § 1 for TDD FS system deployment in the frequency range 55.78-57 GHz (see Note 1);
- 2 that administrations should consider the channel arrangement given in Annex 1, § 2 for FDD FS system deployment in the frequency range 55.78-57 GHz (see Note 1);
- 3 that administrations wishing to implement a specific radio-frequency plan should consider the channel arrangement given in Annex 2 for FS systems deployment, either FDD or TDD, in the frequency range 57-64 GHz (see Note 2);
- 4 that administrations wishing to implement a specific radio-frequency plan should consider the channel arrangements given in Annex 3 for FS systems deployment, either FDD or TDD, in the frequency range 64-66 GHz;
- 5 that administrations may consider the channel arrangements in Annexes 2 and 3 for a combined use of the bands 57-64 GHz and 64-66 GHz utilizing a 50-MHz channel separation;
- 6 that the following Notes are considered as part of this Recommendation.

NOTE 1 – The channel arrangements in Annex 1 provide the same centre frequencies for both TDD and FDD operation.

NOTE 2 – The channel arrangement in Annex 2 can also be used in any portion of the 57-64 GHz range, due to different national needs.