



European Radiocommunications Committee (ERC)  
within the European Conference of Postal and Telecommunications Administrations (CEPT)

## ERC RECOMMENDATION (01)02

### PREFERRED CHANNEL ARRANGEMENT FOR DIGITAL FIXED SERVICE SYSTEMS OPERATING IN THE FREQUENCY BAND 31.8 – 33.4 GHz

Recommendation adopted by the Working Group "Spectrum Engineering" (SE)

#### BACKGROUND

This ERC Recommendation provides a channel arrangement on a purely technical basis for the development of fixed service equipment. Like the channel arrangements for the 26 GHz and 28 GHz bands this recommendation it is **not** aimed to give any preference with regard to what kind of technologies (e.g. FDD or TDD) or applications (e.g. fixed wireless access (FWA) or infrastructure) to be accommodated in this band.

Furthermore, this ERC-Recommendation does **not** provide any guidance on frequency assignment issues (e.g. block assignment, measures to ensure inter-operator-compatibility, symmetrical and asymmetrical traffic etc.).

“The European conference of Postal and Telecommunications Administrations,

*considering*

- a) that the WRC-2000 allocated on a world-wide primary basis the 31.8 - 33.4 GHz band to the Fixed Service, available for High Density applications in the Fixed Service (HDFS) (Art S5.547);
- b) that sharing in the 31.8 - 33.4 GHz band with Radionavigation (RNS), Space Research SRS (Deep Space-Space to Earth) and Inter Satellite Services (ISS) is considered as feasible taking into account footnote S5.547A stating that Administrations should take practical measures to minimize the potential interference between stations in the fixed service and airborne stations in the radionavigation service in the 31.8 - 33.4 GHz band, taking into account the operational needs of the RNS;
- c) that CEPT has a long term objective to harmonise the use of frequencies throughout Europe to benefit from technical and economic advantages;
- d) that CEPT-Administrations should apply preferred channel arrangement in order to make the most effective and efficient use of the spectrum for fixed service applications;
- e) that fixed service technology derived from the frequency bands 26 GHz and 28 GHz could economically be deployed in the 31.8 GHz to 33.4 GHz band;
- f) that it may sometimes be desirable to interleave additional radio-frequency channels between those of the main pattern;

*noting*

- a) that technical and operational restrictions may be necessary to minimise potential interference between stations in the fixed service and airborne stations in the radionavigation service;
- b) that for Frequency Duplex Division (FDD) point to multipoint systems, as for example in the 26 and 28 GHz bands, systems are designed to transmit from Central Radio Stations in the lower half of the band while all Terminal Stations transmit in the upper half of the band.

*recommends*

1. that CEPT Administrations should follow the recommended preferred channel arrangement for the frequency band 31.8 – 33.4 GHz given in the Annex;
2. that when an interleaved channel arrangement is used, the values of the centre frequencies of these radio-frequency channels should be below those of the corresponding channel frequencies (as detailed in the Annex) by a value of half the channel spacing.”

*Note:*

*Please check the ERO web site ( [www.ero.dk](http://www.ero.dk) ) under “Documentation / Implementation” for the up to date position on the implementation of this and other ERC Decisions.*

**Annex**

**PREFERRED CHANNEL ARRANGEMENT IN THE BAND 31.8 – 33.4 GHz**

The centre frequencies for channel separations of 3.5 MHz, 7 MHz, 14 MHz, 28 MHz and 56 MHz shall be derived as follows:

Let

$f_r$  be the reference frequency of 32599 MHz,

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

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

Duplex spacing = 812 MHz,

Centre gap = 56 MHz for the 3.5, 7, 14 and 28 MHz channel separation,  
140 MHz for the 56 MHz channel separation.

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

a) for channel separation of 56 MHz:

$$\begin{array}{ll} \text{lower half of the band:} & f_n = f_r - 756 + 56 n \\ \text{upper half of the band:} & f_n' = f_r + 56 + 56 n \end{array} \quad \text{where } n = 1, 2, 3, \dots 12$$

b) for a channel separation of 28 MHz:

$$\begin{array}{ll} \text{lower half of the band:} & f_n = f_r - 798 + 28 n \\ \text{upper half of the band:} & f_n' = f_r + 14 + 28 n \end{array} \quad \text{where } n = 1, 2, 3, \dots 27$$

c) for a channel separation of 14 MHz:

$$\begin{array}{ll} \text{Lower half of the band:} & f_n = f_r - 791 + 14 n \\ \text{Upper half of the band:} & f_n' = f_r + 21 + 14 n \end{array} \quad \text{where } n = 1, 2, 3, \dots 54$$

d) for a channel separation of 7 MHz:

$$\begin{array}{ll} \text{Lower half of the band:} & f_n = f_r - 787.5 + 7 n \\ \text{Upper half of the band:} & f_n' = f_r + 24.5 + 7 n \end{array} \quad \text{where } n = 1, 2, 3, \dots 108$$

e) for a channel separation of 3.5 MHz:

$$\begin{array}{ll} \text{Lower half of the band:} & f_n = f_r - 785.75 + 3.5 n \\ \text{upper half of the band:} & f_n' = f_r + 26.25 + 3.5 n \end{array} \quad \text{where } n = 1, 2, 3, \dots 216$$

XS MHz	n	$f_1$ MHz	$f_n$ MHz	$f_1'$ MHz	$f_n'$ MHz	ZS <sub>1</sub> MHz	ZS <sub>2</sub> MHz	YS MHz	DS MHz
56	1...12	31899	32515	32711	33327	99	73	196	812
28	1...27	31829	32557	32641	33369	29	31	84	812
14	1...54	31822	32564	32634	33376	22	24	70	812
7	1...108	31818.5	32567.5	32630.5	33379.5	18.5	20.5	63	812
3.5	1...216	31816.75	32569.25	32628.75	33381.25	16.75	18.75	59.5	812

**Table 1: Calculated parameters according to ITU-R Rec. 746**

