

Recommendation T/R 13-02 E (Montreux 1993)

**PREFERRED CHANNEL ARRANGEMENTS FOR
FIXED SERVICES IN THE RANGE 22.0 - 29.5 GHz**

Recommendation proposed by the Working Group "Frequency Management" (FM)

Text of the Recommendation adopted by the "European Radiocommunications Committee" (ERC):

The European Conference of Postal and Telecommunications Administrations,

considering:

- 1) that following decisions taken at WARC-92, new fixed service channelling arrangements are required in the range 22.0 - 29.5 GHz;
- 2) that a wide range of fixed service applications requiring various channel bandwidths need to be accommodated;
- 3) that there are technical and economic advantages in adopting harmonised channel plans.

noting:

- a) that in the context of this recommendation the guard band is defined as the frequency difference between the edge of the band and the channel edge;
- b) that the separation band is defined as the band between the go and return halves, from edge of the bands used by other services;
- c) that the centre gap is defined as the frequency difference between the upper and lower channel edges of the go and return halves of the band;
- d) that TX/RX separation is defined as the frequency separation between the centre frequency of the transmitter and the centre frequency of the associated receiver.

further noting:

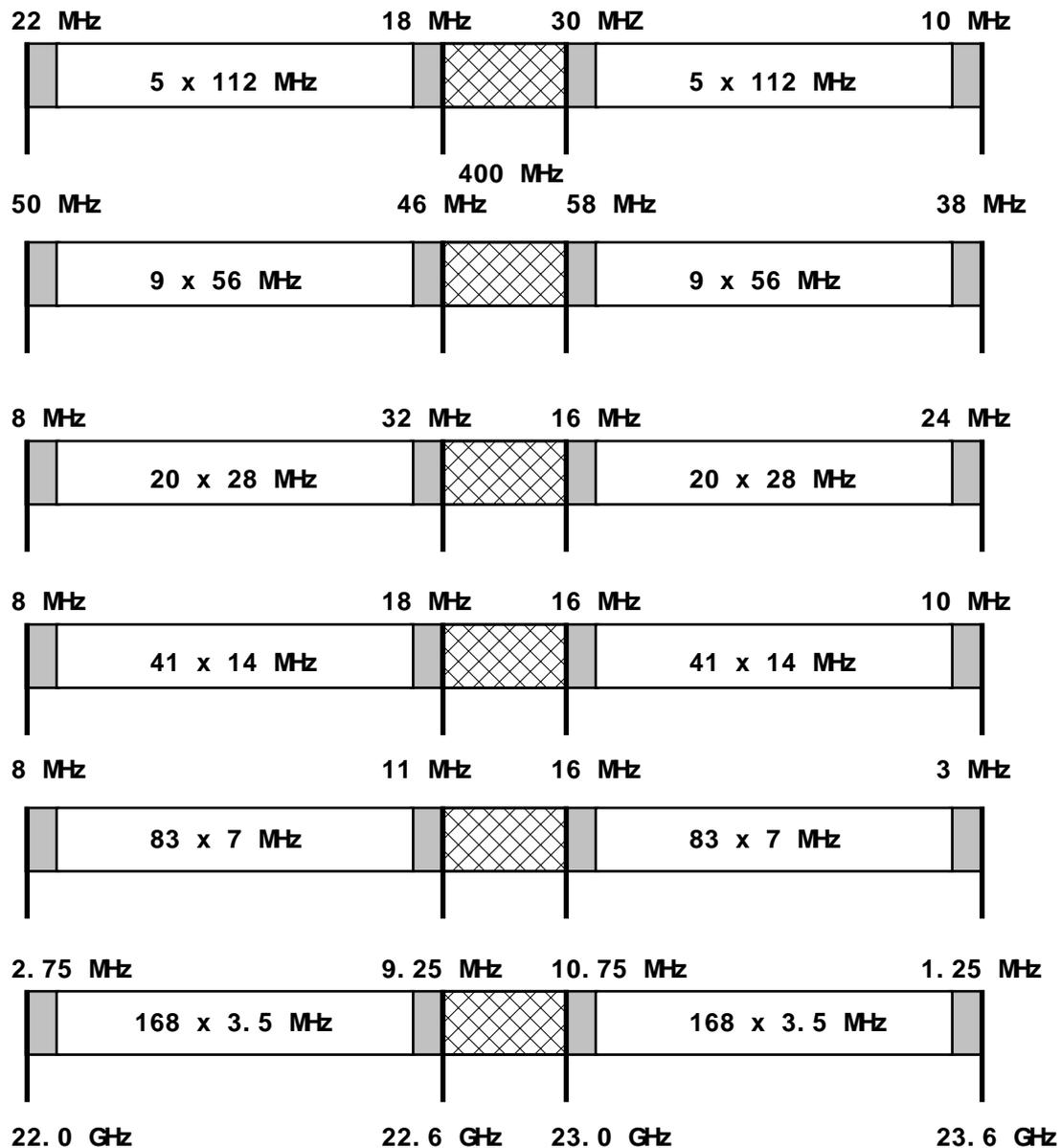
that the bands 22.6 - 23.0 GHz and 24.25 - 24.5 GHz may be used for unidirectional links such as ENG/OB.

recommends:

- 1) that the fixed service in the band 22.0 - 22.6 GHz paired with 23.0 - 23.6 GHz should be operated in accordance with the channel plan given in Annex A;
- 2) that the fixed service in the band 24.5 - 26.5 GHz should be operated in accordance with the channel plan given in Annex B;
- 3) that the fixed service in the band 27.5 - 29.5 GHz should be operated in accordance with the channel plan given in Annex C.

ANNEX A

Frequency bands 22.0-22.6 / 23.0 - 23.6 GHz



Let

f_0 be the centre frequency of **21196 MHz**

f_n be the centre frequency of the radio-frequency channel in the lower half of the band

$f_{n'}$ be the centre frequency of the radio-frequency channel in the upper half of the band

TX/RX separation = **1008 MHz**

Centre gap = **400 MHz**

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

a) for systems with a carrier spacing of 112 MHz

$$\begin{array}{lll} \text{lower half of the band :} & f_n = f_o + 770 + 112n & \\ \text{upper half of the band :} & f_{n'} = f_o + 1778 + 112n & \text{where } n = 1, \dots 5 \end{array}$$

b) for systems with a carrier spacing of 56 MHz

$$\begin{array}{lll} \text{lower half of the band :} & f_n = f_o + 826 + 56n & \\ \text{upper half of the band :} & f_{n'} = f_o + 1834 + 56n & \text{where } n = 1, \dots 9 \end{array}$$

c) for systems with a carrier spacing of 28 MHz

$$\begin{array}{lll} \text{lower half of the band :} & f_n = f_o + 798 + 28n & \\ \text{upper half of the band :} & f_{n'} = f_o + 1806 + 28n & \text{where } n = 1, \dots 20 \end{array}$$

d) for systems with a carrier spacing of 14 MHz

$$\begin{array}{lll} \text{lower half of the band :} & f_n = f_o + 805 + 14n & \\ \text{upper half of the band :} & f_{n'} = f_o + 1813 + 14n & \text{where } n = 1, \dots 41 \end{array}$$

e) for systems with a carrier spacing of 7 MHz

$$\begin{array}{lll} \text{lower half of the band :} & f_n = f_o + 808.5 + 7n & \\ \text{upper half of the band :} & f_{n'} = f_o + 1816.5 + 7n & \text{where } n = 1, \dots 83 \end{array}$$

f) for systems with a carrier spacing of 3.5 MHz

$$\begin{array}{lll} \text{lower half of the band :} & f_n = f_o + 805 + 3.5n & \\ \text{upper half of the band :} & f_{n'} = f_o + 1813 + 3.5n & \text{where } n = 1, \dots 168 \end{array}$$

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

a) for systems with a carrier spacing of 112 MHz

$$\begin{array}{lll} \text{lower half of the band:} & f_n = f_o - 1008 + 112n & \\ \text{upper half of the band:} & f_{n'} = f_o + 112n & \text{where } n = 1, \dots 8 \end{array}$$

b) for systems with a carrier spacing of 56 MHz

$$\begin{array}{lll} \text{lower half of the band:} & f_n = f_o - 980 + 56n & \\ \text{upper half of the band:} & f_{n'} = f_o + 28 + 56n & \text{where } n = 1, \dots 16 \end{array}$$

c) for systems with a carrier spacing of 28 MHz

$$\begin{array}{lll} \text{lower half of the band:} & f_n = f_o - 966 + 28n & \\ \text{upper half of the band:} & f_{n'} = f_o + 42 + 28n & \text{where } n = 1, \dots 32 \end{array}$$

d) for systems with a carrier spacing of 14 MHz

$$\begin{array}{lll} \text{lower half of the band:} & f_n = f_o - 959 + 14n & \\ \text{upper half of the band:} & f_{n'} = f_o + 49 + 14n & \text{where } n = 1, \dots 64 \end{array}$$

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$$\begin{array}{lll} \text{lower half of the band:} & f_n = f_o - 955.5 + 7n & \\ \text{upper half of the band:} & f_{n'} = f_o + 52.5 + 7n & \text{where } n = 1, \dots 128 \end{array}$$

f) for systems with a carrier spacing of 3.5 MHz

$$\begin{array}{lll} \text{lower half of the band:} & f_n = f_o - 953.75 + 3.5n & \\ \text{upper half of the band:} & f_{n'} = f_o + 54.25 + 3.5n & \text{where } n = 1, \dots 256 \end{array}$$

The arrangement f) above uses frequencies spaced by 3.5 MHz but interleaved between the homogenous pattern with an offset of 1.75 MHz.

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