CEPT/ERC/RECOMMENDATION 12-10 (The Hague 1998)[1]

HARMONISED RADIO FREQUENCY ARRANGEMENTS FOR DIGITAL SYSTEMS OPERATING IN THE BAND 48.5 GHz - 50.2 GHz

Recommendation proposed by the Working Group "Spectrum Engineering" (WGSE)

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

The European Conference of Post and Telecommunications Administrations,

considering

1. that CEPT should develop radio frequency channel arrangements in consultation with organisations developing standards for radio systems, in order to make the most effective use of the spectrum available;

2. that the propagation characteristics of the band 48.5 GHz - 50.2 GHz are ideally suited to short range low and medium capacity digital fixed systems;

3. that the anticipated developments in telecommunications networks will require large numbers of short range links in the supporting infrastructure;

4. that any radio frequency channel arrangement should incorporate a provision for the future introduction of improved equipment standards,

noting

a) that Article S5 of the Radio Regulations allocates the band 48.5 GHz - 50.2 GHz on an equal primary basis to the Fixed, Fixed-Satellite and Mobile services. Sharing criteria between Fixed and Mobile, and Fixed and Fixed-Satellite services may be required;

b) that Article S5 of the Radio Regulations footnote S5.555 allocates the band 48.94 GHz - 49.04 GHz to the Radio Astronomy Service on a primary basis for spectral line observations. In making assignments to stations of other services in this band, administrations are urged to take all practical steps to protect the Radio Astronomy Service from harmful interference. ERC-Report 36 provides guidance on sharing between the radio astronomy and fixed services operating within Europe. The report states that a co-ordination zone with a 50 km radius should be suitable to protect the radio astronomy service in most European countries depending on the local terrain around a radio observatory;

c) that in some CEPT countries there are existing fixed systems that operate in bands contained within the band 48.5 GHz - 50.2 GHz on national channel arrangements and are not operating in accordance with the channel arrangements given in the **Annex A**;

d) in some CEPT countries the band 48.5 GHz - 50.2 GHz is not currently available for the Fixed Service.

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[1] This Recommendation superseedes Recommendation 12-04 E (Stockholm 1995)

recommends

1) that CEPT Administrations which have the band 48.5 GHz - 50.2 GHz available for the Fixed Service should follow the recommended radio frequency arrangements for the band 48.5 GHz - 50.2 GHz given in **Annex A**;

2) that CEPT Administrations which have existing fixed service systems operating within the band 48.5 GHz - 50.2 GHz, not in accordance with recommends 1, may allow these systems to remain until the year 2008 and may determine on a national basis, the degree of protection given. Any international co-ordination that may be required between existing and new systems shall be in accordance with Article S11 of the Radio Regulations.

ANNEX A

DERIVATION OF RADIO FREQUENCY CHANNELS

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

Let

fr   be the reference frequency of 49350 MHz (14100 x 3.5 MHz),

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

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

TX/RX separation   =   884 MHz,
Band separation   =   100 MHz,

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

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

lower half of the band: $fn = fr - 848 + 28\,n$
upper half of the band: $fn' = fr + 36 + 28\,n$ where n = 1, 2, 3, … 28

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

lower half of the band: $fn = fr - 841 + 14\,n$
upper half of the band: $fn' = fr + 43 + 14\,n$ where n = 1, 2, 3, … 56

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

lower half of the band: $fn = fr - 837.5 + 7\,n$
upper half of the band: $fn' = fr + 46.5 + 7\,n$ where n = 1, 2, 3, … 112

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

lower half of the band: $fn = fr - 835.75 + 3.5\,n$
upper half of the band: $fn' = fr + 48.25 + 3.5\,n$ where n = 1, 2, 3, … 224

Calculated parameters according to ITU-R Rec. 746

TABLE 1

XS MHz	n	f1 MHz	fn MHz	f'1 MHz	f'n MHz	Z1S MHz	Z2S MHz	YS MHz	DS MHz
28	1,...28	48530	49286	49414	50170	30	30	128	884
14	1,...56	48523	49293	49407	50177	23	23	114	884
7	1,...112	48519.5	49296.5	49403.5	50182.5	19.5	19.5	107	884
3.5	1,...224	48517.75	49298.25	49401.75	50182.25	17.75	17.75	103.5	884

XS   Separation between centre frequencies of adjacent channels

YS   Separation between centre frequencies of the closest go and return channels

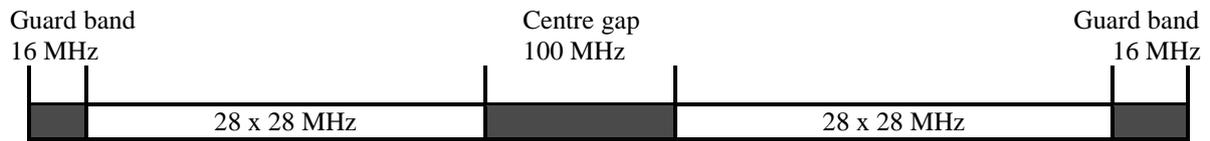Z1S   Separation between the lower band edge and the centre frequency of the first channel

Z2S   Separation between centre frequencies of the final channel and the upper band edge

DS   Duplex spacing (f'n - fn)
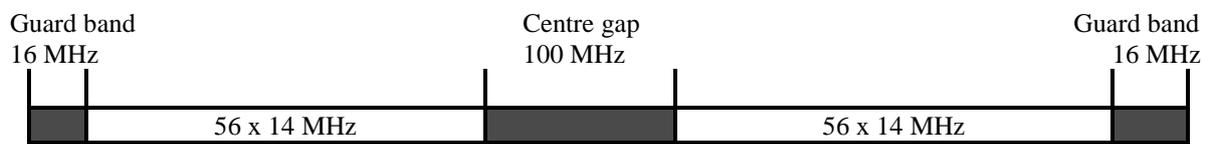
Occupied spectrum: 48.5 to 50.2 GHz Band

TABLE 2
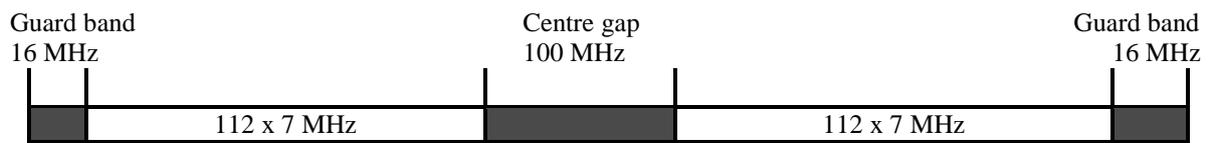
a)   28 MHz channels (3.5 MHz x 8)

Guard band 16 MHz		Centre gap 100 MHz			Guard band 16 MHz
	28 x 28 MHz			28 x 28 MHz	

b)   14 MHz channels (3.5 MHz x 4)

Guard band 16 MHz		Centre gap 100 MHz			Guard band 16 MHz
	56 x 14 MHz			56 x 14 MHz	

c)   7 MHz channels (3.5 MHz x 2)

Guard band 16 MHz		Centre gap 100 MHz			Guard band 16 MHz
	112 x 7 MHz			112 x 7 MHz	

d)   3.5 MHz channels (3.5 MHz x 1)

Guard band 16 MHz		Centre gap 100 MHz			Guard band 16 MHz
	224 x 3.5 MHz			224 x 3.5 MHz	

48.5 GHz   49.3 GHz   49.4 GHz   50.2
GHz   GHz