

ERC Recommendation 12-08

Harmonised radio frequency channel arrangements and block allocations for low, medium and high capacity systems in the band 3600 MHz to 4200 MHz

approved 1997

latest amended 10 May 2024

INTRODUCTION

This Recommendation provides radio-frequency channel arrangements for fixed wireless systems operating in the 3600 MHz to 4200 MHz. The channel spacing recommended is for the frequency range 3600 to 4200 MHz based on ITU-R Recommendation F.635 [2] with 30 MHz and 15 MHz channels for medium and high-capacity systems (Annex A) and 3800 to 4200 MHz channel arrangements based on ITU-R Recommendation F.382 [1] with 29 MHz channels for high-capacity systems (Annex B). These bands are used for applications such as in network/broadcast infrastructure or mobile backhaul.

ERC RECOMMENDATION 12-08 OF 1997 ON HARMONISED RADIO FREQUENCY CHANNEL ARRANGEMENTS AND BLOCK ALLOCATIONS FOR LOW, MEDIUM AND HIGH CAPACITY SYSTEMS IN THE BAND 3600 MHZ TO 4200 MHZ, REVISED MAY 1998, AMENDED 10 MAY 2024

“The European Conference of Postal and Telecommunications Administrations,

considering

- a) that CEPT has a long-term objective to harmonise the use of frequencies throughout Europe;
- b) that CEPT should develop radio frequency channel arrangements and block allocation rules in order to make the most effective use of the spectrum for point to point (P-P) and point to multipoint (P-MP) applications;
- c) that the achievement of harmonisation requires the adoption of a minimum number of channel arrangements and block allocation rules;

noting

- a) that Article 5 of the Radio Regulations [3] allocates the band 3600 MHz to 4200 MHz on a primary basis to the Fixed Service and Fixed Satellite Service;
- b) that the band 3600 MHz – 3800 MHz is also allocated on a primary basis and the band 3800 MHz to 4200 MHz on a secondary basis to the Mobile service;
- bbis) that current use of the band 3600-4200 MHz in most European countries is according to Recommendation ITU-R F.635 [2] and/or Recommendation F.382 [1];
- c) that ITU-R Recommendation F.635 only sets a basic raster of 10 MHz without defining a specific channel spacing or a duplex spacing;
- e) that in most European countries there is a need for medium and high capacity radio relay systems for long range applications and/or the allocation of additional spectrum for P-MP systems in the band 3600-4200 MHz;
- g) that frequency separation may be required for un-coordinated deployment of current and future systems;
- h) that cellular deployment of P-MP systems preferably requires the allocation of continuous spectrum to the operator;

recommends

1. that CEPT administrations having the band 3600-4200 MHz available for the fixed service should adopt channel arrangements in accordance with either:
 - 1) Annex A
which is based on ITU-R Recommendation F.635 for the frequency range 3600-4200 MHz with channel spacings of 30 or 15 MHz and a duplex spacing of 320 MHz;
 - or
 - 2) Annex B
which is based on ITU-R Recommendation F.382 for the frequency range 3800-4200 MHz.

Note:

Please check the Office documentation database <https://docdb.cept.org/> for the up to date position on the implementation of this and other ECC Recommendations.

ANNEX A: HARMONISATION OF THE FREQUENCY RANGE 3600 TO 4200 MHZ BASED ON ITU-R RECOMMENDATION F.635 [2] WITH 30 MHZ AND 15 MHZ CHANNELS FOR MEDIUM AND HIGH CAPACITY SYSTEMS

An arrangement based on ITU-R Recommendation F.635 [2] with 30 MHz channel spacing would provide a total of 9 “go” and 9 “return” channels.

Let f_0 (=3900 MHz) be the frequency of the centre of the band of frequencies occupied
 f_n be the centre frequency of one radio frequency channel in the lower half of the band
 f'_n be the centre frequency of one radio frequency channel in the upper half of the band

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

30 MHz channel spacing

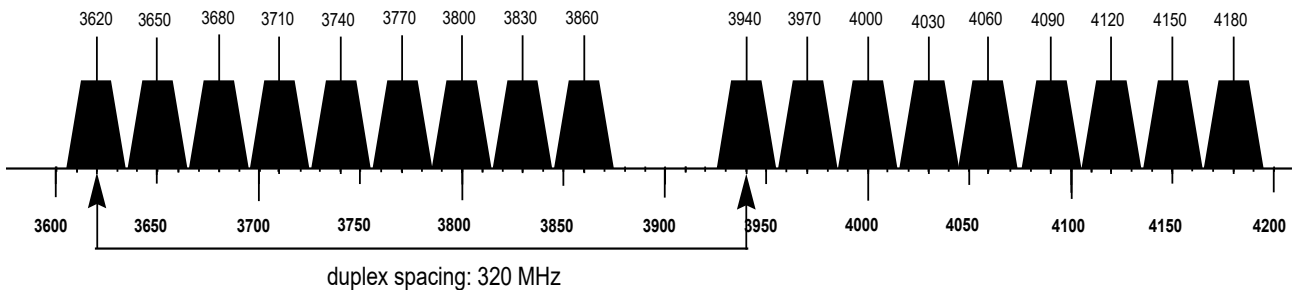
Lower half of the band: $f_n = (f_0 - 310 + 30 n)$ MHz
 Upper half of the band: $f'_n = (f_0 + 10 + 30 n)$ MHz

where $n = 1, 2, 3 \dots 9$

15 MHz channel spacing

Lower half of the band: $f_n = (f_0 - 302.5 + 15 n)$ MHz
 Upper half of the band: $f'_n = (f_0 + 17.5 + 15 n)$ MHz

where $n = 1, 2, 3 \dots 18$



ANNEX B: HARMONISATION OF THE FREQUENCY RANGE 3800 TO 4200 MHz BASED ON ITU-R RECOMMENDATION F.382 [1] WITH 29 MHz CHANNELS FOR HIGH CAPACITY SYSTEMS

An arrangement based on ITU-R Recommendation F.382 [1] with 29 MHz channel spacing would provide a total of 6 "go" and 6 "return" channels.

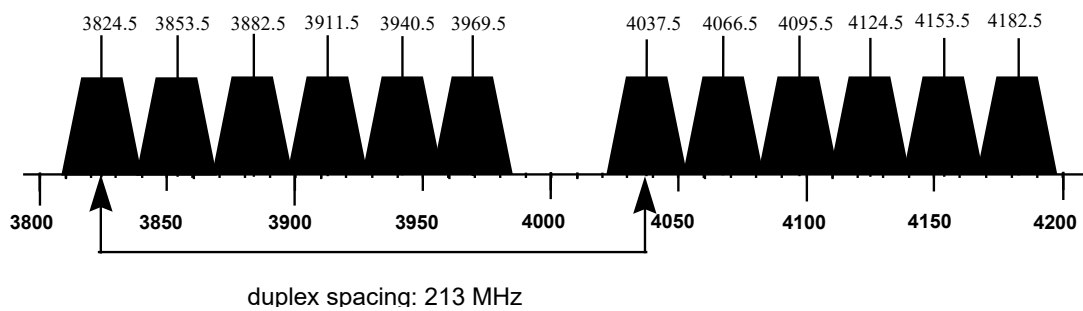
Let f_0 (=4003.5 MHz) be the frequency of the centre of the band of frequencies occupied (MHz)
 f_n be the centre frequency of one radio-frequency channel in the lower half of the band (MHz)
 f'_n be the centre frequency of one radio-frequency channel in the upper half of the band (MHz),

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

$$\begin{aligned} \text{lower half of the band: } f_n &= f_0 - 208 + 29n, \\ \text{upper half of the band: } f'_n &= f_0 + 5 + 29n, \end{aligned}$$

where

$$n = 1, 2, 3, 4, 5 \text{ or } 6.$$



ANNEX 1: LIST OF REFERENCES

- [1] Recommendation ITU-R F.382: "Radio-frequency channel arrangements for radio-relay systems operating in the 2 and 4 GHz bands"
- [2] Recommendation ITU-R F.635: "Radio-frequency channel arrangements based on a homogeneous pattern for fixed wireless systems operating in the 4 GHz (3 400-4 200 MHz) band"
- [3] ITU Radio Regulations, Edition of 2020