

RECOMMENDATION ITU-R F.1488* **

**FREQUENCY BLOCK ARRANGEMENTS FOR FIXED WIRELESS ACCESS
SYSTEMS IN THE RANGE 3 400-3 800 MHz**

(Questions ITU-R 215/8 and ITU-R 125/9)

(2000)

The ITU Radiocommunication Assembly,

considering

- a) that fixed wireless access (FWA) systems in the range 3 400-3 800 MHz can provide enhanced telephony and data services;
- b) that in all three ITU Regions the range 3 400-3 800 MHz is allocated on a primary basis to the fixed service (FS) and the fixed-satellite service (FSS);
- c) that in a number of countries the 3 700-4 200 MHz band is heavily used by both point-to-point systems in the FS as well as by the FSS;
- d) that in Regions 2 and 3 the range 3 400-3 600 MHz is allocated to the radiolocation service as per RR No. S5.433;
- e) that several administrations have introduced FWA systems in bands within the range 3 400-3 800 MHz;
- f) that FWA has substantial potential to enhance the availability of telecommunication services in both urban and rural areas;
- g) that a flexible block (sub-band) arrangement, rather than use of conventional point-to-point channel arrangement can accommodate various FWA technologies, whilst remaining consistent with good spectrum management principles, including provision for inter-systems/services operation and overall spectrum efficiency;
- h) that sufficient capacity and flexibility for deployment of multiple systems within a desired service area can be achieved by the use of either frequency blocks (sub-bands) of 25 MHz, or the aggregation of a variable number of frequency slots from a homogeneous pattern based on an interval of 0.25 MHz;
- j) that such arrangements also accommodate block duplex spacings in combinations of both 50 MHz and 100 MHz and that use of such blocks facilitates common uplink/downlink designations for efficient deployment of FWA systems in adjacent blocks;
- k) that several administrations have already adopted one of the two arrangements in order to promote a competitive environment while at the same time providing adequate bandwidth to support future growth of services;
- l) that time division duplex (TDD) systems could also be accommodated, provided that appropriate co-existence criteria can be met;
- m) that in some countries there may be cases where FWA systems need to co-exist with point-to-point systems in the same FS allocation;

* This Recommendation was jointly developed by experts of Radiocommunication Study Groups 8 and 9, and future revisions should be undertaken jointly.

** This Recommendation should be brought to the attention of Radiocommunication Study Groups 4 (Working Party (WP) 4-9S) and 8 (WP 8B).

- n) that a standardized block width might offer benefits through economies of scale and simplified inter-system and inter-operator frequency planning in the same deployment area;
- o) that the FSS (space-to-Earth) is also allocated on a primary status in this range, and in some countries appropriate measures may be needed in the planning and deployment of FWA systems and satellite earth stations, including judicious choice of frequencies;
- p) that in some countries there may be cases where FWA systems may need to take technical and operational measures to co-exist with radiolocation services in this band,

recognizing

- a) that in some cases administrations may use other Recommendations to harmonize more readily with point-to-point channel arrangements;
- b) that in some European countries, the block arrangement starts at 3 410 MHz,

recommends

- 1** that those administrations planning to implement FWA systems in the 3 400-3 800 MHz range, or parts of this band, should consider block (sub-band) edge frequencies which are exactly divisible by 0.25 MHz;
- 2** that frequency blocks should be assigned according to capacity of systems and technology used;
- 3** that if systems using TDD technologies are also deployed in the same area, due account should be taken of the necessity to assign the TDD frequency blocks to minimize interference;
- 4** that administrations planning to implement FWA systems in this range adjacent to sea or ocean areas are urged to consider using the highest available frequency blocks in order to minimize the possibility of harmful interference from systems in the radiolocation service;
- 5** that the arrangements should comply with either Annex 1 or 2.

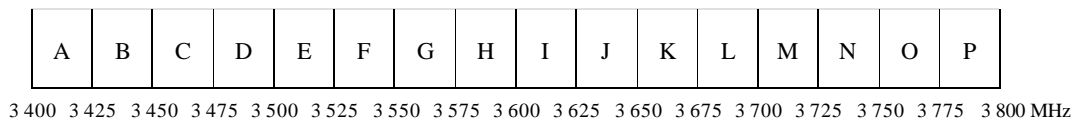
ANNEX 1

Frequency arrangement based on 25 MHz blocks (sub-bands)

This arrangement consists of 16 adjacent 25 MHz blocks starting at 3 400 MHz as per Fig. 1. Any two of these blocks may be paired for frequency division duplex (FDD) operation and any single block may be used for TDD operation. As well, blocks may be aggregated for higher capacity or higher bandwidth applications.

FIGURE 1

25 MHz block (sub-band) plan for the range 3 400-3 800 MHz



ANNEX 2

**Frequency arrangement based on blocks formed from
the aggregation of 0.25 MHz slots**

Where a frequency duplex allocation is required, the spacing between the lower edges of each paired block (sub-band) shall be 100 MHz. The edges of each block (sub-band) are defined as follows:

TABLE 1

3 400-3 600 MHz band

Lower blocks (MHz)	$0.25 N + 3\,400$ to $0.25 (N + k) + 3\,400$
Upper blocks (MHz)	$0.25 (N + 400) + 3\,400$ to $0.25 (N + k + 400) + 3\,400$
$1 \leq k \leq 400, 0 \leq N \leq 399, k + N \leq 400$	

TABLE 2

3 600-3 800 MHz band

Lower blocks (MHz)	$0.25 N + 3\,600$ to $0.25 (N + k) + 3\,600$
Upper blocks (MHz)	$0.25 (N + 400) + 3\,600$ to $0.25 (N + k + 400) + 3\,600$
$1 \leq k \leq 400, 0 \leq N \leq 400, k + N \leq 400$	

In Tables 1 and 2, k defines the width of each block and N defines the lower edge of each block.

Where a sub-banding with a 50 MHz frequency duplex allocation is required, the spacing between the lower edges of the paired block shall be 50 MHz. The edges of each block are defined as follows:

TABLE 3

3 400-3 500 MHz band

Lower blocks (MHz)	$0.25 N + 3\,400$ to $0.5 (N + k) + 3\,400$
Upper blocks (MHz)	$0.25 (N + 200) + 3\,400$ to $0.25 (N + k + 200) + 3\,400$
$1 \leq k \leq 200, 0 \leq N \leq 199, k + N \leq 200$	

TABLE 4

3 500-3 600 MHz band

Lower blocks (MHz)	$0.25 N + 3\,400$ to $0.25 (N + k) + 3\,400$
Upper blocks (MHz)	$0.25 (N + 200) + 3\,400$ to $0.25 (N + k + 200) + 3\,400$
$1 \leq k \leq 200, 400 \leq N \leq 599, k + N - 400 \leq 200$	

TABLE 5

3 600-3 700 MHz band

Lower blocks (MHz)	$0.25 N + 3\,600$ to $0.25 (N + k) + 3\,600$
Upper blocks (MHz)	$0.25 (N + 200) + 3\,600$ to $0.25 (N + k + 200) + 3\,600$
$1 \leq k \leq 200, 0 \leq N \leq 199, k + N \leq 200$	

TABLE 6
3 700-3 800 MHz band

Lower blocks (MHz)	$0.25 N + 3\,600$ to $0.25 (N + k) + 3\,600$
Upper blocks (MHz)	$0.25 (N + 200) + 3\,600$ to $0.25 (N + k + 200) + 3\,600$
$1 \leq k \leq 200, 400 \leq N \leq 600, k + N - 400 \leq 200$	

In Tables 3 to 6, k defines the width of each block and N defines the lower edge of each block.
