

INTRODUCTION TO VHF/UHF/Microwaves BANDS AND BANDPLANS

1. Amateur and Amateur Satellite Service frequency allocations above 30 MHz

Current frequency allocations to the Amateur Service and the Amateur Satellite Service from 30 MHz upwards, as established at the WARC 1979 and maintained at the WARC 1991 (Torremolinos), are set out in section IIb, which also gives some other useful information extracted from the ITU Radio Regulations.

ITU Regulations strongly recommend that Radio Services use their frequency allocations rationally and economically. With an eye to the retention of the frequencies allocated to the Amateur Service and the Amateur Satellite Service it follows that full use should be made of all amateur bands, including the shared bands (Recommendation adopted at the IARU Region I Conference in Stresa, 1956).

Particularly the use of the UHF/Microwaves bands should be encouraged by stressing UHF and Microwaves technique in amateur magazines and by organising contests, meetings, conferences etc. especially aimed at stimulating UHF and Microwaves activity (Recommendation adopted at the IARU Conference in Brussels, 1969).

2. IARU Region 1 bandplanning: Principles

At the meeting of the IARU Region 1 VHF/UHF/Microwaves Committee at Düsseldorf, April 1989, the following principles of bandplanning were adopted. In the same month these principles were accepted as (interim) Region 1 policy by the Executive Committee of IARU Region 1. They were definitely adopted at the IARU Region 1 Conference in Torremolinos, 1 - 6 April 1990.

PRINCIPLES OF BANDPLANNING

A. Basis

Many of the transmission modes and techniques currently used in the Amateur Service, such as ATV, RTTY, FAX, repeaters, satellites etc. are not or not fully compatible. To make orderly communication on and efficient use of the amateur bands possible, bandplanning is mandatory.

The basic philosophy behind bandplanning should be:

- i) to assign frequencies for certain activities in such a way that all current users can practice the various modes of amateur radio with a minimum of mutual interference, provided they are using state-of-the-art equipment and communication techniques.

Possibilities for shifts and/or extensions in the plan, which undoubtedly will become necessary in view of future developments in techniques and communication modes should be carefully considered before adopting a bandplan.

- ii) to avoid, through careful planning, the necessity of drastic changes in future, as this type of changes could lead to technical difficulties and/or large expenses for many amateurs (for instance, a complete change in repeater channel frequencies).

With good anticipation only gradual changes, adaptations and additions should be required in the course of time.

All bandplanning should be in accordance with the I.T.U definitions of the Amateur Service and the Amateur Satellite Service as found in the I.T.U. Radio Regulations:

S1.56 Amateur Service: A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.

S1.57 Amateur Satellite Service: A radiocommunication service using space stations on earth satellites for the same purposes as those of the Amateur

Service

B. Remarks on the practical implementation

- a. The definition of the Amateur Service implies that bandplanning should take into account all aspects of amateur radio - selftraining, intercommunication and technical investigations.

Consequently, for any band the bandplan should aim to accommodate for the maximum number of amateur activities (modes, techniques), both now and in the future.

Clearly there are impossible situations: CCIR ATV cannot be carried out in the 144 MHz allocation etc.

No band should, however, be allocated mainly to one aspect of amateur radio.

When, due to its nature, an activity cannot be incorporated within the bandplan of a specific band, it should not be forgotten that we have many bands available above 30 MHz. The more activity we can generate on the higher bands the better for the defense of these bands against the claims of other services!

- b. Technical investigations by amateurs, be it in the classical field of propagation research or on modern digital communication techniques etc. are a laudable and legitimate aspect of amateur activity.

However, when using amateur bands for experimenting with communication techniques, the transmitting techniques, the equipment and the frequencies used should never be taken as the closing entry in the chain of development. Within a bandplan the use of optimum bandwidths, transmitting equipment and techniques should be the normal aim for any amateur.

Any required standardisation should also be aimed at the optimum use of amateur frequencies, and be flexible enough to accommodate future improvements.

- c. In view of the large number of (potential) amateur users who will only practice communication, the allocation of part of an amateur band to channelized work, be it FM repeaters or FM simplex, Packet Radio, etc. can often be considered as practically final. Care should be exercised to ensure that other aspects of amateur radio will find sufficient room and that room is available for future developments in the Amateur Service.

Techniques used in channelized amateur work should also be state-of-the art. For instance, accommodating more channels should, where possible, be sought within the existing allocation by using more modern techniques, smaller bandwidths etc. Other Radio Services have done this. In the spirit of the definition of the Amateur Service there should be progress in techniques, not just a claim for more spectrum, sticking to old techniques!

- d. FM repeaters provide a communication service to mobile amateur-stations (including hand-held equipment). In some cases they may be installed to aid the accessibility of stations in mountainous areas.

They are not intended to make DX contacts possible, and hence their coverage under normal propagation conditions should be limited.

The number of repeater stations installed should be determined by

- the required regional coverage
- the expected number of intended users

FM repeaters should not regularly be used as local chat channels for fixed (home) stations. This interferes with their defined use.

Repeater frequency allocations in neighbouring countries within Region I should be coordinated in case their coverage pattern would overlap the border (see section VIII).

- e. The primary purpose of beacons is the checking of propagation conditions, both for every day amateur use, and for special propagation research projects. When allocating exclusive

segments of a band to beacons regard should be given to:

- i) Reasonable frequency separation is needed to allow for, for instance, auroral spread;
- ii) Guard bands at the edges of the segment are desirable to prevent de-sensitization of receivers used for beacon projects due to strong local traffic on adjacent frequencies.

C. SOME DEFINITIONS (see also section VIIm)

At the IARU Region 1 Conference 1996 (Tel Aviv) it appeared useful when amending bandplans to use the following definitions :

- An unmanned station is a station in the Amateur(-Satellite) Service which transmits while the license holder of the station is not present.
- A network station is a station in the Amateur Service which has a permanent link to one or more network stations (see also Section VIIm).

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