

RECOMMENDATION ITU-R SM.1133*

SPECTRUM UTILIZATION OF BROADLY DEFINED SERVICES

(Question ITU-R 205/1)

(1995)

The ITU Radiocommunication Assembly,

considering

- a) that the Radio Regulations (RR) define over 40 different radio services;
- b) that, narrowly defined services can unnecessarily restrict flexibility and limit spectrum utilization;
- c) that the RR defines some radio services as subsets of others;
- d) that the factors with respect to the utilization of broadly or narrowly defined services need to be delineated,

recommends

1 that, when considering the utilization of broadly defined services in a specific frequency band, administrations should consider the factors in Annex 1.

ANNEX 1

A guide to utilization of broadly defined services**1 Introduction**

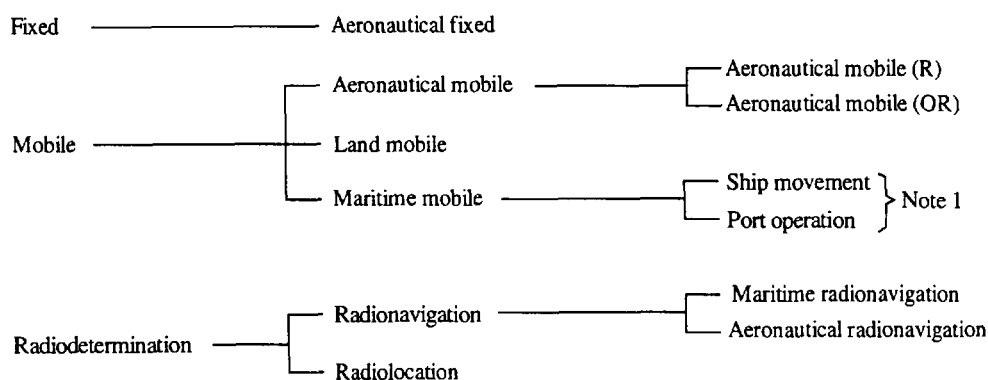
This Recommendation considers the technical requirements for the utilization of more broadly defined services. The relationship between radio services in terms of broader and narrower definitions is shown in Fig. 1. The objective of using broadly defined services is to increase the flexibility of allocations. The concept of using broadly defined services in this context does not necessitate the elimination of narrowly defined or subset services, but involves the use of the most broadly defined service possible, given the factors discussed below.

* This Recommendation should be brought to the attention of Telecommunication Development Study Groups 1 and 2 (ITU-D).

FIGURE 1

Relationship between radio services in terms of broader and narrower definitions

Terrestrial services

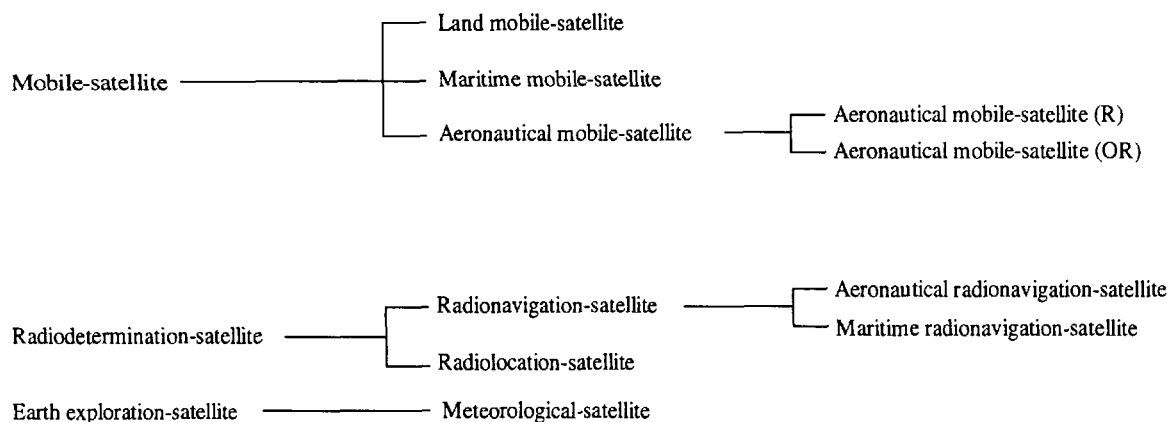


The following services are not defined by the Radio Regulations (RR) as being part of any grouping of services.

Broadcasting
Amateur
Radio astronomy
Meteorological aids
Standard frequency and time signal

Note 1 - The ship movement and port operation services are not subject to any table allocations. They are referred to in RR Appendix 18.

Space services



The following services are not defined by the RR as being part of any grouping of services.

Fixed-satellite
Broadcasting-satellite
Amateur-satellite
Radio astronomy
Standard frequency and time signal-satellite
Space operations
Space research
Inter-satellite

D01

2 In considering the use of the broadly defined services, the following should be noted:

- broadly defined services can provide a simpler allocation process;
- the complexity of sharing and coordination is related to the number of services and the kind of services that are subsets of a broadly defined service;
- while use of broadly defined radio services increases the flexibility of the allocation process, it may introduce more complex sharing within a particular frequency band. Hence there exists a trade-off between the flexibility and the complexity of sharing;
- use of broadly defined services may not result in higher spectrum efficiency. Especially when subset services with very different technical parameters (such as large difference in transmitter power) are together, degradation of efficiency may result;
- the safety aspects of services should be considered;
- it is possible that broadly defined radio services may be applicable in some bands and not in others (e.g. HF vs SHF);
- services which are expected to be phasing out due to the use of old technology, and emerging services could be identified so as to facilitate a process of using broadly defined services;
- in considering whether broadly defined services should be used as opposed to subset services, the concerns of developing countries, such as access to the spectrum and orbit, should be addressed;
- where broadly defined services are allocated, sharing criteria, conditions to address the exclusive worldwide or regional use of certain bands, etc. will be necessary.

In studying the use of broadly defined services, a number of factors should be considered. These include at least the economical, social, political, technical and operational factors.

In this Recommendation, technical and operational criteria or principles are outlined.

3 Technical factors

The technical factors which have a major impact on the viability of utilizing broadly defined radio services are:

- RF radiated power,
- necessary or permitted bandwidth,
- interference protection characteristics,
- service range or coverage,
- coordination factors,
- introduction of new technology (e.g. digital modulation and digital signal structure).

3.1 RF radiated power

Generally, different radio services require different RF radiated power levels in order to provide the quality and level of service required.

Using radio services which are incompatible in transmission power requirements will introduce severe limitations upon the service with the lower power requirements.

3.2 Necessary bandwidth

The bandwidth requirement of a particular radio service depends upon the type of information to be carried and the modulation technique employed. Generally, different radio services require different transmission bandwidths.

If subset radio services which use widely different bandwidths are used together, spill-over and wideband noise from wideband transmissions would cause inter-service interference to narrow-band services unless these were separated by