

RECOMMENDATION ITU-R SA.1264

**FREQUENCY SHARING BETWEEN THE METEOROLOGICAL
AIDS SERVICE AND THE MOBILE-SATELLITE SERVICE
(EARTH-TO-SPACE) IN THE 1 675-1 700 MHz BAND***

(Question ITU-R 204/7)

(1997)

The ITU Radiocommunication Assembly,

considering

- a) that the World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992) (WARC-92) allocated the 1 675-1 710 MHz band on a primary basis in Region 2 to the mobile-satellite service (MSS) (Earth-to-space) and maintained the primary status of the meteorological-aids (MetAids) service in the band 1 668.4-1 700 MHz;
- b) that MSS networks may include geostationary or non-geostationary satellites;
- c) that there exist hundreds of MetAids receiving stations and that, moreover, additional similar stations are foreseen in the future in the 1 668.4-1 700 MHz range (see Recommendation ITU-R SA.1165);
- d) that the MetAids ground stations can be fixed, mobile or transportable;
- e) that several MSS earth station transmitters could potentially operate near a MetAids receiving station;
- f) that some MetAids operators plan to increase the spectrum usage and revise the frequency assignment plans for new generations of MetAids systems;
- g) that radiosondes operating in the 1 675-1 700 MHz band radiate about the same e.i.r.p. density levels toward space as typical hand-held mobile earth stations, and co-channel interference from one or more radiosondes located in the receiving beam of typical MSS satellites may result in unacceptably low ratios of carrier-to-interfering signal power;
- h) that hand-held mobile earth stations in the proximity of a MetAids receiver will cause unacceptable levels of interference into the MetAids receiver;
- j) that in countries where MetAids stations are present in large numbers, mobile, and/or unregistered, establishment of exclusion zones around MetAids receivers is not practical;
- k) that many administrations operate radio direction finding MetAids networks in the 1 675-1 700 MHz band in support of synoptic measurements and for fulfilment of other requirements, including unscheduled radiosonde flights that preclude the possibility of time sharing with the MSS;
- l) that synoptic data collected by these stations benefit all member administrations of the WMO World Weather Watch;
- m) that currently available radiosondes which operate in the 1 668.4-1 700 MHz MetAids allocation have large frequency tolerances, of the order of ± 4 MHz, and new generations of radiosondes having smaller frequency tolerances would probably be significantly more costly and unaffordable in the near-term (5 years or more, see Recommendation ITU-R SA.1165),

recognizing

1 that WARC-92 decided that, in the band 1 675-1 710 MHz, stations in the MSS shall not cause harmful interference to, nor constrain the development of, the meteorological satellite and MetAids services and the use of this band shall be subject to the provisions of Resolution No. 46 (WARC-92) (Radio Regulations No. 735A (SS.377));

* This Recommendation should be brought to the attention of the World Meteorological Organization (WMO) and Radiocommunication Working Party 8D.

- 2** that radiosondes are consumable equipment and therefore their cost is of critical importance. Hence significant increase of their cost may have an adverse impact on meteorological operations;
- 3** that implementation of MetAids systems with improved radiocommunication characteristics would require additional cost and appropriate time-frames for transition,

noting

- a) that some administrations will be unable to operate MetAids systems in the band 1 668.4-1 675 MHz as a result of frequency sharing constraints with respect to new aeronautical mobile (ground-to-air) systems being deployed in the 1 670-1 675 MHz band and the inability to accommodate radiosondes in the remaining 1 668.4-1 670 MHz band due to the allocations to radioastronomy in the band 1 668.4-1 670 MHz;
- b) that some administrations avoid MetAids frequency sharing problems with meteorological-satellite earth station receivers by operating radiosondes at frequencies below 1 685 MHz;
- c) that MSS networks cannot share frequencies with meteorological-satellite earth station receivers in the 1 690-1 698 MHz band (see Recommendation ITU-R SA.1158);
- d) that enhancements to equipment to improve spectrum efficiency are technically feasible, but may take years to implement and the budgetary resources to perform such enhancements may not be readily available worldwide,

recommends

- 1** that manufacturers of MetAids equipment be urged to develop equipment with improved radiocommunication characteristic (i.e. occupied bandwidth and frequency tolerance of radiosondes, and selectivity of MetAids receivers) at minimum incremental cost in order to reduce the bandwidth requirements of MetAids equipment;
- 2** that MetAids system operators and/or other appropriate organizations, in particular WMO, be urged to take appropriate steps to implement their systems with improved radiocommunication characteristics taking into account *recognizing* 2 and 3. Such implementation should take into consideration their operating requirements and the need to facilitate potential sharing with other services (e.g. MSS);
- 3** that, in connection with the long-term efficiency enhancements of *recommends* 1 and 2, efficient spectrum management techniques should be implemented for MetAids systems to minimize the spectrum needed for MetAids systems in the 1 675-1 690 MHz band, such that a segment of that band may become universally available for accommodation of MSS (Earth-to-space) networks without impacting worldwide operation of MetAids systems;
- 4** that, it is essential, for the concentration of MetAids operations in a sub-band, that improved protection of MetAids operations should be promptly planned and implemented in that sub-band;
- 5** that studies should be pursued further with a view to identifying the sub-band where MetAids operations should be concentrated.
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