

RECOMMENDATION ITU-R RS.1264-1^{*,**}**Feasibility of frequency sharing between the meteorological aids service and the mobile-satellite service (Earth-to-space) in the 1 668.4-1 700 MHz band**

(1997-2003)

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 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 GSO or non-GSO 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 RS.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 1 668.4-1 700 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 C/I 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;

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

** Radiocommunication Study Group 7 made editorial amendments to this Recommendation.

- l) that several countries are operating GVAR and S-VISSR MetSat earth stations in the sub-band 1 683-1 690 MHz, where co-channel operation with the MetAids service is not feasible;
- m) that synoptic data collected by these MetAids stations benefit all member administrations of the WMO World Weather Watch;
- n) 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 RS.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 Nos. 9.11A and 5.377 of the Radio Regulations;
- 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;
- 4 that the use of the band 1 668.4-1 700 MHz for MetAids operations varies worldwide and is dependent on regional MetSat operations, meteorological requirements, and national spectrum plans,

noting

- a) that many administrations are not operating MetAids systems in the band 1 668.4-1 675 MHz as a result of frequency sharing constraints with other services allocated in the 1 668.4-1 675 MHz band including the radio astronomy service in the band 1 668.4-1 670 MHz;
- b) that most administrations avoid MetAids frequency sharing problems with meteorological-satellite earth station receivers by operating radiosondes at frequencies between 1 675 and 1 683 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;
- e) that a few administrations with large national MetAids networks plan continue to use the sub-band 1 670-1 683 MHz for national MetAids operations for the foreseeable future,

recommends

- 1 that manufacturers of MetAids equipment be urged to further 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 1 668.4-1 690 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 improved protection of MetAids should be promptly planned and implemented in the sub-band where MetAids operations are to be concentrated;
 - 5 that the sub-band 1 675-1 683 MHz be maintained for use by MetAids so that interference to MetSat user stations between 1 683-1 700 MHz can be avoided;
 - 6 that MetAids operations be concentrated within the sub-band 1 675-1 683 MHz taking into account *recognizing* 2 and 3;
 - 7 that sharing possibilities between the MSS and MetAids exist in the sub-band 1 670-1 675 MHz, taking into account national requirements indicated in *noting* e).
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