



Recommendation ITU-R M.1084-5
(03/2012)

**Interim solutions for improved efficiency
in the use of the band 156-174 MHz by
stations in the maritime mobile service**

M Series
**Mobile, radiodetermination, amateur
and related satellite services**



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Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

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P	Radiowave propagation
RA	Radio astronomy
RS	Remote sensing systems
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SA	Space applications and meteorology
SF	Frequency sharing and coordination between fixed-satellite and fixed service systems
SM	Spectrum management
SNG	Satellite news gathering
TF	Time signals and frequency standards emissions
V	Vocabulary and related subjects

Note: This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.

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RECOMMENDATION ITU-R M.1084-5*, **

**Interim solutions for improved efficiency in the use of the band
156-174 MHz by stations in the maritime mobile service**

(1994-1995-1997-1998-2001-2012)

Scope

This Recommendation provides ways to improve efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service; specifically describes technical characteristics when using channels spaced by 12.5 kHz, migration to narrow-band channels, an example method for implementing interleaved narrow-band channels at 12.5 kHz offset spacing and assignment of channel numbers to interleaved channels and simplex operation of duplex channels.

The ITU Radiocommunication Assembly,

considering

- a) that a common international system is essential for maritime communications to ensure the safety of life at sea;
- b) that the greatest long-term benefits in spectrum efficiency are gained by using the latest digital or narrow-band transmission techniques;
- c) that the introduction of new technology or replanning of frequency bands is a significant exercise involving a long period of transition;
- d) that any new equipment needs to be compatible or be able to co-exist with existing equipment conforming to Recommendation ITU-R M.489;
- e) that the introduction of new technology should not interrupt the continuous availability of RR Appendix 18 maritime mobile distress and safety communications in the VHF bands for all users;
- f) that congestion in the VHF maritime mobile band has become a serious problem in some parts of the world and is continuing to grow;
- g) that because of this need administrations may decide to take measures to solve their local congestion problem;
- h) that RR Appendix 18 makes provision for administrations to apply 12.5 kHz channel interleaving, subject to coordination with affected administrations;
- j) that the implementation of 12.5 kHz channels requires a standard channel numbering plan;
- k) that some administrations have implemented single frequency operation of two frequency channels as a means of alleviating current congestion;

* This Recommendation should be brought to the attention of the International Maritime Organization (IMO).

** Radiocommunication Study Group 5 made editorial amendments to this Recommendation in November 2010.

l) that these interim solutions are used by the standard automatic identification system developed in accordance with Recommendation ITU-R M.1371 to meet IMO vessel carriage requirements,

recommends

- 1 that administrations having an urgent need to resolve congestion, should implement single frequency operation of two frequency channels as an interim expedient measure;
- 2 that, for administrations having an urgent need to resolve congestion, changing to 12.5 kHz analogue frequency modulation (FM) as an interim expedient may be used to improve spectrum utilization but should consider the impact on current operations, especially where it involved international shipping using 25 kHz channel spacing;
- 3 that administrations, when employing 12.5 kHz analogue FM channels as an interim measure, should take appropriate means to avoid interference to the distress and safety channels and channels affecting the safety of international shipping;
- 4 that the interim arrangements referred to in *recommends* 2 and 3 should not prejudice the implementation of the longer term solution resulting from the ongoing studies which may result in the use of advanced technologies and channelling of bandwidth other than 12.5 kHz;
- 5 that the interim arrangements referred to in *recommends* 2 and 3 shall not prejudice the implementation of a single international system for distress and safety communications by the international community in the longer term;
- 6 that administrations intending to resolve current congestion problems through the use of narrow-band channels should consider Annex 2 as a guide to migration from 25 kHz channels to narrower bands;
- 7 that administrations intending to resolve current congestion problems through the use of narrow-band channels should use equipment conforming to the technical parameters given at Annex 1, whilst taking into account the provisions of RR Appendix 18;
- 8 that administrations implementing interleaved narrow-band channels at 12.5 kHz offset spacing on an interim basis should consider Annex 3 as an example of a possible implementation method (different example methods are available with other characteristics than those described in Annex 3);
- 9 that administrations implementing narrow-band channels at 12.5 kHz should consider Annex 4 for numbering the new channels;
- 10 that administrations implementing single frequency operation of two frequency channels should consider Annex 4, § 3, for numbering the channels;
- 11 that administrations should, as far as possible, look to the implementation of the latest digital or narrow-band techniques to meet future operational requirements and achieve the efficient use of the band 156-174 MHz.

Annex 1

Technical characteristics for equipment designed to operate in channels spaced by 12.5 kHz

Use of equipment implementing these parameters listed below (see Note 1) should only be in accordance with the provisions of RR Appendix 18:

- the frequency tolerance for coast and ship station transmitters should not exceed 5 parts in 10^6 ;
- the frequency deviation should not exceed ± 2.5 kHz.

NOTE 1 – For information, other characteristics are based on European Telecommunications Standard (ETS) 301 925 published by the European Telecommunications Standards Institute (ETSI).

Annex 2

Migration to narrow-band channels in the maritime mobile service

1 Introduction

This Annex considers how in future the maritime-mobile service might migrate to narrow-band channels spaced at 5 kHz or 6.25 kHz apart, using linear or digital modulation. Consideration is given to migration from 25 kHz channel spacing as used at present, and from 12.5 kHz if the latter was to be implemented as an interim measure by some administrations.

2 Implications of migration to narrow-band channels

2.1 Migration

The most practicable and least disruptive method of migrating from 25 kHz or 12.5 kHz to 5 kHz or 6.25 kHz would be by interleaving the narrow-band channels with the wider ones and a similar technique can be used in all cases. However because the linear and digital modulation techniques using 5 kHz and/or 6.25 kHz are incompatible with current FM equipment, dual mode or additional equipment would be required during the change-over period.

2.2 Interleaving

2.2.1 Interleaving with 25 kHz channels

Figures 1 and 2 illustrate how 5 kHz and 6.25 kHz channels could be interleaved with the existing 25 kHz ones. During the change-over period, coast stations and ships would be required to equip with narrow-band equipment and move to the new narrow-band channels as they became available. The numbers of new narrow-band channels would be gradually increased during the transition period with the number of 25 kHz channels available correspondingly decreasing.

On a specified date all remaining 25 kHz channels would be withdrawn to be replaced by new ones.