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| **U.S. Radiocommunications Sector**  **Fact Sheet** | |
| **Working Party:** ITU-R WP5B | **Document No:** USWP5B36-xx |
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| **Document Title:** Working Document Towards a Revision of Recommendation ITU-R M.489-2 | |
| **Author(s)/Contributors(s):**  Pamela Murray  USCG  Jerry Ulcek  USCG  Johnny Schultz  Sev1tech Inc  Ross Norsworthy  REC Inc | Phone: (202) 657-3081  Email: pamela.j.murray@uscg.mil  Phone: (202) 579-5924  Email: jerry.l.ulcek@[uscg](http://jerry.l.ulcek@uscg.mil).mil  Phone: (727) 403-4029  Email: [johnnyschultz@sev1tech.com](http://johnnyschultz@sev1tech.com)  Phone: (727) 515-8025  Email: ross\_norsworthy@[msn](http://ross_norsworthy@msn.com).com |
| **Purpose/Objective:** This proposal adds technical details to prevent blocking from unwanted in-band signals. | |
| **Abstract:**  The “Working Document Towards a Revision of Recommendation ITU-R M.489-2, Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz” proposes technical and editorial revisions to bring the standard up to date. This proposal is intended to prevent blocking from unwanted in-band signals. | |

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| **Radiocommunication Study Groups** | A blue logo with a black background  AI-generated content may be incorrect. |
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| **WORKING DOCUMENT TOWARDS A REVISION OF RECOMMENDATION ITU-R M.489-2**  **Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz** | |
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**1 Introduction**

The purpose of this document is to progress the work toward the revision of Recommendation M.489-2.

The “Working Document Towards a Revision of Recommendation ITU-R M.489-2, Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz” proposes technical and editorial revisions to bring the standard up to date. This proposal adds a technical detail to prevent blocking from unwanted in-band high-level signals.

**2 Summary of changes**

Add a requirement for receivers:

The blocking ratio should be at least 70 dB from unwanted signals up to +10 dBm.

**3 Attachment**

The following attachment contains the proposed change to the WORKING DOCUMENT TOWARDS A REVISION OF RECOMMENDATION ITU-R M.489-2

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| Annex 3.9 to Working Party 5B Chair’s Report | |
| Preliminary draft REVISION OF RECOMMENDATION ITU-R M.489-2 | |
| Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz | |

(1974-1978-1995-202X)

Rec. ITU-R M.489-2

Scope

The Recommendation describes the technical characteristics of VHF radiotelephone transmitters and receivers (or transceivers) used in the maritime mobile service when operating in 25 kHz channels of Appendix **18** of the Radio Regulations (RR). It also contains those additional characteristics of transceivers required to operate digital selective calling.

Key words

Technical characteristic, VHF, radiotelephone, maritime mobile service, 25 kHz

Abbreviations/Glossary

FM Frequency Modulation

IEC International Electrotechnical Commission

RR Radio Regulations

VHF Very High Frequency

The ITU Radiocommunication Assembly,

considering

*a)* that Resolution No. 308 of the World Administrative Radio Conference (Geneva, 1979) stipulated that:

– all maritime mobile VHF radiotelephone equipment shall conform to 25 kHz standards by 1 January 1983;

*b)* that RR Appendix **18** gives a table of transmitting frequencies which is based upon the principle of 25 kHz channel separations for the maritime mobile service;

*c)* that in Opinion 42, the International Electrotechnical Commission (IEC) has been invited to advise the ITU Radiocommunication Sector of any methods of measurement applicable to radio equipment used in land mobile services; and that such methods of measurement may also be suitable for radio equipment used in maritime mobile services;

*d)* that there is a need to specify the technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz,

recommends

that the following characteristics in Annex 1 should be met by VHF (metric) FM radiotelephone equipment used for the maritime mobile services operating on the frequencies specified in RR Appendix **18**.

Annex 1  
  
Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz

# 1 General characteristics

1.1 The class of emission should be F3E/G3E.

1.2 The necessary bandwidth should be 16 kHz.

1.3 Only phase modulation (frequency modulation with a pre-emphasis characteristic of 6 dB/octave) should be used.

1.4 The frequency deviation corresponding to 100% modulation should approach  5 kHz as nearly as practicable. In no event should the frequency deviation exceed  5 kHz. Deviation limiting circuits should be employed such that the maximum frequency deviation attainable should be independent of the input audio frequency.

1.5 Where duplex or semi-duplex systems are in use, the performance of the radio equipment should continue to comply with all the requirements of this Recommendation.

1.6 The equipment should be designed so that frequency changes between assigned channels can be carried out within 5 s.

1.7 Emissions should be vertically polarized at the source.

1.8 Stations using digital selective calling shall have the following capabilities:

a) sensing to determine the presence of a signal on 156.525 MHz (channel 70); and

b) automatic prevention of the transmission of a call, except for distress and safety calls, when the channel is occupied by calls.

# 2 Transmitters

2.1 The frequency tolerance for coast station transmitters should not exceed 5 parts in 106, and that for ship station transmitters and stations operating under RR No. 51.77 should not exceed 10 parts in 106.

2.2 Spurious emissions on discrete frequencies, when measured in a non-reactive load equal to the nominal output impedance of the transmitter, should be in accordance with the provisions of RR Appendix **3**.

2.3 The carrier power for coast stations should not normally exceed 50 W.

2.4 The carrier power for ship station transmitters should not exceed 25 W. Means should be provided to readily reduce this power to 1 W or less for use at short ranges, except for digital selective calling equipment operating on 156.525 MHz (channel 70) in which case the power reduction facility is optional .

2.5 The upper limit of the audio-frequency band should not exceed 3 kHz.

2.6 The cabinet radiated power should not exceed 25 W. In some radio environments, lower values may be required.

# 3 Receivers

3.1 The reference sensitivity should be equal to or less than 2.0 V, e.m.f., for a given reference signal-to-noise ratio at the output of the receiver.

3.2 The adjacent channel selectivity should be at least 70 dB.

3.3 The spurious response rejection ratio should be at least 70 dB.

3.4 The radio frequency intermodulation rejection ratio should be at least 65 dB.

3.5 The blocking ratio should be at least 70 dB from unwanted signals up to +10 dBm.

3.6 The power of any conducted spurious emission, measured at the antenna terminals, should not exceed 2.0 nW at any discrete frequency. In some radio environments lower values may be required.

3.7 The effective radiated power of any cabinet radiated spurious emission on any frequency up to 70 MHz should not exceed 10 nW. Above 70 MHz, the spurious emissions should not exceed 10 nW by more than 6 dB/octave in frequency up to 1 000 MHz. In some radio environments, lower values may be required;

# 4 References

4.1 Reference should also be made to Recommendations [ITU-R SM.331](https://www.itu.int/rec/R-REC-SM.331/en) and [ITU-R SM.332](https://www.itu.int/rec/R-REC-SM.332/en) and to the relevant IEC publications on methods of measurement.