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Radiocommunication Sector of ITU

Recommendation ITU-R M.689-3
(03/2012)

**International maritime VHF radiotelephone
system with automatic facilities
based on DSC signalling format**

M Series
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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.689-3*

International maritime VHF radiotelephone system with automatic facilities based on DSC signalling format**

(1990-1992-1994-2012)

Scope

This Recommendation describes the operational requirements for an International maritime VHF radiotelephone system with automatic facilities, which is based upon the digital selective calling (DSC) signalling format. This radiotelephone system is designed to work in the channels detailed in Radio Regulations (RR) Appendix 18.

The ITU Radiocommunication Assembly,

considering

- a) that an automated maritime VHF radiotelephone system expedites the handling of traffic and increase the efficient use of the radio channels;
- b) that international standardization is of great importance in the maritime mobile service;
- c) that the existing public correspondence channels listed in Appendix 18 to the RR are in widespread use by ships and coast stations in the maritime mobile service;
- d) that no other VHF channels are available for the exclusive use of the maritime mobile service;
- e) that Article 52 of the RR do not permit coast stations to emit signals on idle VHF radiotelephone working channels;
- f) that the DSC system described in Recommendations ITU-R M.493 and ITU-R M.541 can be used for signalling over the radio path for an automatic system using a common VHF DSC channel;
- g) that the existing RR Appendix 18 channels can be used in such an automatic system without impairing their use for manual operations from ships or coast stations,

recommends

- 1** that the operational procedures described in Annex 1 should be observed when operating an international radiotelephone system with automatic facilities based on the DSC signalling format, and using the public correspondence channels listed in RR Appendix 18;
- 2** that the same RR Appendix 18 channel may be used for both automatic and manual operation by the same coast station depending on the requirements of the ship stations;
- 3** that the technical characteristics of the ship and coast station equipment should be in accordance with Annex 2.

* This Recommendation should be brought to the attention of the Telecommunication Standardization Sector.

** Coast stations may also use other procedures with automatic facilities based on DSC signalling format directly on VHF radiotelephone working channels.

Annex 1

Operational procedures

1 Introduction

These procedures are initiated by using DSC on the VHF calling channel and based on the technical characteristics and operational procedures detailed in Recommendations ITU-R M.493 and ITU-R M.541. Connection to the PSTN is effected using any appropriate VHF public correspondence working channel listed in RR Appendix 18 without in any way impairing their use for manual operation.

Appendix 1 illustrates the timing of the call set-up, calling and acknowledgement sequences described by these procedures in the ship-to-shore direction and in the shore-to-ship direction.

2 Operational procedures in the ship-to-shore direction

2.1 Ship station initiates call

2.1.1 The user aboard the ship (hereafter referred to as the user) composes the calling sequence (see Note 1) on his DSC equipment as follows:

- selects the format specifier 123 (automatic/semi-automatic service);
- enters address (identification) of required VHF coast station;
- selects the category routine (100);
- (the ship station self-identification is entered automatically);
- selects first telecommand 101 (duplex F3E/G3E) or 100 (simplex F3E/G3E) or 106 (data) (see Note 2) and second telecommand as appropriate;
- inserts subscriber number required (e.g. telephone number);
- selects “end of sequence” signal “RQ”.

NOTE 1 – It is assumed that commercial equipment will be produced which simplifies the composition of the calling sequence. In practice the user should only need to key the VHF coast station address and the required subscriber number, all other information being inserted automatically.

NOTE 2 – Duplex mode of operation should be used for data communications.

2.1.2 The user selects the VHF DSC calling channel (channel 70 of RR Appendix 18) and initiates transmission of the sequence on the calling channel. In order to reduce the probability of call collisions, the DSC equipment should automatically inhibit transmission of this sequence until the calling channel is clear of any signal.

2.1.3 If the ship station does not receive an error-free acknowledgement from the called coast station (see § 2.2) within 5 s, the calling sequence should be automatically repeated. If an error-free acknowledgement is still not received within a further 5 s, then any further repetitions should be effected by manually initiating a new calling sequence. Such further repetitions to the same coast station should not, however, be initiated until at least 15 min have elapsed.

2.2 Coast station acknowledgement

2.2.1 The coast station should, within 3 s of receipt of the calling sequence, initiate the transmission of an acknowledgement sequence on the DSC calling channel. The coast station equipment should also automatically inhibit transmission of the acknowledgement until the calling channel is clear.

2.2.2 If the coast station can comply immediately with the call request, then it should immediately:

- radiate an “engaged channel” signal on the coast station transmit frequency of the appropriate working channel;
- transmit the acknowledgement sequence which should contain the same information as in the call request with the following exceptions:
 - the address will be that of the ship;
 - the self-identification will be that of the coast station;
 - the working channel number will be included;
 - the “end of sequence” signal will be “BQ”.

2.2.3 If the coast station cannot comply immediately with the call request due to the appropriate working channel(s) being busy, then the acknowledgement sequence should be as in § 2.2.2 except that the first telecommand will be 104 (unable to comply) and the second telecommand will be 103 (queue) if the optional ring-back procedure is applied, else 102 (busy) and three symbols No. 126 should be included in the channel information field.

2.2.4 If the coast station cannot comply for other reasons, the acknowledgement sequence should be as in § 2.2.3, except that the second telecommand signal should be one of symbol numbers 100-109 as appropriate.

2.2.5 The ship station, on receipt of an error-free acknowledgement in accordance with § 2.2.2 (ability to comply), should, within 5 s of receipt, change to the working channel indicated in the acknowledgement and transmit, on that working channel, a carrier for a minimum period of 2 s. Fully automated ship station equipment should, within that transmission, transmit a DSC call which is identical to the initial call (see § 2.1.1) except that the “end of sequence” signal should be 127 (see Note 1).

NOTE 1 – In some regional applications, ships do not transmit DSC signals on the working channels. Equipment on ships sailing beyond these regional applications and participating in the automated service, should be able to comply with the requirements for the fully automated service.

2.2.6 If the ship station receives an error-free acknowledgement in accordance with § 2.2.3 indicating “unable to comply – queue” then, if the user still requires the call connection, the ship station should continue to monitor the DSC calling channel for any calls from the coast station.

2.2.7 The ship station, on receipt of an acknowledgement indicating “unable to comply” in accordance with § 2.2.4 (or, if the coast station does not operate the “ring-back” procedure (§ 2.3.2), in accordance with § 2.2.3), should, if an automatic connection is still required, initiate an appropriate new call in accordance with § 2.1.

2.2.8 If the coast station transmitted an acknowledgement indicating “unable to comply” in accordance with § 2.2.4 (or, if the coast station does not operate the “ring-back” procedure (§ 2.3.2), in accordance with § 2.2.3), then it should take no further action with respect to the call request.