



Recommendation ITU-R M.1081-1
(03/2012)

**Automatic HF facsimile and data system
for maritime mobile users**

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



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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.1081-1*

Automatic HF facsimile and data system for maritime mobile users

(1994-2012)

Scope

This Recommendation provides the automatic HF facsimile and data system for maritime mobile service using digital selective calling (DSC) messages; it specifically describes system characteristics and operational procedures for setting up calls and passing messages.

These include the contents of DSC messages used to establish initial contact between the maritime mobile user and gateway, protocols and structures of messages used to pass data over the working channel between the maritime mobile user and the gateway, and the characteristics of DSC and HF modems.

The ITU Radiocommunication Assembly,

considering

- a) the increasing importance of non-voice telecommunication services, e.g. high-speed data transfer and facsimile services;
- b) that maritime mobile users may be equipped with MF/HF radio equipment to satisfy the requirements of the GMDSS;
- c) that a high-speed data service over HF radio may be useful for updating Electronic Chart Display and Information Systems (ECDIS);
- d) that vessels already use personal computers to run application software to manage ships' stores, staff, etc.;
- e) that Article 52 of the Radio Regulations (RR) does not permit coast stations to emit identification or marking signals on idle radiotelephone working channels;
- f) that system compatibility is necessary for international operation, and that commonality is desirable to ensure that system cost per mobile user is minimized;
- g) that most ship stations are not able to simultaneously use their radio transmitter and receiver for duplex operation;
- h) that vessels equipped with the global distress safety system (GMDSS) have fewer qualified radio operators with detailed knowledge of HF propagation operating the radio equipment;
- j) that the digital selective-calling (DSC) system described in Recommendations ITU-R M.493 and ITU-R M.541 can be used for signalling over the radio path to enable common channels to be used for initial signalling purposes prior to transfer to a working channel;
- k) that the data transfer rate that can be achieved over the radio path is significantly lower than that which can be achieved over the PSTN,

recommends

- 1** that the gateway which provides the interface at the coast station between the radio and PSTN paths should include store-and-forward facilities;

* The Director, Radiocommunication Bureau, is invited to bring this Recommendation to the attention of the Telecommunication Standardization Sector and the International Maritime Organization (IMO).

- 2 that the system characteristics and operational procedures for setting up calls and passing data messages, including facsimiles, between maritime mobile users and fixed users on the PSTN should be in accordance with Annex 1;
- 3 that the frequencies used for a radio contact between a maritime mobile user and the gateway should be automatically determined by a frequency prediction program;
- 4 that calling channels should be used, employing digital selective-calling techniques based on the technical and operational characteristics in accordance with Recommendation ITU-R M.493, for establishing the initial contact between the mobile user and the gateway;
- 5 that the transfer of the data (including facsimile images) should be conducted on working channels employing data modems specifically designed to cope with HF propagation characteristics and capable of a user data rate, after error correction, on a typical HF telephony-bandwidth channel, of approximately 1 000 bit/s;
- 6 that the contents of the DSC messages used to establish the initial contact between the maritime mobile user and the gateway should be in accordance with Annex 2;
- 7 that the error correcting protocol and structure of the messages that are used to pass data between the maritime mobile user and the gateway over the working channel should be in accordance with Annex 3;
- 8 that the operation of the maritime mobile user's equipment should be simple and should not require detailed knowledge of HF radio propagation;
- 9 that the maritime mobile user's equipment should be capable of receiving data messages during unattended operation;
- 10 that fixed users on the PSTN should be able to use their normal data and facsimile equipment as used for communication with other users on the PSTN;
- 11 that data transmission over the working channel should have a very low residual error rate;
- 12 that the technical characteristics of the DSC and HF data modems should be in accordance with Annex 4;
- 13 that data compression techniques should be used on the data files transferred across the radio path to reduce the amount of data to be transferred;
- 14 that the mobile user's terminal should include an interface to a navigation system which provides on-line position information;
- 15 that the characteristics and procedures described in the annexes are equally applicable when the connection between the gateway and fixed users is via a Public Switched Data Network instead of via the PSTN.

Annex 1

System characteristics and operational procedures for setting up calls and passing data messages

1 General

1.1 A typical configuration of a complete communication system is shown in Figure. 1.

1.2 The gateway, through which all messages pass, is basically a store-and-forward message switch which provides an interface between the radio and PSTN message paths. The gateway communicates with maritime mobile users over the radio path and with fixed users over the PSTN.

1.3 To facilitate automatic calling of the mobile and to enable billing, all mobile and fixed users wishing to send messages should be registered on a database in the gateway. Mobile users should be identified by their name and unique nine-digit Maritime Mobile Service Identity (MMSI). Fixed users should be identified by their name and a ten-digit Personal Identification Number (PIN). The gateway checks the user's MMSI or PIN number before allowing them to send messages into the gateway. The gateway's database also maintains an up-to-date record of mobile users' positions (see §§ 2.1 and 3.2 below).