

REPORT ITU-R F.2062

**Enhanced high frequency digital radiocommunication systems
capable of providing enhanced applications**

(2005)

1 Introduction

Digital radio communications in the HF band have specific attributes that make HF a viable solution for many requirements. There are three digital applications that are typical for HF digital systems; messaging, also known as e-mail, interactive Internet applications, and large file transfer. Software defined radios are also used for data transmissions over applications of enhanced HF systems.

In the event of the collapse or overload of normal telecommunication operation due to natural disasters (e.g. earthquakes) and other emergencies, such HF digital systems using fixed transportable and mobile stations can be established in a very short period of time to provide the emergency links required, in the first phase of the alarm or during the coordination of the relief operation.

2 Electronic messaging

HF electronic message systems and networks provide a highly versatile means of radiocommunication to a broad base of users engaged in public protection and humanitarian efforts. Such systems can also bring inexpensive and reliable radiocommunication equipment to remote and sparsely populated areas.

2.1 Operational characteristics

Beyond the salient features of HF systems, electronic messaging systems are:

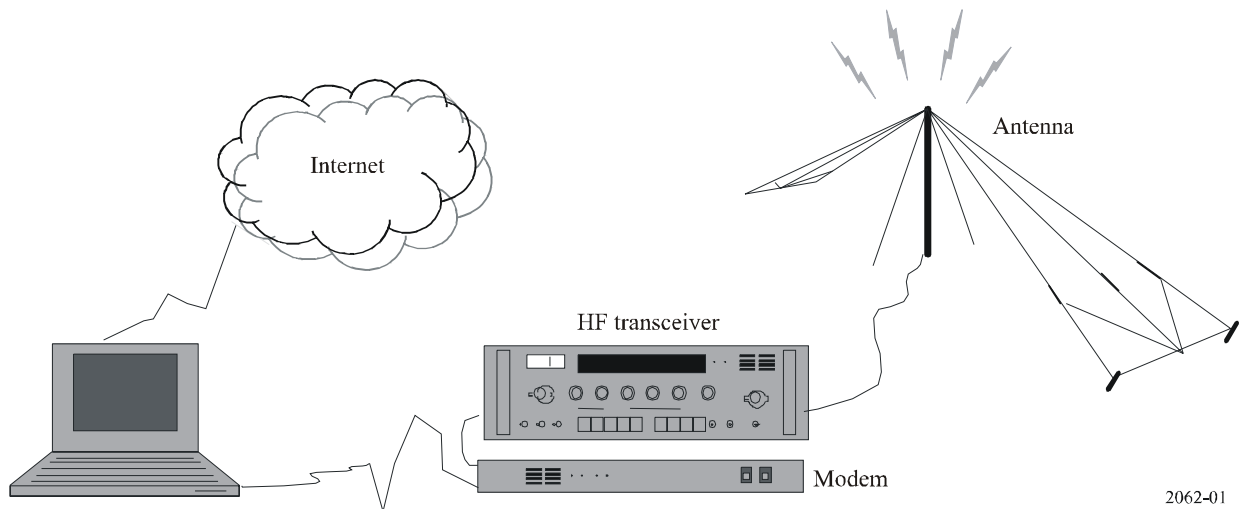
- *Easy to use:* A laptop computer and an HF radio transceiver using adaptive techniques alleviate the requirement for trained radio personnel. Once the equipment is configured, non-technical personnel can send electronic messages without the assistance of trained radio personnel.
- *Flexible:* An HF electronic messaging system can provide robust and reliable Internet electronic mail connectivity to meet modern communications requirements.

Electronic messaging systems usually operate in store-and-forward mode; that is, the system is expected to deliver messages eventually, but users do not expect instantaneous delivery. This store and forward possibility of electronic messaging makes it especially suitable for use over HF radio, because of the occasional link outages that occur due to ionospheric variability.

2.2 General description

The following describes a common set-up for a typical HF electronic messaging system. The ground entry point (Fig. 1) is a gateway to the Internet (connection to the Internet may be of a variety of means, from local area network to dial-up to cable, satellite, or digital subscriber line). The remote site (Fig. 2) can be an exact duplicate of the ground entry point, with the exception that no connection to the Internet exists.

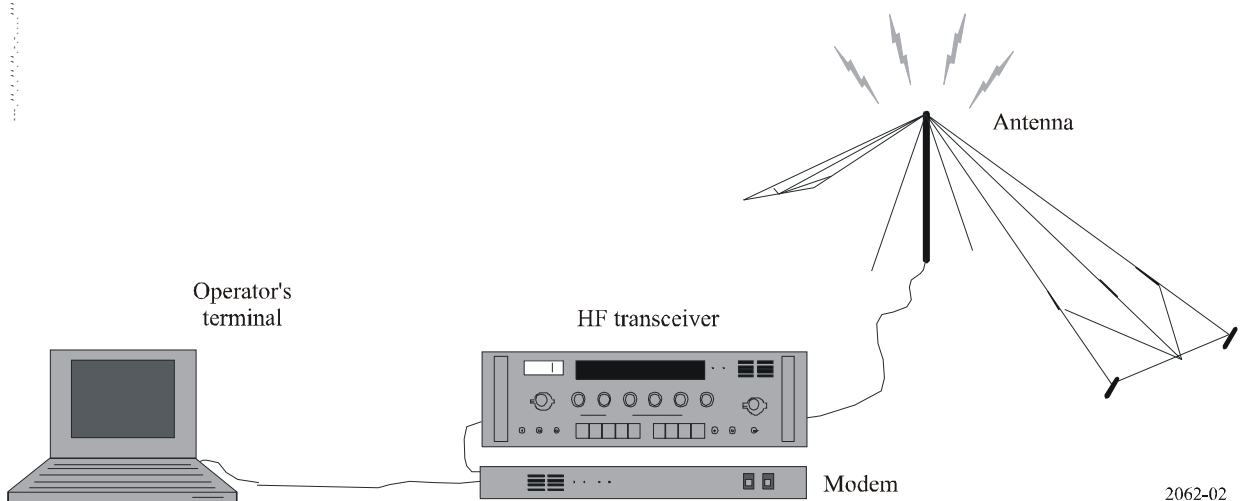
FIGURE 1
Gateway set-up



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The main function of a gateway is direct connectivity to the Internet and to serve as a bridge between the wired network and the wireless network. Otherwise, both the ground entry site and the remote site may have similar components.

FIGURE 2
Remote site set-up



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HF electronic messaging networks often provide numerous ground entry points throughout a region or even around the globe. These ground entry points are all interconnected by the Internet to central message servers. Remote users establish an HF link to any suitable entry point to send and receive their messages. HF electronic messaging systems often use specialized protocols over the air.

3 Interactive Internet and Intranet applications

In contrast to electronic messaging, other Internet and Intranet applications are interactive: Users expect quick responses to their input (typing or mouse clicks). Such applications include web browsing, remote login, and instant messaging (sometimes called “HF chat”).