THE AMERICAN RADIO RELAY LEAGUE, INC

The American Radio Relay League, Inc, is a noncommercial association of radio amateurs, organized for the promotion of interest in Amateur Radio communication and experimentation, for the establishment of networks to provide communications in the event of disasters or other emergencies, for the advancement of the radio art and of the public welfare, for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

ARRL is an incorporated association without capital stock chartered under the laws of the State of Connecticut, and is an exempt organization under Section 501(c)(3) of the Internal Revenue Code of 1954. Its affairs are governed by a Board of Directors, whose voting members are elected every two years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial, and no one who could gain financially from the shaping of its affairs is eligible for membership on its Board.

"Of, by, and for the radio amateur," ARRL numbers within its ranks the vast majority of active amateurs in the nation and has a proud history of achievement as the standard-bearer in amateur affairs. As its membership journal, ARRL publishes *QST* monthly.

A bona fide interest in Amateur Radio is the only essential qualification of membership; an Amateur Radio license is not a prerequisite, although full voting membership is granted only to licensed amateurs in the US and Canada.

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Purposes of *QEX:*

1) provide a medium for the exchange of ideas and information between Amateur Radio experimenters
2) document advanced technical work in the Amateur Radio Field
3) support efforts to advance the state of the Amateur Radio art.

All correspondence concerning *QEX* should be addressed to the American Radio Relay League, 225 Main Street, Newington, CT USA 06111. Envelopes containing manuscripts and correspondence for publication in *QEX* should be marked: Editor, *QEX*.

Both theoretical and practical technical articles are welcomed. Manuscripts should be typed and double spaced. Please use the standard ARRL abbreviations found in the 1985 and 1986 ARRL Handbooks and in the January 1984 issue of *QST*. Photos should be glossy, black-and-white positive prints of good definition and contrast, and should be the same size or larger than the size that is to appear in *QEX*.

Empirically Speaking . . .

Just the FAX, Ma'am

Facsimile (FAX) has been part of Amateur Radio ever since photo and weather FAX machines have been available on the surplus market. Compared to CW, SSB, RTTY and more recently packet, FAX has not (yet) started a revolution in the world of ham radio. FAX hasn't been as well liked as its sibling, slow-scan television (SSTV), although even their mother has a hard time telling them apart sometimes.

But there's evidence all that may be changing, largely because of computers. The Keith Sueker, W3VF, article on "Real-Time HF WEFAX Maps on a Dot-Matrix Printer," using an Apple II computer, (*QST*, Mar 1986) piqued quite a bit of interest. An adaptation by Elmer Schwittek, K2LAF, for the IBM® PC appeared in Technical Correspondence, *QST*, Dec 1986. Recently, Advanced Electronic Applications, Inc (AEA) added a capability to their PK-232 to print weather FAX maps on a dot-matrix printer having the Epson graphics mode. Although one could argue that WEFAX is simply high-tech SWLing, not Amateur Radio, some hams seem to have a fascination for it.

But there's another kind of FAX: document facsimile. Almost any office building of any size has one or more. You may have used it to send or receive drawings or typewritten material over the telephone but didn't give it any thought as a terminal device for Amateur Radio applications. Basically, if the document FAX machine can communicate over a phone line, it can also do it via ham radio. Some interfacing is required, however, because ham radio circuits are usually half-rather than full-duplex, and signal levels need to be matched. Other than just experimenting, what good is document FAX in the Amateur Radio Service? Plenty. As an emergency-communications mode, it has the potential for sending documents on official letter head and with signatures. It allows originators to type or handwrite messages on any piece of paper and addressees to receive hard copies of incoming messages. Besides text, other black-and-white graphics can be transmitted. These may include maps (such as with satellite tracks and footprints), sketches, schematics, and other line drawings. Add a little telecommand to the recipe and you could ask a FAX bulletin board to transmit a certain page you would like to see. What makes document FAX feasible now for the amateur experimenter is the availability of used machines and the emergence of computer emulation of document FAX. Recently, several Japanese Amateur Radio magazines have been bulging with information on interfacing document FAX machines. Of particular note are the March 1987 issue of *CQ Ham Radio* and the '87 Spring issue of *Ham Journal*. Unfortunately for those who read only English, these articles are in Japanese. We'll try to get on the good side of the authors of these articles and see if we can get some material in English for *QEX*.

The Japanese experimenters are using CCITT Group 2 facsimile machines. Standards for use over the public telephone network are published in CCITT Recommendations:

$ T.2 (Group 1)-a low-definition double-sideband modulation system with no bandwidth compression, 6 minutes/page.

$ T.3 (Group 2)-uses bandwidth compression (encoding and vestigial-sideband modulation), 3 minutes/page.

$ T.4 (Group 3)-reduces redundant information in the document signal prior to transmission, 1 minute/page.

For use over public data networks, CCITT publishes Recommendation T.5 (Group 4).

Personal computers can originate and receive document FAX with appropriate adapters. In fact, documents originated on a PC generally look better. *PC Magazine* listed commercially available FAX modems in their June 23, 1987 edition. Experimenters, here's your assignment: Let's have some manuscripts on document FAX protocols, hardware, interfacing, and computer emulation. Correspondence on the availability of reasonably priced new and used document FAX gear would be welcome in *QEX*.—W4RI