



# GAO Research Inc. Multi-Frequency (MF) R1/R2 Software

GAO Research Inc.

*#1 In Embedded Communications Software*

<http://www.gaoresearch.com>

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## Product Description

Multi-frequency (MF) R1/R2 is an implementation of ITU-T Recommendations Q.320, Q.322, Q.323, and Q.441 for multi-frequency signal receiving equipment. Signaling systems R1 and R2 are used for inter-register signaling. The R1 signaling system is specified by the ITU-T as the North American code and the R2 signaling system is specified to be a European code.

Both signaling systems R1 and R2 consist of two parts: Line signaling and Register signaling. Line signaling is used to handle line and supervisory signals. Register signaling is used for address signals.

R1 and R2 line signaling operates in a digital transmission environment and operations are handled by signaling bits. R1 Register signaling handles address signals using MF in-band pulse signaling at frequencies of 700Hz to 1700Hz, at 200Hz increments. The combination of two of these frequencies determines the signal. R2 Register signaling handles address signals also by sending a combination of two fundamental frequencies. The R2 system uses two different sets of six frequencies to combine for the forward and backward signals.

## Features of MF R1/R2 Software

- Fully compliant to ITU-T Recommendations Q.320, Q.322, Q.323, and Q.441.
- Implemented in assembly or C.
- Low data and program memory requirements.
- User-callable functions.

## Leadership in Embedded Communications Software

With nearly a decade of experience, GAO leads the embedded communications software market by providing comprehensive modem, fax, speech, and telephony technologies; broad technical expertise; and unsurpassed support to our world-class customers including electronics, communications, and semiconductor companies across the globe.

## Rigorous Testing

GAO's testing facilities are equipped with state-of-the-art test equipment. Our software is rigorously tested on TAS, Consultronics, Rochelle, Advent and Telegra equipment under various channel models according to the relevant ITU or TIA standards. All GAO's speech software has passed the test vectors specified by the ITU. Our telephony software meets all appropriate TIA, EIA, BellCore, and Mitel standards. GAO also adheres to stringent quality control procedures, which is reflected in our well structured code, detailed design documentation, and well-defined design and test plans. This ensures ease of integration into the customer's system, easy maintenance, and a smooth upgrade path for next-generation customer products.

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