As the RF spectrum becomes more and more congested and the demand for broadband communications continues to grow, there exists an ever-increasing need for improved bandwidth-efficient modulation methods. Aside from the traditional schemes, e.g., M-PSK, QAM, that achieve their bandwidth efficiency from the inherent multilevel nature of the technique (i.e., transmitting multiple bits per symbol) there exist other schemes that combine coding with an M-ary waveform set via a suitable mapping function and are capable of offering further spectral improvements. One such class of schemes recently introduced by the author is cross-correlated trellis-coded quadrature modulation (XTCQM) which captures a number of state-of-the-art spectrally efficient modulations including Feher-patented QPSK (FQPSK) as specific embodiments. Indeed it has been shown that FQPSK can be represented as a form of trellis-coded modulation (TCM) with a binary coded decimal (BCD) mapper and a transmitted signaling set composed of 16 different waveforms. Optimum and reduced complexity receivers of FQPSK have been developed that achieve a good balance between bandwidth and power efficiencies with further reduction in required power made possible by interpreting FQPSK as an inner code in a serial or parallel (turbo) concatenated arrangement using a simple outer code and iterative decoding.