

Digital Microwave Radio Forward error correction

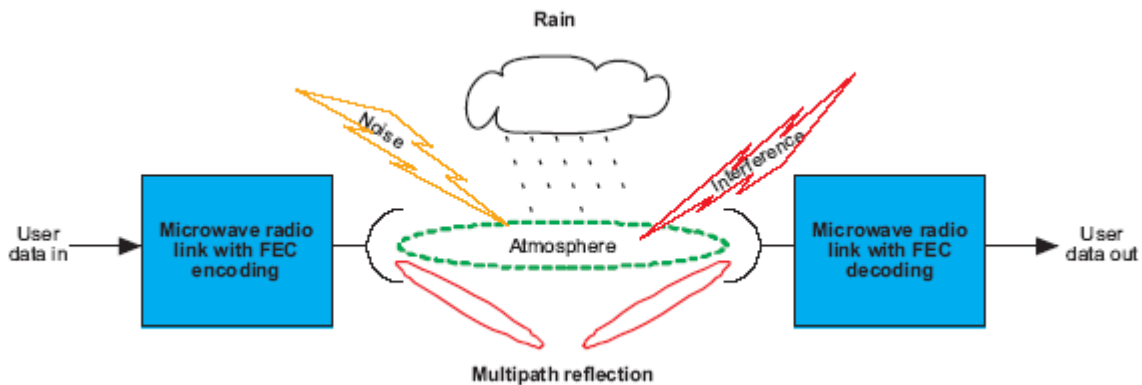
Introduction of CODAN 8800 Digital Microwave Radio DMR FEC system

Whenever digital information is transmitted by radio, external negative influences can cause errors in the data. These influences may be attenuation of the received signal caused by high rainfall, interference caused by other transmitting devices, or unwanted reflections.

To ensure the integrity of the data, a number of additional, redundant data bits can be embedded in the valid data. At the receiver, error-correcting algorithms use these redundant data bits to correct all but the most severe errors. This process is called Forward Error Correction (FEC).

FEC and the Digital Microwave Radio

Digital Microwave Radios (DMRs) communicate with each other by transmitting information through the atmosphere. These transmissions are subject to a number of negative influences such as interference, reflections, noise or rain fading of the received signal, as shown in Figure 1. These conditions may cause the receive equipment to generate errors in the data.



CODAN 8800 DIGITAL MICROWAVE RADIO Figure 1: External Influences

The user data is transmitted as a continuous stream of digital information. If the receiver detects an error, it cannot request the transmitter to pause transmission and resend the last piece of information, as this process would cause data to be lost while the receiver is waiting for a reply.

FEC is used to overcome the problem of errors occurring in received data streams. In addition to the actual data, FEC sends error correction information. When transmission errors occur, the receiver uses the error correction data to repair any errors that may have occurred.

Digital Microwave Radio implementation of FEC

The ratio between the number of data bits transmitted and the number of error correction bits included is governed by the severity of the negative external influences applied to the transmitted signal. In the real world, the severity of these external influences will continually change as the weather and climate change.

CODAN has implemented FEC in the 8800 series DMR to allow the ratio between main and error correction data to vary dynamically as climatic and other external influences affect the radio signal. During periods of poor transmission conditions, the 8800 series digital microwave radio FEC system will increase the number of error correction bits transmitted. This flexible FEC technique allows the receiver to correct more errors and provide improved quality of service delivery.

Digital Microwave Radio | FEC

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http://digital-microwave-radio.at-communication.com/en/at/digital_microwave_radio_8800_fec.html