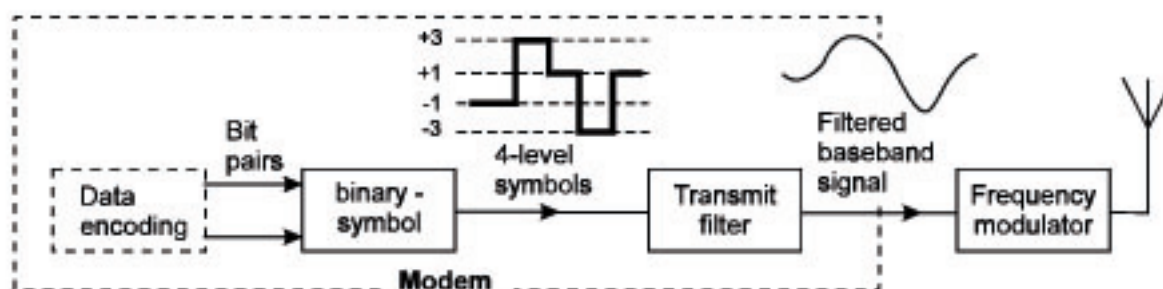# Modulation Characteristics of
SATELLINE-M3-T1 UHF Radio Data Modem Transmitter (Transceiver)

SATELLINE-M3-TR1 radio data modem uses CML FX919B integrated circuit for encoding the data to the Tx modulator and further to the other stages of the transmitter. The encoder block of the FX919B circuit translates the binary data to 4-level symbols. Each symbol contains the information of two bits.
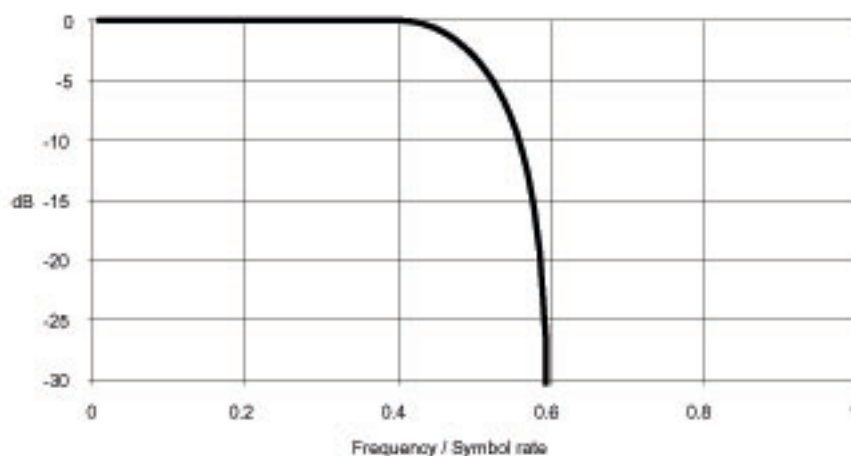

Figure 4 Generation of RRC Filtered 4-Level Tx Baseband Signal

After encoding, the data symbols are passed through a linear-phase lowpass filter with a 'Root Raised Cosine' (RRC) frequency response defined by the function

$H(f) = 1$ for $0 \le f < (1-b)/(2T)$

     = square root of $\{0.5\ [1 - \sin(\pi T\ (f - 0.5/T)/b)]\}$ for $(1-b)/(2T) \le f \le (1+b)/(2T)$

     = 0   for $(1+b)/(2T) < f$

     , where $b = 0.2$ and $T = 1/$symbol rate,

to eliminate the high frequency components of the modulating signal.

Figure 5 RRC Filter Frequency Response (including the external RC filter R4/C5)

Source of information: Document no. D/919B/1 July 1997, CML Semiconductor Products Ltd.