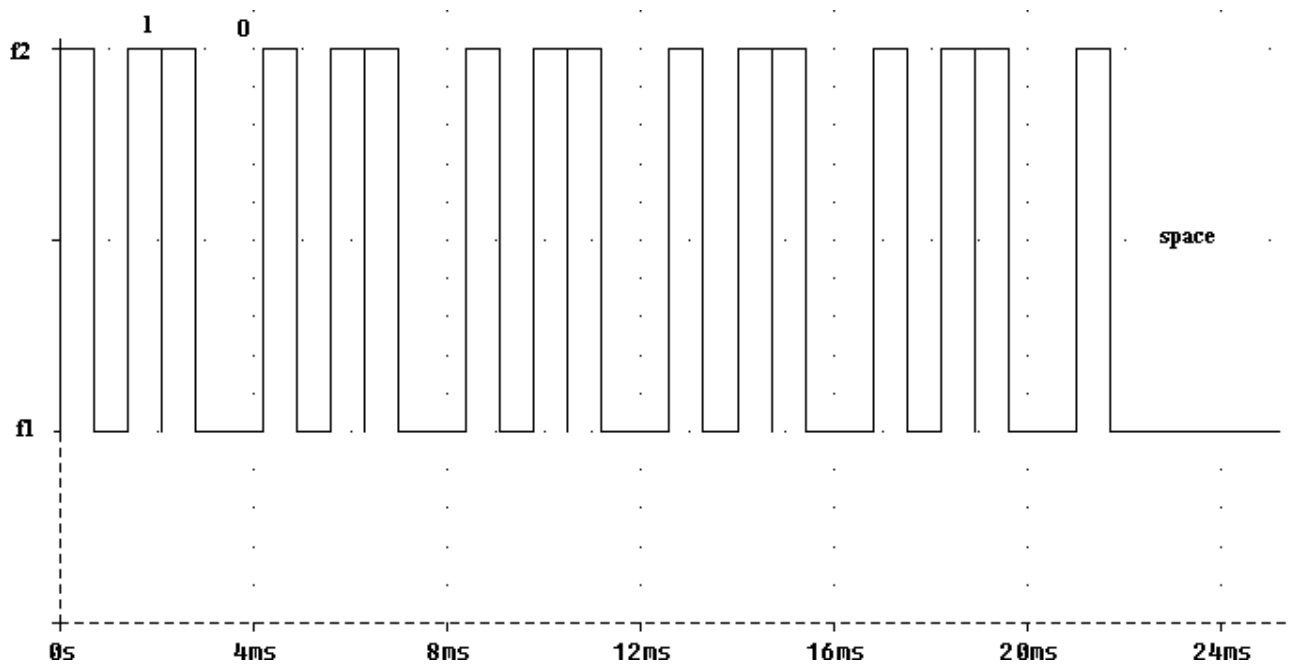
Elcombe Smoke Detector Modulation Scheme

The Smoke Detector contains a low power RF Transmitter operating at a nominal center frequency of 173.225 MHz .

This is derived from a stable crystal oscillator at 57.7416 MHz , which is itself FM modulated by a digital signal .

The digital signal comprises typically 25 bits each comprising 3 zones , a start pulse , space , and a low or high data pulse , each bit lasting nominally 2.1 mS . This word is followed by an inter-word space of 10 mS . The space corresponds to the low frequency f1 and the total deviation f2-f1 is nominally 6 kHz. The following diagram illustrates the scheme :-


1
0
f2
f1
space
0s
4ms
8ms
12ms
16ms
20ms
24ms