Duty Cycle Correction factor

On a change of state, 8 identical packets are transmitted at random intervals. The time interval between each packet varies between 100 – 450 ms. Each packet has 60 bits transmitted and is PWM-ASK with a duration no longer than 20 ms. So in the worst case 100uS, we are only ever transmitting for <20 mSecs.

Since the modulation is PWM-ASK (0=122uS on 122uS off, 1=122uS on 244uS off), the duty cycle is always less than 50%. However, since use a "porch" signal at the beginning of the packet of 976uS, we have used 50% in our calculations.

Thus, for every 100 ms, we are transmitting for less than 20 ms of that time period, at a duty cycle of <50%. So we used a correction factor of 10 dB.
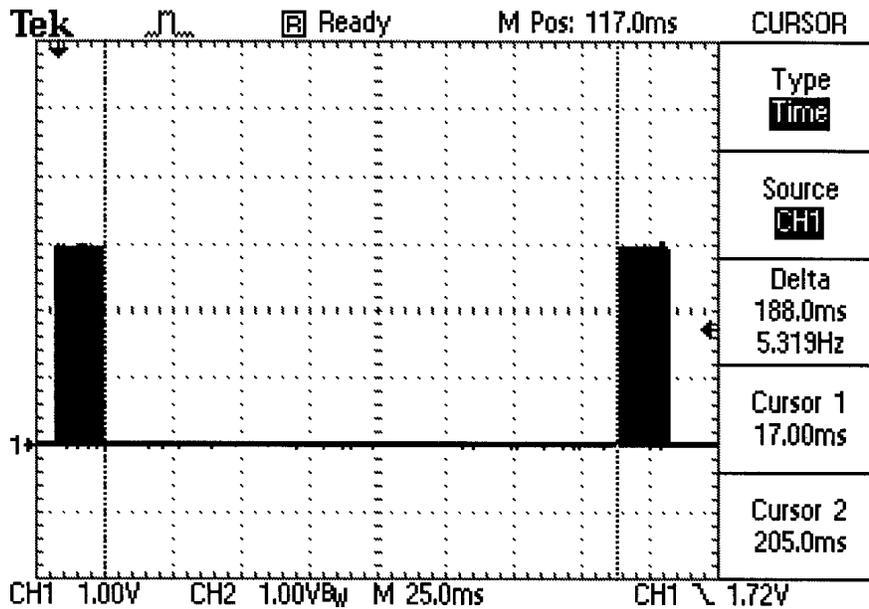
Timing plots are given below.
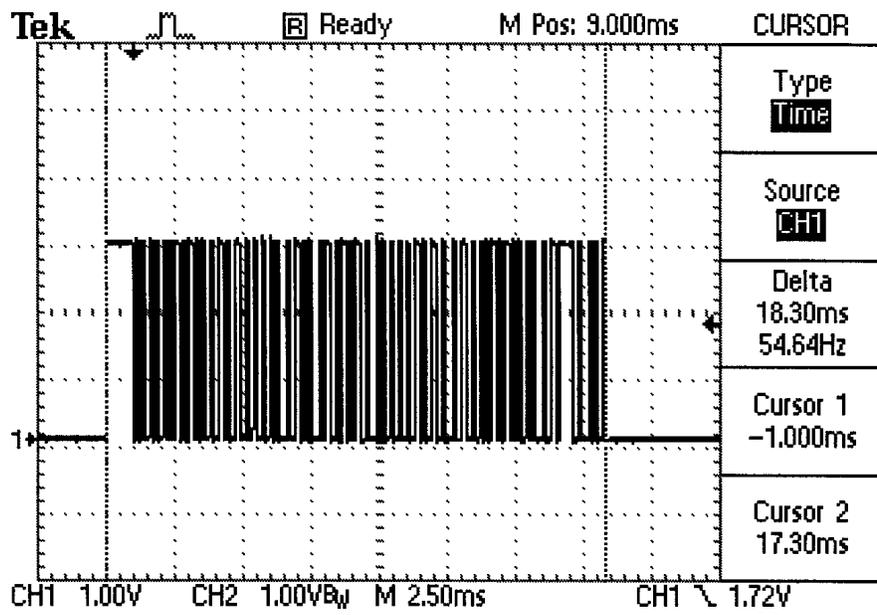

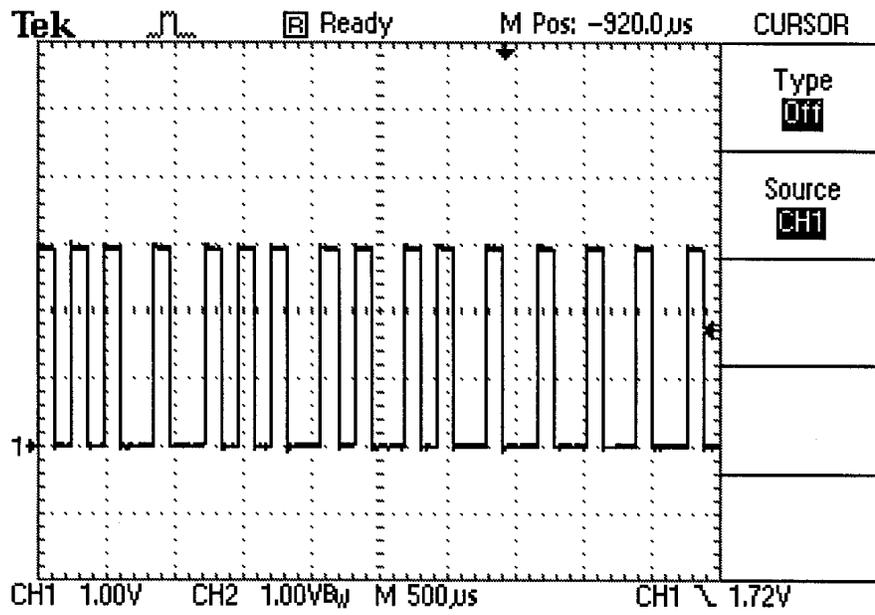**Figure 1 Transmitted Data Packets, 25ms/div**

Figure 2 Transmitted Data Packet, 2.5 ms/div

Figure 3 Transmitted Data Packet, 500 us/div