Qflash Trio RF transmission operation

Qflash Trio is an accessory photoflash device used in conjunction with a digital SLR camera. It sends synchronizing RF pulses to remote Qflash Trio devices.

This device's transmission is triggered by a signal from an SLR type digital camera. This trigger from the camera is itself initiated ***manually*** by the photographer releasing the camera shutter. Upon shutter release, the Qflash Trio emits a single 0.6ms pulse train. Another 0.6ms pulse transmission will not occur except by a manual input from the operator (photographer).

The following block diagrams and scope measurement chart show the sequence of RF transmission and duration of RF transmission.

Line 1 shows the camera sending the trigger signal to the micro-controller.

Line 2 shows the micro-controller sending the coded the pulse train to the RF transmitter after receiving the trigger signal from the camera.

Line 3 shows the remote RF receiver receiving the coded the pulse train and sending it to the micro-controller for decoding.

Line 4 shows remote flash fired (recorded by photo sensor) after the micro-controller decoded the pulse train.

The scope measurement chart shows the pulse train duration is about 0.6ms. The time delay from camera trigger to flash firing is about 0.7ms. That time delay is mainly depended on the duration of the pulse train. It is very important that the delay between camera trigger and flash firing can not be longer. Otherwise the camera can not catch the light from remote flash before its shutter closes. For example for typical 1/250s shutter speed, camera shutter remains open only 4ms after the camera sends out a trigger signal. If the time delay from camera trigger to flash firing is more than 4ms (pulse train duration is more than 4ms), the camera never catches the light from remote flash.

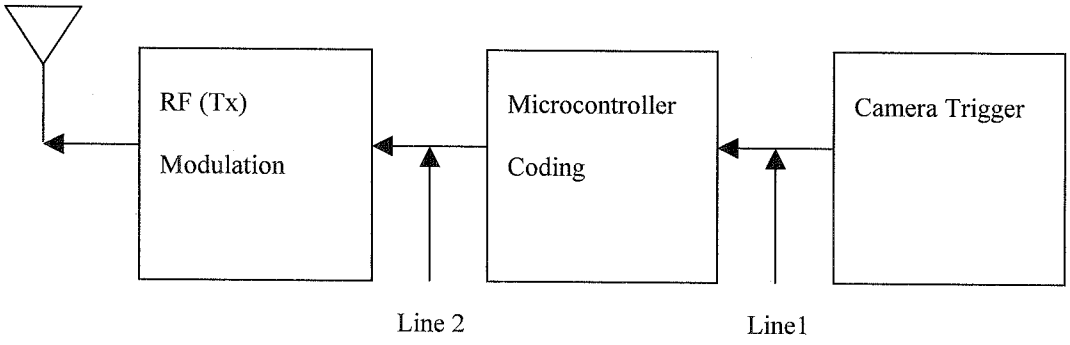


Fig 1 Local Camera Trigger Diagram

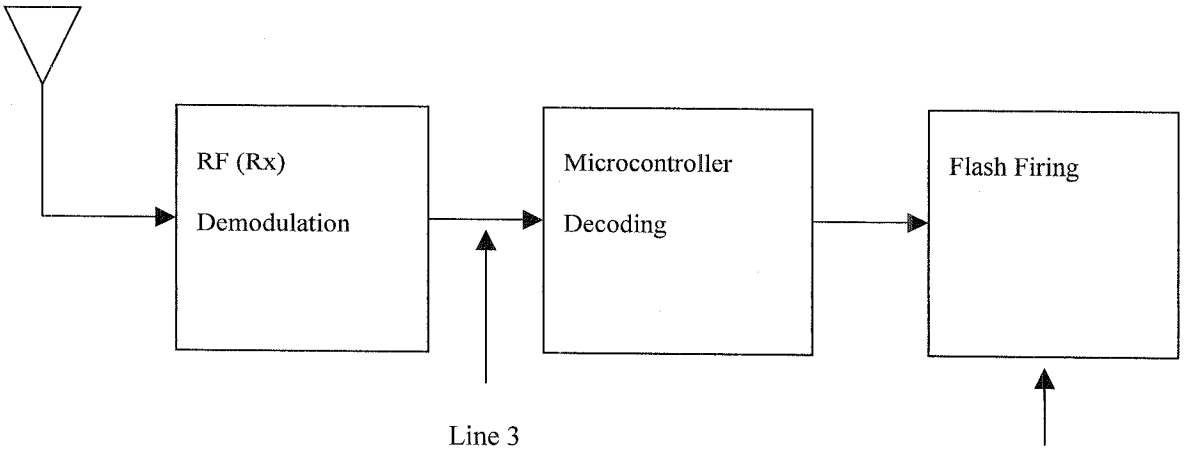
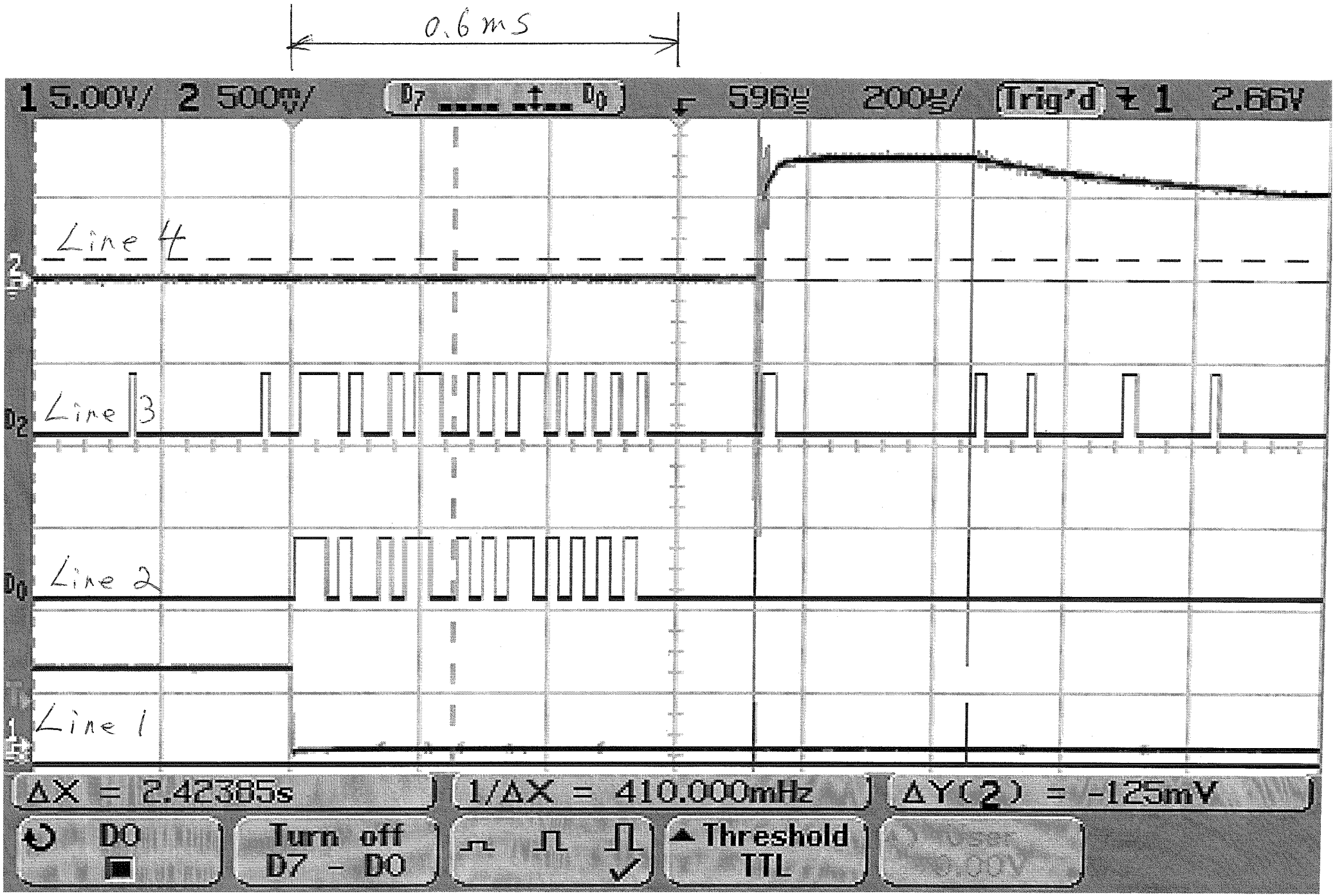


Fig 2 Remote Flash Firing Diagram


0.6 ms
1 5.00V/ 2 500mV/
D7 D0
596µs 200µs/
Trig'd 1 2.66V
Line 4
Line 3
Line 2
Line 1
ΔX = 2.42385s
1/ΔX = 410.000mHz
ΔY(2) = -125mV
D0
Turn off D7 - D0
Threshold TTL