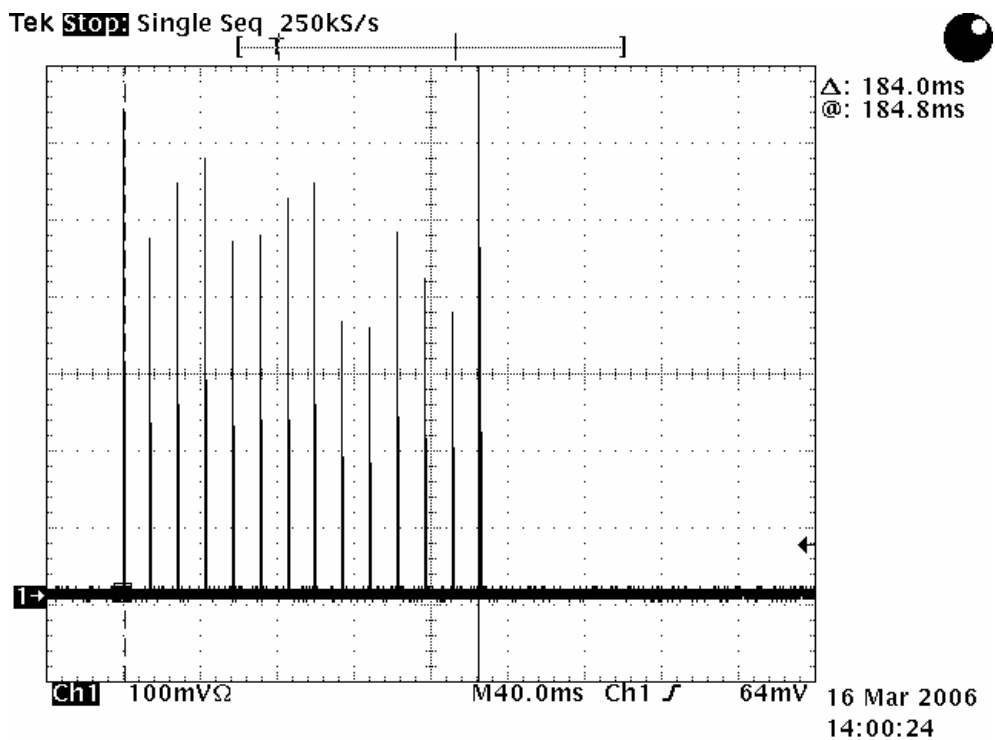# Flashpulses of the Konika Minolta Dynax 7D

Ralph Wagner, 16.3.2006

Equipment:
- Konika Minolta 2,8/17-35mm (D) Objektiv
- Oszilloscope Tektronix TDS784
- Fast Photodiode with ns-risetime, own power supply and a saturation voltage of 800mV.
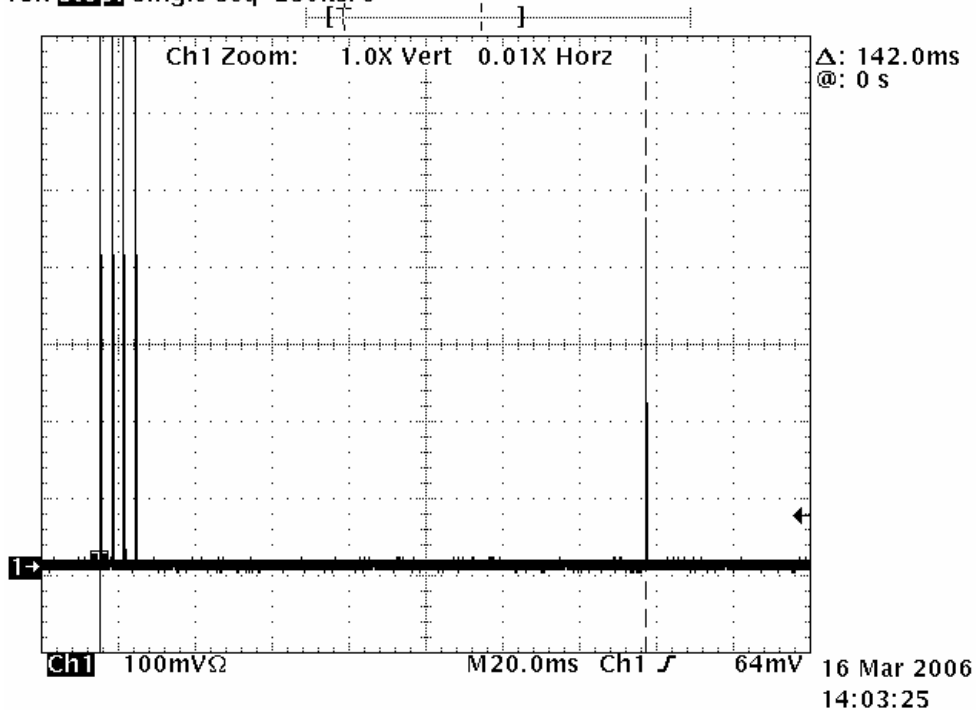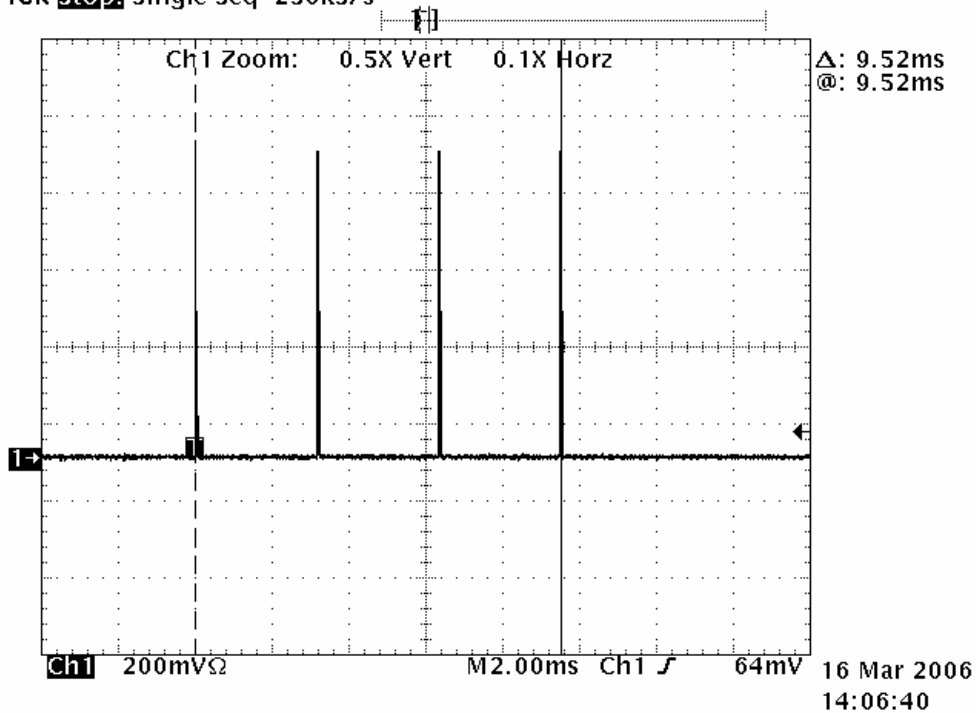
1. Autofokus-Flashes

14 equally spaced Flashes with a separation of ~13ms (overall 180ms)

2. Fill-flash/ADI-flash

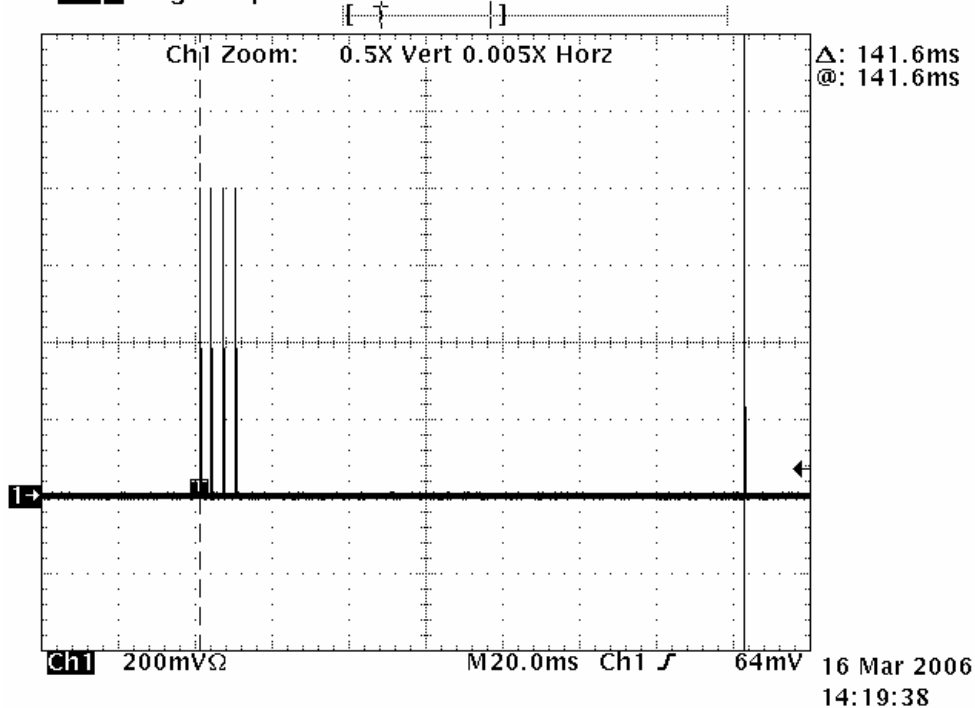The measuring-pre-flash consists of 4 single flashes with a distance of ~3,2ms (overall 9,5ms). The main-flash follows 142ms after the first measuring-pre-flash. A change of this value in different illumination setups is not observed.
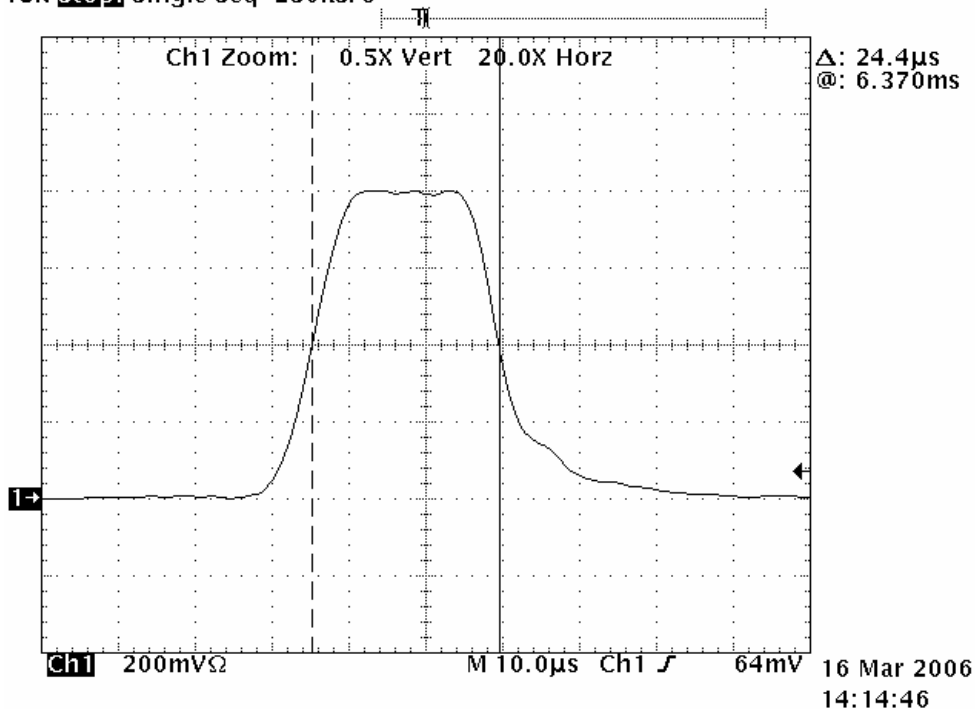
3. Fill-flash / Pre-FlashTTL

Tek Stop: Single Seq 500kS/s

Ch1 Zoom: 0.5X Vert 0.005X Horz

Δ: 141.6ms
@: 141.6ms

1→

Ch1   200mVΩ   M20.0ms Ch1 ∫   64mV   16 Mar 2006
                                                          14:19:38

A difference between ADI-flash and Pre-flashTTL is not observed.

Tek Stop: Single Seq 250kS/s

Ch1 Zoom: 0.5X Vert 20.0X Horz

Δ: 24.4μs
@: 6.370ms

1→

Ch1   200mVΩ   M 10.0μs Ch1 ∫   64mV   16 Mar 2006
                                                          14:14:46
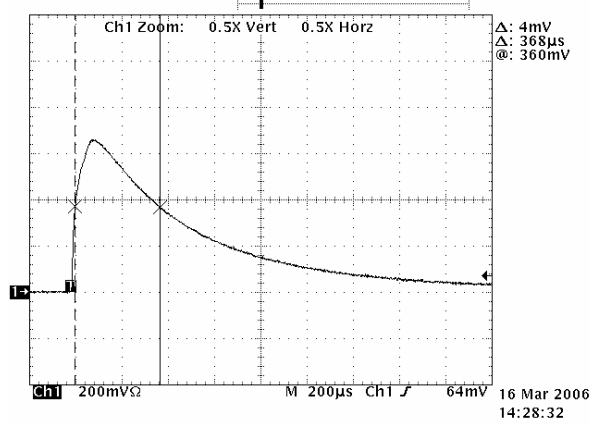
The pulse duration of the measuring-pre-flash is ~25μs.
The normal time for the blinking reflex is given as about 250ms. As many people a photographed with closed or bedroom eyes, their reaction is clearly faster. A research of technical college of Cologne, Germany, revealed that 20% of the people take a longer time than 250ms to close the eyes.
[Source: german wikipedia]
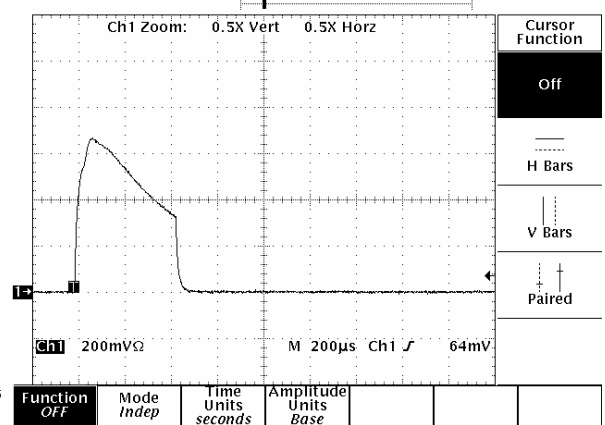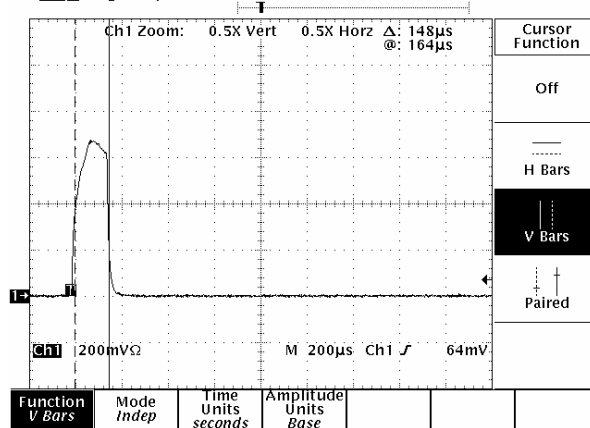
4. Fill-flash / Manual 1/1 to 1/16

1/1

1/2

1/4

1/8

1/16

1/16 (magnified)

Flash rate	1/1	1/2	1/4	1/8	1/16
Pulse duration Δt (FWHM)	370μs	400μs	148μs	77μs	44μs
equivalent to	1/2700s	1/2500s	1/6800s	1/13000s	1/22700s

In a dark room already at ¼ flash rate a shorter exposure time is reached than the possible with the shortest exposure time of the camera. The overall illumination time at flash rate 1/1 is longe than 1ms, bcause of the tail.

5. Red-Eye / Manual

Tek STOP: Single Seq 250kS/s

Ch1 Zoom: 0.5X Vert 0.002X Horz

Ch1 200mVΩ   M 100ms Ch1 ʃ   64mV   16 Mar 2006
                                                          14:39:08
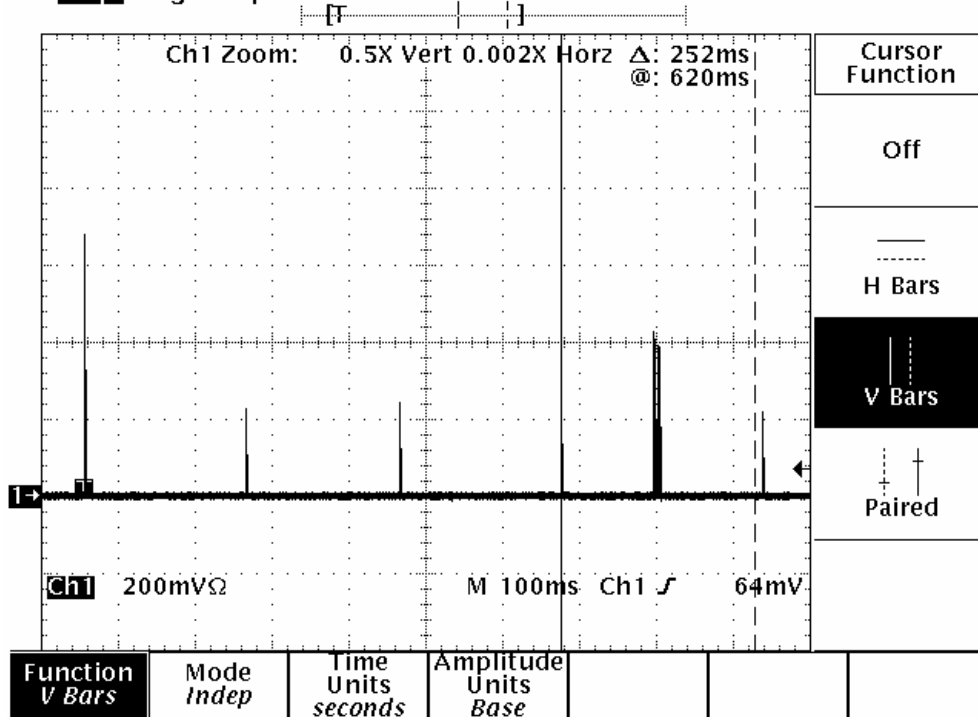
For stricture of the pupils 4 flashes with a distance of 190ms are given (overall 575ms). The main flash follows 250ms after the last Red-eye-pre-flash.

6. Red-Eye / ADI-flash

Tek Stop Single Seq 250kS/s

Ch1 Zoom: 0.5X Vert 0.002X Horz Δ: 252ms @: 620ms

Cursor Function

Off

H Bars

V Bars

Paired

Ch1 200mVΩ   M 100ms Ch1 ∫ 64mV

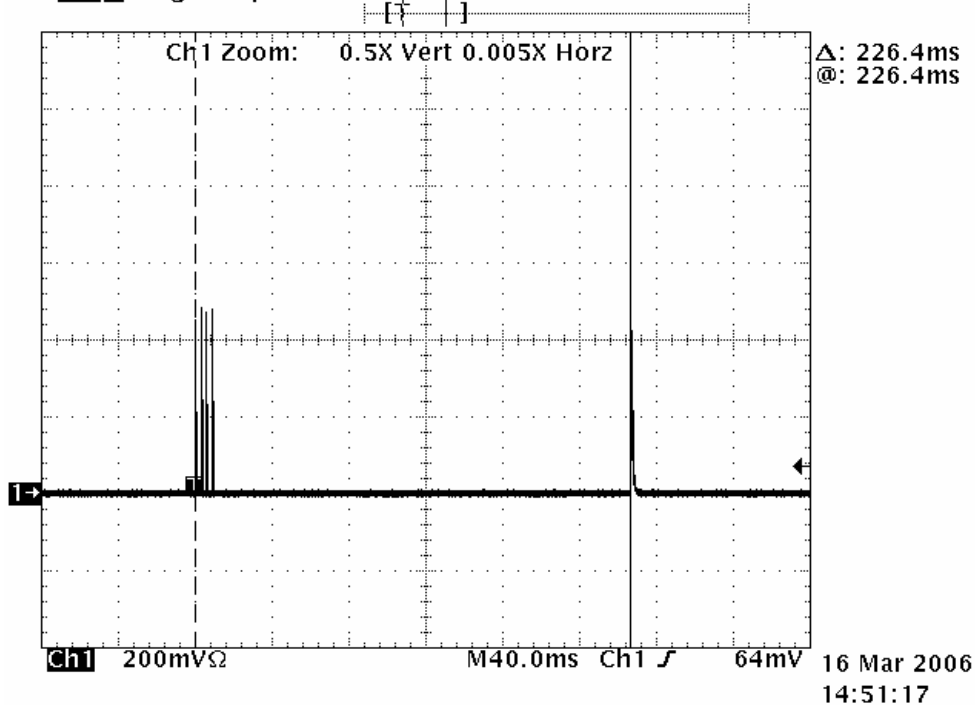| Function V Bars | Mode Indep | Time Units seconds | Amplitude Units Base | | | |

Compared to the manual-flash here the measuring-pre-flashes are included between the last red-eye-pre-flash and the main-flash. The main-flash is again 142ms after the first measuring-pre-flash. The distance between the first red-eye-pre-flash and the main-flash does not change much. It might be delayed by the time for the measuring-pre-flashes (not checked).

7. Rear-Sync. / ADI-flash, Mode S, 1/10s

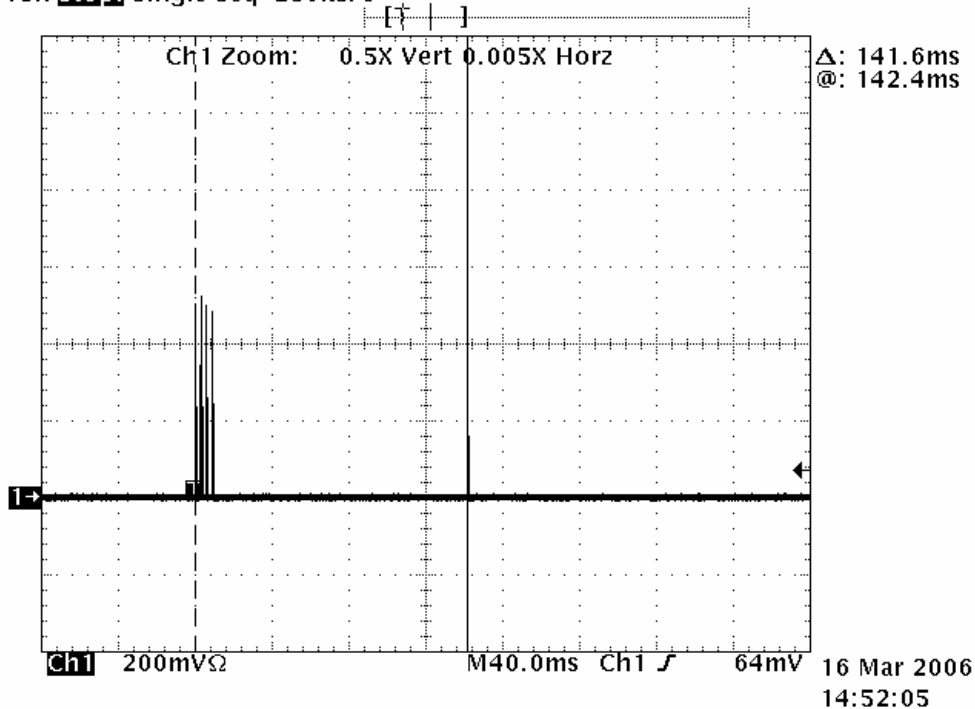Measurement of the displacement of the main flash between fill-flash and rear-sync.

Rear-sync.


```
Tek [Stop] Single Seq  250kS/s
                              [↓  ↓]
    Ch1 Zoom:    0.5X Vert 0.005X Horz        Δ: 226.4ms
                                              @: 226.4ms


1→

 Ch1   200mVΩ            M40.0ms  Ch1 ∫    64mV   16 Mar 2006
                                                  14:51:17
```
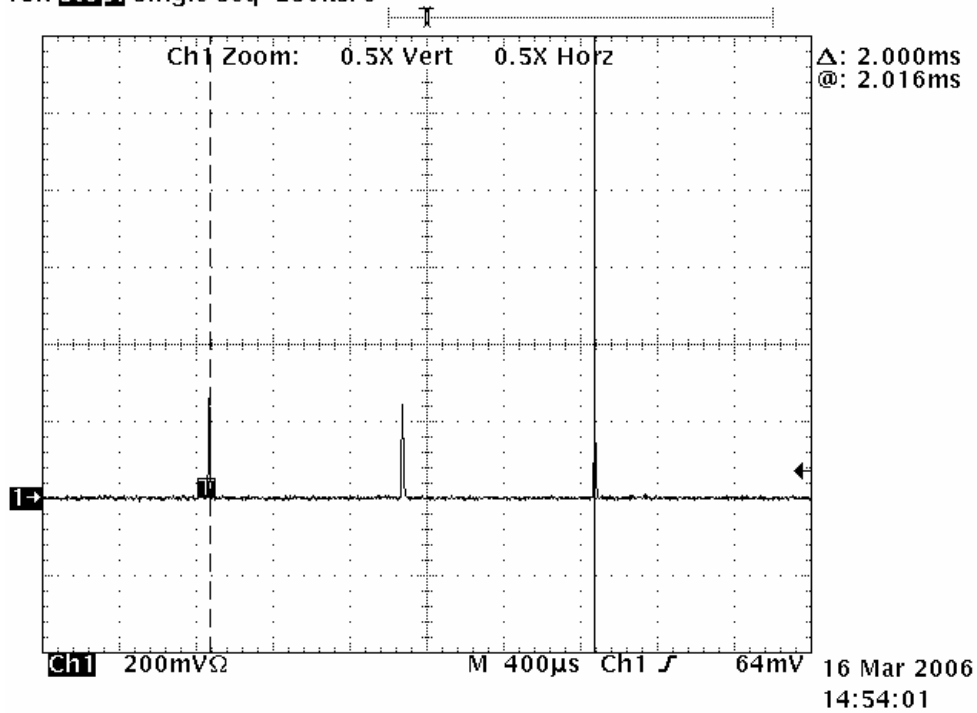
Fill-flash


```
Tek [Stop] Single Seq  250kS/s
                              [↓  ↓]
    Ch1 Zoom:    0.5X Vert 0.005X Horz        Δ: 141.6ms
                                              @: 142.4ms


1→

 Ch1   200mVΩ            M40.0ms  Ch1 ∫    64mV   16 Mar 2006
                                                  14:52:05
```

At rear-sync.-mode the main-flash is 85ms later than in fill-flash-mode (at a exposuretime of 1/10s (equivalent to 100ms). In one or both flash-modes the flash is not moved maximal to the beginning or the end of the exposure time.

8. Wireless, Test-flash at pressing the AEL-button


```
Tek [Stop] Single Seq  250kS/s
         Ch1 Zoom:    0.5X Vert    0.5X Horz          Δ: 2.000ms
                                                      @: 2.016ms




1→




Ch1  200mVΩ                    M 400μs  Ch1 ⌐    64mV  16 Mar 2006
                                                       14:54:01
```
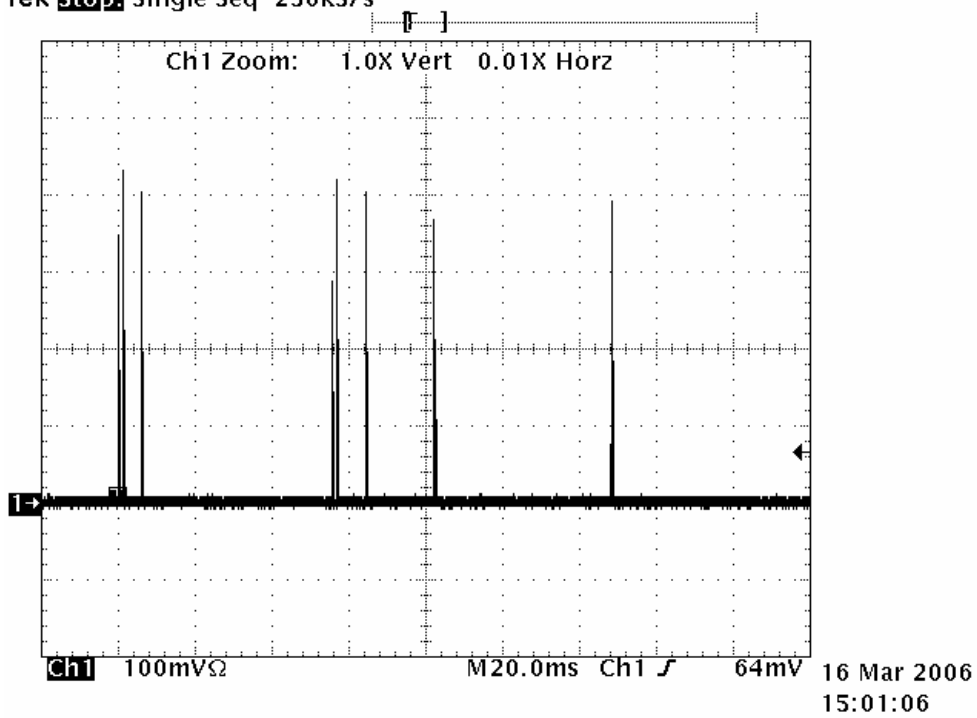
At wireless-mode the test-flash for testing the wireless connection to the remote flash consists of 3 flashes separated by 1,0ms.

9. Wireless / ADI-flash

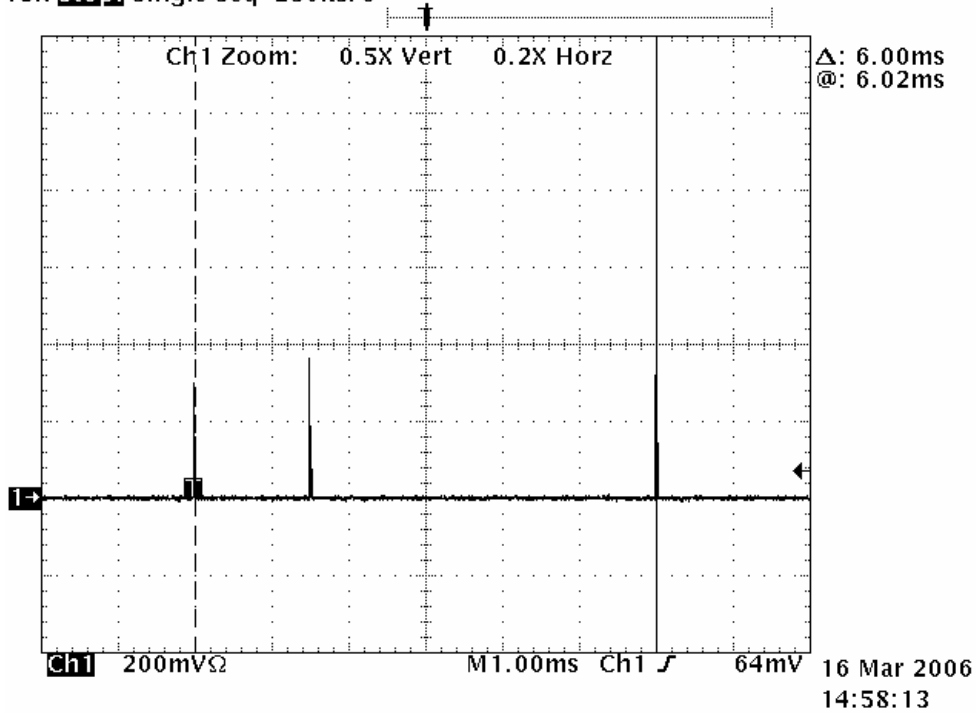In this case the pattern of the flashes is complicated:
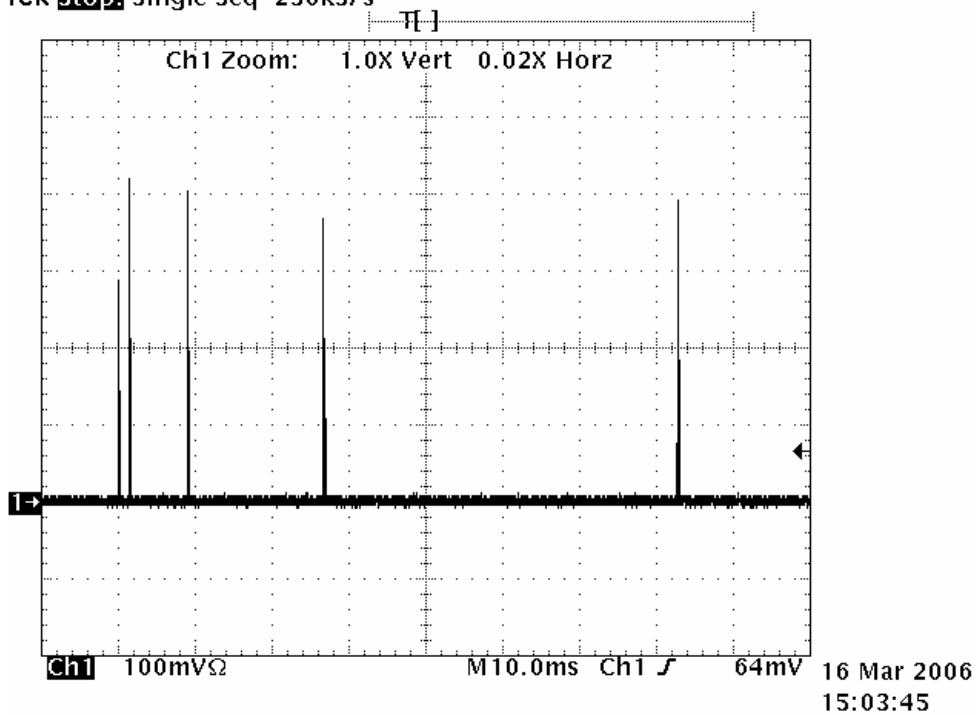

This sequence is shown magnified on the next page.

The first three pulses:

The last pulses of the sequence.:

The meaning of the flashes in this sequence is unclear.

A measurement of the HSS-mode was skipped due to a missing external flash.