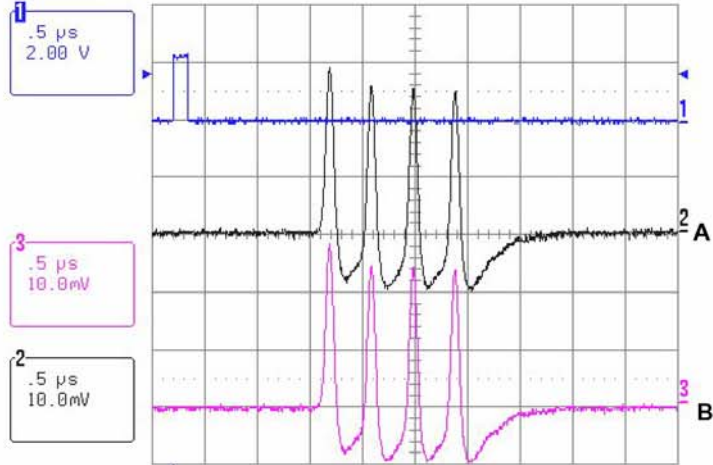


# RR Response to Calibration Pulses at Input to Digitizers

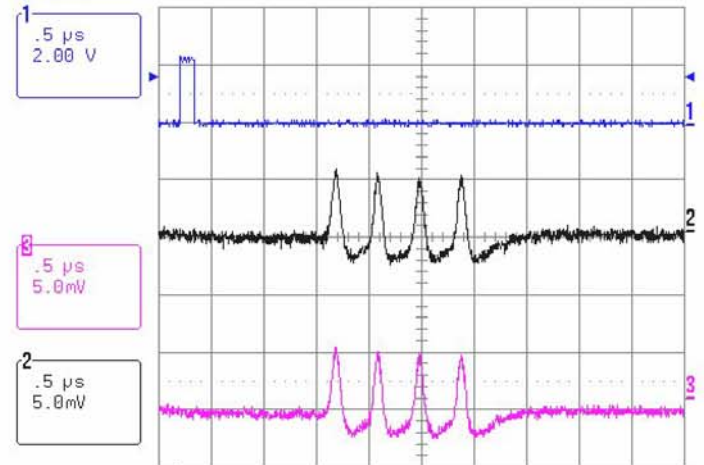
20-Aug-03  
11:44:49

## Hi Intensity 1 : 1



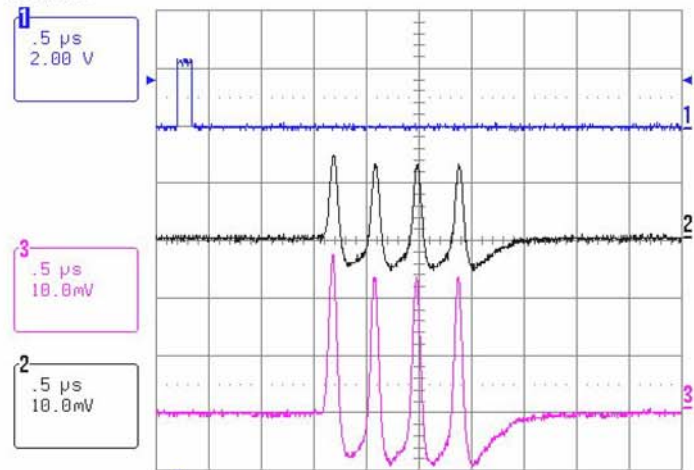
20-Aug-03  
11:47:35

## Low Intensity 1 : 1



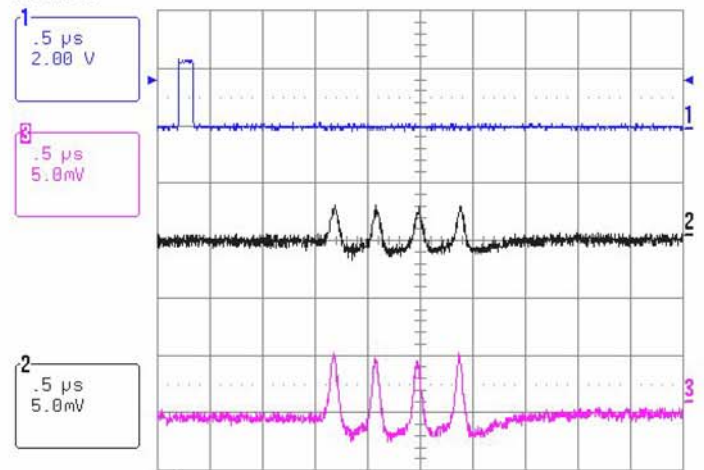
20-Aug-03  
11:45:06

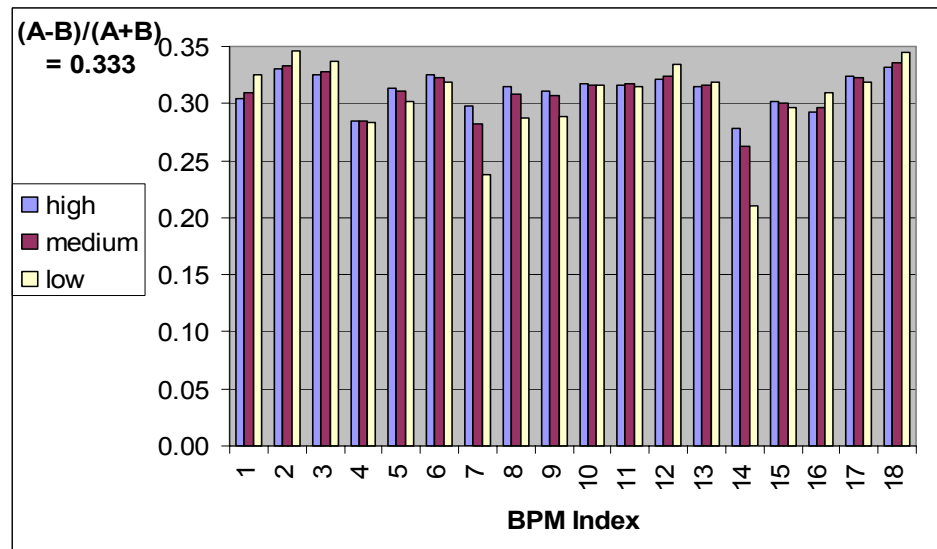
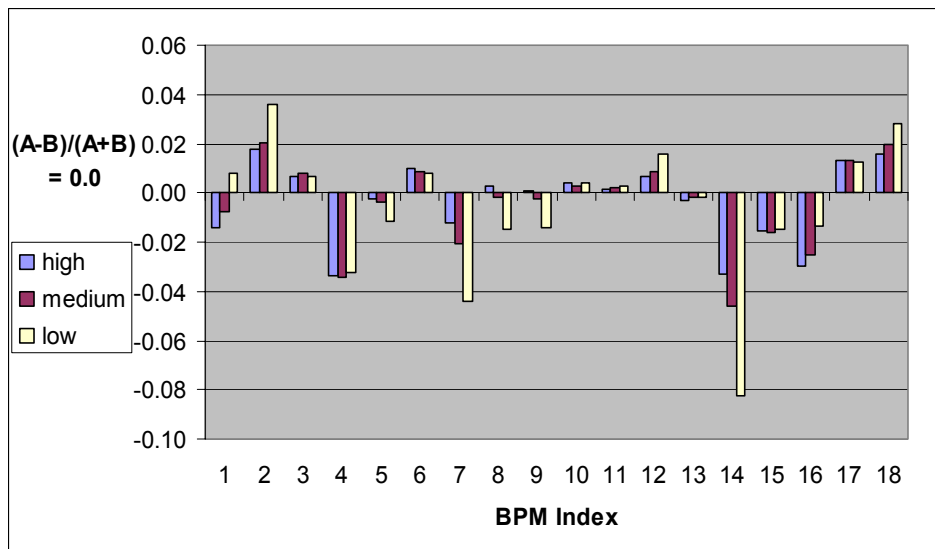
## Hi Intensity 0.5 : 1



20-Aug-03  
11:47:52

## Low Intensity 0.5 : 1





Want different intensities and ratios:

If A and B have a gain difference:

error independent of intensity and  $\sim$  position

A and B offset difference:

error independent of position but larger  
at low intensity

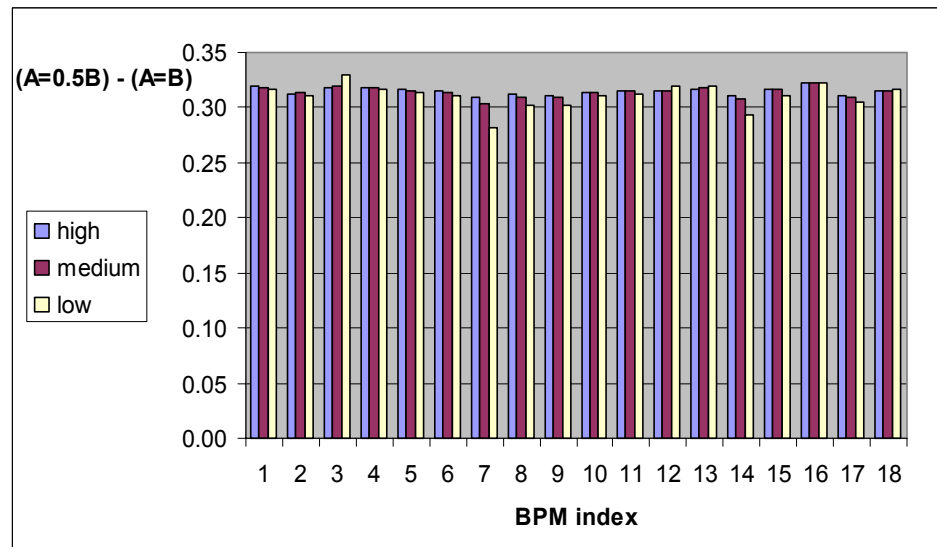
$$A(\text{meas}) = (1 + \varepsilon) A(\text{true}) + \delta$$

$$B(\text{meas}) = (1 - \varepsilon) B(\text{true}) - \delta \quad \text{then}$$

$$(A - B)/(A+B) (\text{meas})$$

$$= \varepsilon + \delta / B \quad [A = B \text{ setting}]$$

$$= (8/9)\varepsilon + (4/3)\delta / B - 1/3 \quad [A = 1/2 B \text{ setting}] \quad \&$$



$[A=B] - [A=0.5B] = 1/3 + \varepsilon/9 - 1/3 \delta/B$  > note how the effect of the scale error is reduced a factor of 9 and the offset error by 3 when comparing the A=B and A=0.5B measurements (bottom right plot).