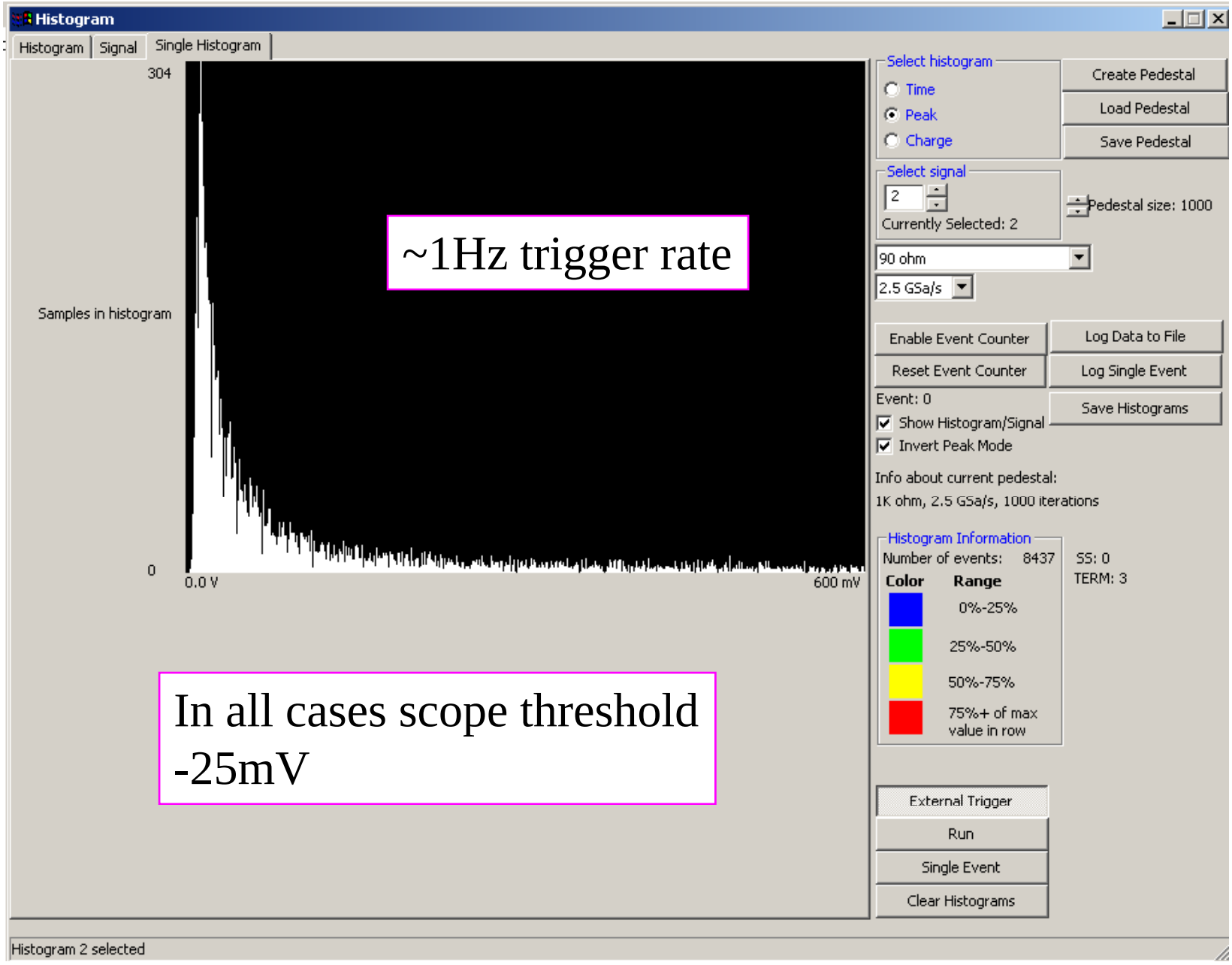
“Analog” x-ray monitor check-out

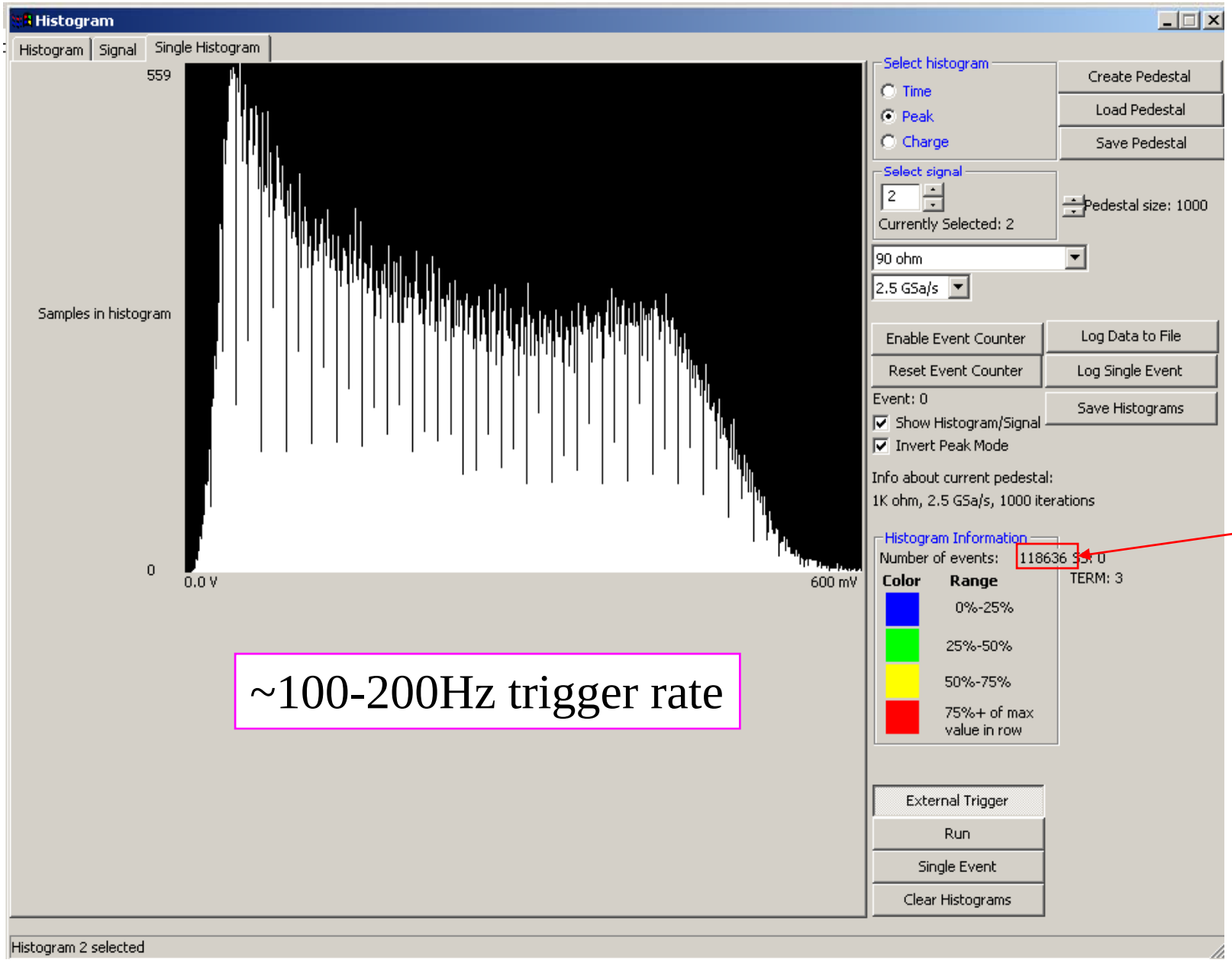
- Basic performance of Pulse Height monitor
- Response to various sources
- Gain estimates

2-SEP-2010
ID Lab

Cosmic ray Distribution



^{60}Co (again at 700mV on PMT)



~100-200Hz trigger rate

>100k events

Estimated Gain

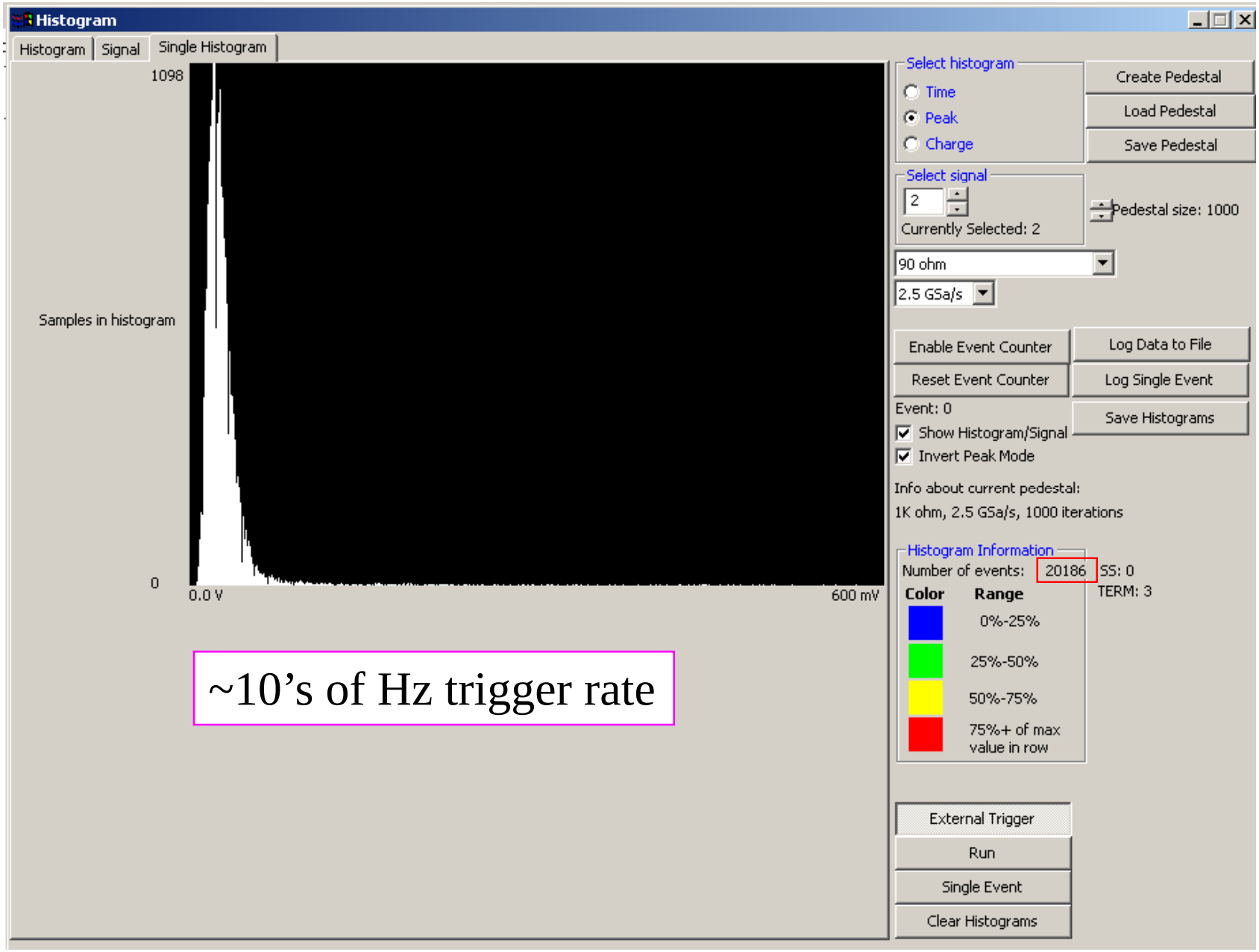
Hamamatsu 5874

697mV gain bias

Estimate of Signal output for xFEL recorded with HPK H5784 + BC-408 GSV 2-Sep-10

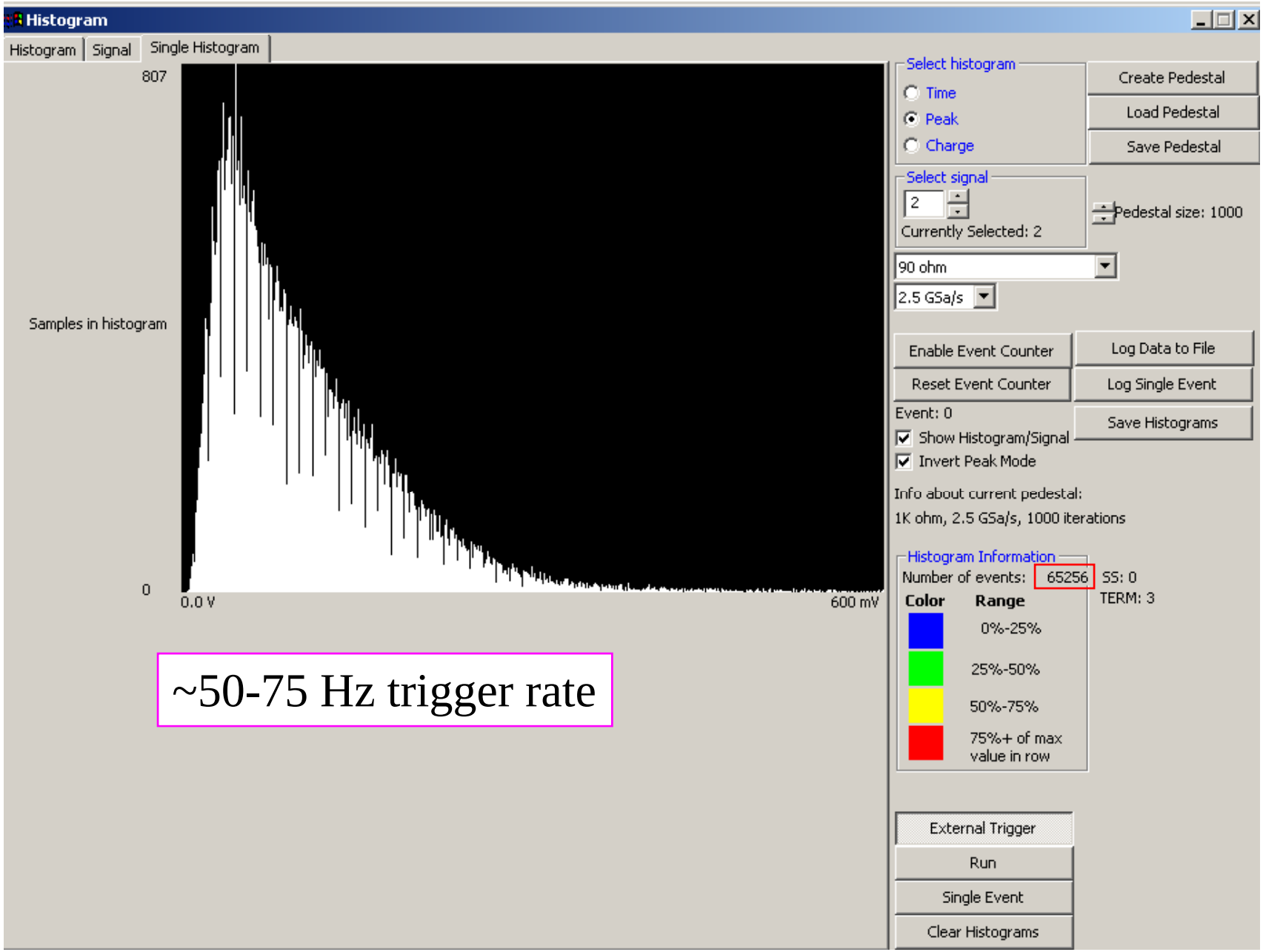
Signal base width [ns]	5	triangle wave assumption	
dT =	2.5	ns	
1e- =	1.60E-19	C	
I =	6.4E-11	A/p.e.	
R_term =	50	ohms	
V_i =	3.2E-09	V/p.e.	
PMT bias =	650	mV	LUT
g_PMT =	2.00E+05		
V_j =	6.40E-04	V/p.e.	
g_amp	20	dB	
	10	times V	
a_split	-3	dB	
a_volt	0.707946		
V_k =	0.000453		
a_couple =	0.78		
V_l =	0.000353	V/p.e.	
Net gain =	5.521977	x Voltage	
x/g Energy	662	keV	
L_peak =	400	nm	
E_rel =	3.15	eV/p.e.	1260eV.nm
BC-408	64	%	percent anthracene
Anthracene	5	%	or so
Addl loss	70	%	off peak, geometric & absorption loss
	4708	gamma	
Q.E. =	20	%	
	942	p.e.	
V_peak =	333	mV	

^{57}Co (again at 700mV on PMT)



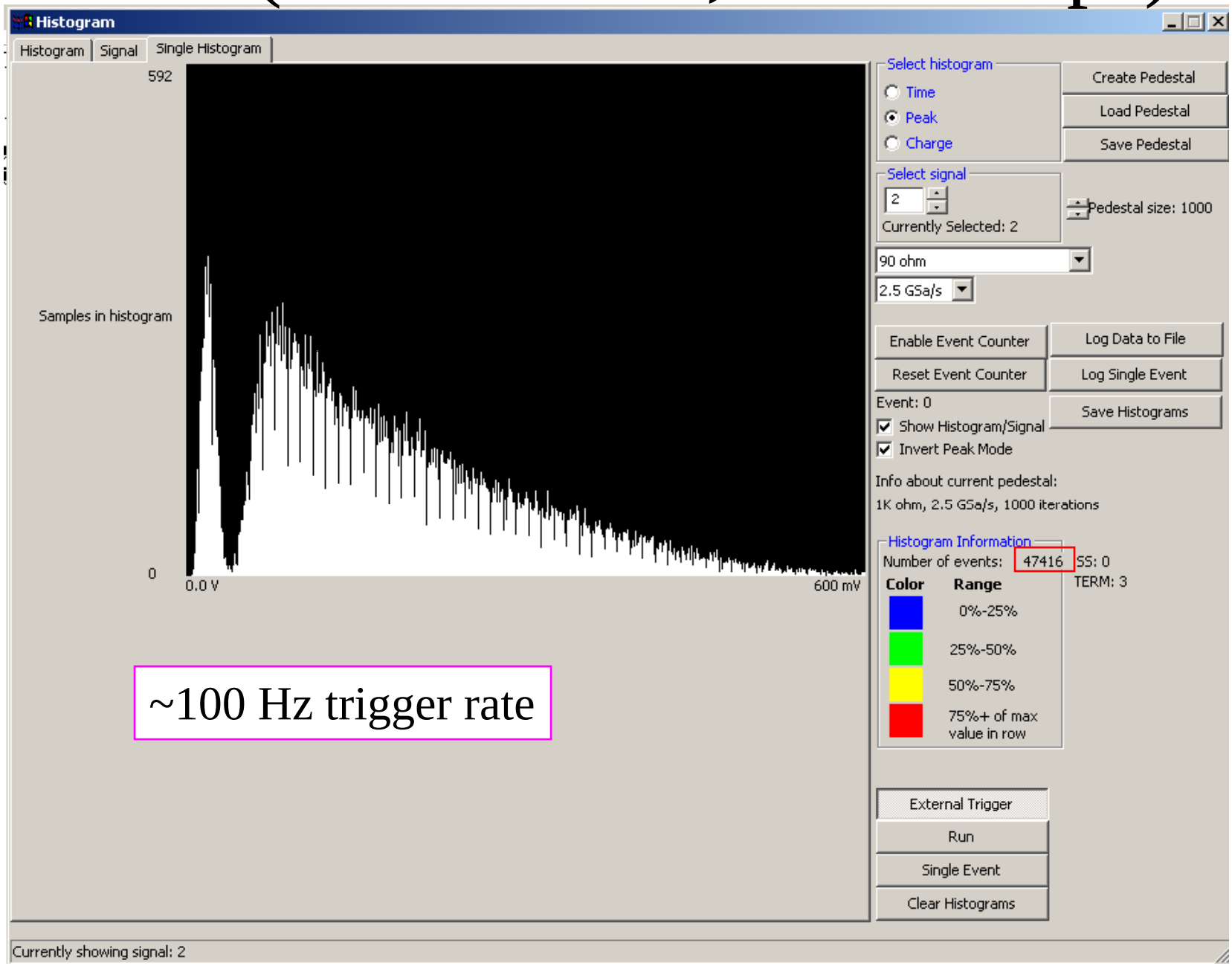
~10's of Hz trigger rate

^{57}Co (950mV on PMT)



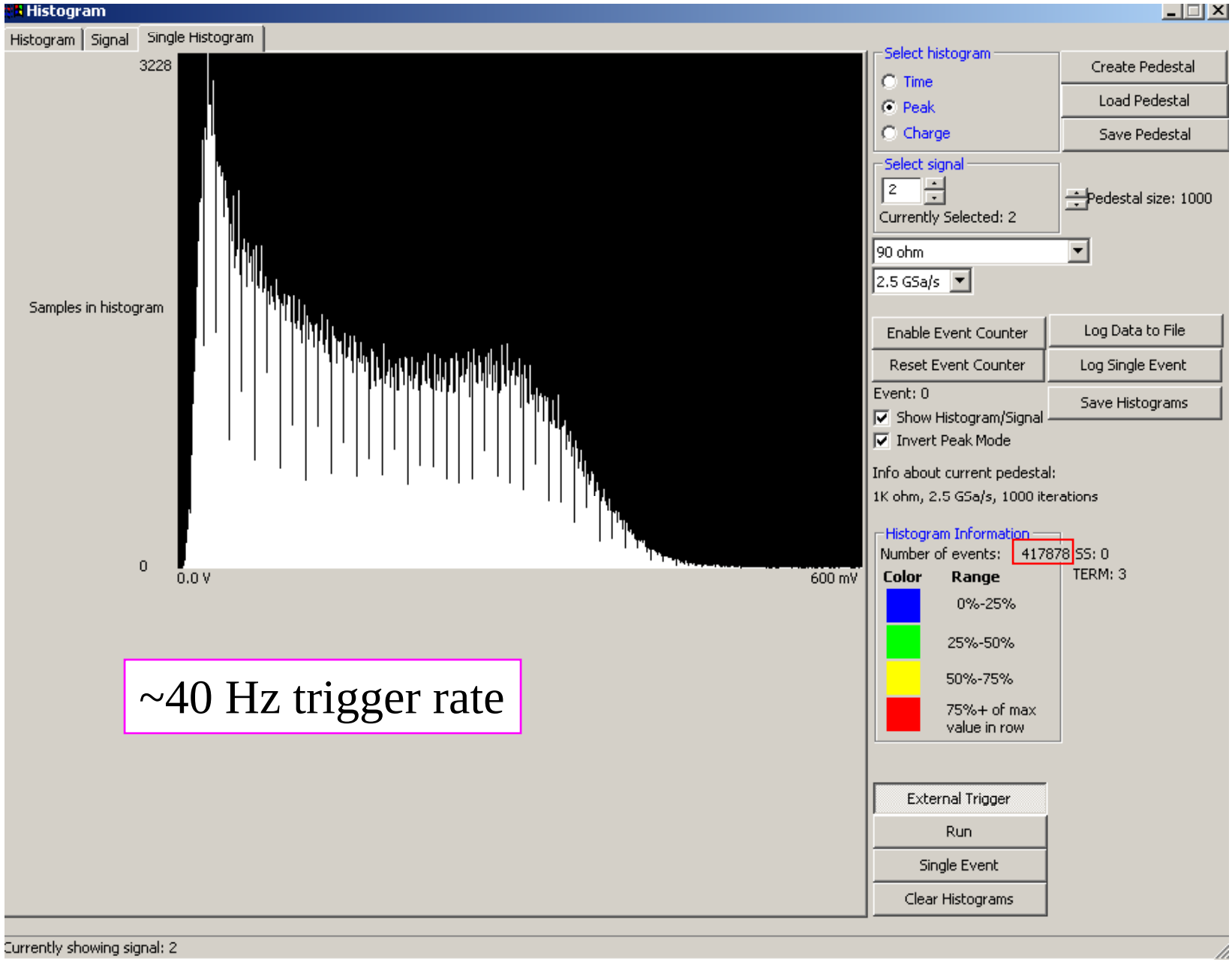
~50-75 Hz trigger rate

^{57}Co (650mV bias, 40dB amps)



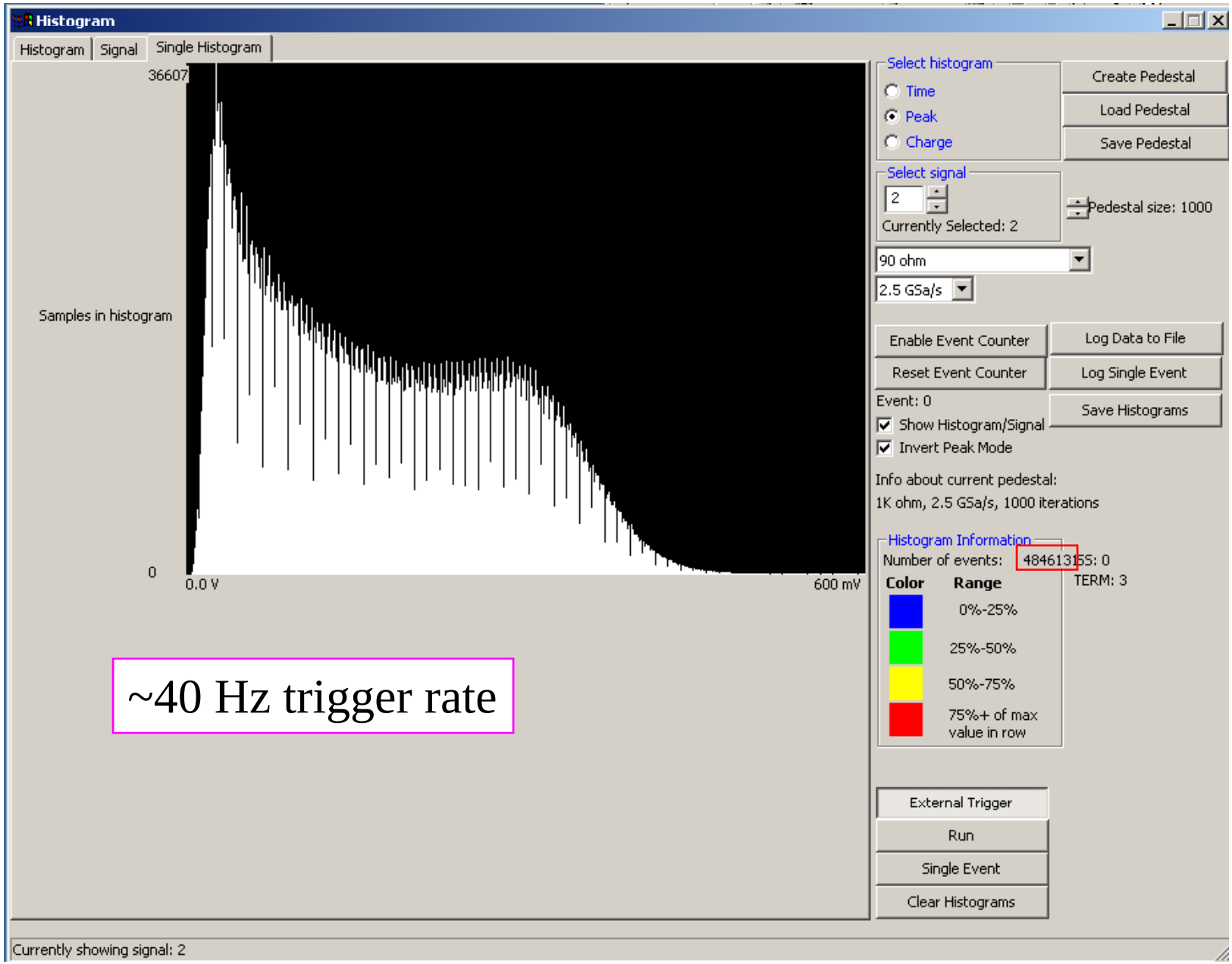
~100 Hz trigger rate

^{137}Cs (748mV bias, 20dB amps)



~40 Hz trigger rate

^{137}Cs (748mV bias, 20dB amps)



~40 Hz trigger rate