Update 4 on 14.2.2006

EE VFE cards - dynamic range, 6.8/5.6

Predicted noise	Full dynamic range (pC)	Full D.R. Gain 12 (pC)
~3.5ke-	12.8	1.1

VPTs sorted across Dee - pC yields BEFORE loss factors, for photons with Etransverse = 70 GeV

Eta	1/sin(theta)	VPT yield(1.8T) (new mean, 35.4e/MeV)	Photon energy (GeV) if ET (GeV) = 70	Electron yield (electrons) from photon	Yield, Y, in pC, from photon
1.6	2.58	48.6	180.6	8.78E+06	1.40
1.8	3.11	38.1	217.7	8.29E+06	1.33
2	3.76	30.8	319.9	9.85E+06	1.58
2.2	4.57	25.8	319.9	8.25E+06	1.32
2.5	6.13	25.8	429.1	1.11E+07	1.77

Note: max energy in a single xtal = 80% of total photon energy - this factor not incorporated on this sheet

Possible losses, VPTs	
1.8 to 4T	0.9
Va 1000 to 800	0.9
Faceplate	0.9
Burn-in	0.9
Net VPT factor	**0.6561**

Possible crystal light yield losses for an average crystal (Dall=31.6%)		
Eta	Low L (%)	High L (%)
1.6	3.7	11.8
1.8	7.75	17.55
2	11.8	23.3
2.2	15.88	25.66
2.5	22	29.2

Net loss factor, VPT*Xtal		Net yield in pC VPT*Xtal*Y
Low L	High L	High L
0.63	0.58	0.81
0.61	0.54	0.72
0.58	0.50	0.79
0.55	0.49	0.64
0.51	0.46	0.82

Not included **Blocking capacitor reduction from 1nF to 0.475 nF, loss of pulse height ~5%**
100 Ω resistor in series to MGPA, loss of pulse height ~5% - resistor not yet final

Noise in Endcap, VFE with 3900 electrons

Eta	VPT yield(1.8T) (with ref to new mean, 35.4e/MeV)	Noise for 3900 e- (MeV)	Transverse noise (MeV) per channel
1.6	48.6	80.25	31.1
1.8	38.1	102.36	32.9
2	30.8	126.62	33.7
2.2	25.8	151.16	33.1
2.5	25.8	151.16	24.7

Noise after VPT and crystal effects included
VFE noise 3900 electrons

Eta	VPT/Xtal losses VPT*Xtal High Lumi	Transverse noise (MeV) per channel
1.6	0.58	53.7
1.8	0.54	60.8
2	0.50	66.9
2.2	0.49	67.8
2.5	0.46	53.1