



BIRDS-3 Power Budget

Pooja Lepcha



Power Generation Estimation



Parameters	Abbreviations/Units	Values
Solar cell efficiency	(cEff)	0.293
Solar constant	(sPower,[w/m2])	1366.1
Number of solar cell on each side	(nPX, nPY, nMY, nPZ, nMZ)	2
Area per one solar panel of satellite	(cArea,[m2])	0.003018
Generated Power	[mW]	1490
Energy Available per Orbit	[mWh]	2300
Power loss in blocking diode	[mWh]	750
Efficiency of Electronics devices(DC/DC converters)	[η 1]	0.8
Total Energy Available per orbit	[mWh]	1240



Power Consumption



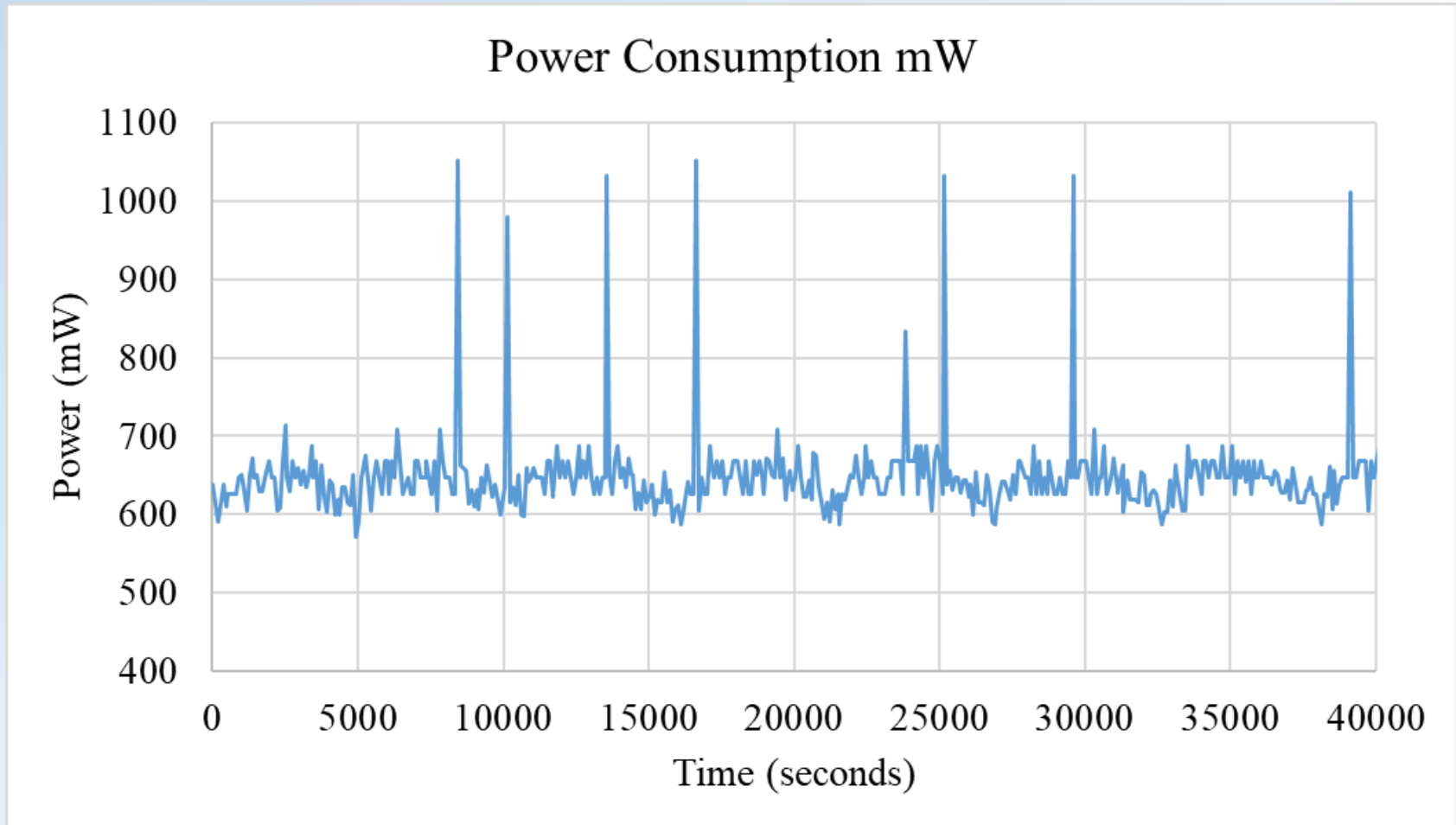
Subsystems/ Missions	Without CPLD		With CPLD	
	Battery Voltage (V)	Current (mA)	Battery Voltage (V)	Current (mA)
Main, COM and Reset PIC	3.8	94	3.8	85
FAB PIC with OBC	3.8	140	3.8	147
CW Transmission	3.8	210	3.8	212
Data Downlink	3.8	1050	3.8	1059
CAM Mission	3.8	361 (max)	3.8	368 (max)
LDM Mission	3.8	152	3.8	154
ADCS Mission	3.8	218(max)	3.8	225(max)
Antenna Deployment	3.8	2450	3.8	2418



On Orbit Results



Nominal Power Consumption – 650mW





On Orbit Results



Average Power Generation $\sim 1\text{Wh}$

