

LignoSat-1R

Power Budget

03 December, 2025

Haruki Toritani

Kyoto University

Energy Generation Prediction

Parameters	Abbreviations/Unit	Values
Solaar Cell Efficiency	(cEff)	0.293
Number of exposed panels for each side	(+X, +Y, -Y,+Z, -Z)	2
Area per panel of satellite	(cArea, [m ²])	0.004829
Generated Energy per Orbit	[mWh]	2507
Energy loss in Blocking diode	[mWh]	300
Efficiency of DC/DC Converter	η	0.8
Energy loss in Battery	[mWh]	210
Total Energy available per orbit	[mWh]	1555.6

Power Budget

Parameters	OBC-EPS and FAB	COM UHF (RX)	COM UHF (TX-CW)	COM UHF (TX- Telemetry)	(Antenna Deployment) Burner Circuit	MSN	RAB	Power Indicator LED	Power Consumpti on by mode [mWh]
Maximum Power Consumption [mW]	395	197	482	3280	10920	59	42	380	
Allocated time per cycle [h]	1.53	1.09	0.409	0.0408	0.00833	1.53	1.53	0.167	
Maximum Power Consumption per cycle[mWh]	604.35	214.91	197.18	133.82	90.96	90.27	64.26	63.33	
Default mode	on	on	on	off	off	on	on	off	1171
Emergency mode (MSN, RAB OFF)	on	on	on	off	off	off	off	off	1016
Command uplink and Beacon	on	on	on	on	off	on	on	off	1305
Antenna Deploy (30 mins)	on	off	off	off	on	off	off	on	759

Total Energy Available per Orbit = 1555.6 mWh > 1171 mWh (Default mode)