

BIRDS-3 Project (Raavana-1, Nepalisat-1, Uguisu)

Version: 4.2

Date: 2018-10-16

	Unit	Downlink		Uplink	
		FM Telemetry/ Mission	CW Beacon	FM Command	
Orbit Altitude	km	410	410	410	
Distance of Elevation Angle at 10 deg	km	1466.33	1466.33	1466.33	
Frequency	MHz	437	437	435	
Bandwidth	Hz	26000	500	26000	
Emission Type	-	F1D	A1A	F1D	
Modulation	-	GMSK	CW	GMSK	
Protocol	-	AX.25	-	AX.25	
<b>Transmitter</b>					
Transmitter Power Output	W	0.8	0.1	14	
	in dBW	dBW	-0.97	-10.00	11.46
	in dBm	dBm	29.03	20.00	41.46
Transmission Line Losses	dB	1	1	3	
Antenna Gain	dBi	1.1	1.1	18	
EIRP	dBW	-0.87	-9.90	26.46	
<b>Path</b>					
Antenna Pointing Loss	dB	5	5	4	
Antenna Polarization Loss	dB	3	3	3	
Path Loss	dB	148.58	148.58	148.54	
Atmospheric Loss	dB	1	1	1	
Ionospheric Loss	dB	0.4	0.4	0.4	
Rain Loss	dB	0	0	0	
Isotropic Signal Level at Receiver	dB	-158.85	-167.88	-130.48	
<b>Receiver</b>					
Antenna Pointing Loss	dB	4	4	5	
Antenna Gain	dBi	18	18	1.1	
Transmission Line Losses	dB	3	3	1	
Received Power	dBW	-147.85	-156.88	-135.38	
Effective Noise Temperature	K	600	600	6000	
Figure of Merit (G/T)	dB/K	-12.78	-12.78	-37.68	
Boltzman's Constant	dBj/K	-228.6	-228.6	-228.6	
C/No	dB	52.97	43.93	55.44	
System Desired Data Rate	bps	4800	100	4800	
	in dBHz	dBHz	36.81	20.00	36.81
Eb/No	dB	16.15	23.93	18.62	
Required Bit Error Rate (BER)	-	1.00E-06	1.00E-06	1.00E-06	
Required Eb/No	dB	12.5	10.5	12.5	
Required C/No	dB	49.31	30.50	49.31	
<b>System Link Margin</b>					
	dB	3.65	13.43	6.12	