

O3b Network Forward Link Analysis - Tier 1 Service For Suva, Fiji

Link Budget Creator - Rev 1.1: July 15, 2010		Tier 1	Tier 1
Ground Parameter		Teleport	Telco
Location		Sunset Beach RHCP, United States	Suva
Latitude	(°)	21.3	-18.1
Longitude (East)	(°)	201.9	178.4
E/S Range to SV	(km)	9576.3	8611.6
E/S Elevation to SV	(°)	38.6	58.5
E/S Altitude	(m)	0.0	0.0
SV Beam Identifier	(#)	12	
Minutes Into Pass (Sample #45)	(Min)	21.3	
Telco Spot Beam Off-Angle	(°)	0.2	
Telco Spot Beam Diameter	(km)	60.1	
Maximum Roundtrip Latency	(msec)	121.3	
Modulation Parameters		Forward	Return
Enter Receiver	Type	DVB-S2	
Available Bandwidth	(Hz)	216,000,000	
Channel Symbol Rate	(sps)	180,000,000	
Channel Modulation Type		32APSK	
Channel FEC Rate		0.83	
Channel Spectral Efficiency	(bits/Hz)	4.17	
Channel Throughput	(bps)	725,506,072.87	
Uplink		Forward	Return
E/S Tx Channels per HPA	(#)	4	
E/S Tx Carrier Frequency	(MHz)	28020.00	
E/S Tx HPA Power Level	(W)	500.00	
E/S Tx OBO	(dB)	-4.00	
E/S Tx Post-HPA Losses	(dB)	-1.50	
E/S Tx Antenna Gain (7.3 meter)	(dB)	64.82	
E/S Tx EIRP Per Channel	(dBW)	80.29	
E/S Tx Pointing Loss	(dB)	-0.50	
E/S Tx RF Link Availability	(%)	92.000	
E/S Tx Atmospheric Losses	(dB)	-2.87	
E/S Tx Spreading Loss	(dB)	-150.62	
Satellite		Forward	Return
SV Number of Channels per HPA	(#)	1	
SV Rx G/T	(dB/K)	3.95	
SV Rx Power Per Tier	(dBW)	-120.15	
SV Rx Flux Density Per Tier	(dBW/m ²)	-73.69	
SV Tx OBO	(dB)	-3.80	
SV Tx Post-TWTA Losses	(dB)	-1.50	
SV Tx Antenna Gain	(dBi)	30.76	
SV Tx EIRP Per Channel/Carrier	(dBW)	43.59	
SV Tx Pointing Loss	(dB)	0.00	
Downlink		Forward	Return
E/S Rx Carrier Frequency	(MHz)	18220.00	
E/S Rx Spreading Loss	(dB)	-149.69	
E/S Rx RF Link Availability	(%)	92.000	
E/S Rx Atmospheric Losses	(dB)	-1.41	
E/S Rx Pointing Loss	(dB)	-0.50	
E/S Rx Antenna Gain (4 meter)	(dBi)	55.22	
E/S Rx Effective G/T	(dB/K)	31.58	
E/S Rx Power Per Channel	(dBW)	-99.47	
E/S Rx Flux Density Per Channel	(dBW/m ²)	-108.02	
Total Link		Forward	Return
Carrier / Noise Bandwidth	(dB)	82.55	
Carrier / Noise Uplink	(dB)	25.90	
Carrier / Noise Downlink	(dB)	22.94	
Carrier / Intermodulation Im (C/Im)	(dB)	25.74	
(C/N) - Total Actual	(dB)	18.70	
(C/N) - Total Required	(dB)	18.08	
(E _b /N ₀) - Total Actual	(dB)	12.51	
(E _b /N ₀) - Total Required	(dB)	11.88	
Excess Margin	(dB)	0.62	
Fade Margin (to loss of link)	(dB)	19.85	