

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

Link Budget Creator - Rev 1.1: July 16, 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)		40,003,200	
Channel Symbol Rate	(sps)		33,336,000	
Channel Modulation Type			32APSK	
Channel FEC Rate			0.83	
Channel Spectral Efficiency	(bits/Hz)		4.17	
Channel Throughput	(bps)		134,363,724.70	
Uplink			Forward	Return
E/S Tx Channels per HPA	(#)		5	
E/S Tx Carrier Frequency	(MHz)		28020.00	
E/S Tx HPA Power Level	(W)		500.00	
E/S Tx OBO	(dB)		-3.00	
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)		80.32	
E/S Tx Pointing Loss	(dB)		-0.50	
E/S Tx RF Link Availability	(%)		96.000	
E/S Tx Atmospheric Losses	(dB)		-4.13	
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)		-121.39	
SV Rx Flux Density Per Tier	(dBW/m ²)		-74.93	
SV Tx OBO	(dB)		-4.00	
SV Tx Post-TWTA Losses	(dB)		-1.50	
SV Tx Antenna Gain	(dBi)		30.76	
SV Tx EIRP Per Channel/Carrier	(dBW)		43.39	
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	(%)		96.000	
E/S Rx Atmospheric Losses	(dB)		-2.11	
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)		31.21	
E/S Rx Power Per Channel	(dBW)		-100.37	
E/S Rx Flux Density Per Channel	(dBW/m ²)		-108.92	
Total Link			Forward	Return
Carrier / Noise Bandwidth	(dB)		75.23	
Carrier / Noise Uplink	(dB)		31.98	
Carrier / Noise Downlink	(dB)		28.99	
Carrier / Intermodulation Im (C/Im)	(dB)		20.28	
(C/N) - Total Actual	(dB)		18.41	
(C/N) - Total Required	(dB)		18.08	
(E _p /N ₀) - Total Actual	(dB)		12.21	
(E _p /N ₀) - Total Required	(dB)		11.88	
Excess Margin	(dB)		0.33	
Fade Margin (to loss of link)	(dB)		19.56	