

O3b Network Return 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)	10078.1	8690.1
E/S Elevation to SV	(°)	31.0	56.4
E/S Altitude	(m)	0.0	0.0
SV Beam Identifier	(#)		12
Minutes Into Pass (Sample #30)	(Min)		14.0
Telco Spot Beam Off-Angle	(°)		0.2
Telco Spot Beam Diameter	(km)		60.1
Maximum Roundtrip Latency	(msec)		125.2
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			QPSK
Channel FEC Rate			0.67
Channel Spectral Efficiency	(bits/Hz)		1.33
Channel Throughput (100% / 100% of Full Rate)	(bps)		232,341,806.38
Uplink		Forward	Return
E/S Tx Channels per HPA	(#)		1
E/S Tx Carrier Frequency	(MHz)		28020.00
E/S Tx HPA Power Level	(W)		500.00
E/S Tx OBO	(dB)		-2.00
E/S Tx Post-HPA Losses	(dB)		-2.86
E/S Tx Antenna Gain (4 meter)	(dB)		58.96
E/S Tx EIRP Per Channel	(dBW)		81.09
E/S Tx Pointing Loss	(dB)		-0.50
E/S Tx RF Link Availability	(%)		99.700
E/S Tx Atmospheric Losses	(dB)		-21.42
E/S Tx Spreading Loss	(dB)		-149.77
Satellite		Forward	Return
SV Number of Channels per HPA	(#)		4
SV Rx G/T	(dB/K)		3.15
SV Rx Power Per Tier	(dBW)		-137.87
SV Rx Flux Density Per Tier	(dBW/m ²)		-90.61
SV Tx OBO	(dB)		-5.80
SV Tx Post-TWTA Losses	(dB)		-1.50
SV Tx Antenna Gain	(dBi)		30.97
SV Tx EIRP Per Channel/Carrier	(dBW)		35.78
SV Tx Pointing Loss	(dB)		0.00
Downlink		Forward	Return
E/S Rx Carrier Frequency	(MHz)		18220.00
E/S Rx Spreading Loss	(dB)		-151.06
E/S Rx RF Link Availability	(%)		99.700
E/S Rx Atmospheric Losses	(dB)		-9.73
E/S Rx Pointing Loss	(dB)		-0.50
E/S Rx Antenna Gain (7.3 meter)	(dBi)		61.08
E/S Rx Effective G/T	(dB/K)		35.26
E/S Rx Power Per Channel	(dBW)		-111.10
E/S Rx Flux Density Per Channel	(dBW/m ²)		-125.51
Total Link		Forward	Return
Carrier / Noise Bandwidth	(dB)		82.55
Carrier / Noise Uplink	(dB)		8.18
Carrier / Noise Downlink	(dB)		9.12
Carrier / Intermodulation Im (C/Im)	(dB)		19.95
(C/N) - Total Actual	(dB)		5.41
(C/N) - Total Required	(dB)		5.30
(E _s /N ₀) - Total Actual	(dB)		4.16
(E _s /N ₀) - Total Required	(dB)		4.05
Excess Margin	(dB)		0.11
Fade Margin (to loss of link)	(dB)		6.56