

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)		10152.1	8712.6
E/S Elevation to SV	(°)		30.0	55.8
E/S Altitude	(m)		0.0	0.0
SV Beam Identifier	(#)			12
Minutes Into Pass (Sample #28)	(Min)			13.1
Telco Spot Beam Off-Angle	(°)			0.2
Telco Spot Beam Diameter	(km)			60.1
Maximum Roundtrip Latency	(msec)			125.9
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				16APSK
Channel FEC Rate				0.75
Channel Spectral Efficiency	(bits/Hz)			3.00
Channel Throughput (100% / 100% of Full Rate)	(bps)			521,337,648.33
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	(%)			98.000
E/S Tx Atmospheric Losses	(dB)			-7.03
E/S Tx Spreading Loss	(dB)			-149.80
Satellite			Forward	Return
SV Number of Channels per HPA	(#)			4
SV Rx G/T	(dB/K)			3.15
SV Rx Power Per Tier	(dBW)			-123.49
SV Rx Flux Density Per Tier	(dBW/m ²)			-76.24
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)			-151.12
E/S Rx RF Link Availability	(%)			98.000
E/S Rx Atmospheric Losses	(dB)			-3.71
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)			36.68
E/S Rx Power Per Channel	(dBW)			-105.14
E/S Rx Flux Density Per Channel	(dBW/m ²)			-119.55
Total Link			Forward	Return
Carrier / Noise Bandwidth	(dB)			82.55
Carrier / Noise Uplink	(dB)			22.56
Carrier / Noise Downlink	(dB)			16.51
Carrier / Intermodulation Im (C/Im)	(dB)			19.95
(C/N) - Total Actual	(dB)			13.85
(C/N) - Total Required	(dB)			13.61
(E _s /N ₀) - Total Actual	(dB)			9.08
(E _s /N ₀) - Total Required	(dB)			8.84
Excess Margin	(dB)			0.24
Fade Margin (to loss of link)	(dB)			15.00