

## 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)		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				0.75
Channel Spectral Efficiency	(bits/Hz)			3.75
Channel Throughput (100% / 100% of Full Rate)	(bps)			652,199,730.09
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)			-4.00
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)			79.09
E/S Tx Pointing Loss	(dB)			-0.50
E/S Tx RF Link Availability	(%)			92.000
E/S Tx Atmospheric Losses	(dB)			-3.06
E/S Tx Spreading Loss	(dB)			-149.69
Satellite			Forward	Return
SV Number of Channels per HPA	(#)			4
SV Rx G/T	(dB/K)			3.15
SV Rx Power Per Tier	(dBW)			-121.43
SV Rx Flux Density Per Tier	(dBW/m <sup>2</sup> )			-74.17
SV Tx OBO	(dB)			-5.80
SV Tx Post-TWTA Losses	(dB)			-1.50
SV Tx Antenna Gain	(dBi)			30.94
SV Tx EIRP Per Channel/Carrier	(dBW)			35.75
SV Tx Pointing Loss	(dB)			0.00
Downlink			Forward	Return
E/S Rx Carrier Frequency	(MHz)			18220.00
E/S Rx Spreading Loss	(dB)			-150.62
E/S Rx RF Link Availability	(%)			92.000
E/S Rx Atmospheric Losses	(dB)			-1.45
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)			37.60
E/S Rx Power Per Channel	(dBW)			-102.40
E/S Rx Flux Density Per Channel	(dBW/m <sup>2</sup> )			-116.82
Total Link			Forward	Return
Carrier / Noise Bandwidth	(dB)			82.55
Carrier / Noise Uplink	(dB)			24.62
Carrier / Noise Downlink	(dB)			20.17
Carrier / Intermodulation Im (C/Im)	(dB)			23.11
(C/N) - Total Actual	(dB)			16.75
(C/N) - Total Required	(dB)			16.53
(E <sub>p</sub> /N <sub>o</sub> ) - Total Actual	(dB)			11.01
(E <sub>p</sub> /N <sub>o</sub> ) - Total Required	(dB)			10.79
<b>Excess Margin</b>	<b>(dB)</b>			<b>0.22</b>
<b>Fade Margin (to loss of link)</b>	<b>(dB)</b>			<b>17.90</b>