

## 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)		9831.6	8633.3
E/S Elevation to SV	(°)		34.6	57.9
E/S Altitude	(m)		0.0	0.0
SV Beam Identifier	(#)		12	
Minutes Into Pass (Sample #37)	(Min)		17.4	
Telco Spot Beam Off-Angle	(°)		0.2	
Telco Spot Beam Diameter	(km)		60.1	
Maximum Roundtrip Latency	(msec)		123.2	
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			16APSK	
Channel FEC Rate			0.75	
Channel Spectral Efficiency	(bits/Hz)		3.00	
Channel Throughput	(bps)		96,551,732.47	
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	(%)		99.600	
E/S Tx Atmospheric Losses	(dB)		-16.24	
E/S Tx Spreading Loss	(dB)		-150.84	
Satellite			Forward	Return
SV Number of Channels per HPA	(#)		1	
SV Rx G/T	(dB/K)		4.09	
SV Rx Power Per Tier	(dBW)		-133.58	
SV Rx Flux Density Per Tier	(dBW/m <sup>2</sup> )		-87.26	
SV Tx OBO	(dB)		-7.00	
SV Tx Post-TWTA Losses	(dB)		-1.50	
SV Tx Antenna Gain	(dBi)		30.76	
SV Tx EIRP Per Channel/Carrier	(dBW)		40.39	
SV Tx Pointing Loss	(dB)		0.00	
Downlink			Forward	Return
E/S Rx Carrier Frequency	(MHz)		18220.00	
E/S Rx Spreading Loss	(dB)		-149.72	
E/S Rx RF Link Availability	(%)		99.600	
E/S Rx Atmospheric Losses	(dB)		-8.40	
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)		29.40	
E/S Rx Power Per Channel	(dBW)		-109.68	
E/S Rx Flux Density Per Channel	(dBW/m <sup>2</sup> )		-118.23	
Total Link			Forward	Return
Carrier / Noise Bandwidth	(dB)		75.23	
Carrier / Noise Uplink	(dB)		19.79	
Carrier / Noise Downlink	(dB)		17.88	
Carrier / Intermodulation Im (C/Im)	(dB)		20.52	
(C/N) - Total Actual	(dB)		14.11	
(C/N) - Total Required	(dB)		13.61	
(E <sub>b</sub> /N <sub>0</sub> ) - Total Actual	(dB)		9.34	
(E <sub>b</sub> /N <sub>0</sub> ) - Total Required	(dB)		8.84	
<b>Excess Margin</b>	<b>(dB)</b>		<b>0.50</b>	
<b>Fade Margin (to loss of link)</b>	<b>(dB)</b>		<b>15.26</b>	