GPS LINK BUDGET

Room 3297 (SIL)	L1									L2								
Satellite Transmitter																		
Satellite Transmitter Power (25 Watts)	14	dBW								14	dBW							
RF Losses in transmitter path	-1.25	dB								-1.25	dB							
Antenna Gain (with respect to isotrope)	13.5	dBi								13.5	dBi							
Satellite ERP	26.25	**dBW**								26.25	**dBW**							
Propagation																		
Atmospheric and Polarization Losses	-0.5	dB								-0.5	dB							
Free Space Path Loss	-1.84E+02	dB								-1.82E+02	dB							
Received Power on Earth dBW	-1.59E+02	**dBW**								-1.57E+02	**dBW**							
Received Power on Earth dBm	-1.29E+02	**dBm**								-1.27E+02	**dBm**							
Room#	3175A	Screen Rm	3163	3297A	3297B	3297C	3297D	3175B		3175A	Screen Rm	3163	3297A	3297B	3297C	3297D	3175B	
Facility Re-radiation System	**PORT 1**	**PORT 2**	**PORT 3**	**PORT 4**	**PORT 5**	**PORT 6**	**PORT 7**	**PORT 8**		**PORT 1**	**PORT 2**	**PORT 3**	**PORT 4**	**PORT 5**	**PORT 6**	**PORT 7**	**PORT 8**	
Gain of Receive Antenna	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	dBic	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	dB
RF Losses in Cable & Connectors (min.)	-2	-2	-2	-2	-2	-2	-2	-2	dB	-1.73	-1.73	-1.73	-1.73	-1.73	-1.73	-1.73	-1.73	dB
(from Receive Antenna to Amplifier)																		
Gain of Line Amplifier (measured)	32.73	31.68	32.58	32.21	32.35	32.3	32.28	32.36	dB	37.65	37.72	37.52	37.12	37.5	37.52	37.7	37.65	dB
RF Losses in Cable & Connectors	-5.6	-10.79	-15.08	-3.97	-4.22	-4.4	-4.17	-5.6	dB	-5.11	-9.32	-12.95	-3.48	-3.86	-4	-3.8	-5.11	dB
(from Amplifier to Passive Antenna)																		
Gain of Passive Radiating Antenna	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	dBic	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	dBc
Free Space Path Loss (100ft)	-6.61E+01	-6.61E+01	-6.61E+01	-6.61E+01	-6.61E+01	-6.61E+01	-6.61E+01	-6.61E+01	dB	-6.39E+01	-6.39E+01	-6.39E+01	-6.39E+01	-6.39E+01	-6.39E+01	-6.39E+01	-6.39E+01	dB
Additional Attenuators	-18	-16	-12	-21	-21	-21	-22	-20		-20	-16	-12	-21	-21	-21	-22	-20	
RF Power Level at 100ft Distance	**-1.48E+02**	**-1.52E+02**	**-1.51E+02**	**-1.49E+02**	**-1.50E+02**	**-1.50E+02**	**-1.51E+02**	**-1.50E+02**	**dBm**	**-1.40E+02**	**-1.40E+02**	**-1.40E+02**	**-1.40E+02**	**-1.40E+02**	**-1.40E+02**	**-1.40E+02**	**-1.40E+02**	**dBm**

Free Space Path Loss Calculations

Satellite to Earth	**L1**									**L2**	
where d = distance	2.52E+07	m								2.52E+07	m
lambda = wavelength = c/f	1.91E-01									2.44E-01	
c = speed of light	3.00E+08	m/sec								3.00E+08	m/sec
f = frequency	1.57E+09	Hz								1.23E+09	Hz
Free Space Path Loss	-1.84E+02	dB								-1.82E+02	dB

100ft from Passive Antenna

where d = distance	3.05E+01	m								3.05E+01	m
lambda = wavelength = c/f	1.91E-01									2.44E-01	
c = speed of light	3.00E+08	m/sec								3.00E+08	m/sec
f = frequency	1.57E+09	Hz								1.23E+09	Hz
Free Space Path Loss	-6.61E+01	dB								-6.39E+01	dB

Band	**L1**									**L2**								
Amplified Splitter Port	**PORT 1**	**PORT 2**	**PORT 3**	**PORT 4**	**PORT 5**	**PORT 6**	**PORT 7**	**PORT 8**		**PORT 1**	**PORT 2**	**PORT 3**	**PORT 4**	**PORT 5**	**PORT 6**	**PORT 7**	**PORT 8**	
Line Gain Amplifier (measured)	16.68	16.68	16.68	16.68	16.68	16.68	16.68	16.68	dB	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	dB
Antenuator	-1	-1	-1	-1	-1	-1	-1	-1	dB	-1	-1	-1	-1	-1	-1	-1	-1	dB
Amplifiered Splitter Port Gain (measured)	17.05	16	16.9	16.53	16.67	16.62	16.6	16.68	dB	17.95	18.02	17.82	17.42	17.8	17.82	18	17.95	dB
Total	**32.73**	**31.68**	**32.58**	**32.21**	**32.35**	**32.3**	**32.28**	**32.36**	**dB**	**37.65**	**37.72**	**37.52**	**37.12**	**37.5**	**37.52**	**37.7**	**37.65**	**dB**