

Link Parameters	Riverside, CA Gateway (clear-sky)	Riverside, CA Gateway (faded uplink #1)	Riverside, CA Gateway (faded uplink #2)	Cheyenne, WY Gateway (clear-sky)	Cheyenne, WY Gateway (faded uplink #1)	Cheyenne, WY Gateway (faded uplink #2)	Germantown, MD Gateway (clear-sky)	Germantown, MD Gateway (faded uplink #1)	Germantown, MD Gateway (faded uplink #2)
<b>Modulation Parameters:</b>									
Information Bit Rate (kbps)	358,000	358,000	358,000	358,000	358,000	358,000	358,000	358,000	358,000
FEC Rate	0.8950	0.8950	0.8950	0.8950	0.8950	0.8950	0.8950	0.8950	0.8950
Modulation Type (BPSK/QPSK/8PSK/16QAM)	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK
<b>Link Geometry:</b>									
Satellite Longitude ("East)	-65.0	-65.0	-65.0	-65.0	-65.0	-65.0	-65.0	-65.0	-65.0
Tx E/S City Location (name)	Riverside	Riverside	Riverside	Cheyenne	Cheyenne	Cheyenne	Germantown	Germantown	Germantown
Tx E/S Longitude ("East)	-117.4	-117.4	-117.4	-104.8	-104.8	-104.8	-77.3	-77.3	-77.3
Tx E/S Latitude ("North)	34.0	34.0	34.0	41.1	41.1	41.1	39.2	39.2	39.2
Tx E/S Range to Satellite (km)	39,321	39,321	39,321	38,825	38,825	38,825	37,564	37,564	37,564
Tx E/S Elevation to Satellite (°)	22.4	22.4	22.4	27.6	27.6	27.6	42.9	42.9	42.9
Rx E/S City Location (name)	Rio de Janeiro	Rio de Janeiro	Rio de Janeiro	Rio de Janeiro	Rio de Janeiro	Rio de Janeiro	Rio de Janeiro	Rio de Janeiro	Rio de Janeiro
Rx E/S Longitude ("East)	-43.3	-43.3	-43.3	-43.3	-43.3	-43.3	-43.3	-43.3	-43.3
Rx E/S Latitude ("North)	-22.9	-22.9	-22.9	-22.9	-22.9	-22.9	-22.9	-22.9	-22.9
Rx E/S Range to Satellite (km)	36,853	36,853	36,853	36,853	36,853	36,853	36,853	36,853	36,853
Rx E/S Elevation to Satellite (°)	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7
<b>Uplink (per carrier):</b>									
Carrier Frequency (MHz)	29,000	29,000	29,000	29,000	29,000	29,000	29,000	29,000	29,000
HPA Power Level (W)	2.65	26.62	50.00	5.90	18.91	50.00	2.65	43.04	50.00
HPA Power in dBW (dBW)	4.2	14.3	17.0	7.7	12.8	17.0	4.2	16.3	17.0
Post-HPA Losses (dB)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Tx E/S Power to Antenna in dBW (dBW)	3.2	13.3	16.0	6.7	11.8	16.0	3.2	15.3	16.0
PSD into Tx E/S Antenna (dBW/Hz)	-80.7	-70.7	-68.0	-77.3	-72.2	-68.0	-80.7	-68.6	-68.0
Tx E/S Antenna Diameter (m)	13.2	13.2	13.2	8.1	8.1	8.1	13.2	13.2	13.2
Tx E/S Antenna Gain (dB)	68.8	68.8	68.8	65.3	65.3	65.3	68.8	68.8	68.8
Tx E/S EIRP per Carrier (dBW)	72.0	82.0	84.8	72.0	77.1	81.3	72.0	84.1	84.8
E/S Pointing Loss (dB)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Atmospheric Loss (dB)	1.17	1.17	1.17	0.79	0.79	0.79	0.69	0.69	0.69
Availability up (%)	50.00	99.90	99.98	50.00	99.90	99.99	50.00	99.90	99.97
Rain attenuation (dB)	0.3	10.3	20.6	0.1	5.2	13.6	0.3	12.5	21.1
Free Space Loss (dB)	213.6	213.6	213.6	213.5	213.5	213.5	213.2	213.2	213.2
<b>Satellite:</b>									
G/T towards Tx E/S (dB/K)	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Output Back-Off (Aggregate across txpdr) (dB)	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0
EIRP per Carrier towards Rx E/S (dBW)	62.8	62.8	62.8	62.8	62.8	62.8	62.8	62.8	62.8
EIRP SD (dBW/Hz)	-21.2	-21.2	-21.2	-21.2	-21.2	-21.2	-21.2	-21.2	-21.2
<b>Downlink:</b>									
Carrier Frequency (MHz)	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300
Atmospheric Loss (dB)	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Availability down (%)	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
Rain attenuation (dB)	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5
E/S Pointing Loss (dB)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Free Space Loss (dB)	209.0	209.0	209.0	209.0	209.0	209.0	209.0	209.0	209.0
Rx E/S Antenna Diameter (m)	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Rx E/S Antenna Gain (dB)	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8
Rx E/S G/T (clear-sky) (dB/K)	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8
System (LNA+Sky) Noise Temp. (K)	200	200	200	200	200	200	200	200	200
Increase in Noise Temp due to rain (K)	41	41	41	41	41	41	56	56	56
<b>Total Link:</b>									
Carrier Noise Bandwidth (kHz)	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000
(C/N) - Thermal Uplink (dB)	18.1	18.1	10.6	18.7	18.7	14.6	18.9	18.9	10.9
(C/N) - Thermal Downlink (dB)	15.3	15.3	15.3	15.3	15.3	15.3	15.0	15.0	15.0
(C/I) - Other Link Degradations (dB)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
(C/N) - Total Actual (dB)	11.2	11.2	8.3	11.3	11.3	10.2	11.2	11.2	8.4
(C/N) - Total Required (dB)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Excess Margin (dB)	4.6	4.6	1.7	4.7	4.7	3.6	4.6	4.6	1.8