

# NIMIQ 5 Link Budgets

Link Parameters	1	2	3
	13 meter Feeder Link E/S Nominal Feeder Link Site	13 meter Feeder Link E/S Nominal Feeder Link Site	13 meter Feeder Link E/S Nominal Feeder Link Site
	to	to	to
	45 cm Receive-Only	45 cm Receive-Only	45 cm Receive-Only
<b>Modulation Parameters:</b>			
Information Bit Rate per Carrier (kbps)	30,719	30,719	30,719
FEC Rate	5/6	5/6	5/6
Reed-Solomon Ratio (188/204, None)	188/204	188/204	188/204
Overall Coding Overhead (%)	30.2%	30.2%	30.2%
Modulation Type (BPSK/QPSK/8PSK/16QAM)	QPSK	QPSK	QPSK
Filter Roll-off Factor ("alpha") (%)	20	20	20
<b>Link Geometry:</b>			
Satellite Longitude (°East)	-72.7	-72.7	-72.7
Tx E/S City Location (name)	Gilbert	Gilbert	Gilbert
Tx E/S Longitude (°East)	-111.8	-111.8	-111.8
Tx E/S Latitude (°North)	33.4	33.4	33.4
Tx E/S Range to Satellite (Km)	38,340	38,340	38,340
Tx E/S Elevation to Satellite (°)	33.1	33.1	33.1
Tx E/S Altitude (m)	300.0	300.0	300.0
Rx E/S City Location (name)	Miami	New York	Los Angeles
Rx E/S Longitude (°East)	-80.3	-74.0	-118.2
Rx E/S Latitude (°North)	25.9	40.8	34.0
Rx E/S Range to Satellite (km)	36,589	37,565	38,804
Rx E/S Elevation to Satellite (°)	58.6	42.9	27.9
Rx E/S Altitude (m)	1.0	15.0	33.0
<b>Link (per carrier):</b>			
Carrier Frequency (MHz)	17,550	17,550	17,550
HPA Power Level (to give required PFD at satellite) (W)	22.7	22.7	22.7
HPA Power in dBW (dBW)	13.6	13.6	13.6
Post-HPA Losses (dB)	2.0	2.0	2.0
Tx E/S Power to Antenna in dBW (dBW)	11.6	11.6	11.6
Tx E/S Antenna Diameter (m)	13.0	13.0	13.0
Antenna Efficiency (%)	65	65	65
Tx E/S Antenna Gain (dB)	65.7	65.7	65.7
Tx E/S EIRP (dBW)	77.3	77.3	77.3
E/S Pointing Loss (dB)	0.1	0.1	0.1
Atmospheric Loss (dB)	0.44	0.44	0.44
Availability up (%)	99.9	99.9	99.9
Rain attenuation (ITU-R Rec. P.618-8) (dB)	3.1	3.1	3.1
Free Space Loss (dB)	209.0	209.0	209.0
<b>Satellite:</b>			