

NIMIQ 5 Link Budgets

Link Parameters		1	2	3
		13 meter Feeder Link E/S	13 meter Feeder Link E/S	13 meter Feeder Link E/S
		Nominal Feeder Link Site	Nominal Feeder Link Site	Nominal Feeder Link Site
		to	to	to
		45 cm Receive-Only	45 cm Receive-Only	45 cm Receive-Only
Modulation Parameters:				
Information Bit Rate per Carrier	(kbps)	41,200	41,200	41,200
FEC Rate		2/3	2/3	2/3
Overall Coding Overhead	(%)	56.5%	56.5%	56.5%
Modulation Type (BPSK/QPSK/8PSK/16QAM)		8PSK	8PSK	8PSK
Filter Roll-off Factor ("alpha")	(%)	20	20	20
Link Geometry:				
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
Link (per carrier):				
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
Satellite:				
Resulting PFD at Satellite	(dBW/m²)	-89.0	-89.0	-89.0