Link budget calculations

Receiver Sensitivity Calculation	Units	Equation	Value
Transmitter Power Output	dBm		23
Transmit Frequency	MHz		5800
Transmitter Antenna Gain	dBi		24
Receiver Antenna Gain	dBi		24
Distance Between Antenna	m		5000
Free Space Path Loss	dB	(-27.55)+20*log10(f)+20*log10(d)	121,69796
Cabel Loss	dB		
Received Power	dBm		-50,69795996
Signal-to-Noise Ratio (SNR)	dB	From table	25
Maximum Channel Noise	dBm		-75,69795996
Receiver Sensitivity	dB		-72
Link Margin	dB	Link Margin = Received Power - R	21,30204004

Link margin is enough to ensure 99% avaibility with regards to Rayleigh's fading model

Rayleigh's Fading Model

Time Availability (%)	Fade Margin (dB)
90	8
99	18
99,9	28
99,99	38
99,999	48

Modulation & Encoding Scheme	Data Rate (Mbps)	SNR (dB)
BPSK 1/2	6	8
BPSK 3/4	9	9
QPSK 1/2	12	11
QPSK 3/4	18	13
16-QAM 1/2	24	16
16-QAM 3/4	36	20
64-QAM 2/3	48	24
64-QAM 3/4	54	25