

Forward Link Budget GEN1 Handheld

<b>Forward Link: 5 GHz up/2.5 GHz down</b>						
<b>User Beam</b>	<b>Inner</b>		<b>Middle</b>		<b>Outer</b>	<b>Units</b>
<b>Uplink Analysis</b>						
Frequency	5.125		5.125		5.125	GHz
Satellite altitude	1414		1414		1414	km
GW Elevation	40		40		40	deg
Slant Range	1969		1969		1969	km
EIRP per user	28.2		26.9		28.7	dBW
Path loss	-172.5		-172.5		-172.5	dB
Polarization loss	-0.1		-0.1		-0.1	dB
Pointing loss	-1.0		-1.0		-1.0	dB
Satellite antenna gain	6.37		6.37		6.37	dBi
Line loss	-2.60		-2.60		-2.60	dB
RX power/user @LNA	-141.7		-143.0		-141.1	dBW
Average user data rate	2400		2400		2400	bps
System noise temperature	550		550		550	K
Thermal noise density, No	-201.2		-201.2		-201.2	dBW/Hz
Interference density, Io	-196.8		-198.5		-198.2	dBW/Hz
Uplink Eb/(No+Io)	19.9		19.9		21.5	dB
Nominal transponder gain	122.7		122.7		122.7	dB
<b>Downlink Analysis</b>						
Frequency	2.50		2.50		2.50	GHz
TX power per user	-14.3		-15.6		-13.7	dBW
Line loss	-2.1		-2.1		-2.1	dB
Satellite antenna gain	12.69		15.51		17.20	dBi
EIRP per user	-3.7		-2.1		1.4	dBW
Satellite altitude	1414		1414		1414	km
User elevation angle	70		50		25	deg
Range	1486		1739		2528	km
Free space loss	-163.8		-165.2		-168.4	dB
Polarization & tracking loss	-1.0		-1.0		-1.0	dB
RX signal/user/satellite	-168.5		-168.3		-168.1	dBW
User antenna gain	0.51		0.33		0.00	dBi
RX signal at antenna output	-168.0		-168.0		-168.1	dBW
System noise temperature	293.7		293.7		293.7	K
Thermal noise density, No	-203.9		-203.9		-203.9	dBW/Hz
Average data rate	2400		2400		2400	bps
Downlink Eb/No	2.1		2.1		2.1	dB
Interference per channel	-148.70		-148.60		-148.80	dBW
Spreading bandwidth	1.23		1.23		1.23	MHz
1/(10*LOG(spreading bandwidth))	-60.9		-60.9		-60.9	dB/Hz
Interference Density, Io	-209.6		-209.5		-209.7	dBW/Hz
Downlink Eb/(No+Io)	1.1		1.1		1.0	dB
Coherent combining gain	2.5		2.5		2.5	dB
Overall (up&down) Eb/(No+Io)	3.5		3.5		3.5	dB
Required Eb/No w/ power control margin	3.5		3.5		3.5	dB
Available margin for propagation effects	16		16		16	dB