

EXHIBIT #2

ORBITAL
Modification Request to File No.: 5486-EX-PL-96

UPLINK CALCULATIONS

				Exhibit 2			
DESC:	BATSAT Uplink Analysis						
DATE:	21-May-97						
Modulation							
	OQPSK MODULATION 57600 BAUD						
	GROUND SEGMENT						
EI	Elevation Angle (deg)		deg	5	10	15	20 deg
Pt	Transmitter Power	20	W				
	Transmit Ant. Polariz.	RHCP					
Gt(S)	Tx Antenna Gain @ Elevation angle	17.6	dBic	17.6	17.6	17.6	17.6 dBi
Ld	Distribution Losses	3	dB				
EIRP(S)	Tx EIRP @ Elevation angle (dBm)		dBm	57.6103	57.6103	57.6103	57.6103 dBm
	SATELLITE SEGMENT						
H	Altitude	313	nm				
		580	km				
D	Distance (nm)			1230	1018	854	730 nm
F	Frequency	450.0	MHz				
L	Free Space Loss (dB)		dB	152.66457	151.01625	149.49748	148.13304 dB
P	Receive Ant. Polariz.	lin					
Lp	Polarization Loss	4.1	dB				
La	Atmospheric Loss	1	dB				
Lm	Multipath Fade Loss	3	dB				
AI	Satellite Look Angle		deg	65.939029	64.511921	62.2968	59.465377 deg
Ad	Satellite Depression Angle		deg	24.060971	25.488079	27.7032	30.534623
Gre(AI)	Eff. Rec. Ant. Gain (dB)	-10	dB	-10	-10	-10	-10 dBi
Tant	Antenna Noise Temperature	600	K				
Ld	Distribution Losses	2.5	dB				
Pin	Receiver Input Power (dBm)		dBm	-115.6543	-114.0059	-112.4872	-111.1227 dBm
NF	Receiver Noise Figure	3	dB				
Trxs	RX System Noise Temp.	752.9519	K				
BW	Receiver Noise Bandwidth	100	kHz				
Pnr	Receiver Noise Power	-119.8335	dBm				
C/N	Received Carrier/Noise Ratio (dB)		dB	4.179264	5.8275873	7.3463592	8.7107988 dB
Fb	Bit Rate (kb/s)	57.6	kb/s				
Eb/No	Received Eb/No (dB)		dB	6.5750392	8.2233624	9.7421344	11.106574 dB
	Required Eb/No (10 ⁻⁵ BER)	10.5	dB				
	Implementation Margin (dB)	2	dB				
Mi	Link Margin (dB)		dB	-5.924961	-4.276638	-2.757866	-1.393426 dB
Mc	Clear-Sky Link Margin		dB	-1.924961	-0.276638	1.2421344	2.6065739 dB