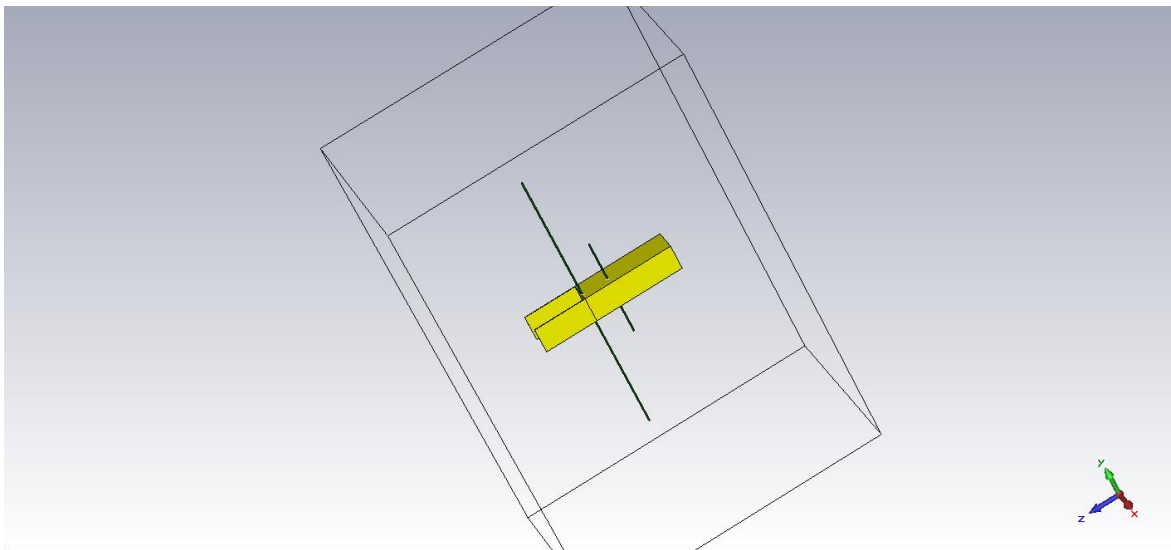
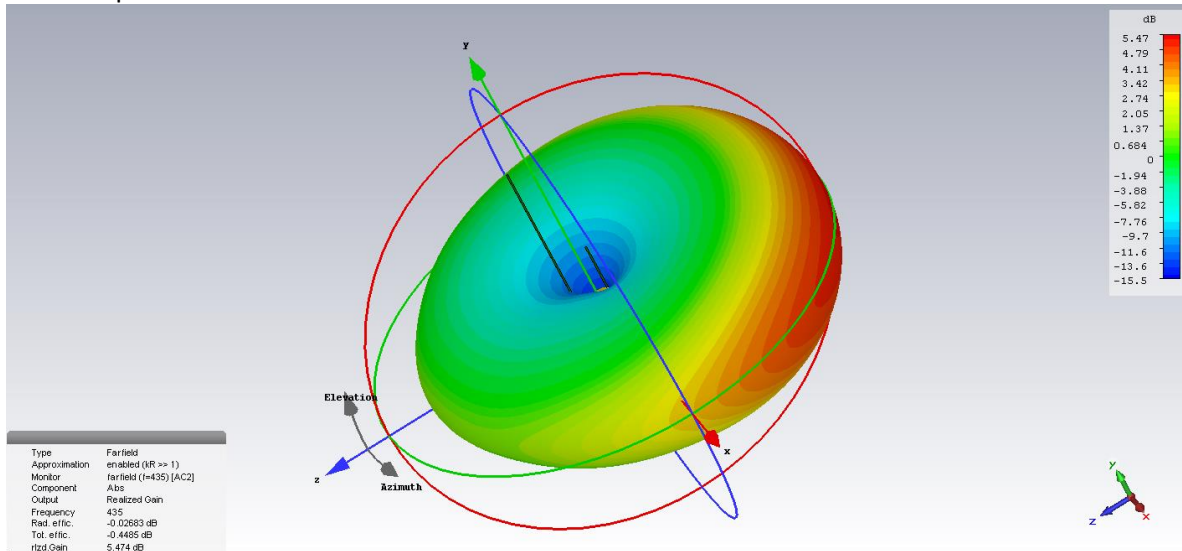


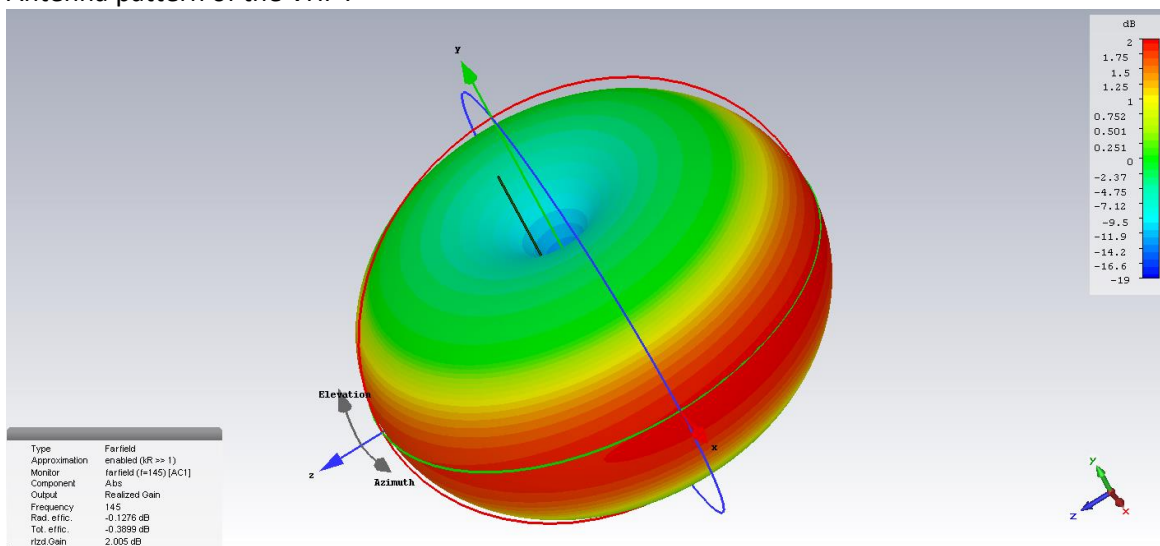
Configuration :



Antenna pattern of the UHF :



Antenna pattern of the VHF :



Power budget in unfavorable case : all ADCS subsystems at full power and worst orbit (maximum eclipse time and low inclination)

PicSat Power Consumption [mW]						
System	Raw power	margin	power + margin	quantity	Duty Cycle	Power
EPS	210	2%	214,2	1	100%	214,2
iOBC	380	2%	387,6	1	100%	387,6
TRxVU	Rx	490	514,5	1	95%	488,775
	Rx & Tx	3500	3675	1	5%	183,75
AntS1	17,5	2%	17,85	2	100%	35,7
AntS2	17,5	5%	18,375	2	100%	36,75
Payload	Science	2040	2142	1	65%	1392,3
	Sby	150	157,5	1	35%	55,125
ADCS	full power	1800	1980	1	70%	1386
	Sby	200	220	1	30%	66
Power consumed						4246,2
Margin						10%
EPS overall losses 10%						424,62
Total						5095,44
Power generated including margin on worst orbit						5860
Balance						764,56

Uplink case one : Spacecraft antenna gain = 2dB, GS Transmitter power = 10W

PicSat		NOTE:
Uplink Command Budget:		
Parameter:	Value:	Units:
Ground Station:		
Ground Station Transmitter Power Output:	10,0	watts
In dBW:	10,0	dBW
In dBm:	40,0	dBm
Ground Stn. Total Transmission Line Losses:	3,6	dB
Antenna Gain:	16,3	dB _i
Ground Station EIRP:	22,7	dBW
Uplink Path:		
Ground Station Antenna Pointing Loss:	0,3	dB
Gnd-to-S/C Antenna Polarization Losses:	0,1	dB
Path Loss:	141,6	dB
Atmospheric Losses:	2,1	dB
Ionospheric Losses:	0,7	dB
Rain Losses:	0,0	dB
Isotropic Signal Level at Spacecraft:	-122,1	dBW
Spacecraft (Eb/No Method):		
----- Eb/No Method ----		

Spacecraft Antenna Pointing Loss:	0,3	dB
Spacecraft Antenna Gain:	2,2	dBi
Spacecraft Total Transmission Line Losses:	2,0	dB
Spacecraft Effective Noise Temperature:	2000	K
Spacecraft Figure of Merit (G/T):	-32,8	dB/K
S/C Signal-to-Noise Power Density (S/No):	73,4	dBHz
System Desired Data Rate:	1200	bps
In dBHz:	30,8	dBHz
Command System Eb/No:	42,6	dB
Demodulation Method Seleted:	AFSK/FM	
Forward Error Correction Coding Used:	None	
System Allowed or Specified Bit-Error-Rate:	1,0E-05	
Demodulator Implementation Loss:	1,0	dB
Telemetry System Required Eb/No:	23,2	dB
Eb/No Threshold:	24,2	dB
System Link Margin:	18,4	dB

Uplink case2 : Spacecraft antenna gain = -15dB, GS Transmitter power = 120W

Uplink Command Budget:

Parameter:	Value:	Units:
Ground Station:		
Ground Station Transmitter Power Output:	120,0	watts
In dBW:	20,8	dBW
In dBm:	50,8	dBm
Ground Stn. Total Transmission Line Losses:	3,6	dB
Antenna Gain:	16,3	dBi
Ground Station EIRP:	33,5	dBW
Uplink Path:		
Ground Station Antenna Pointing Loss:	0,3	dB
Gnd-to-S/C Antenna Polarization Losses:	0,1	dB
Path Loss:	141,6	dB
Atmospheric Losses:	2,1	dB
Ionospheric Losses:	0,7	dB
Rain Losses:	0,0	dB
Isotropic Signal Level at Spacecraft:	-111,3	dBW
Spacecraft (Eb/No Method):		
----- Eb/No Method ----		

Spacecraft Antenna Pointing Loss:	0,3	dB
Spacecraft Antenna Gain:	-15,0	dBi
Spacecraft Total Transmission Line Losses:	2,0	dB

Spacecraft Effective Noise Temperature:	310	K
Spacecraft Figure of Merit (G/T):	-41,9	dB/K
S/C Signal-to-Noise Power Density (S/No):	75,2	dBHz
System Desired Data Rate:	1200	bps
In dBHz:	30,8	dBHz
Command System Eb/No:	44,4	dB
Demodulation Method Selected:	AFSK/FM	
Forward Error Correction Coding Used:	None	
System Allowed or Specified Bit-Error-Rate:	1,0E-05	
Demodulator Implementation Loss:	1,0	dB
Telemetry System Required Eb/No:	23,2	dB
Eb/No Threshold:	24,2	dB
System Link Margin:	20,2	dB

PicSat		NOTE:
Downlink Telemetry Budget:		
<i>Parameter:</i>	<i>Value:</i>	<i>Units:</i>
Spacecraft:		
Spacecraft Transmitter Power Output:	3,5	watts
In dBW:	5,4	dBW
In dBm:	35,4	dBm
Spacecraft Total Transmission Line Losses:	2,2	dB
Spacecraft Antenna Gain:	2,2	dBi
Spacecraft EIRP:	5,4	dBW
Downlink Path:		
Spacecraft Antenna Pointing Loss:	0,3	dB
S/C-to-Ground Antenna Polarization Loss:	0,2	dB
Path Loss:	151,1	dB
Atmospheric Loss:	2,1	dB
Ionospheric Loss:	0,4	dB
Rain Loss:	0,0	dB
Isotropic Signal Level at Ground Station:	-148,7	dBW
Ground Station (EbNo Method):		
----- Eb/No Method ----		

Ground Station Antenna Pointing Loss:	0,2	dB
Ground Station Antenna Gain:	18,5	dBi
Ground Station Total Transmission Line Losses:	2,0	dB
Ground Station Effective Noise Temperature:	383	K
Ground Station Figure of Merit (G/T):	-9,3	dB/K

G.S. Signal-to-Noise Power Density (S/No):	70,4	dBHz
System Desired Data Rate:	9600	bps
In dBHz:	39,8	dBHz
Telemetry System Eb/No for the Downlink:	30,5	dB
Demodulation Method Seleted:	BPSK	
Forward Error Correction Coding Used:	None	
System Allowed or Specified Bit-Error-Rate:	1,0E-05	
Demodulator Implementation Loss:	1	dB
Telemetry System Required Eb/No:	9,6	dB
Eb/No Threshold:	10,6	dB
System Link Margin:	19,9	dB