

TT&C Product Selection

TT&C Antenna System Selection and Options

The Orbital Systems Telemetry, Tracking, and Control (TT&C) antenna systems are fully integrated antenna and RF subsystems built onto a high performance antenna positioner. The antenna feed and reflector are highly optimized to work together with other integrated RF components such as HPAs, upconverters and downconverters.

Antenna System Selection

Begin using this guide by selecting your desired band/s of operation and G/T requirement to find the correct size aperture. Then choose the HPA based on the EIRP possible from that size system.

Aperture Size	Feed Selection				
	S-Band Only Prime Focus	S- and X-Band Prime Focus	S- and X-Band Cassegrain X Dichroic Sub	X-Band RX Only Cassegrain	S- and Ka-Band Cassegrain Ka Dichroic Sub
1.8m					
S-Band G/T	9.1 dB/K	7.0 dB/K			
X-Band G/T		21.4 dB/K			
EIRP (50W HPA at P1dB)	38.8 dBw	39.0 dBw			
2.4m					
S-Band G/T	12.0 dB/K	9.5 dB/K			
X-Band G/T		23.9 dB/K			
EIRP (50W HPA at P1dB)	42.1 dBw	41.5 dBw			
3.0m					
S-Band G/T	14.0 dB/K	11.5 dB/K			12.8 dB/K
X-Band or Ka-Band G/T		26.0 dB/K			30.0 dB/K
EIRP (50W HPA at P1dB)	44.1 dBw	43.5 dBw			43.2 dBw
3.7m					
S-Band G/T	15.6 dB/K	13.1 dB/K	15.3 dB/K		
X-Band G/T		27.6 dB/K	28.3 dB/K	28.5 dB/K	
EIRP (50W HPA at P1dB)	45.8 dBw	45.1 dBw	44.9 dBw		
5.0m					
S-Band G/T	18.2 dB/K	15.7 dB/K	17.9 dB/K		
X-Band G/T		30.2 dB/K	30.9 dB/K	31.0 dB/K	
EIRP (50W HPA at P1dB)	48.4 dBw	47.7 dBw	47.5 dBw		
6.1m					
S-Band G/T	19.8 dB/K	17.3 dB/K	19.6 dB/K		
X-Band G/T		31.8 dB/K	32.8 dB/K	33.0 dB/K	
EIRP (50W HPA at P1dB)	50.0 dBw	49.3 dBw	49.0 dBw		
7.3m					
S-Band G/T	21.4 dB/K	18.9 dB/K	21.2 dB/K		
X-Band G/T		33.3 dB/K	34.1 dB/K	34.3 dB/K	
EIRP (50W HPA at P1dB)	51.3 dBw	50.6 dBw	50.3 dBw		



Applications:

TT&C antennas and ground station front ends used to transmit and receive satellite control signals and to collect satellite payload data.

- EIRP value shown in table is for 50W HPA option operating at P1dB point. Value is mid band. For 100W HPA option this number is increased by 4 dBw
- G/T is given for high elevation without radome. Value provided is mid band and typical
- Radome performance degradation: G/T is reduced by 0.5 dB/K in S- Band, and 1.3 dB/K in X- Band. EIRP is reduced by 0.3 dBw
- Radomes are optional for antenna positioners depending on climate and wind speeds

TT&C System Options

- Select feed and aperture based on required bands of operation and necessary G/T using chart located above. If band is not shown above indicate non-standard option on page 2 and provide band requirements
- Determine HPA size option by taking 50W EIRP performance from prior chart selection. If more power is required choose the 100W HPA option on page 2 and increase EIRP by 4 dBw
- Complete option selections on page 2 beginning with your customer information and provide this basic set of requirements to your Orbital Systems sales representative or Orbital Systems Sales Department at OrbitalSales@cpil.com for a quotation
- For questions regarding additional antenna options or general specifications contact us using information located at the bottom of page 2

For a quotation please answer the following questions and return to OrbitalSales@cpii.com:

Purchasing Organization: _____

Contact Name: _____

Title: _____

Address: _____ City: _____

Country: _____

Telephone: _____ Mobile: _____

Email: _____ Website: _____

Organization Operating the Antenna:

Antenna Location City: _____ Antenna Location Country: _____

Target installation date for antenna system? *Typical time frame from purchase to shipment is 4 months*

Month _____ Year: _____

Select aperture size from chart on page 1.

- 1.8m 2.4m 2.8m 3.0m 3.7m 5.0m 6.1m 7.3m

Select HPA size from chart on page 1: 50W HPA 100W HPA (Increase EIRP by 4 dBw)

Transmit band required? S-Band Non-standard _____

Transmit polarity required? RHCP LHCP Selectable

Receive band/s required? *Choose only one.*

- Prime Focus S-Band RX X-Band SX-Band Non-standard _____
 Cassegrain X-Band RX Only SX-Band Ka-Band RX Only S-Ka-Band Non-standard _____

Receive polarity required?

- S-Band RHCP LHCP Selectable Simultaneous
 X-Band RHCP LHCP Selectable Simultaneous
 Ka-Band RHCP LHCP Selectable Simultaneous

Upconverter option required? No Yes

- 70 MHz IF Non-standard _____

Downconverter option required? No Yes

- S-Band RX 70 MHz Tunable
 X-Band RX 720 MHz Tunable / IF Bandwidth 200 MHz 1200 MHz CF Block or 1250 MHz CF Block
 Ka-Band RX 1200 MHz CF Block or 2400 MHz CF Block
 Non-standard _____

Optional loopback test converter? No Yes - *Only available with optional upconverter and downconverter.*

- S-Band to S-Band

Distance to indoor rack equipment from antenna system?

- Distance _____ Standard RF fiber link (upgrade) Line amplifier (upgrade)

Optional radome required? No Yes - Refer to page 1 for radome performance degradation.

- 14' (1.8m to 2.4m) 18' (3.0m to 3.7m) 25' (5.0m) 28' (6.1m)

Optional narrow-band satellite modem required? No Yes

- Precision LPN frequency reference _____ MHz Required number of LPN ports _____

High-rate demodulator option? No Yes

- Modes required _____ Rack Enclosure
 RF Input frequency _____ MHz IF frequency _____ MHz IF bandwidth _____ MHz

