L3HARRIS™
FAST. FORWARD.

C/TT-505 UHF COMMAND/ TELEMETRY TRANSCEIVER

TRANSCEIVER	
Frequency Range	
UHF 400-to-500 MHz (factory preset)	
Frequency Source	
Low-phase noise PLL synthesizer	
Modulation	
FSK (NRZ-L)	
PSK (Bi-Ø-L, 60 ° phase modulation with residual carrier)	
Data Rates	
8, 32, 128 and 256 kbps	
Receiver Sensitivity (BER ≤ IE-6)	
FSK, 128 kHz deviation, no coding	-103 dBm max, -103.5 typical (128 kbps) -109 dBm max, -110 typical (8 kbps)
FSK, 8 kHz deviation, no coding	-112 dBm max, - 113.5 typical (8 kbps)
PSK with no coding	-101 dBm max, -103.0 typical (256 kbps) -104 dBm max, -106.5 typical (128 kbps) -110 dBm max, -113.0 typical (32 kbps) -116 dBm max, -119.0 typical (8 kbps)
PSK with rate = ½, k = 7 coding	-106.5 dBm max, -108.0 typical (256 kbps) -109.5 dBm max, -112.0 typical (128 kbps) -115.5 dBm max, -118.0 typical (32 kbps) -121.5 dBm max, -124.0 typical (8 kbps)
Receiver 3rd Order Intercept	
-20 dBm	
RF Output Power	
+40 dBm min (10 W) +41.4 dBm typical (13.8 W)	
Power Requirements	
Primary power in receive and transmit mode	60 W max, 45.5 W typical
Primary power in receive mode only	6 W max, 4.9 W typical
Operating Voltage	
22 to 36 VDC	
Weight	
2 kg	
Mechanical	
6.75” L x 5.05” W x 3.65” H	
RF Input Range	
-130 dBm to -70 dBm, +10 dBm max	

The C/TT-505 UHF Command/ Telemetry Transceiver is designed to meet the needs of many different types of space systems that require command and telemetry capabilities. The transceiver provides a full-duplex wireless RF command, telemetry and data link between two spacecraft.

The C/TT-505 incorporates The Consultative Committee for Space Data Systems’ Proximity-1 protocol, providing error-free communication by employing an error-detection and retransmission service. Additionally, the Proximity-1 protocol provides an automatic link-establishment feature that allows the primary transceiver to reconfigure the secondary transceiver with no intervention from the secondary spacecraft.

Design of the transceiver is flexible enough to accommodate many mission scenarios where a data link is needed between two spacecraft, such as planetary and lunar orbiter/lander spacecraft, formation-flying interferometry spacecraft and asteroid or comet fly-by spacecraft. The spacecraft interface uses an RS-422 serial command and status interface. This allows the spacecraft to control or reconfigure the transceiver and get extensive insight into the current configuration, link status and health of the transceiver.

TRANSCEIVER	
Input Characteristics	
External Reference	0 to +10 dBm
Command Data	RS-422
Command Clock	RS-422
TX Data	RS-422
TX Clock	RS-422
Ext. Ref. Enable	Opto-isolated discrete
Doppler/Canister Strobe	Opto-isolated discrete

ADDITIONAL FEATURES

Additional features include a PSK modulator and demodulator using 60-degree phase modulation and Bi-Ø-L encoding/decoding. Convolutional encoding (rate=1/2, k=7) and Viterbi decoding are selectable for PSK mode. The FSK modulator and demodulator are also selectable with V.35/V.36 encoding and decoding. A two-way Doppler measurement system is also available.

EXPERT SUPPORT

The C/TT-505 is designed, built, assembled and tested all within one facility and is serviced and supported by engineering professionals with decades of spaceflight design experience. Every C/TT-505 delivered is accompanied by domain expertise in parts, materials, radiation analysis, mechanical engineering, power supply design, digital signal processing, radio frequency design and manufacturing engineering. For most applications, existing data items can be provided for review, reducing the analysis and testing required.

C/TT-505 UHF Command/Telemetry Transceiver

L3HARRIS™
FAST. FORWARD.

1025 W. NASA Boulevard
Melbourne, FL 32919
t 800 852-5105 f 513 573-6290
SpaceSales.cin@L3Harris.com