

ADAPTIVE X-BAND TRANSMITTER #SatelliteandSpace









LOCUS XBTx (Adaptive X-Band Transmitter) developed by ASELSAN for transmission of the payload data from LEO Earth Observation Satellites to ground stations.

XBTx performs the acquisition and reception of payload data, modulation and coding, digital to analog conversion, RF upconversion, amplification and filtering functions.

XBTx supports high data rate (SCCC, DVB-S2) and legacy (4D-8PSK-TCM) waveforms. XBTx also supports adaptive/variable modulation and coding, which allows the usage of variable data rates, high volume of data transmission and robust link budget performance.

XBTx provides the usage of static digital pre-distortion which aims to improve the linearization of high-power amplifiers (TWTA or SSPA).

Baseband Data Processing

Waveforms

- Adjustable up to 64 APSK with following options:
 - Legacy waveform: 4D-8PSK-TCM (CCSDS-401, Article 1. 2.4.18, Annex-1) and RS channel coding (CCSDS 131.0-B-3)
 - 2. CCSDS 131.2-B-1 Flexible Advanced Coding and Modulation Scheme for High Rate Telemetry Applications (SCCC)
 - CCSD-131.3-B-1 CCSDS Space Link Protocols Over ETSI 3. **DVB-S2 Standard**

Roll-off Options

: Adjustable and compatible with **CCSDS** standards

Output Symbol Rate Input User Data Rate : Adjustable up to 150 Msps : Up to 800 Mbps





RF

Carrier frequency range : 8025 MHz – 8400 MHz (Center frequency is

Output RF power

Budgets

Bus Voltage	: Unregulated between 22 VDC and 38 VDC
Power consumption	:<20 W
Dimensions	: < 240 x 110 x 170 mm3 (WxLxH)
Mass	: < 2.5 kg

: -10 to +6 dBm (Adjustable)

adjustable with respect to used symbol rate)

Environmental Conditions

Temperature range	: Operating: -20°C to 55°C (Acceptance)	
Non-operating	: -25°C to 60°C (Acceptance)	
Random Vibration and Shock Levels : To be supplied on demand		
Radiation Tolerance TID	: >30 krad	
SEL	: LETth > 60 MeV.cm2/mg	

RAMS

Lifetime :>8 years Power switch on-off cycles: > 50000 cycles (1 cycle = OFF ON OFF)

User Data Interface Physical layer

: LVDS Connector : Micro-D with 25 pins Data flow control : Yes with using LVDS Return Link : Redundant LVDS interfaces Redundancy

I/O Connectors

TM/TC connector Power connector

LVDS connectors **RF** connector

TM/TC Interfaces

Digital TM/TC interface High level commands **Bi-level telemetry**

: MIL-STD-1553B : HV-HPC ON and OFF commands (Compatible with ECSS-E-ST-50-14C) : BDM ON/OFF telemetry (Compatible with ECSS-E-ST-50-14C)

: Sub-D with 15 pins (MIL-STD-1553B) : Sub-D with 15 pins (with TC ON&OFF

command and TM ON/ OFF status)

: Micro-D with 25 pins

: SMA female (50 Ohm)

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