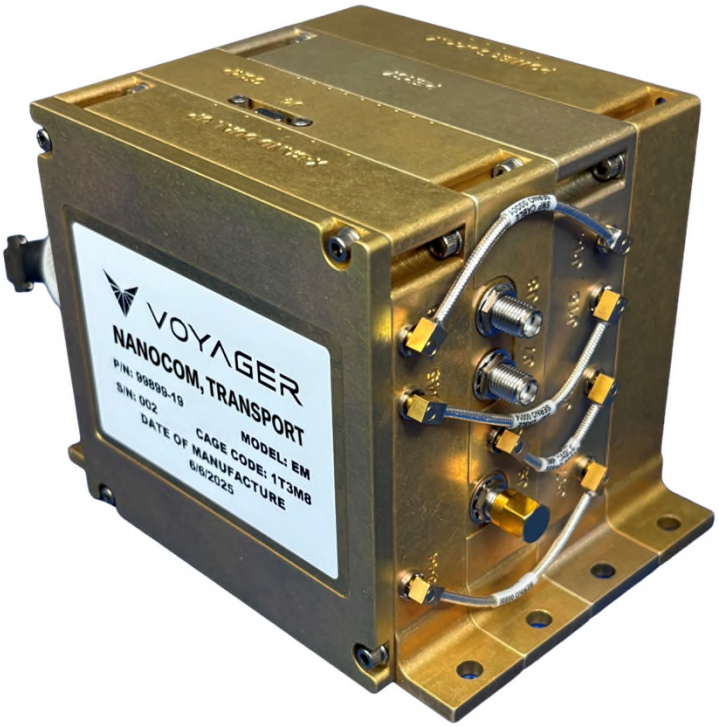
NANOCOM™ Software-Defined Transceivers

Transport Configuration S-and X-Band

OVERVIEW

Nanocom™ SDR Transport supports (2) X-band Downlinks, S-band Uplink and S-band Downlink, plus encryption, network protocols and on-board storage. It is flexible in modulation, channel frequency and data rate on-orbit. Mission data is received over Aurora from the memory module.

Nanocom™ SDR is programmable on orbit and contains a Xilinx Zynq System on a Chip (SoC) whose large availability of programmable logic resources support sophisticated algorithms.



KEY FEATURES

- Modular design for ease of configuration
- Zynq 7045 SoC; Dual-core ARM Cortex-A9
- Low SWaP
- On-orbit reprogrammable
- FW/SW co-development
- 7-year mission life

APPLICATIONS

- Commercial and Military SDR
- Mission Data Transmitter
- Signal Intelligence Receiver
- Satellite Orbits: LEO, MEO, GEO, Cislunar

NANOCOM™ Software-Defined Transceivers (Transport S- and X-Band)

PRODUCT SPECIFICATIONS

TRANSMITTER	≤ 6 GHz	X-BAND
Frequency	70 – 6000 MHz	8.025 – 8.4 GHz
RF Channels	1	2
RF Output Power	0 dBm	+10 dBm
Signal Bandwidth	56 MHz	1 GHz
Modulation	BPSK, QPSK, OQPSK, BPSK on subcarrier, Ranging, Coherency, SGLS, USB/STDN	
Data Rate	10 kbps – 1 Mbps	1 - 320 Msps, > 1 Gbps capable
FEC	RS (255,223) I=5, Convo (1/2) k=7, LDPC (7/8)	
Frequency Accuracy	±2 ppm EOL, locks to external 10 MHz	
Spurious And Harmonics	≤ -60 dBc, NTIA spectral Mask Compliant	
EVM	< 4% RMS	
RECEIVER		
Frequency	70 – 6000 MHz	
Data Rate	10 kbps – 1 Mbps	
Modulation	BPSK, QPSK, OQPSK, BPSK on subcarrier	
Dynamic Range	-70 dBm to 0 dBm	
Max Input Power	+2 dBm	
Channel Bandwidth	56 MHz	
Acquisition and Doppler	± 60 KHz, 10 kHz/s	
TRANSCEIVER		
Outline Dimensions	12.7 cm x 9.2 cm x 9.7 cm	
Mass	1.5 kg	
Mission Life	Up to 7 years	
Radiation	20 krads, LET > 43 MeV parts level	
Input Voltage	18 - 40 VDC isolated	
Power Consumption	< 48 W	
EMI/EMC	MIL-STD-461	
Data/Ctrl Interfaces	RS-422, SpW, CAN, LVDS, 1PPS, 4 Aurora lanes (2 Gbps/lane)	
Temperature Range	-30 °C to +60 °C operating, -40 °C to +85 °C (unpowered)	
Vibration	GSFC-STD-7000 (NASA GEVS) Qual Levels	
Encryption	AES-256-GCM authenticated encryption	