Libre Space Foundation

SatNOGS COMMS

The SatNOGS-COMMS is a dual-band software configurable radio transceiver specifically designed for Telemetry and Telecommand (TMTC) in the S-band and UHF.

The radio module supports full in-flight reconfiguration of the carrier and intermediate frequencies, bitrate, modulation options, and channel-filter bandwidth.

SatNOGS-COMMS is fully compatible with SatNOGS Network for all TMTC functionality. The software and hardware are released as open source projects, which can be tailored to user needs.



SatNOGS-COMMS KEY FEATURES	
Transceiver / Controller	 STM32H7 ARM® Cortex®-M7 based microcontroller AT86RF215 high flexibility dual-band transceiver with I/Q Radio capabilities FPGA ZYNQ-7020 Internal Memory: 8GB Latch-up protection with mitigation mechanism
RF Features	 Dual radio, UHF and S-Band, Half-duplex operation per band Adjustable TX power: 26 - 32dBm, 1dB step with no ALC and stability ±1.5dB (uncalibrated), SFCG 21-2R4 compatible Receiver Noise Figure: 1.5dB AGC dynamic range: 58dB Frequency step size: 100Hz in UHF and 400Hz in S-Band Frequency Stability: ±0.5 ppm (uncalibrated) Frequency Ranges: 2025-2110MHz (Rx) 2200-2290MHz(Tx) 400-440MHz (Rx/Tx)
Baseband and Protocol	 GMSK/GFSK,BPSK,QPSK modulation schemes Data rates up to 50 kbps for UHF up to 1 Mbps for S-band Framing encapsulation CCSDS IEEE 802.15.4 Framing options CCSDS coding schemes

	IQ support for both UHF and S-Band
Interfaces	 Electrical: CAN-FD. UART, I2C, SPI, LVDS, Antenna deployment interface Mechanical: LibreCube Board Specification compliant RF Connector: SMC
Mass	• Less than 200 g with aluminum shield
Dimensions	• 90x90x25 mm
Power	 DC supply voltage: 6 - 14V Power consumption: 8 W (peak when transmit 31dBm in S-Band radio)
Environmental	• Operating Temperature: -40 to +85 °C