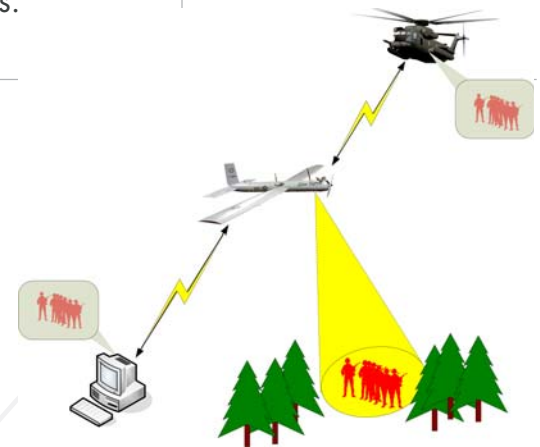


Miniature BEAM Transceiver (MBT) UAV Video System

Nova Engineering's Miniature Beam Transceiver (MBT) system provides a complete system-level solution to the problem of achieving an air-to-ground video downlink: secure, error resilient, high quality and bandwidth efficient in a small, light-weight and low-power form – ideal for small UAV applications.

Bandwidth Efficient Real-time Video Link for UAVs

- ▼ Embedded digital video compression for high quality and flexibility
- ▼ Compact, light-weight and lower-power package
- ▼ Resilient links with integral error correction
- ▼ Standard interface for a variety of cameras



Nova Engineering's MBT system is a powerful combination of video compression and bandwidth efficient modulation, coupled with advanced digital signal processing techniques which enables users to transmit real-time, high quality video streams in a fraction of the bandwidth required by other systems. In addition, the assortment of data rates, frequency ranges, and modes of operation with the MBT system provides unsurpassed flexibility in meeting a variety demanding needs and ever-changing operational scenarios for today's small UAVs.

The MBT system uniquely combines digital video and spectrally efficient waveforms transmission in a compact package. MBT incorporates a real-time, hardware-based, image compression algorithm known as JPEG2000. This makes it possible to decrease digital video data rates to bandwidths equal to, or narrower than, comparable analog signal bandwidths, while delivering high coding efficiency, lossy and lossless transforms, superior error resiliency, and lower complexity than other compression algorithms; which translates directly into lower power and lower latency.

MBT includes an L-Band transmitter that supports data rates up to 27Mbps and bandwidth efficient modulations such as SOQPSK and CPM in addition to forward error correction. MBT also includes a UHF transceiver for remote Command and Control of the video transmitter and other UAV requirements. MBT provides a small, lightweight, low power, air-to-ground video downlink for small UAVs where size, weight and power requirements are critical. Furthermore, the transmitted video signal needs to be secure, error resilient, high quality, and occupy minimal bandwidth.

Applications

- ▼ Video links for small or other Unmanned Aircraft Systems (UAS)



Parameter	Specifications
Carrier frequency	225MHz -400MHz (UHF Module), channelization in 25kHz steps 1710MHz -1850MHz (L-Band Module), channelization in 0.5MHz steps
Carrier stability	Within +/- 5 PPM -20° C to + 70° C (UHF Module) Within +/- 20 PPM -20° C to + 70° C (L-Band Module)
RF Output	1W incident minimum (UHF Module), into VSWR < 2:1, any phase angle, SMA jack 2W incident minimum (L-Band Module), into VSWR < 2:1, any phase angle, SMA jack
Impedance	50 ohms (nominal)
Load VSWR	No damage, any load VSWR and phase angle
Harmonic & spurious level	In accordance with latest MIL-STD 461
Turn-on time	RF output within 3dB of rated output within 500msec, full operation within 1 sec
Spectral masks	NTIA Manual of Regulations & Procedures for Federal Radio Frequency Management (25kHz plan) (UHF Module) PCM/FM: per IRIG 106 (L-Band Module) SOQPSK-TG: per IRIG 106 spectral mask (Tier 1) (twice the efficiency of PCM/FM) (L-Band Module) Multi-h CPM: per ARTM spectral mask (Tier 2) (three times the spectral efficiency of PCM/FM) (L-Band Module)
TPC/FEC	Turbo Product Code adds 4-8 dB of link margin with Hypermod MMD44 (or equivalent) demodulator (L-Band Module)
Data & clock levels	RS-422 (TTL optional)
Bit rate	FSK: 16kbps (UHF Module) BEAM CPM: 40-50kbps (UHF Module) PCM/FM: 50kbps to 13.9 Mbps (L-Band Module) SOQPSK: 50kbps to 27.8 Mbps (L-Band Module) Multi-h CPM: 50kbps to 27.8 Mbps (L-Band Module)
Input impedance	TTL: 10 kOhm to +5 Vdc; RS-422: 1 kOhm differential
Video compression	JPEG 2000, MPEG2 optional
Encryption	Optional
Connectors	Video (CameraLink): CameraLink MDR-26 (UHF Module) Video (NTSC, S-Video): MDM-15, sockets (UHF Module) Serial Interfaces (RS-232, RS-422, RS-485): MDM-21, sockets (UHF Module) Data/clock, and serial control: MDM-9, pins (L-Band Module)
Input voltage	+10 to 15Vdc, reverse polarity protected, 2.0 A (typical)
Connectors	MDM-15, pins (UHF Module); MDM-9, pins (L-Band Module)
Baseplate temperature	Operating: -20° C to +70° C; Storage: -50° C to +125° C
Vibration	Random operating: 0.1 g ² /Hz, 20Hz to 2000Hz, 14 grms, 3 axes Sinusoidal operating: 20g peak, 20Hz to 2000Hz, 3 axes
Shock	Operating: 100g peak, 11msec, 3 axes Storage: MIL-STD-810E, method 514.4
Altitude	Unlimited
Humidity	95% (MIL-STD-810E, method 507)
Dimensions	4.0" x 3.0" x 1.9" (22.8 cubic inches) (UHF Module) 3.5" x 2.5" x 1.45" (12.7 cubic inches) (L-Band Module)
Weight	907 grams (2 lbs.) (UHF Module) 450 grams (1 lb.) (L-Band Module)

More information available on our website.

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