GENERAL DYNAMICS

Mission Systems

The Next Generation Combat Survival Radio (NGSR)



Smaller, lighter, and better power efficiency than previous CSAR radios

Compact and long battery life featuring cell phone form factor with greater than 12 days battery life

Auto-activation: G-Force & water

PNT Robustness with Electronic Warfare bringing anti-jam, antispoof with active beam forming and nulling to GNSS and APNT

Radio designed to be upgradeable to M-Code Inc 2 when available

Overview

The Next Generation Combat Survival Radio (NGSR) is a U.S. Air Force-led program for the DoD and Joint Force providing line-of-sight voice and secure, over-the-horizon, two-way data communications that help combat search and rescue teams quickly locate, authenticate and rescue downed pilots and isolated military personnel. The radio sends encrypted global positioning information, user identification, and situation reports to provide rescue teams and aircraft operating in hazardous conditions with quick and accurate location information. The new NGSR radio is significantly smaller, lighter and has better power efficiency than previous CSAR radios.

The radio features a "cell phone-like" form factor with a large, color display for improved readability and usability. The radio includes simple intuitive buttons spaced for all hand sizes and a single button press for "Mayday", allowing the crew member to easily call for help. The radio is equipped with an automatic G-force with ejection and water activation feature that automatically transmits location data when G-Force or water is detected. A low-profile GPS/APNT patch antenna minimizes clothing snags and is less breakable than stub antennas. The Radio Loader Interface (RLI) provides the capability to simultaneously charge and provision up to 8 radios along with 8 spare batteries. The RLI also supports daisy chaining 2 RLIs to program up to 16 radios simultaneously and includes a GPS repeater initializing geolocation in all radios.

Additional Features & Benefits

- Compatible with existing CSAR radios.
- User friendly, software-defined transceiver enables waveforms, crypto and software upgrades to be added as they become available.
- Enhanced voice quality with Machine Learning (ML) algorithms enables significant noise reduction during communication.
- Multiple antennas provide enhanced Anti-Jam and Anti-Spoofing protection against electronic warfare (EW) threats.
- Slim COTS-based rear mount battery improves comfort when carrying spares, providing 12+ days of operation.
- Includes an additional L/S Band input that supports auxiliary GPS, APNT, or other future waveforms.
- COSPAS-SARSAT 406 (2nd Generation) certification in progress.
- Tri-band flexible antenna.

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General Radio Characteristics:

Frequency range

- 121.5, 156.8, 123.1 MHz; 225-400 MHz; 406 SARSAT
- L/S band

Frequency stability

- 406 SARSAT: < 7.4ppb</p>
- MUOS CSEL SARSAT*
- Modulation
 - AM voice
 - Terminal Area Guidance (TAG)/DME Transponder mode: BPSK/OOK
 - Terminal Area Communications (TAC): MSK 1200 BPS
 - MUOS CSEL SARSAT*

Data burst

 Encrypted (LOS and military SATCOM) includes ID, GPS Coordinates and Text Message

Operating modes

- Voice
- TAG transponder
- TAC Interrogation
- 406 SARSAT
- MUOS CSEL SARSAT*
- Weight: 28.1 oz with battery
- Size (with battery)
 - 6.9 in x 3.90 in x 1.9 in
- Operational temp.
 20°C to +55°C
- Storage temp.: -62°C to +85°C
- Battery Type: Rechargeable
- Battery life:
 - 12+ days battery life
- Receiver Characteristics:
 - Sensitivity (typical)
 - –93 dBm (VHF AM Voice)
 - –99 dBm (UHF AM Voice)
 - MUOS CSEL SARSAT*
 - Bandwidth (typical)
 Narrow Band Voice: 25 KHz (min)
 MUOS CSEL SARSAT*
 - Audio response: 500 Hz to 3500 Hz
 - Distortion (typical): 2 percent
 - Audio output (typical): 50 milliwatts

- Transmitter Characteristics:
 - Average power
 - VHF/UHF AM Voice UHF: 1 Watt
 - TAG: 2 Watts
 - TAC: 1 Watt
 406 SARSAT: 2 Watts
 - MUOS CSEL SARSAT*
 - Modulation: 86% AM
 - Harmonics: =60 dB below carrier
 - Distortion: 3% typical at 86% modulation

GPS/Navigation

- Multi-constellation GNSS
- M-Code
- Additional Capabilities: (upon request)



- 8-radio + 8 spare battery Radio Loader Interface unit.
- Capable of daisy chaining 2 RLIs to program 16 radios simultaneously
- Includes a GPS repeater initializing geolocation in all radios

Benefits

- Accurate
 - Position accuracy to <25 meters</p>
 - Configurable GPS position updates interval
- Secure
- NSA certified CHVP

Rugged

- Immersible to 10m for 3 hrs and to 20m for 10 min
 MIL-STD-464 and MIL-STD-810
- Auto-Activation upon Ejection and/or Water Detection
- Easy to use
- Automatically responds to interrogation without user intervention
- Acquires GPS position automatically when unit is turned on
- Single-hand operation
- Situation report feature
- Color Display: large non-glare, daylight visible backlit display
- Intuitive keypad and UI menu system
- Configuration utility supports fast configuration and cloning
- Single button EMERGENCY feature

Flexible

- Software Defined Radio; upgradeable with future waveforms
- Indicates detection and relative strength of GPS interference
- LOS and BLOS communications paths
- Voice and Texting modes
- Canned, pre-programmed, free-format, and Situation Report encrypted message formats
- Interoperates with a variety of interrogators with multiple interrogation modes (SATCOM, LOS, PLS)
- Onboard and Remote VHF/UHF and GPS antennas
- Configurable battery saving options
- Low risk of interception/detection
- Encrypted 2-way burst data transmission (messaging and position)
- Ancillaries:
 - Rechargeable batteries
 - Replaceable primary communication antenna
 - 8-Radio + 8 spare battery Charging Unit (Remote Loader Interface)
 - Earpiece with 6' cord
 - USB provisioning cable
- Pouch

Designed and manufactured at the General Dynamics Mission Systems facility in Scottsdale, AZ.

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