Bittium Narrowband Waveform™ with Bittium Tough SDR radios

ESSOR High Data Rate Waveform with Bittium Tough SDR radios

Bittium TAC WIN Waveform™ with TAC WIN or Tough SDR radios

Fixed Network

SHDSL and Fiber Connections

TAC WIN Radio Head IV Nodes forming Point-to-Point Network

veform™
TAC WIN RH-III Nodes forming
radios
Point-to-Multipoint Network

TAC WIN RH-I Nodes forming MANET Network

Bittium Tough SDR Vehicular™

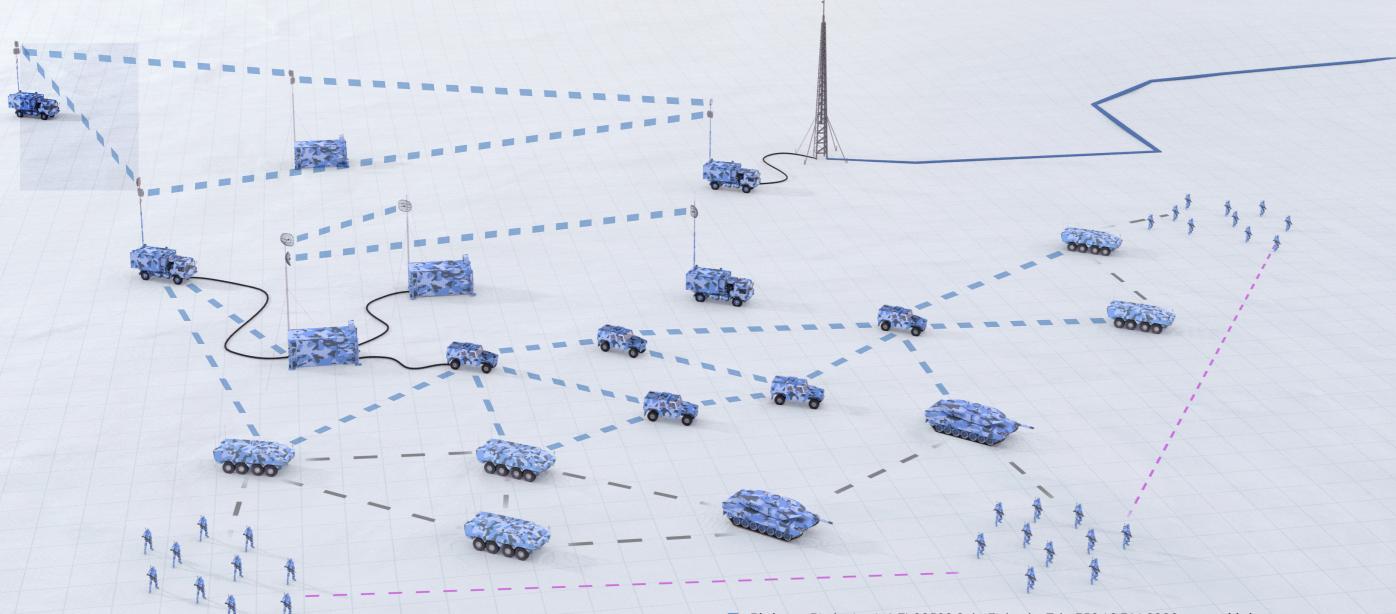
Bittium Tough SDR Handheld™ Nodes

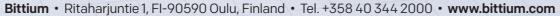


Bittium Tough SDR™ Next-Generation Tactical Radios

Bittium Tough SDR Vehicular and Handheld radios can

also be integrated with the TAC WIN network. Combat vehicles can be installed with either TAC WIN Radio Heads or Tough SDR Vehicular radios to achieve the best possible solution. The combination of both systems is the perfect solution for connectivity and communications across the battlefield.





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Bittium Tough SDR™ Next-Generation Tactical Radios

The software defined vehicular and handheld tactical radios provide voice and data over the widest frequency range, and the highest data throughput across several frequency bands. Together with flexible configuration options and routing networks, the radios support even thousands of radios in one network.

With the radios, troops can communicate securely over narrowband and wideband waveforms, including ESSOR High Data Rate Waveform. Also legacy and national proprietary waveforms can be ported to the radio with national COMSEC and TRANSEC. The unique application sandbox provides flexibility for integration of different C2 applications, such as BMS and blue force tracking. The radios and the waveforms can be security certified nationally and internationally by the customer or a 3rd party.

Waveform Catalogue

- Bittium Narrowband Waveform™ (50 kHz)
- > Bittium TAC WIN Waveform™ (5/10 MHz) with data throughput up to 36 Mbps
- > ESSOR High Data Rate Waveform (1.25 MHz) with data throughput up to ~700 kbps. NATO STANAG 5651
- Radios support also porting of legacy and national proprietary waveforms

Device and Network Management

- ▶ Bittium Tactical Device Management™ for secure and easy management of tactical devices prior, during and after deployment, including software and device configurations and updates
- ➤ Bittium Tactical Network Management[™] for comprehensive network planning, management and analytics

Tactical VoIP service

- > Red/black separation
- Secured boot
- > Tampering detection and response
- Emergency erase
- COMSEC and TRANSEC allowing implementation of national algorithms
- applications with development tools available

Benefits

- > Widest frequency range providing frequency agility and less interference
- > Support for several different waveforms, including ESSOR HDR WF (NATO STANAG 5651) for coalition interoperability
- > Porting also for legacy and national proprietary waveforms
- > Support for several routing networks and even thousands of radios in one network with built-in routing between channels
- > Best-in-class user interface and usability for easy operation
- > Application sandbox for flexible integration of C2 applications, such as BMS and blue force tracking
- > Access to information security implementation and certification both nationally and internationally
- Utilizing latest mobile technologies
- ➤ Compatible with Bittium Tactical Wireless IP Network[™] (TAC WIN)
- > Wired or wireless integration of Tough SDR Handheld to soldier tablets or smartphones, such as Android based Bittium Tough Mobile product family



Founding Member of a4ESSOR and Develo of ESSOR Waveforms



Integrated Bittium Tough VoIP Service™ (see separate datasheet for more information)

Security

- Application Sandbox for customer

HMI

Antenna

Physical Interfaces

Bittium

Tough SDR Vehicular™

High performance and secure vehicular

radio with two independent channels

- Two RF antenna ports
- > Antenna control External antenna control interface for antenna tuning or other control
- > Audio

Two analog audio interface ports with dual PTT support. One port with additional HMI USB support and other with power amplified audio for external speaker. Support for intercom integration in both ports

> LAN/WAN

Two 1 Gbps Ethernet ports with PoE IEEE 802.3af

> Data

I/O interface with combined 100M Ethernet and USB 2.0 (Device and Host mode)

> GNSS

Interface for an external GNSS (GPS and Galileo) antenna

> Extension slot (optional)

Extension card slot for mini-PCle form factor modules such as LTE/5G, mass memory, etc.

Wireless Interfaces

- WLAN 802.11 b/g/n
- > Bluetooth® 4.2

- Display Transflective TFT LCD (320 x 426)
- > Status LEDs
- Keypad
- > Rotary switch A rotary switch with 12 positions: OFF, 1-9 presets, REMOTE and ERASE

Technical Specifications

- > Frequency range
- ANT1: 225 MHz to 2500 MHz ANT2: 30 MHz to 512 MHz Receiver: 30 MHz to 2500 MHz for both ANT1 and ANT2
- > Transmit output power ANT1: 40 W (PEP) ANT2: 50 W (PEP)
- > Channel bandwidth ANT1: 25 kHz to 10 MHz ANT2: 25 kHz to 5 MHz
- > Integrated co-site filters
- > Power supply
- 28 V DC according to MIL-STD-1275E
- > Environmental and EMC standards MIL-STD-810G w/CHANGE1 MIL-STD-461G

- > Temperature range Operating: -40 °C to +55 °C
- > Ingress protection class IP67, also for open connectors
- > Dimensions (H x W x D) 210 x 270 x 300 mm

Storage: -40 °C to +85 °C

- > Weight 15 kg
- Material Surface treated aluminum alloy
- > Declaration of conformity

Standard Accessories

- > Vehicle installation kit with shock absorbers
- Several antenna types
- > Several audio accessories

Bittium product code 9400133 NSN 5820-58-001-5343 NCAGE A850G

Bittium Tough SDR Handheld™

Secure communications for dismounted soldiers such as squad or platoon leader



Physical Interfaces

- Antenna
- Antenna port (TNC) for variety of antenna options. Default antenna for 30 - 512 MHz
- > Battery
- 70 Wh rechargeable Lithium-Ion battery
- > Audio
- Analog audio interface port to connect e.g. headset and external PTT device. Interface includes additional HMI USB support
- > Data
- I/O interface with combined 10/100M Ethernet and USB 2.0 (Device and Host mode)
- Dual PTT
- > Integrated microphone and speaker

Wireless Interfaces

- > GNSS (GPS and Galileo)
- > WLAN 802.11 b/g/n
- > Bluetooth® 4.2

HMI

- Display Transflective TFT LCD (320 x 426)
- > Status LEDs
- Keypad
- > Volume key
- > Rotary switch A rotary switch with 12 positions: OFF, 1-9 presets, REMOTE and ERASE

Technical Specifications

- > Frequency range 30 MHz to 2500 MHz
- > Transmit output power up to 5 W (PEP)
- > Channel bandwidth 25 kHz to 10 MHz
- > Integrated co-site filters
- > Power supply 9 V DC to 13 V DC with 10.8 V DC nominal operating voltage
- > Environmental and EMC standards MIL-STD-810G w/CHANGE1 MIL-STD-461G

> Temperature range

-40 °C to +70 °C

- Operating (radio with battery): -20 °C to +55 °C Operating (radio with remote battery pack): -40 °C to +55 °C Storage (radio): -40 °C to +85 °C Storage (radio with battery):
- > Ingress protection class
- IP67, also for open connectors > Dimensions (with battery)

245 x 79.5 x 48 mm

- 800 g (radio unit), 1200 g (with battery)
- Surface treated aluminum alloy/plastic > Declaration of conformity

Standard Accessories

- > Dismounted soldier kit including headset, MOLLE pouch, bodyworn kit for antenna
- Several antenna types

Bittium product code 9400132 NSN 5820-58-001-5342 NCAGE A850G

FOR MORE INFORMATION, PLEASE CONTACT: defense@bittium.com