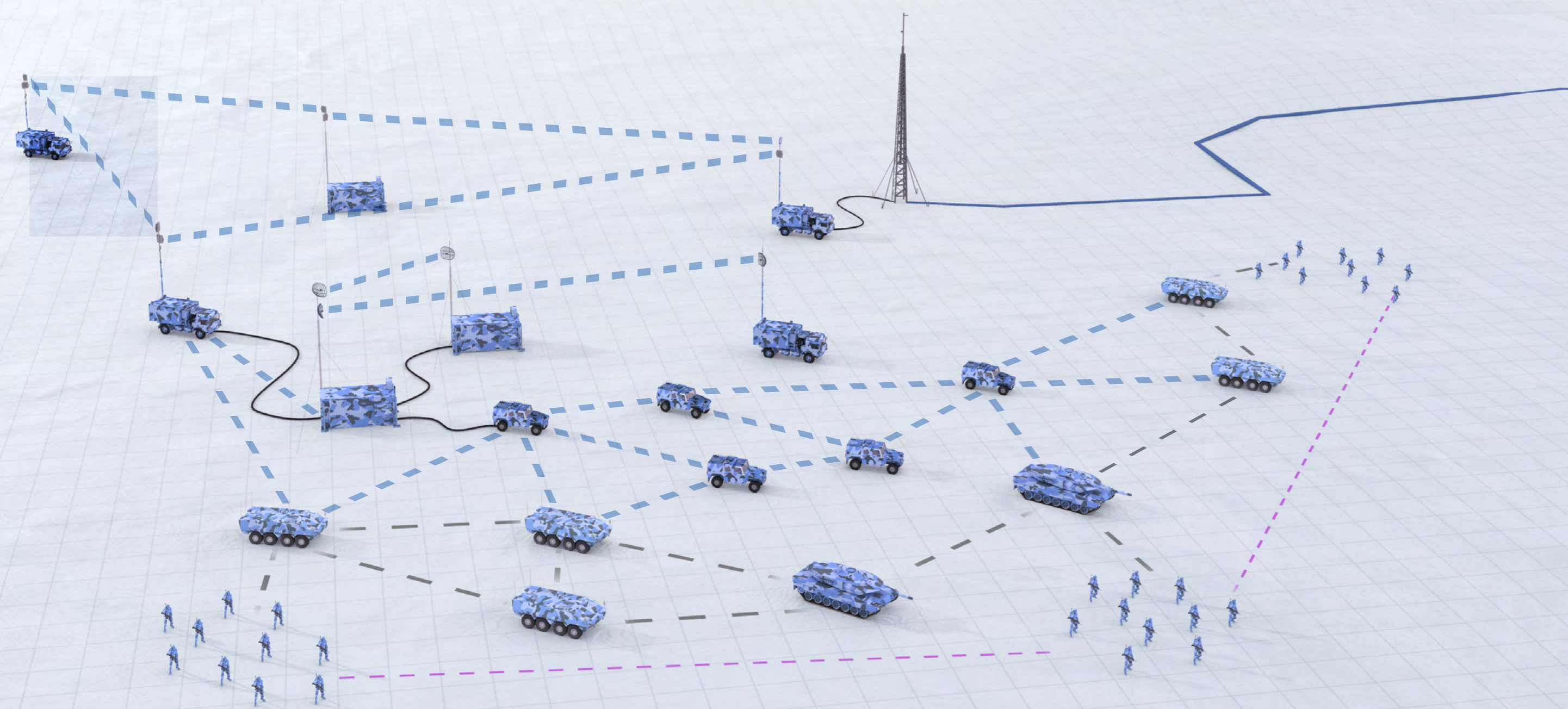


**Bittium Tough SDR™ Vehicular and Handheld radios** can also use the TAC WIN Waveform to connect with the TAC WIN network. Combat vehicles can be installed with either TAC WIN Radio Heads or Tough SDR Vehicular radios to achieve the best possible solution. The combination of both systems is the perfect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

# Bittium

Bittium  
Tactical Wireless  
IP Network™  
TAC WIN



## Bittium TAC WIN MANET



**Bittium TAC WIN MANET** is the optimal solution for troops who require high data rates and highly mobile tactical network. Bittium TAC WIN MANET network provides a reliable and self-healing platform for voice and messaging applications.

The MANET network supports up to 400 nodes, and the whole TAC WIN network at least a 1000 nodes when high quality connections are available (wired connections or links with proper routing protocol timing parameters).

### Bittium TAC WIN is a high-data-rate IP network designed for peer-to-peer warfare.

The network is modular, scalable, and quickly self-healing. TAC WIN provides outstanding data performance across the battlefield with low information latency (< 20 ms). Routing capabilities are optimized for large-scale deployment and highly mobile tactical use from 1 Gb Ethernet fibers to MANET radios. This unique solution provides seamless interoperability between different networks and easy integration with any existing or upcoming IP network.



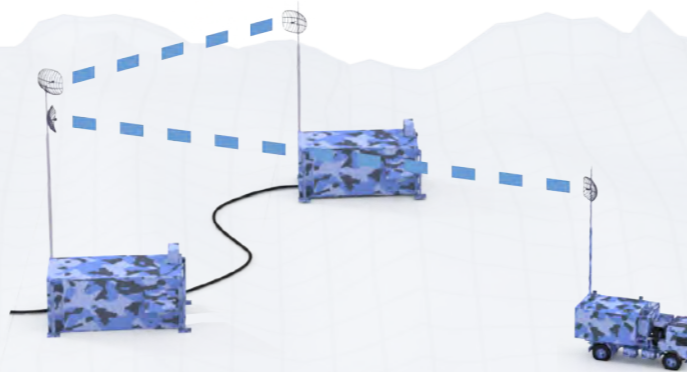
#### Bittium TAC WIN Radio Head I™

- ▶ Frequency band 225 – 400 MHz
- ▶ Signal bandwidth 5 MHz
- ▶ Data throughput with TAC WIN WF: 12Mbps
- ▶ Supports 2x2 MIMO
- ▶ Channel raster 250 kHz
- ▶ TAC WIN WF Tx power: 2 x 4 W
- ▶ Operating voltage: 10 – 60Vdc
- ▶ Temperature range: -40 – +55 °C (operating), -40 – +70 °C (storage)
- ▶ Ingress protection class: IP67
- ▶ Dimensions: 160 x 256 x 454 mm (h x w x d)
- ▶ Weight: 18 kg
- ▶ Tested with MIL-STD-810G and MIL-STD-461G
- ▶ Passive cooling (no fans)

Bittium product code 9400065  
NSN 5820-58-000-6404  
NCAGE A850G

“Bittium TAC WIN provides outstanding data performance across the battlefield”

## Bittium TAC WIN Point-to-Multipoint



**Bittium TAC WIN Point-to-Multipoint network** is the ideal solution for access networks to provide service from link network to Bittium TAC WIN MANET. Furthermore, when more performance is needed, Bittium TAC WIN Point-to-Multipoint nodes can be also used in link configuration. Bittium TAC WIN Point-to-Multipoint network utilizes MANET's self-healing characteristics such as optimized routing and link control to provide the best possible reliability.

**Bittium TAC WIN routing** capabilities can also be used with wired LAN, SHDSL or fiber optic connections.



#### Bittium TAC WIN Radio Head III™

- ▶ Frequency band 1350 – 2400 MHz
- ▶ Signal bandwidth 5 / 10 MHz
- ▶ Data throughput with TAC WIN WF: 26Mbps
- ▶ Channel raster 250 kHz
- ▶ TAC WIN WF Tx power: 4 W
- ▶ Operating voltage: 10 – 60Vdc
- ▶ Temperature range: -40 – +55 °C (operating), -40 – +70 °C (storage)
- ▶ Ingress protection class: IP67
- ▶ Dimensions: 160 x 256 x 454 mm (h x w x d)
- ▶ Weight: 18 kg
- ▶ Tested with MIL-STD-810G and MIL-STD-461G
- ▶ Passive cooling (no fans)

Bittium product code 9400067  
NSN 5820-58-000-6405  
NCAGE A850G



#### Bittium TAC WIN Tactical Router™

- ▶ Routing and Waveform processing unit
- ▶ Operating voltage: 10 – 60Vdc
- ▶ Temperature range: -40 – +55 °C (operating), -40 – +70 °C (storage)
- ▶ Ingress protection class: IP67
- ▶ Dimensions: 223 x 356 x 400 mm (h x w x d)
- ▶ Weight: 19,4 kg
- ▶ Tested with MIL-STD-810G and MIL-STD-461G
- ▶ Passive cooling (no fans)

#### Interfaces

- ▶ 3 x TACWIN Radio units
- ▶ 4 x WAN (2 x RJ45 1000BASE-T / 2 x Fiber 1000BASE-LX)
- ▶ 4 x LAN (1000BASE-T) with PoE (802.3af)
- ▶ 8 x ITU-T G991.2 (GSHDSL)
- ▶ 4 x serial/audio connector

- ▶ 2 x USB
- ▶ GPS in/out
- ▶ ERASE –button and ON/OFF –switch

#### Routing services

- ▶ Custom OLSR in TACTICAL network
- ▶ Custom multicast in TACTICAL network
- ▶ OSPF / BGP routing for external connections
- ▶ Automatic IP address configuration
- ▶ VLANs and configurable bridges
- ▶ QoS: Traffic classifying and priority queues (8 queues)
- ▶ SNMP v3
- ▶ Radius server support
- ▶ AAA
- ▶ 802.1X port authentication
- ▶ Call admission control

#### Tactical VoIP service

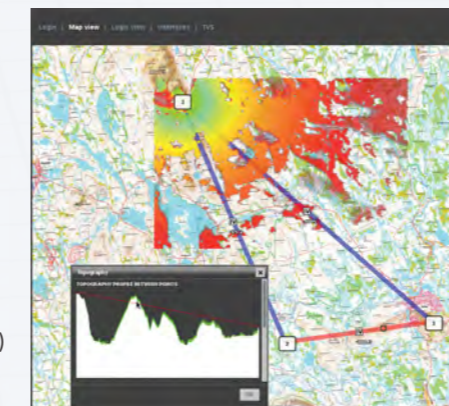
- ▶ Integrated Bittium Tough VoIP Service™ (see separate datasheet for more information)

#### Other services

- ▶ Network configuration with single configuration file
- ▶ SNMP interface
- ▶ IPsec tunneling
- ▶ Firewall
- ▶ 3 different user levels
- ▶ Easy to use local web GUI

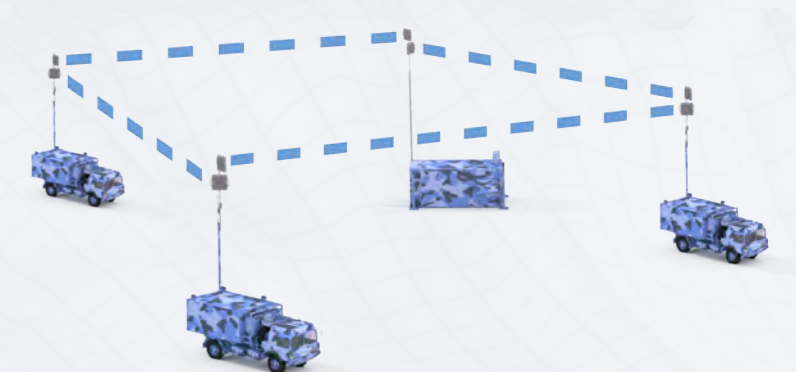
#### Tactical Network Management

- ▶ Compatible with Bittium Tactical Network Management™, a toolset optimized to be used with Bittium's tactical networks
- ▶ See separate datasheet for more information on comprehensive network planning, management, and analytics



Bittium product code 9400064  
NSN 5895-58-000-6412  
NCAGE A850G

## Bittium TAC WIN Point-to-Point



#### Bittium TAC WIN Radio Head IV™

RH-IV and RH-IV High Gain

- ▶ Frequency band 4400 – 5000 MHz
- ▶ Signal bandwidth 5 / 10 / 20 MHz
- ▶ Data throughput with TAC WIN Waveform WF: 50 Mbps
- ▶ Channel raster 250 kHz
- ▶ TAC WIN WF Tx power: 1250 mW
- ▶ Operating voltage: 16 – 60Vdc
- ▶ Temperature range: -40 – +55 °C (operating), -40 – +70 °C (storage)
- ▶ Ingress protection class: IP67
- ▶ Dimensions: 385 x 520 x 67 mm (h x w x d)
- ▶ Weight: 10 kg
- ▶ Tested with MIL-STD-810G and MIL-STD-461G
- ▶ Passive cooling (no fans)
- ▶ One hybrid cable interface (power and data)

**RH-IV variant:** Integrated patch antenna with 50° beam steering (gain 19dBi / beamwidth 9° / vertical polarization). Can be used with external antenna.

Bittium product code 9400072  
NSN 5895-58-000-6406  
NCAGE A850G

### Bittium TAC WIN Waveform™ is

a high-data-rate IP network waveform providing the foundation for a high performance network. The waveform supports several services, such as Multicasting and QoS and provides a reliable development platform for upcoming applications.

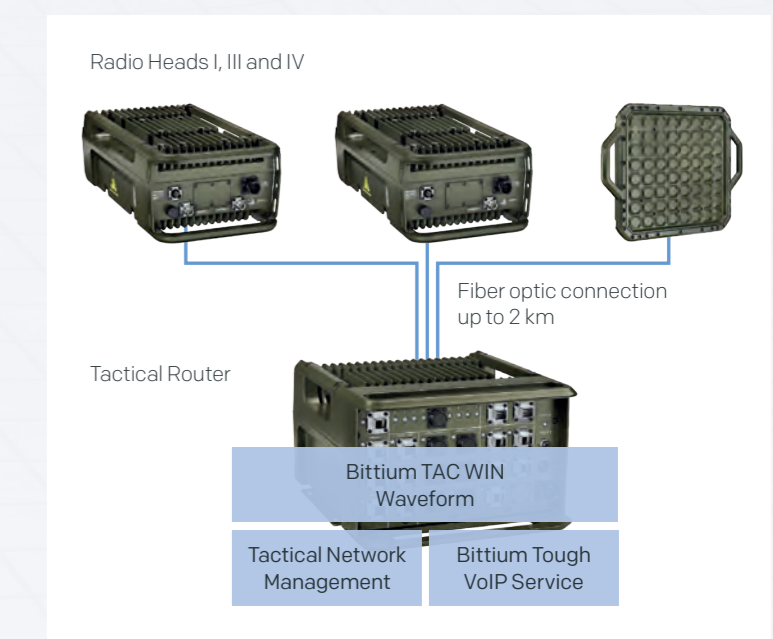
#### TAC WIN WF key features

- ▶ Slow/fast frequency hopping
- ▶ Operation without GNSS
- ▶ Network time distribution via Air Interface
- ▶ Optimized interference cancellation algorithms
- ▶ Supported bandwidths: 5 / 10 / 20 MHz
- ▶ QoS based network radio resource management

**Bittium TAC WIN Radio link network** completes the offering with high capacity connections to the command site or backbone to fixed core network. Radio Head IV is available in two variants, with integrated beam steering antenna or with integrated fixed beam antenna and external rotator integration depending on the customer requirements.

**RH-IV High Gain variant:** Integrated fixed beam antenna with 9° beam (gain 23dBi / vertical polarization) and external rotator control interface.

Bittium product code 9404410  
NSN 5985-58-001-5736  
NCAGE A850G



FOR MORE INFORMATION, PLEASE CONTACT:  
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