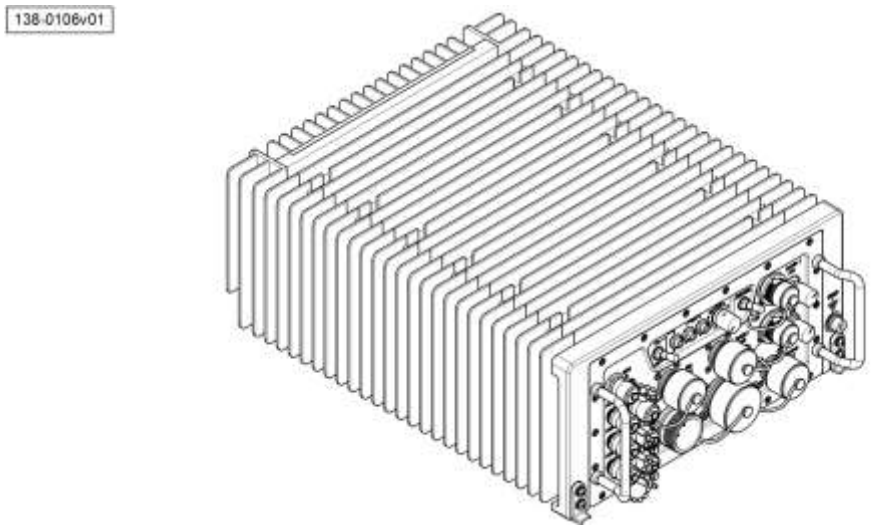
Broadband Network Vehicular (BNET-V) Software Defined Radio (SDR)

Technical Manual



Version 1

Manual Revision Control

Version 4 of the Technical Manual is updated and valid for the following NMS and EMS application versions:

- NMS application version: **3.2 RC18C**
- EMS application version: **3.2 RC18C**

Pay attention! In case you intend to operate and/or maintain equipment of one or more revisions different from those cited above, receive authorization from the commander in charge before using this manual.

CAUTION

It is not permitted to operate the NMS and EMS applications according to manual instructions when the manual Revision does not fit the NMS and EMS versions unless explicit authorization was first given by officer in charge. Failure to follow this warning may cause damage to equipment.

LIST OF EFFECTIVE PAGES

Insert latest changed pages; dispose of superseded pages according to the instructions.

Dates of issue for original and changed pages are:

Original ... 0 ..... April 24

Total number of pages in this publication is 232, consisting of the following:

* Zero in this column indicates an original page.

RECORD OF CHANGES AND VERSIONS

Version No.	Title and Description	Date Entered	Signature
1	Base version	April 24	

Contents

CHAPTER 1

INTRODUCTION

1.1 PURPOSE OF THIS MANUAL

This manual provides the required know-how for S personnel to operate the BNET-V SDR 2.1, the Network Management System (NMS) application, and the Element Management System (EMS) application.

1.2 ARRANGEMENT OF THIS MANUAL

This manual includes the following chapters:

Chapter 1 – Introduction

This chapter provides general information on the scope and arrangement of the manual, definition of warnings, cautions and notes, and a list of acronyms and abbreviations.

Chapter 2 – Safety

This chapter provides safety instructions for operating and maintaining the system assemblies at operator level.

Chapter 3 – General Description

This chapter describes the system in general, a layout of a typical system site and technical data.

Chapter 4 – Detailed Description

This chapter describes the system assemblies and provides an interface diagram (J-to-J).

Chapter 5 – NMS Description

This chapter describes the NMS application installation requirements and NMS screens.

Chapter 6 – EMS Description

This chapter describes the EMS application screens.

Chapter 7 – BNET-V Operation

This chapter provides step-by-step instructions for powering up/down the BNET-V.

Chapter 8 – BNET-V Deployment.

This chapter provides step-by-step instructions for installing the BNET-V on an adapter tray mounted on a vehicle mount, as well as step-by-step instructions for removing the BNET-V after the operation completion.

Chapter 9 – Troubleshooting

This chapter describes common malfunctions that can occur while using the NMS/EMS application, as well as the possible causes and corrective actions.

Chapter 10 – Maintenance Policy

This chapter provides a description of the maintenance concept and preventive and corrective maintenance tasks for the BNET-V system Line Replaceable Units (LRUs), as well as tools and materials required for maintenance.

Chapter 11 – Preventive Maintenance

This chapter provides instructions for performing preventive maintenance tasks by Operators and O Level maintenance technicians.

Chapter 12 – Corrective Maintenance

This chapter provides step-by-step instructions for replacing the system LRUs by O Level technicians.

Chapter 13 – Packaging and Transportation

This chapter provides a description of a packing box for transporting a faulty LRU, as well as instructions for packaging and transporting the faulty LRU.

Chapter 14 – IPC

This chapter contains the information required to detect and identify spare parts for the BNET-V 2.1 system and provides an explanation of the table columns in the Parts List chapter, how to identify a part in the drawings and how to use the catalogue.

Chapter 15 – Wiring Diagrams

This chapter provides wiring diagrams of BNET-V 2.1 system cables.

1.3 WARNINGS, CAUTIONS AND NOTES

Warnings and cautions precede the text and follow the paragraph heading to which they apply. Notes may precede or follow applicable text, depending upon the material to be highlighted. Warnings, cautions or notes are concise statements used to emphasize important or critical data. The definitions of warning, caution and note are as follows:

A warning highlights an essential operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in injury to, or death of, personnel or long-term health hazards.

A caution highlights an essential operating or maintenance procedure, practice, condition, statement etc., which, if not strictly observed, could result in damage to, or destruction of, equipment or loss of mission effectiveness.

NOTE

A note highlights or clarifies an essential system description or operating or maintenance procedure, condition or statement.

1.4 LIST OF ACRONYMS AND ABBREVIATIONS

ACM	Adaptive Coding and Modulation
AM	Amplitude Modulation
ANT	Antenna
ARINC	Aeronautical Radio Incorporated
AW	Adapted Weight
BIT	Built-in Test
BNET-V	Broadband Network Vehicular
Comsec	Communication Security
CV	Customer Version
DC	Direct Current
DNS	Domain Name Service
DPU	Data Processing Unit
EMP	Electromagnetic Pulse
EMS	Element Management System
ETH	Ethernet
FM	Frequency Modulation
GFE	Government Furnished Equipment
GND	Grounding
GPS	Global Positioning System
GUI	Graphical User Interface
GW	Gateway
HDR	High Definition Rate
HQ	Headquarters
ID	Identifier
IP	Internet Protocol
IPC	Illustrated Parts Catalogue
JTAG	Joint Test Action Group
Kbps	Kilo Bit per Second
LRU	Line Replaceable Unit
LTU	Loader and Tester Unit
MAC	Media Access Control
MANET	Mobile Ad-hoc Network
MHz	Megahertz
MFL	Maintenance Failure List
MPV	Man Pack in Vehicle
MV	Master Version
NetFile	Network File
NMS	Network Management System

NTP	Network Time Protocol
OTA	Over the Air
PM	Pulse Modulation
PPS	Pulse per Second
PTT	Push to Talk
PWR	Power
QPSK	Quadrature Phase Shift Keying
RAM	Random Access Memory
RF	Radio Frequency
RSSI	Radio Signal Strength Indication
Rx	Receive
SBC	Single-Board Computer
SDR	Software Defined Radio
Seq.	Sequence
SMA	SubMiniature version A
SNR	Signal Noise Ratio
STS	States
SubWF	Sub-Waveform
TB	Terabyte
TH	Threshold
TNC	Threaded Neill Concelman
TOD	Time of Day
TOS	Type of Service
Tx	Transmit
UHF	Ultra-High Frequency
USB	Universal Serial Bus
VDC	Volt Direct Current
VHF	Very High Frequency
WF	Waveform
WO	Without
WT	Weight

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CHAPTER 2

SAFETY

2.1 SCOPE

This chapter provides safety instructions for operating and maintaining the system assemblies at operator level.

2.2 GENERAL SAFETY INSTRUCTIONS

The safety instructions in this chapter are in addition to, and do not replace, the local regulations and standards that are relevant to the operation and maintenance of the BNET-V 2.1 system.

- In the event of injury, seek immediate medical attention.
- Only trained personnel are permitted to perform BNET deployment, including all safety aspects.
- Follow the general safety instructions in this chapter and the safety instructions for specific events.

2.3 ELECTRICAL HAZARDS

The system environment exposes personnel to risk of electrocution from DC power sources, such as: 24 VDC from an external power source.

To avoid electricity hazards, apply the following and any other applicable safety instructions according to local regulations and standards:

1) Make sure that each system unit is properly grounded.

2) Before connecting a power cable to any system unit, apply the following instructions:

   a) Make sure the electrical connectors are not damaged.

   b) Make sure that the entire length of the cable is not damaged and that no wires are exposed.

   c) Do not connect or disconnect electrical connectors in a wet environment.

2.4 FIRE HAZARDS

To avoid fire hazards, follow these and any other applicable safety instructions:

a. Do not spray flammable cleaning agents on the system electrical components.

b. Make sure serviceable fire-extinguishing equipment is available on site or in the vehicle.

c. If smoke or fire is detected:

   1) Immediately notify the fire fighting unit.

   2) Disconnect the power source.

   3) Evacuate all nonessential personnel and alert all other personnel that there is a fire.

2.5 ELECTRO-MAGNETIC RADIATION HAZARDS

Before deployment of VHF/UHF antenna or VHF antenna, make sure that the connected BNET-V is powered OFF.

2.6 SAFETY INSTRUCTIONS FOR WORKING AT HEIGHT

Some maintenance tasks require working at height. Working at height involves risk of slipping and falling. Always follow local regulations and standards regarding work at height.

To avoid hazards when working at height, perform the following and any other applicable safety instructions according to local regulations and standards:

a. Use only serviceable steps or ladder.

b. Use a properly connected safety belt according to local regulations and standards.

c. Always wear a protective helmet.

d. Work at height only when another person is present to assist when needed.

2.7 SAFETY INSTRUCTIONS FOR CORRECTIVE MAINTENANCE ACTIVITIES

Before performing replacement or maintenance procedures on electrical units:

- Make sure that the unit is disconnected from the power source.
- Alert personnel/post a sign warning not to connect the power.

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CHAPTER 3

GENERAL DESCRIPTION

3.1 SCOPE

This chapter provides a general description of the system, a layout of a typical system site and technical data.

3.2 GENERAL SYSTEM DESCRIPTION

The BNET-V 2.1 is a protected communication system, which enables both voice and data VHF/UHF wireless communication between Headquarters (HQ) and the BNET-V vehicles, as well as between the vehicles.

The NMS application enables operators to control, monitor and configure the network BNET-V devices Over the Air (OTA).

The BNET-V in the vehicles can be locally configured using a Loader and Tester Unit (LTU) running the EMS application.

3.3 SITE/VEHICLE SYSTEM LAYOUT

(See Figure 3-1)

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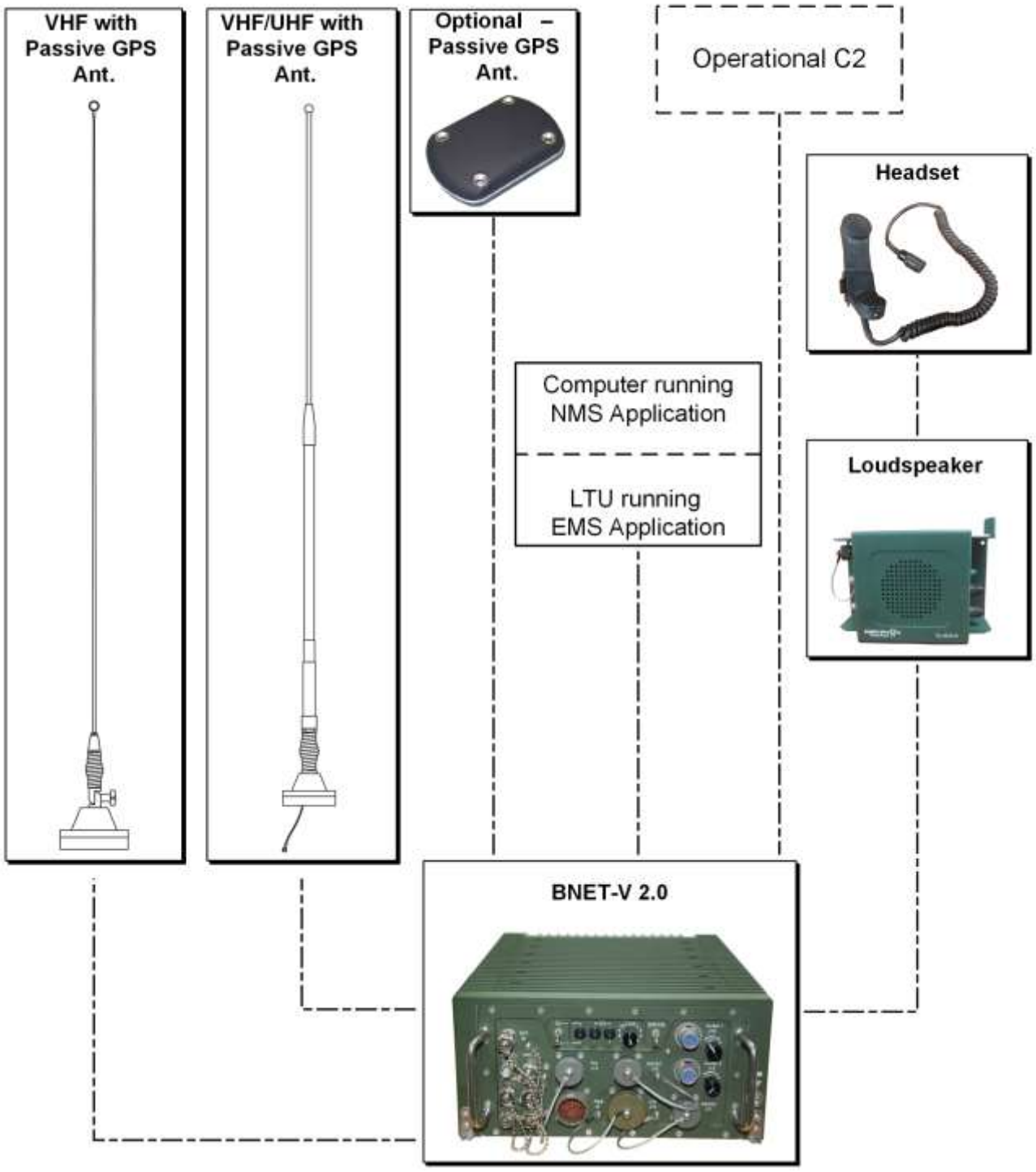

Figure 3-1: Site/Vehicle System Layout

3.4 TECHNICAL DATA

This section provides figures displaying the system units dimensions.

3.4.1 BNET-V Dimensions

(See Figure 3-2)

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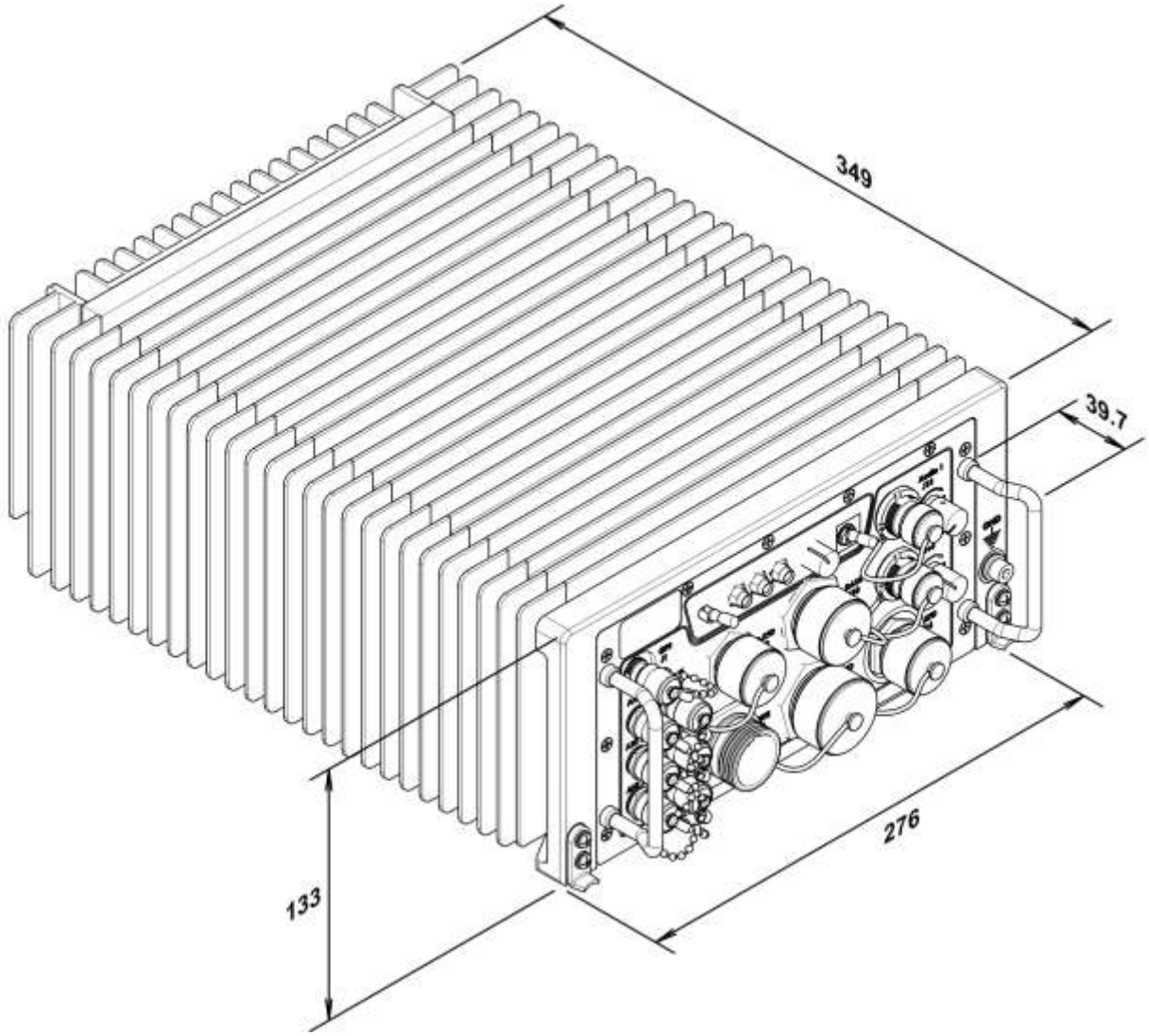

Figure 3-2: BNET-V Dimensions (mm)

3.4.2 Loudspeaker Dimensions

(See Figure 3-3)

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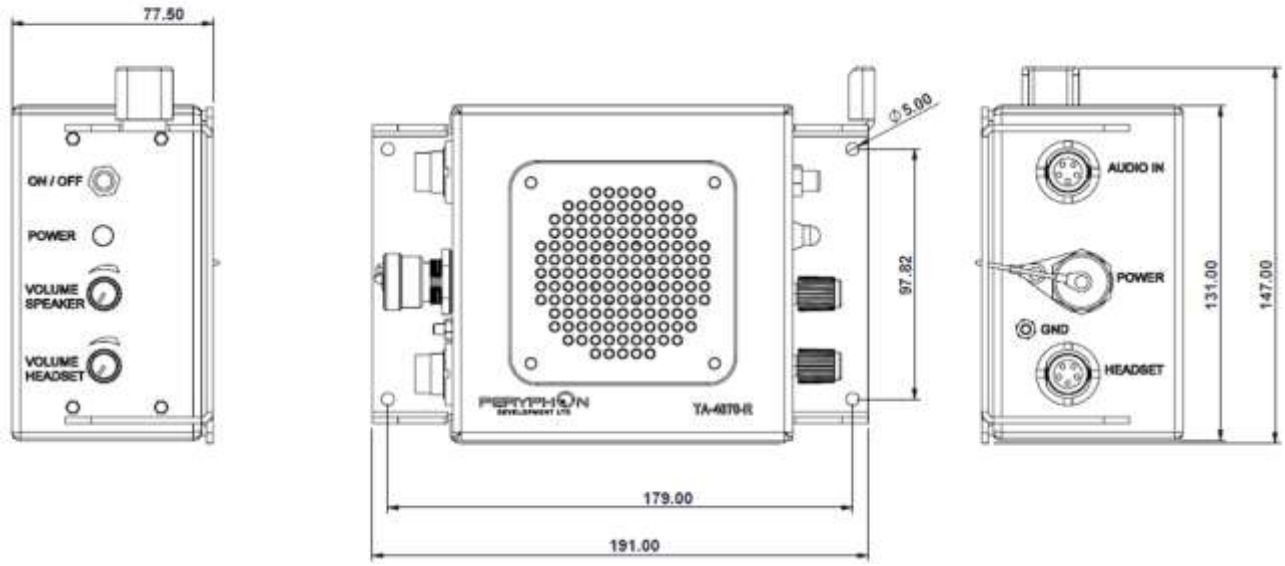

Figure 3-3: Loudspeaker Dimensions (mm)

3.4.3 VHF/UHF Antenna with Integrated Passive GPS Antenna Dimensions

(See Figure 3-4)

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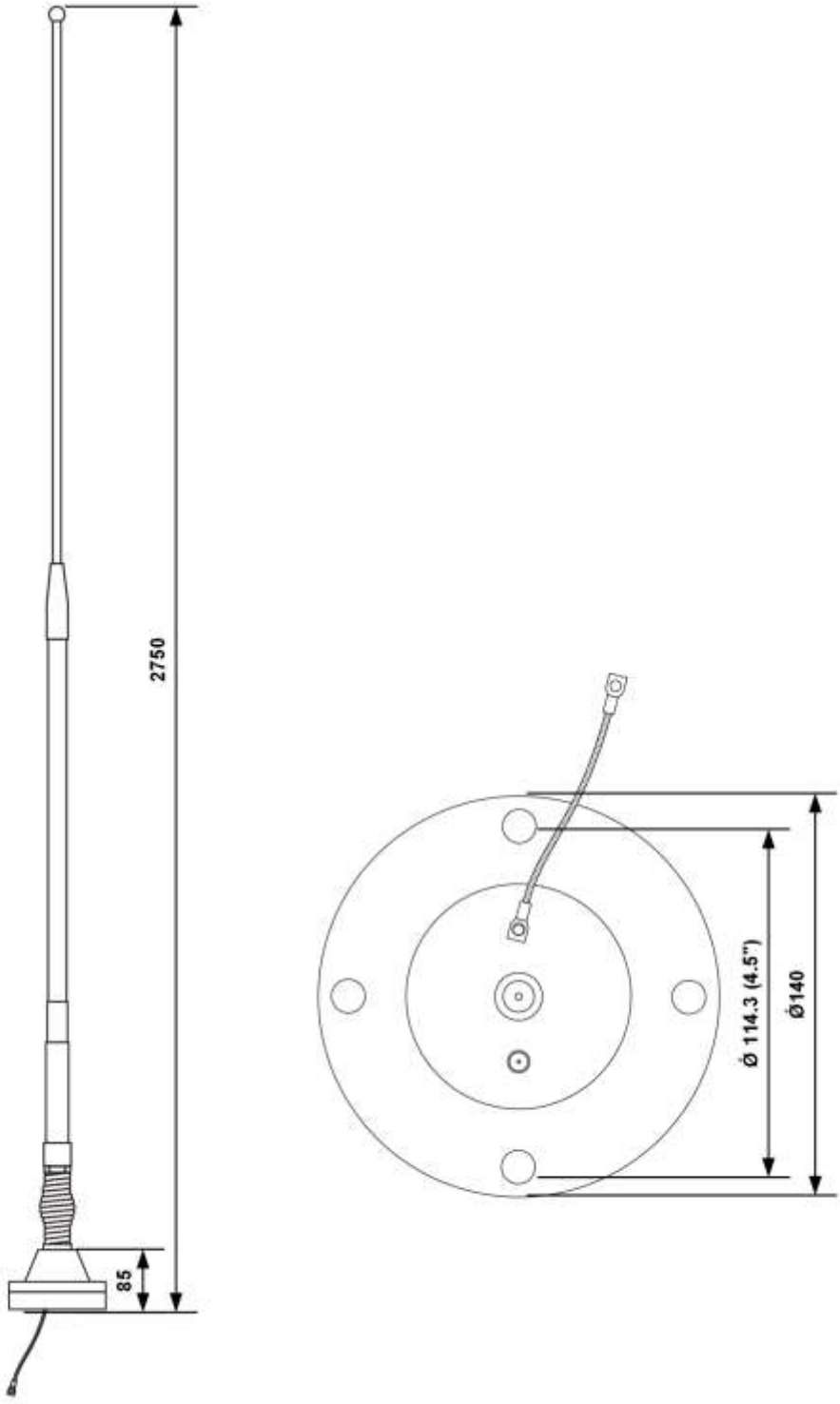

Figure 3-4: VHF/UHF Antenna Dimensions (mm)

3.4.4 VHF Antenna with Integrated Passive GPS Antenna Dimensions

(See Figure 3-5)

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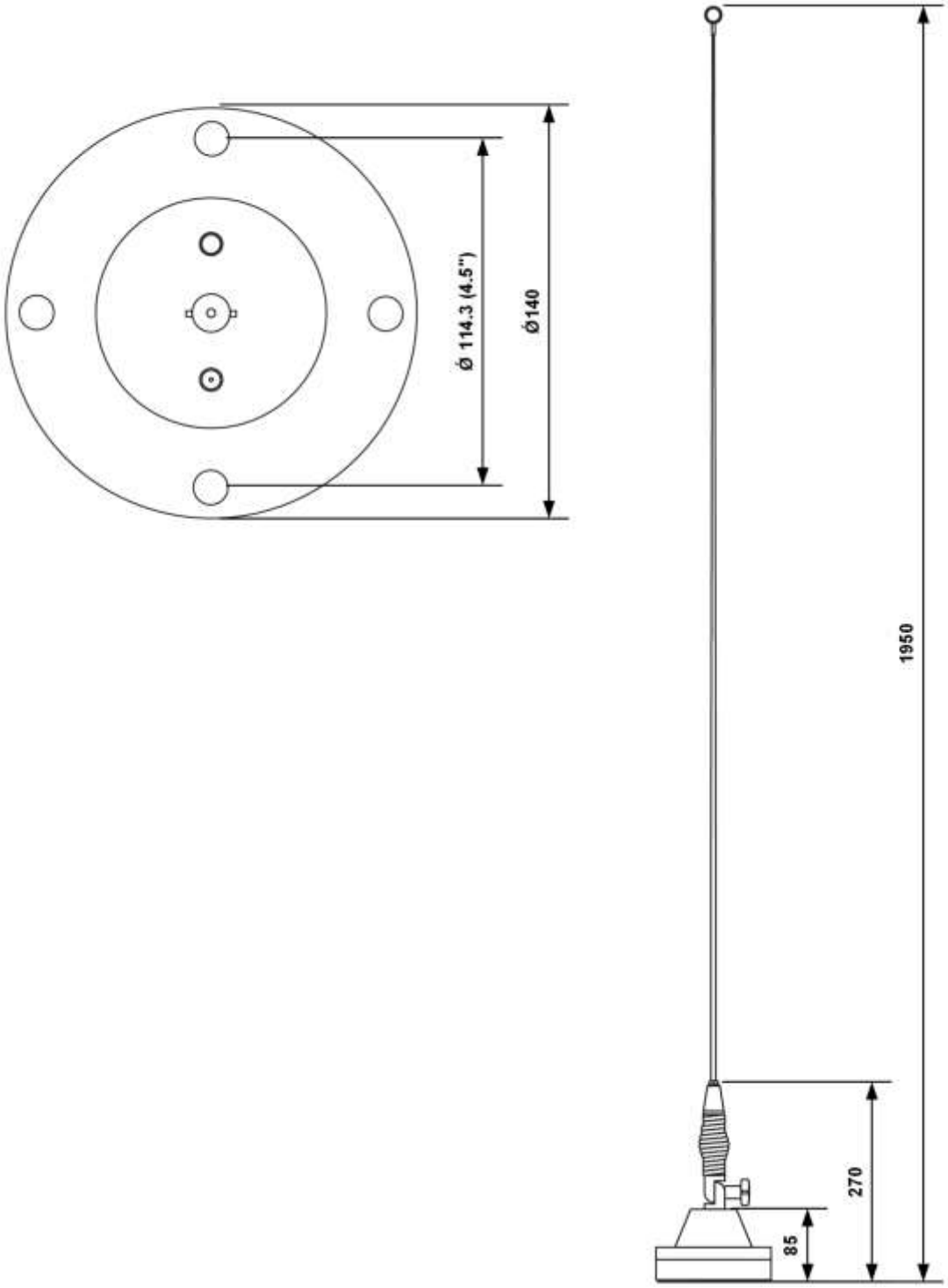

Figure 3-5: VHF Antenna Dimensions (mm)

3.4.5 Optional – Passive GPS Antenna Dimensions

(See Figure 3-6)

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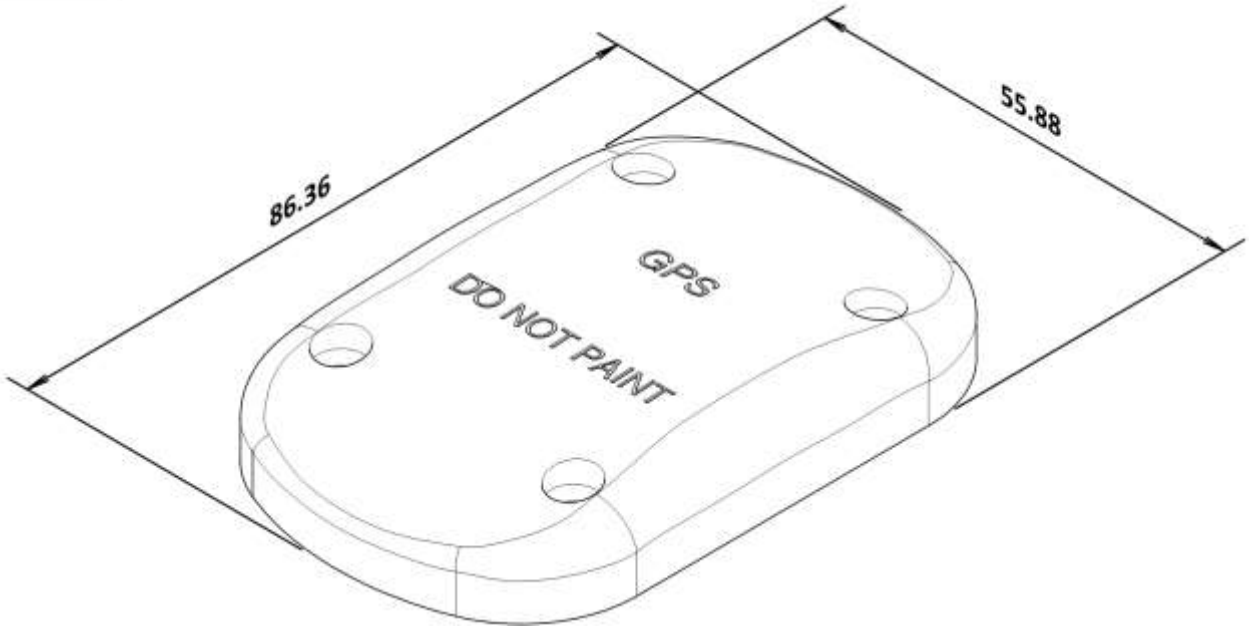

Figure 3-6: Optional GPS Antenna Dimensions (mm)

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CHAPTER 4

DETAILED DESCRIPTION

4.1 SCOPE

This chapter describes the BNET-V 2.1 system assemblies and provides an interface diagram (J-to-J).

4.2 SYSTEM DETAILED DESCRIPTION

This chapter provides a detailed description of the system assemblies.

4.2.1 BNET-V

This section describes the BNET-V function, and provides a physical description and a description of the controls, indicators and connectors.

4.2.1.1 Function

The BNET-V devices provide voice and data wireless communication between HQ and BNET-V vehicles, as well as between the vehicles.

4.2.1.2 Physical Description

(See Figure 4-1 and Table 4-1)

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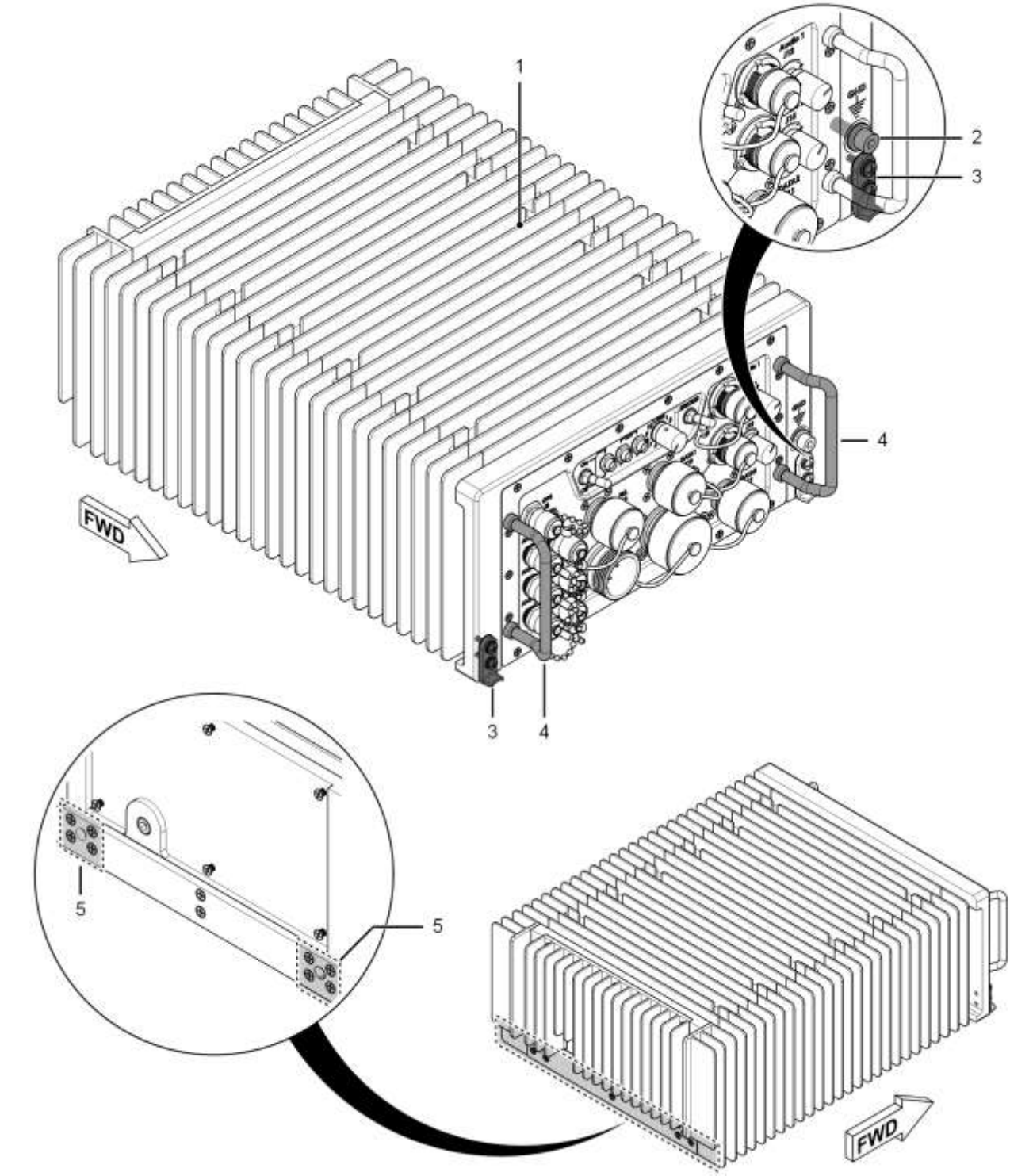

Figure 4-1: BNET-V – Physical Description

Table 4-1: BNET-V – Physical Description

No.	Item	Description
1.	Heat dissipation ribs	Dissipates the BNET-V internal generated heat.
2.	GND stud	Connects to a vehicle grounding point.
3.	Mounting hooks	Enable mounting the BNET-V on the adapter tray.
4.	Carrying handles	Used for carrying the BNET-V unit.
5.	Guiding bore (x2)	Used for guiding the BNET-V on the adapter tray.

4.2.1.3 Controls, Indicators and Connectors

(See Figure 4-2 and Table 4-2)

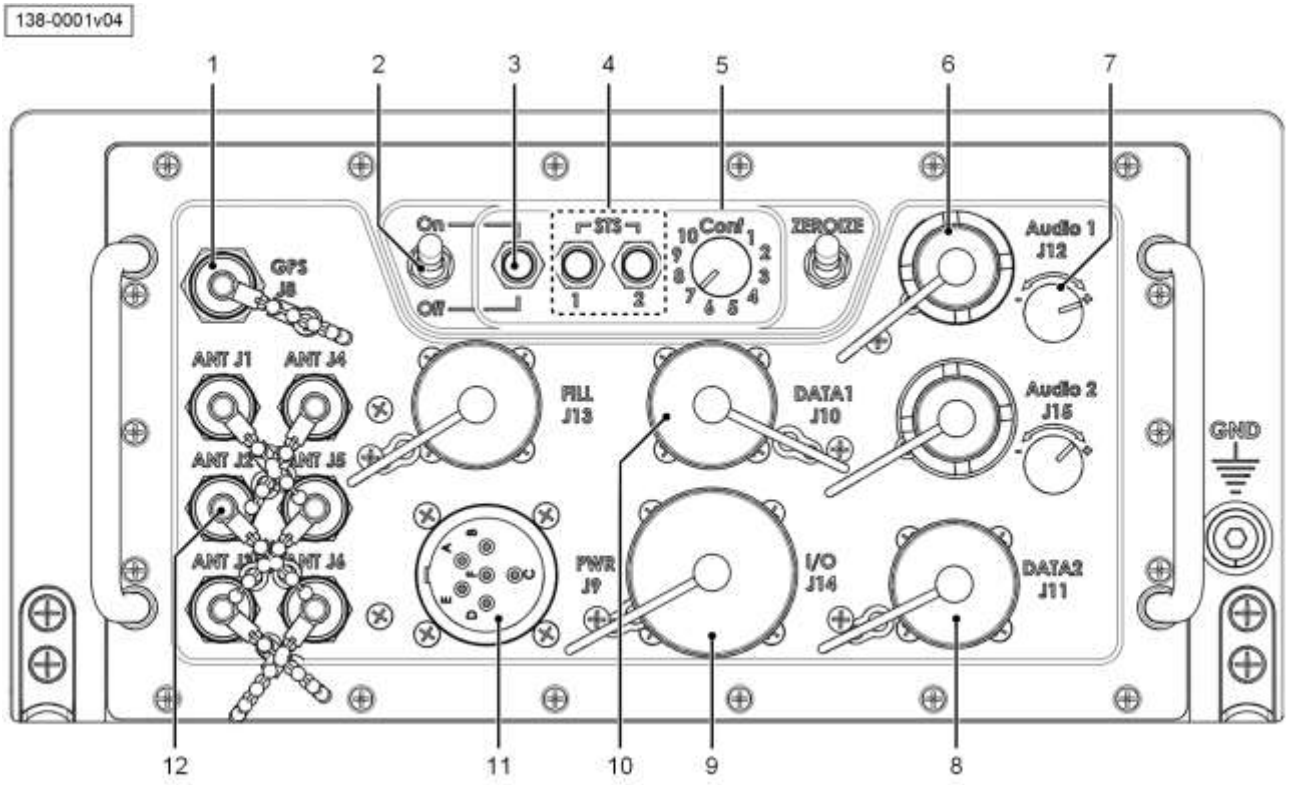

Figure 4-2: BNET-V – Controls, Indicators and Connectors

NOTE

Figure 4-2 callouts point only to the controls, indicators and connectors in use in the system.

Table 4-2: BNET-V – Controls, Indicators and Connectors

No.	Item	Type	Description
1.	GPS J8	TNC connector	Input of GPS signal from the connected antenna (VHF/UHF antenna or VHF antenna).
2.	On/Off	Switch	Turns ON/OFF the BNET.
3.	On/Off	Indicator lamp	Lit when BNET-V is ON.

4.	STS	Indicator lamps	• Lamp 1 – indicates the BNET-V GPS component status:
			  • Lit green when the GPS component operates normally.
			  • Lit orange when the GPS component receives no signal and the BNET-V is synchronised with another BNET-V radio.
			  • Lit red when the GPS component does not operate and the BNET is not synchronised with other BNET radio.
			• Lamp 2 – not in use in this system.

5.	Conf 1-10	Selector	Enables switching between 10 voice group presets. **Note:** Preset 10 is not in use in this system.
6.	Audio 1/J12	Connector	Audio/PTT communication with the loudspeaker: • Output of received audio. • Input of PTT control signal. • Input of handset voice signal for transmitting.
7.	Audio 1	Volume selector	Adjusts the volume level of the audio being sent to the loudspeaker.
8.	Data2/J11	Connector	Ethernet communication with NMS computer or EMS LTU: • Input of configuration data. • Output of BNET status and BIT results.
9.	I/O/J14	Connector	• RS422/RS232 line. • JTAG line. • USB line. • Ethernet for technician maintenance purposes. • External Time of Day (TOD) and 1PPS (Pulse per Second) signals. • Discrete lines for modules Firmware installation.
10.	Data1/J10	Connector	Ethernet communication with the base operational C2 for sending and receiving data.
11.	PWR/J9	Connector	Input of 24 VDC from an external power source.
12.	ANT/J2	TNC connector	• Connected to either VHF/UHF antenna or VHF antenna. • Used for transmission and reception in half duplex. • Output of transmitted RF signal to connected antenna. • Input of received RF signal from connected antenna.

4.2.2 Loudspeaker

This section describes the loudspeaker function, and provides a physical description, as well as a description of the controls, indicators and connectors.

4.2.2.1 Function

The loudspeaker plays the audio signal received by the BNET-V.

The loudspeaker enables using the handset for PTT control and voice signal to transmit via the BNET-V from HQ to BNET-V vehicles, and between the vehicles.

4.2.2.2 Physical Description

(See Figure 4-3 and Table 4-3)

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Figure 4-3: Loudspeaker – Physical Description

Table 4-3: Loudspeaker – Physical Description

No.	Item	Description
1.	Mounting bore (x4)	Used for mounting the loudspeaker using four screws.
2.	Audio aperture	Output of the audio messages received from the connected BNET-V.
3.	GND stud	Connects to the rack/vehicle grounding point.

4.2.2.3 Controls, Indicators and Connectors

(See Figure 4-4 and Table 4-4)

138-0005v01

Figure 4-4: Loudspeaker – Controls, Indicators and Connectors

Table 4-4: Loudspeaker – Controls, Indicators and Connectors

No.	Item	Type	Description
1.	ON/OFF	Push-button	Powers ON/OFF the loudspeaker.
2.	POWER	Indicator lamp	Lit when the loudspeaker is powered ON.
3.	VOLUME SPEAKER	Volume selector	Adjusts the volume level of the audio sounded by the loudspeaker.
4.	VOLUME HEADSET	Volume selector	Adjusts the volume level of the audio sounded by the handset.
5.	HEADSET	Connector	Connects to the Handset for: • Input of operator PTT control and voice signals. • Output of BNET-V received audio signal.
6.	AUDIO IN	Connector	Connects to the BNET-V for: • Input of received audio signal. • Output of operator PTT control and voice signals.
7.	POWER	Connector	Input of 24 VDC from the external power source for the loudspeaker operation.

4.2.3 Handset

This section describes the Handset function and provides a physical and connector description.

4.2.3.1 Function

The Handset is used for hearing audio messages played by the loudspeaker, as well as sending voice messages, using the PTT control, to transmit via the BNET-V to other BNET-V devices.

4.2.3.2 Physical Description

(See Figure 4-5 and Table 4-5)

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Figure 4-5: Handset – Physical and Connector Description

Table 4-5: Handset – Physical and Connector Description

No.	Item	Type	Description
1.	Speaker/microphone	-	Enables audio output and voice input.
2.	PTT	Button	Pressing and holding sends a transmission control signal via the loudspeaker to the BNET-V. **Note:** When not pressed, the BNET-V is in reception mode.
3.	J1 connector	Connector	Connects to the loudspeaker for: • Input of BNET-V received audio messages. • Output of operator PTT control and voice messages.

4.2.4 VHF/UHF Antenna with Integrated Passive GPS Antenna

This section describes the VHF/UHF antenna function and provides a physical and connector description.

4.2.4.1 Function

The VHF/UHF antenna enables the connected BNET-V to transmit and receive RF signals for wireless communication with other BNET-V devices.

The integrated GPS antenna provides the connected BNET-V with satellite location data required for wireless communication.

4.2.4.2 Physical Description

(See Figure 4-6 and Table 4-6)

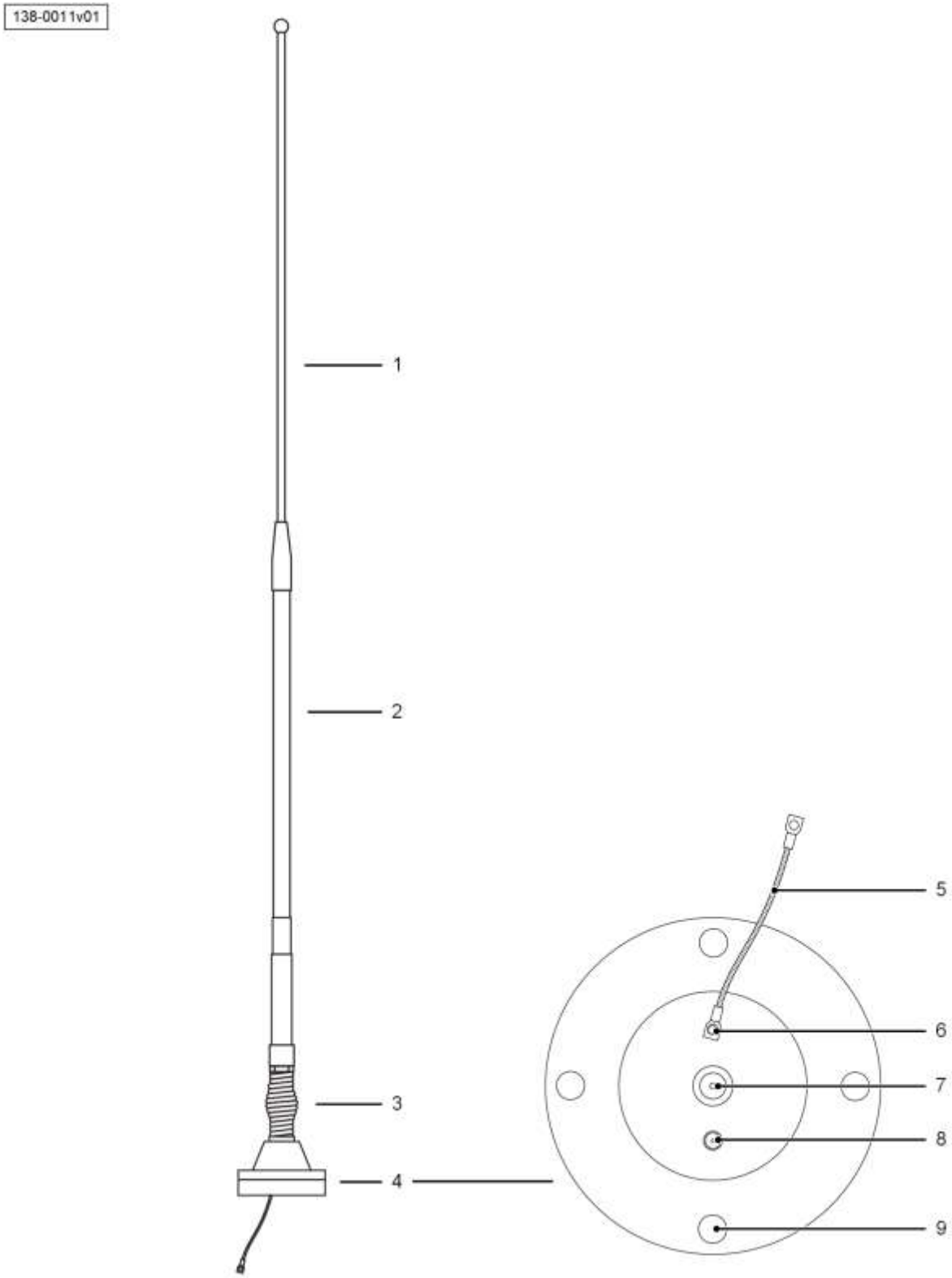

Figure 4-6: VHF/UHF Antenna – Physical and Connector Description

Table 4-6: VHF/UHF Antenna – Physical and Connector Description

No.	Item	Description
1.	Upper radiate element	• Converts transmitted electrical signals to electromagnetic signals. • Converts received electromagnetic signals to electrical signals.
2.	Lower radiate element	
3.	Spring	• Absorbs shocks and vibrations. • Protects the antenna against impacts.
4.	Antenna base	Contains an passive GPS Antenna.
5.	Grounding strap	Used for connecting the VHF/UHF antenna to a grounding post.
6.	Grounding screw	
7.	N-type connector	• Output of received RF signal to the connected BNET-V. • Input of transmitted RF signal from the connected BNET-V.
8.	SMA connector	Output of received satellite GPS signal to the connected BNET-V.
9.	Mounting bore (x4)	Used for mounting the VHF/UHF antenna to the vehicle roof adapter using four screws.

4.2.5 VHF Antenna with Integrated Passive GPS Antenna

This section describes the VHF antenna function and provides a physical and connector description.

4.2.5.1 Function

The VHF antenna enables the connected BNET-V to transmit and receive RF signals for wireless communication with other BNET-V devices.

The integrated GPS antenna provides the connected BNET-V with satellite location data required for wireless communication.

4.2.5.2 Physical Description

(See Figure 4-7 and Table 4-7)

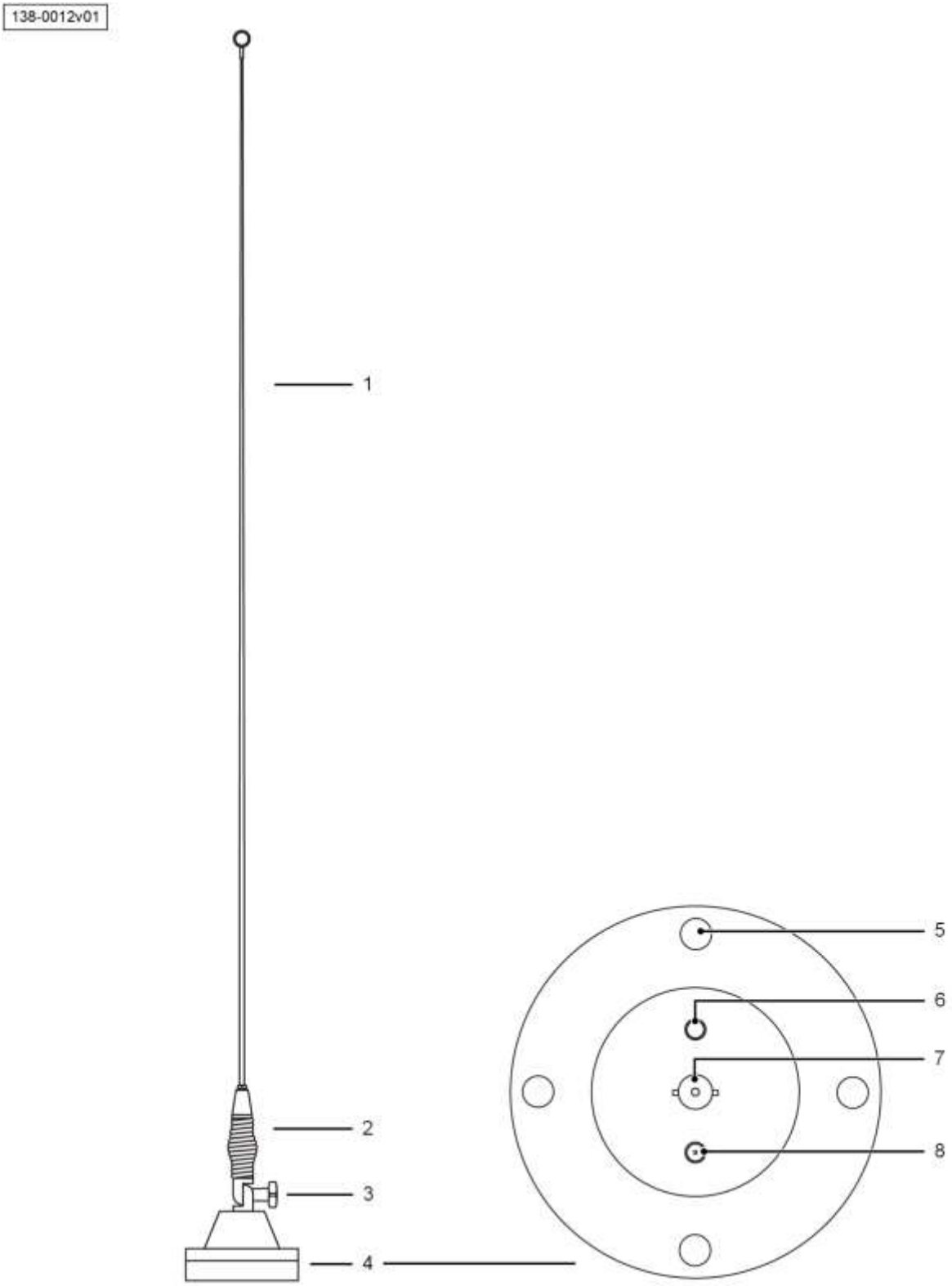

Figure 4-7: VHF Antenna – Physical and Connector Description

Table 4-7: VHF Antenna – Physical and Connector Description

No.	Item	Description
1.	Radiate element	• Converts transmitted electrical signals to electromagnetic signals. • Converts received electromagnetic signals to electrical signals.
2.	Spring	• Absorbs shocks and vibrations. • Protects the antenna against impacts.
3.	Tilting mechanism	Enables adjusting the inclination radius of the antenna, when the system is not operating.
4.	Antenna base	Contains an passive GPS antenna.
5.	Mounting bore (x4)	Used for mounting the VHF antenna to the vehicle roof adapter using four screws.
6.	Grounding screw	Used for connecting the VHF antenna to a grounding post.
7.	N-type connector	• Output of received RF signal to the connected BNET-V. • Input of transmitted RF signal from the connected BNET-V.
8.	SMA connector	Output of received satellite GPS signal to the connected BNET-V.

4.2.6 Optional – Passive GPS Antenna

This section describes the GPS antenna function and provides a physical and connector description.

4.2.6.1 Function

The GPS antenna, if installed, provides the connected BNET-V with the location data required for wireless communication.

4.2.6.2 Physical Description

(See Figure 4-8 and Table 4-8)

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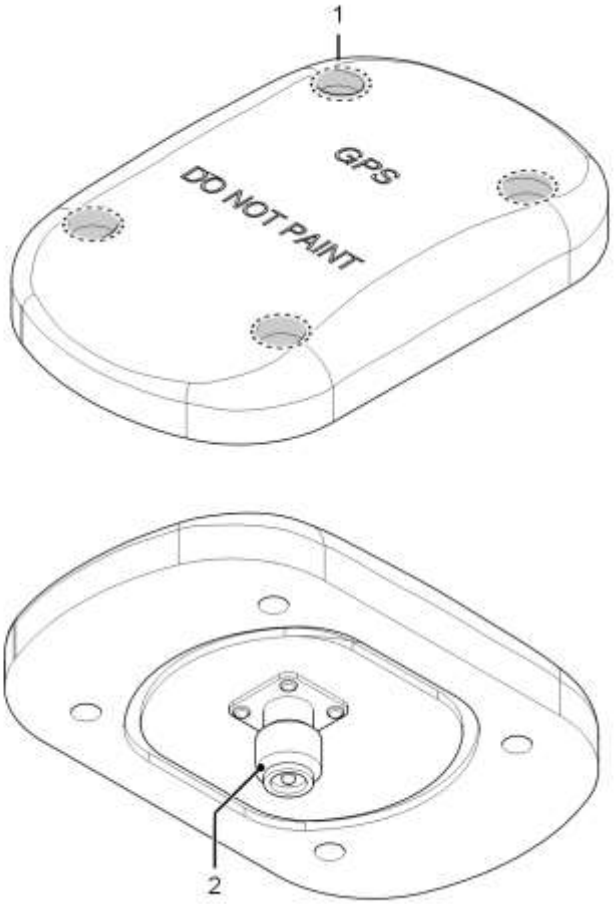

Figure 4-8: Optional GPS Antenna – Physical and Connector Description

Table 4-8: Optional GPS Antenna – Physical and Connector Description

No.	Item	Description
1.	Mounting bore (x4)	Used for mounting the GPS antenna to the vehicle roof adapter using four screws.
2.	RF connector	Output of received satellite GPS signal to the connected BNET-V.

4.3 SYSTEM HARNESSES INTERFACES

(See Figure 4-9 and Table 4-9)

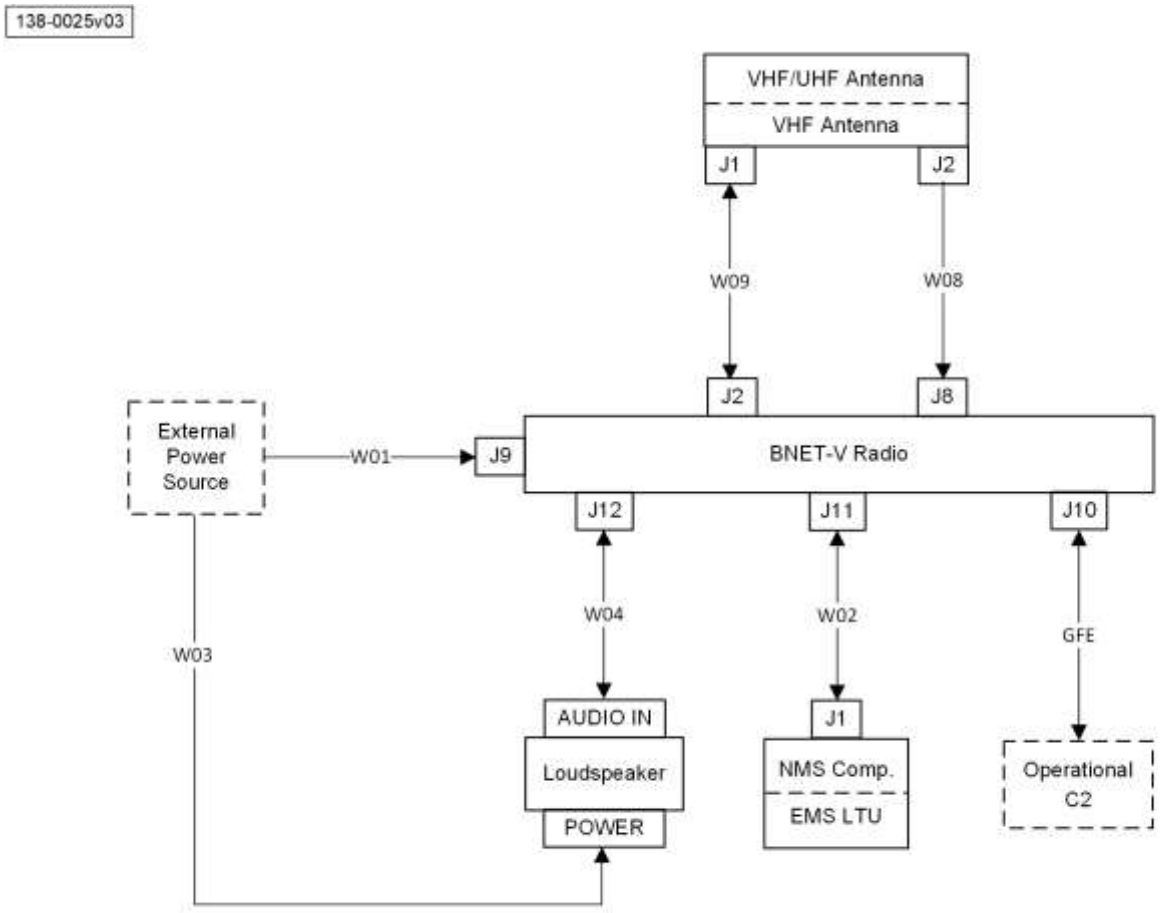

Figure 4-9: System Harnesses Interfaces – Detailed Block Diagram

Table 4-9: System Harnesses Interfaces – Description

Harness	From	Connector	To	Connector	Description
W01	Power source	-	BNET-V	J9	Power supply of 24 VDC
W03		-	Loudspeaker	POWER	
GFE	BNET-V	J10	Operational C[2]	J1	Ethernet communication for data signals.
W02	BNET-V	J11	NMS computer or EMS LTU	J1	Ethernet communication for data signals.
W04	BNET-V	J12	Loudspeaker	AUDIO IN	• Audio/voice signals • PTT control signal
W08	BNET-V	J8	VHF/UHF Antenna or VHF Antenna	J2	GPS reception signal
W09	BNET-V	J2		J1	• RF transmission signal • RF reception signal

CHAPTER 5

NMS DESCRIPTION

5.1 SCOPE

This chapter describes the NMS application installation requirements and NMS screens.

5.2 NMS APPLICATION INSTALLATION REQUIREMENTS

The NMS application requires a computing platform with the following minimum specifications:

- Windows 10
- I7 dual-core processor
- 32 Giga RAM
- 1 TB hard disk

5.3 NMS SCREEN DESCRIPTION

This section describes the NMS application screens.

NOTE

The NMS application screens are presented using the administrator user.

When using the operator user, the NMS screens are identical, however certain options, enabled to the administrator are disabled to the operator.

5.3.1 Log-in Screen

(See Figure 5-1 and Table 5-1)

The Log-in screen is the first screen that appears when the application is activated.

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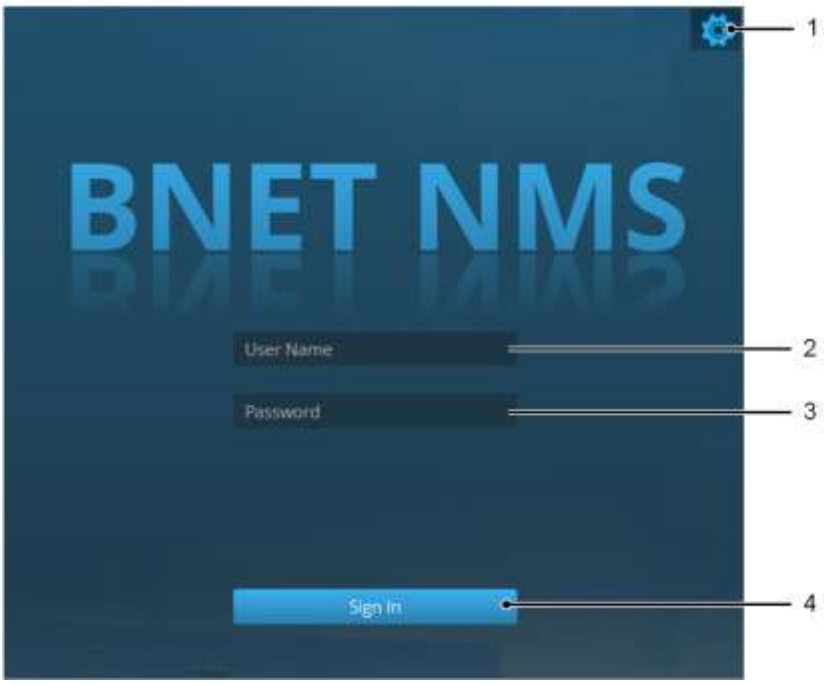


Figure 5-1: Log-in Screen

Table 5-1: Log-in Screen

No.	Icon/Name	Description
1.		Not in use in this system.
2.	Username	Box to enter the operator name.
3.	Password	Box to enter the operator password.
4.	Sign In	Opens the NMS main screen (see section 5.3.2).

5.3.2 Main Screen

(See Figure 5-2 and Table 5-2)

NOTE

The main screen configuration is in accordance with the operator permissions.

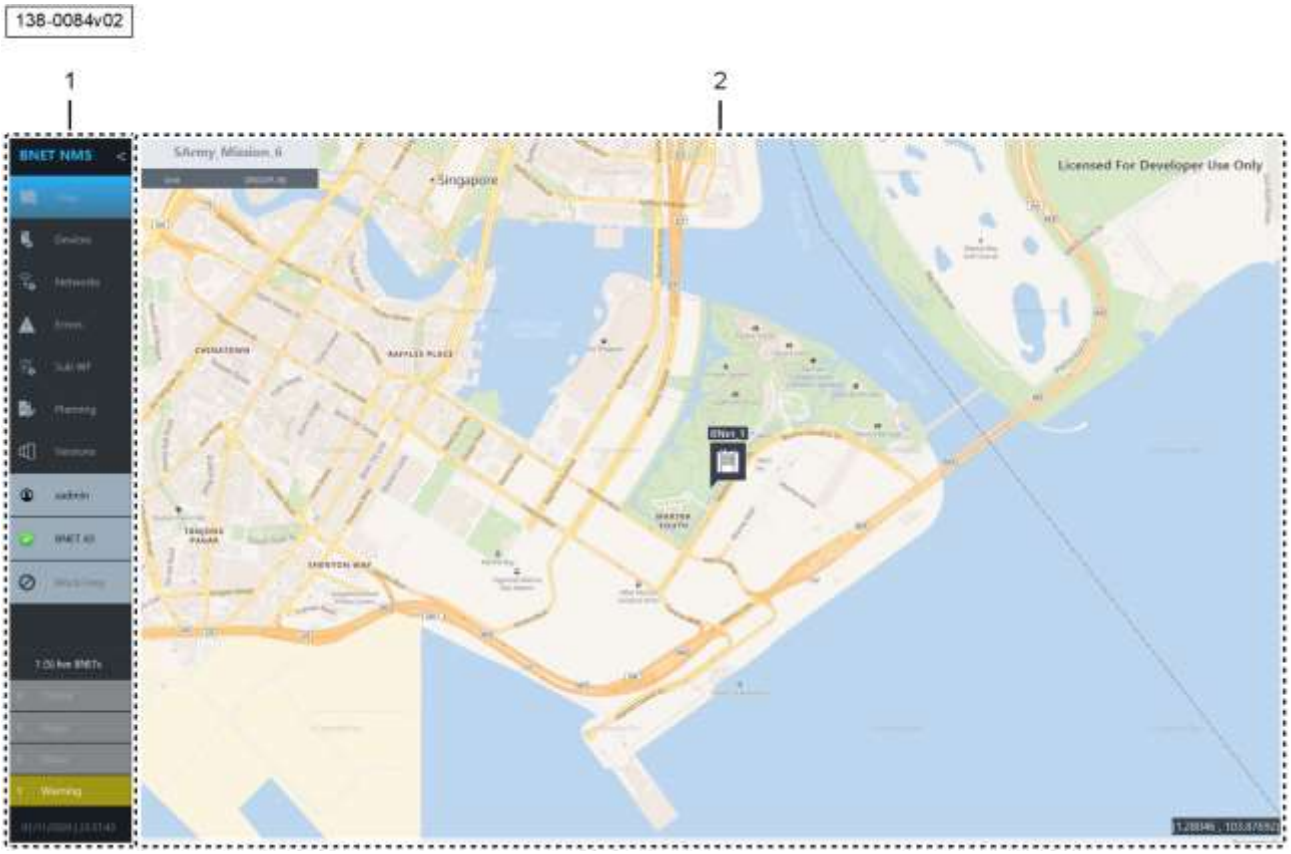


Figure 5-2: Main Screen Structure

Table 5-2: Main Screen Structure

No.	Name	Description

1.	Main toolbar	• Includes controls for navigating and displaying the application screen and windows, as well as statuses of the system BNET devices (see section 5.3.3).
		• Displayed in two states:
		  • Expanded – shows the names and icons.
		  • Collapsed – shows only icons.

2.	Main display area	• Displays a screen selected in the main toolbar (1). • The default is the map screen (see section 5.3.4) which is loaded automatically after log in.

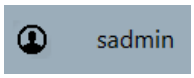
5.3.3 Main Toolbar

(See Figure 5-3 and Table 5-3)

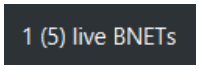
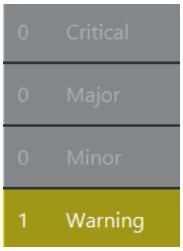
138-0085v02

Figure 5-3: Main Toolbar

Table 5-3: Left Pane

No.	Icon/Indication	Name	Description
1.		Expand/collapse toolbar	Expands/collapses the main toolbar: • In expanded state – the toolbar shows names and icons. • In collapsed state – the toolbar shows only icons.
2.		Map	Displays the currently loaded map with icons of the system active units and BNET devices (see section 5.3.4).
3.		Devices	Opens the Device Status & Configuration screen, to view and configure the system BNET devices (see section 5.3.5), using the BNET form (see section 5.3.5).
4.		Networks	Opens the Network Configuration screen, to add a network to the system, and to view and configure the system networks (see section 5.3.7).
5.		Errors	Opens the Error Report screen to view BNET MFLs information and recommended actions, to correct the errors (see section 5.3.9).
6.		Sub WF	Opens the Network Sub-Waveform Configuration screen, to configure the sub-waveform parameters of the system BNET devices (see section 5.3.10).
7.		Planning	Opens the Mission Planning screen, to plan communication missions for the managing forces (see section 5.3.11).
8.		Versions	Opens the Versions screen, to view current software and firmware versions, and upload a new version (see section 5.3.17).
9.		Active user	• Displays the name of the currently logged user. • Clicking opens the active user window to change map objects display settings, change NMS computer IP address or log out (see section 5.3.18).

10.		BNET device health indicator	• Displays a health indicator and the name of the selected BNET device:
			  •  – no errors are detected in the BNET device.
			  •  – at least one error is detected in the BNET device.
			• Clicking displays the BNET form window directly on the map, to view and configure the selected BNET device parameters (see section 5.3.6).

11.		Block Freq	Not in use in this system.
12.		Live BNET devices	Displays the number of active BNET devices out of the total number of BNET devices in the system.
13.		BNET errors	• Displays the total number of MFLs detected for all active BNET devices, according to the four severity levels: Critical, Major, Minor and Warning. • Clicking opens the Error Report pane to view BNET MFLs information and recommended actions (see section 5.3.9.1).

No.	Icon/Indication	Name	Description
14.	01/11/2020 | 23:57:43	Time and date	Displays the current time and date.

5.3.4 Map Screen

(See Figure 5-4 and Table 5-4)

The map is automatically loaded from a file to the NMS application and displayed in the main display area. All active BNET devices are displayed on the map according to their Global Positioning System (GPS) coordinates.

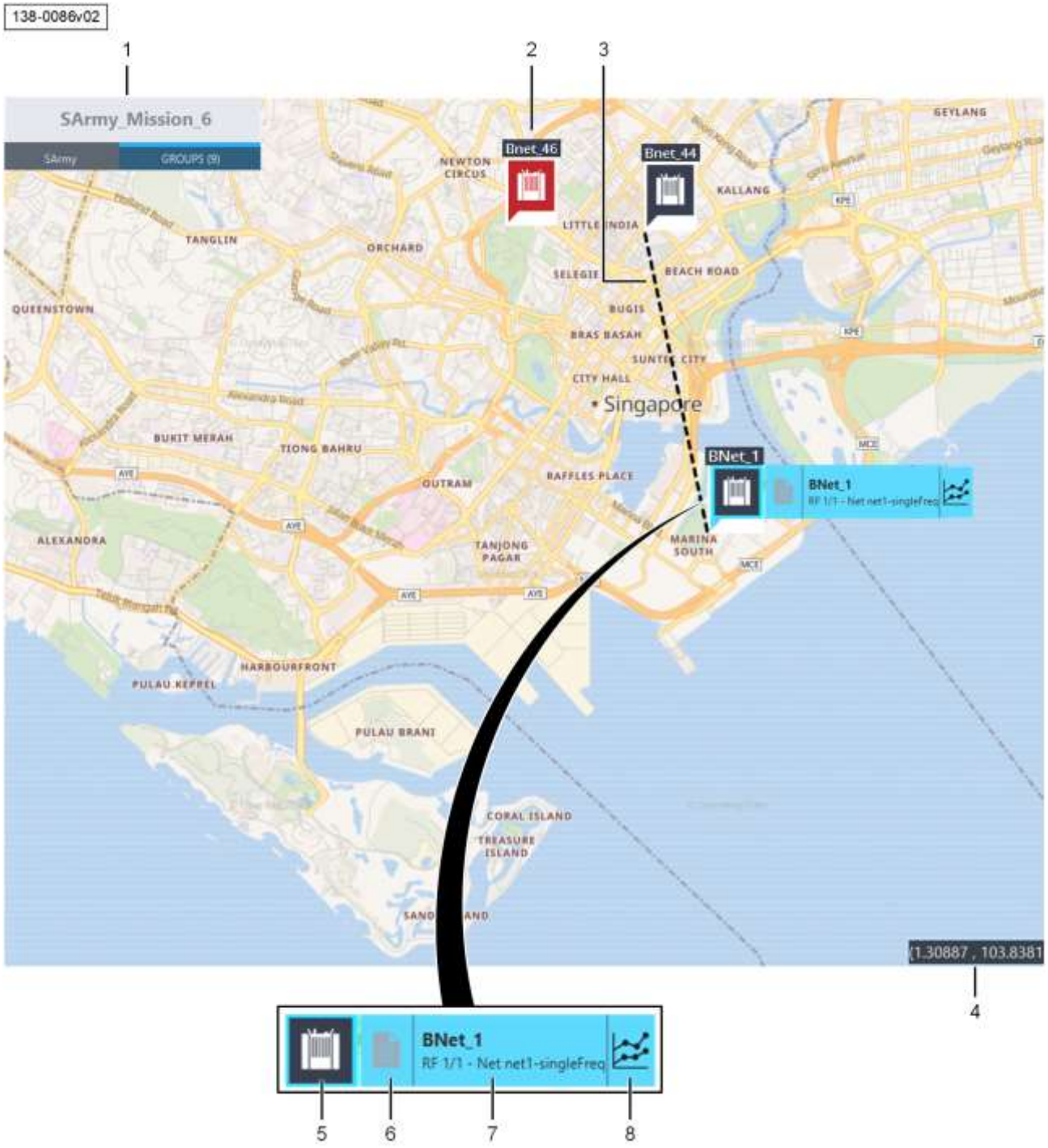


Figure 5-4: Map Screen

Table 5-4: Map Screen

No.	Icon/Name	Description
1.	Unit filter and group configuration window	• Used for filtering force unit BNET devices to display on the map. • Enables adding new voice/data groups in real-time (see section 5.3.4.1).

No.	Icon/Name	Description
2.	Force/BNET device name and icon	Displays the name and icon of the force/BNET device: •  – BNET device •  – Ground HQ •  – Aggregation of BNET devices **Note:** • The icon bottom left angle points to its location coordinates. • See description of icon types and colours in section 5.3.4.1.

3.	Receiving Sun
	Link quality and link bandwidth
		• Displays the reception sun of the top 10 links (based on settings parameters).
		• Link lines, drawn on the map, connect the transmitting BNET devices and the selected BNET device, and are refreshed every second.
		• Line colour is based on the transmission load, according to the threshold.
		• Lines indicate link quality and link bandwidth:
		  • Link quality is represented by line dashes:
		  • Good ——————
		  • Degraded – – – – – –
		  • Bad ----------
		  • Link bandwidth is represented by line thickness:
		  • Narrow ——————
		  • Medium ——————
		  • Wide ———————

4.	Coordinates	Displays the coordinates of the mouse cursor location on the map.
5.	BNET icon	Shows the BNET device on the map. **Note:** See description of icon types and colours in section 5.3.4.1.
6.		Opens/closes the BNET form window for the selected BNET device (see section 5.3.6).
7.	NC1/RF1 U Manet	Displays the selected BNET device basic details: • BNET name • RF head number • Network name
8.		Opens the Frequency Spectrogram window, to view an RF spectrogram of the selected BNET received signal (see section 5.3.4.2).

5.3.4.1 Map Icons

(See Table 5-5)

BNET devices, BNET aggregations and headquarters (HQ) objects are represented on the map as icons based on GPS location.

If communication is lost, the object is located according to the last known location.

The icon colour indicates BNET error(s).

The name label of the device/aggregation/HQ is displayed above the icon.

NOTE

Name labels can become hidden using the active user window (see section 5.3.18).

Table 5-5: Map Icons (to be updated)

No.	Icon	Description
1.	BNET device icons	
		• Icon for Man Pack in Vehicle (MPV) type BNET. • BNET device without errors.
		No GPS, displays last known location.
		BNET device with at least one error.
2.	Aggregation icons	
		• Icon for BNET aggregation. • Indicates that all BNET devices in the aggregation do not have errors.
		Indicates an error in one of the BNET devices in the aggregation.
		Indicates that one of the BNET devices in the aggregation is selected.
3.	Headquarters Icons	
		Icon for HQ.
	(To be updated)	(To be updated)

5.3.4.2 Frequency Spectrogram Window

(See Figure 5-5 and Table 5-6)

The Frequency Spectrogram window provides a visual representation of the signal strength/loudness over-time at various frequencies present in a particular waveform.

The operator can view whether there is more or less energy at a specific frequency used by the BNET RF head, as well as how the energy levels of a frequency vary over time.

The frequency spectrogram has two-dimensional graphs, with a third dimension represented by colours; time moves from left to right along the horizontal axis.

The amplitude (strength/loudness) of a specific frequency at any given time is represented by the third dimension, colour, with dark blues corresponding to low amplitudes and brighter colours corresponding to progressively stronger/louder amplitudes.

138-0087v03

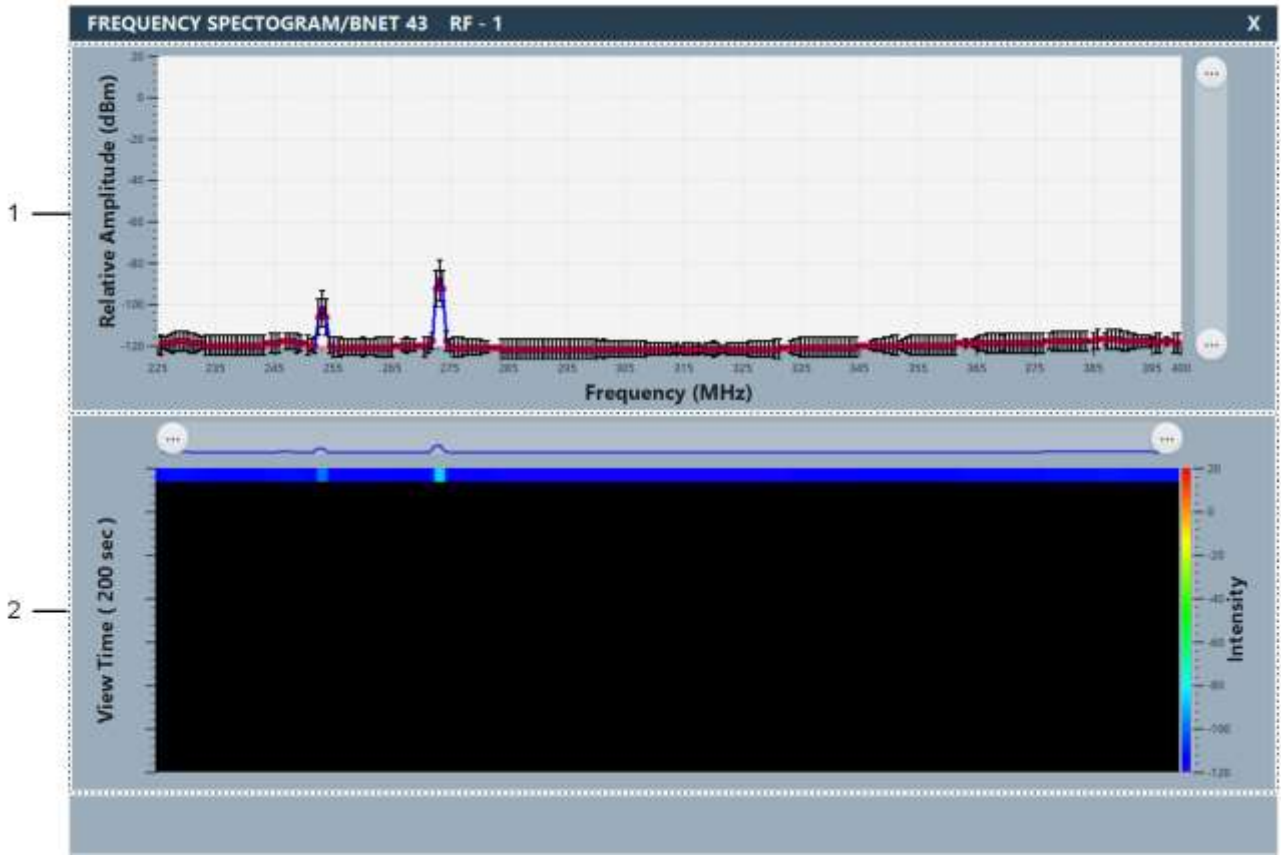


Figure 5-5: Frequency Spectrogram Window

Table 5-6: Frequency Spectrogram Window

No.	Name	Description
1.	Relative Amplitude (dBm)	Displays amplitude values between (-120) dBm and 20 dBm.
	Frequency (MHz)	Displays frequency values between 30 MHz and 400 MHz.
		Graph segment focus buttons that enable shifting the viewed graph segment vertically along the Relative Amplitude axis.
2.	View Time (200 sec)	Displays the time period in seconds.
	Intensity	Displays a colour legend of the colours displayed in the graph, used for interpreting the relative amplitude (1) intensity.
		Graph segment focus buttons that enable shifting the viewed graph segment horizontally along the timeline.

5.3.4.3 Unit Filter and Group Configuration Window

This section describes the unit filter and group configuration window tabs.

5.3.4.3.1 Manager Tab

(See Figure 5-6 and Table 5-7)

138-0088v03

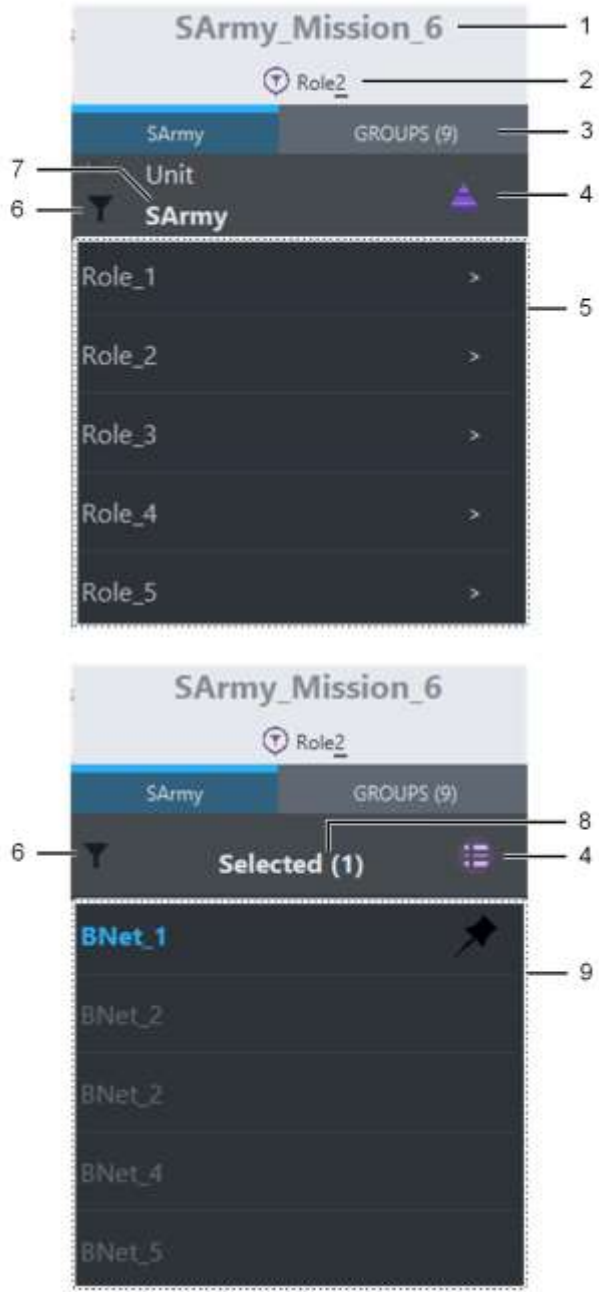
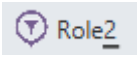


Figure 5-6: Unit Filter and Group Configuration Window – Manager Tab

Table 5-7: Unit Filter and Group Configuration Window – Manager Tab

No.	Icon/Name	Description
1.	Mission	Displays the mission name.
2.		• Indicates that the filter is activated. • Displays the filtered unit (in this case: Role_2).
3.	Groups	Switches to Groups tab (see section 5.3.4.3.2).
4.		Clicking: • Shows a list of the force units (9) BNET devices. • Changes the icon to  .
		Clicking: • Hides the force BNET devices. • Changes the icon back to  .
5.	Units list	• Displays a list of the manager units. • Clicking a unit row expands/collapses a list of the unit BNET devices.

6.		• Indicates that the BNET device list (9) is not filtered.
		• Clicking:
		  • Filters the BNET device list, according to the selected unit (5).
		  • Changes the icon to  .

		• Indicates that the BNET device list (9) is filtered, according to the selected unit (5).
		• Clicking:
		  • Cancels the filter, i.e., reverts the list to show all BNET devices.
		  • Changes the icon back to  .

7.	Manager	Displays the managing force name.
8.	Selected (x)	Displays the number of BNET devices selected in the BNET devices list (9).
9.	BNET device list	• Displays a list of the BNET devices included in the managing force (7) or selected unit (5). • Selected BNET device is highlighted in blue and shown on the map.
		Clicking: • Hides the selected BNET highlight on the map. • Changes the icon to  .
		Clicking: • Highlights the selected BNET device on the map. • Centres the map on the selected BNET. • Changes the icon back to  .

5.3.4.3.2 Groups Tab

(See Figure 5-7 and Table 5-8, Figure 5-8 and Table 5-9)

138-0116v03

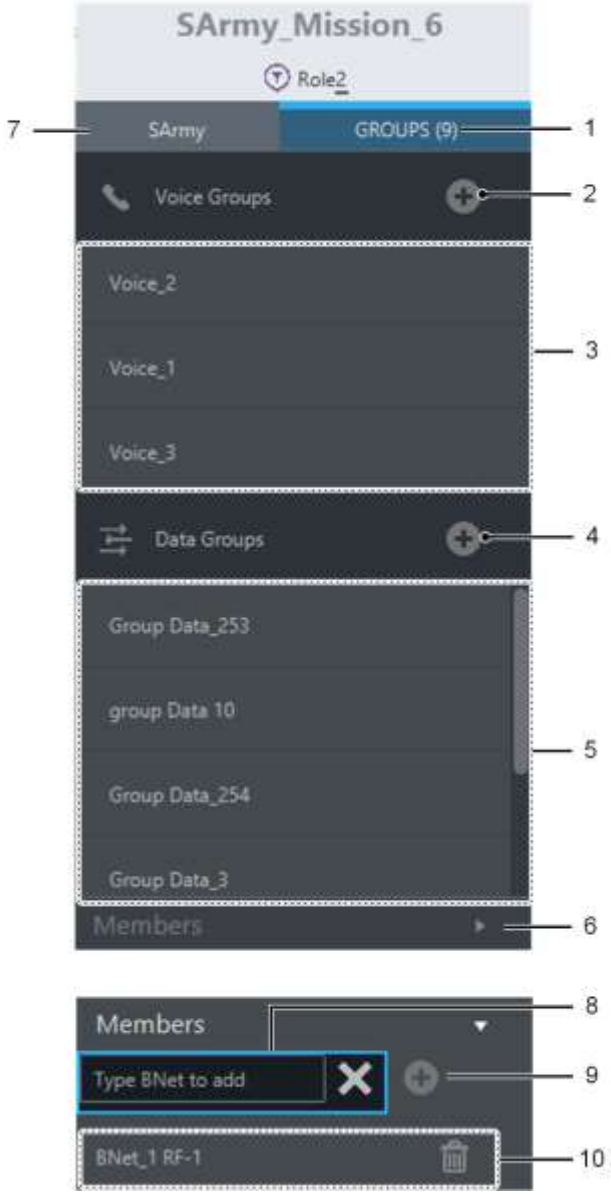


Figure 5-7: Unit Filter and Group Configuration Window – Groups Tab

Table 5-8: Unit Filter and Group Configuration Window – Groups Tab

No.	Icon/Name	Description
1.	Groups (x)	Displays the total number of voice and data groups included in the managing force.
2.		Opens the voice group add pane (see section 5.3.4.3.3), to add a voice group in real-time.

3.	Voice Groups list	• Displays a list of the voice groups included in the managing force.
		• Clicking a group:
		  • Highlights the group in blue.
		  • Displays the group members list (10).

4.		Opens the data group add pane (see section 5.3.4.3.4), to add a data group in real-time.

5.	Data Groups list	• Displays a list of the data groups included in the managing force.
		• Clicking a group:
		  • Highlights the group in blue.
		  • Displays the group members list (10).

6.		Expands/collapses the members list (10).
7.	Manager	Switches to Manager tab (see section 5.3.4.3.1).
8.	Type BNet to add	Box to enter a BNET device name, to add as a member to the managing force or a selected group.
		Erases the content of the Type BNet to add box (11).
9.		Adds the entered BNET device (7) to the members list (10).
10.	Members list	Displays a list of BNET devices included in the managing force or a selected group.
		Deletes the selected group.

5.3.4.3.3 Voice Group Add Pane

(See Figure 5-8 and Table 5-9)

138-0159v01

Figure 5-8: Unit Filter and Group Configuration Window – Voice Group Add Pane

Table 5-9: Unit Filter and Group Configuration Window – Voice Groups Add Pane

No.	Name	Description
1.	Data	Switches to the data group add pane (see section 5.3.4.3.4).
2.	Name	Box to enter the voice group name.
3.	Group	Box to enter the voice group ID number.
4.	Save	Saves in real-time the entered voice group as part of the managing force groups.
5.	Cancel	Closes the pane without saving the entered voice group.

5.3.4.3.4 Data Group Add Pane

(See Figure 5-9 and Table 5-10)

138-0117v02

Figure 5-9: Unit Filter and Group Configuration Window – Data Group Add Pane

Table 5-10: Unit Filter and Group Configuration Window – Data Groups Add Pane

No.	Name	Description
1.	Voice	Switches to the voice group add pane (see section 5.3.4.3.3).
2.	Name	Box to enter the data group name.
3.	IP	Four boxes to enter the four octets of the group IP address that functions as the group multicast address. **Note:** • The system multicast address is **234.0.0.XX**. • **Only** the forth octet of the multicast address can be set (1-254).
4.	Save	Saves in real-time the entered data group as part of the managing force groups.
5.	Cancel	Closes the pane without saving the entered data group.

CAUTION

Once the operator adds a data group in **real-time**, each data group member (BNET device) refers to received data packets, according to the new group:

- Data packets received from a member of the group (i.e., same multicast address) are **utilized**.
- Data packets received from a non-member are **ignored**.

5.3.5 Device Status & Configuration Screen

(See Figure 5-10 and Table 5-11)

The Device Status & Configuration screen displays a table of all of the BNET devices in the system, based on operator permissions.

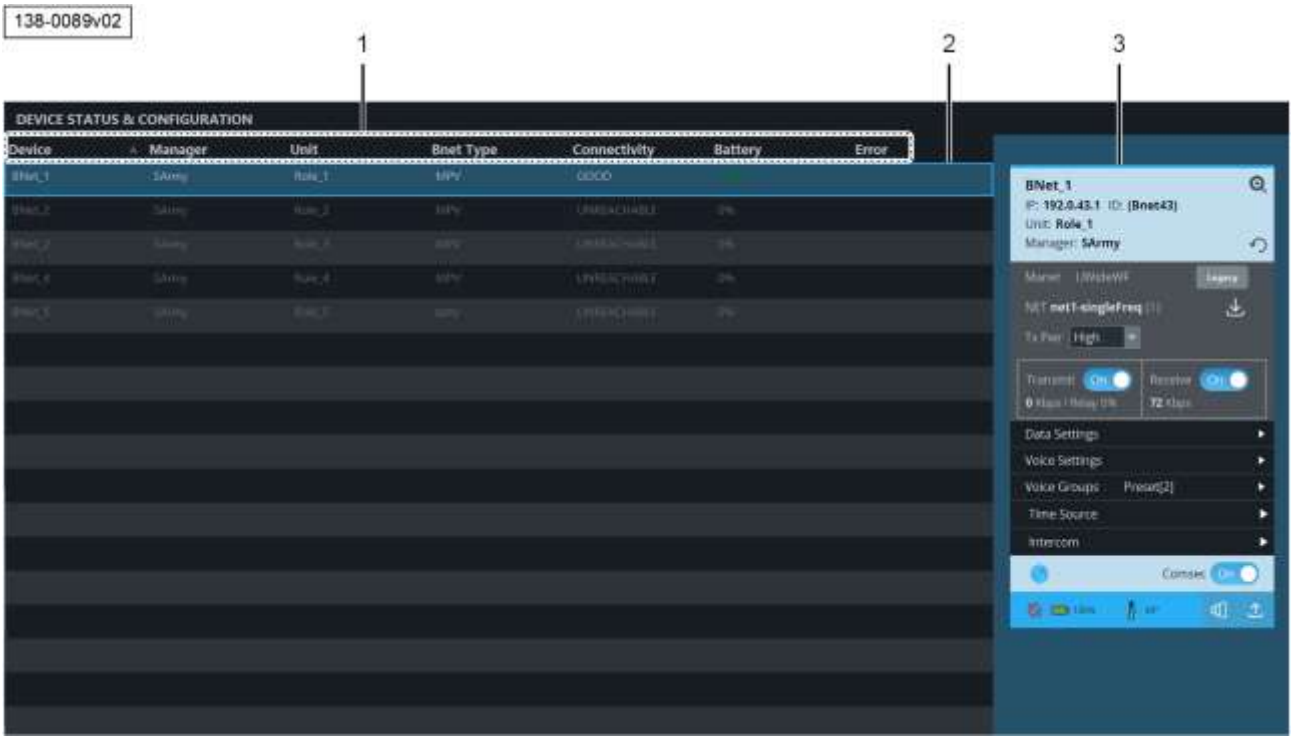


Figure 5-10: Device Status & Configuration Screen

Table 5-11: Device Status & Configuration Screen

No.	Name	Description
1.	Device table headings	
	Device	Displays the BNET device name.
	Manager	Displays the BNET grandparent name.
	Unit	Displays the BNET device.
	Bnet Type	Displays the BNET type – MPV, HH
	Connectivity	Displays the BNET connectivity quality – good, degraded or bad.
	Battery	Displays the BNET remaining battery power in percentage.
	Error	• Displays an error indication ( ) for the relevant BNET device. • Clicking the icon opens the Error Report screen displaying the selected BNET device error(s) (see section 5.3.9).
2.	Selected BNET device	Highlighted in a blue transparent colour. **Note:** The selected BNET parameters are displayed and can be configured in the BNET form window (3).

3.	BNET form window	Displays the selected BNET device parameters and enables configuration (see section 5.3.6).

5.3.6 BNET Form Window in MANET Mode

(See Figure 5-11 and Table 5-12)

138-0098v03

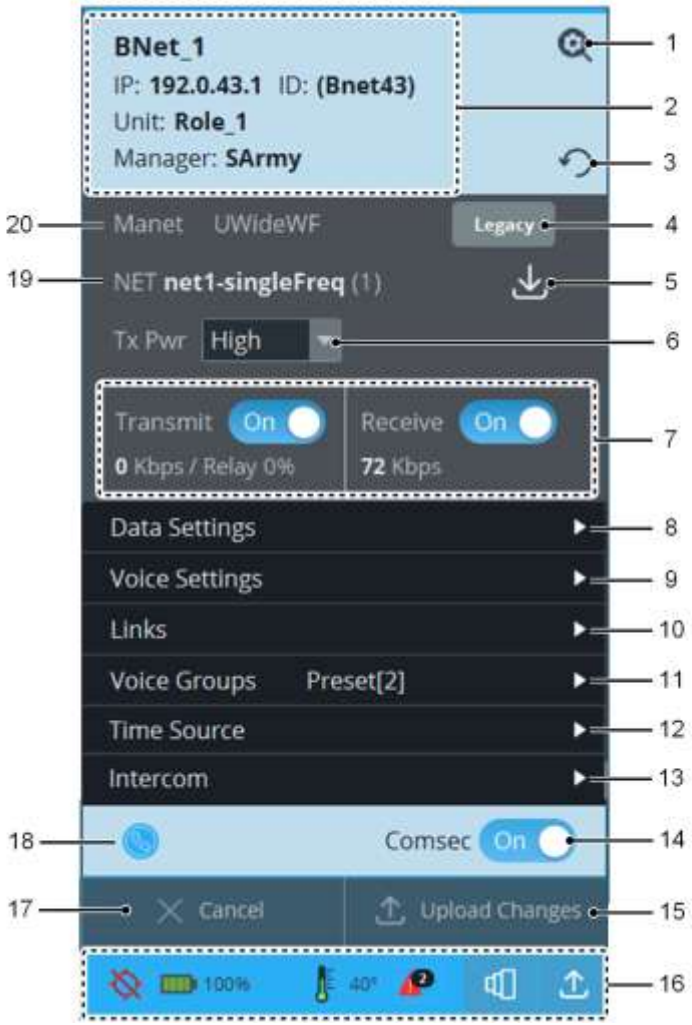
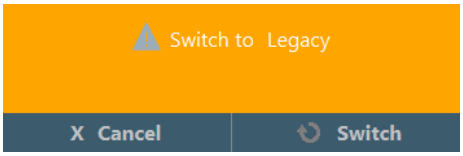
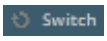


Figure 5-11: BNET Form Window in MANET Mode

Table 5-12: BNET Form Window in MANET Mode

No.	Icon	Name	Description
1.		Advanced Configuration	Opens the Advanced Configuration form (see section 5.3.6.1).
2.	-	BNET	Displays the BNET device name.
		IP	Displays the BNET IP address.
		ID	Displays the BNET identifier number.
		Unit	Displays the name of the BNET managing unit.

No.	Icon	Name	Description
		Manager	Displays the name of the distributed mission plan, which includes the BNET.
3.		Restart	Opens a Restarting BNET pane (see section 5.3.6.2).
4.	-	Legacy	• Clicking opens the Switch to Legacy dialogue box:  • Clicking  switches to Legacy mode (see section 5.3.6.11).
5.		Install Network	Opens the Install Network pane, to upload the MANET network parameters to the BNET (see section 5.3.6.3).
6.	-	Tx Pwr	Box to select the BNET transmission power: • High – 40 dBm • Medium – 30 dBm • Low – 20 dBm
7.	-	Transmit	• Enables/disables (On/Off) the BNET transmission capability. • Displays the amount of transmitted data in Kbps. • Relay – displays the percentage of data transmitted via another BNET.
		Receive	• Enables/disables (On/Off) the BNET reception capability. • Displays the amount of received data in Kbps.
8.		Data Settings	Expands/collapses the Data Settings pane (see section 5.3.6.5).
9.		Voice Settings	Expands/collapses the Voice Settings pane (see section 5.3.6.6).
10.		Links	Expands/collapses the Links tab, which displays up to 10 top BNET links and their quality based on Radio Signal Strength Indication (RSSI) parameters (see section 5.3.6.7).
11.		Voice Groups	Expands/collapses the Voice Groups pane (see section 5.3.6.8).
12.		Time Source	Expands/collapses the Time Source pane (see section 5.3.6.9).
13.		Intercom	Expands/collapses the Intercom pane (see section 5.3.6.10).
14.	-	Comsec	Enables/disables (On/Off) Communications Security for encrypted communication of the BNET RF head.
15.		Upload Changes	Uploads the changed settings to the selected BNET. **Note:** Appears only after a setting is changed.
16.	-	Status Bar	Displays BNET status indications and buttons for additional actions (see section 5.3.6.4).
17.		Cancel	Cancels the settings change. **Note:** Appears only after a setting is changed.

No.	Icon	Name	Description
18.		Landline	Not in use in this system.
19.	-	NET	Displays network name and ID number.
20.	-	Waveform and sub-waveform	Displays the current waveform (Manet) and sub-waveform: • UWideWF • UNarrowWF

5.3.6.1 Advanced Configuration Pane

(See Figure 5-12 and Table 5-13)

138-0118v02

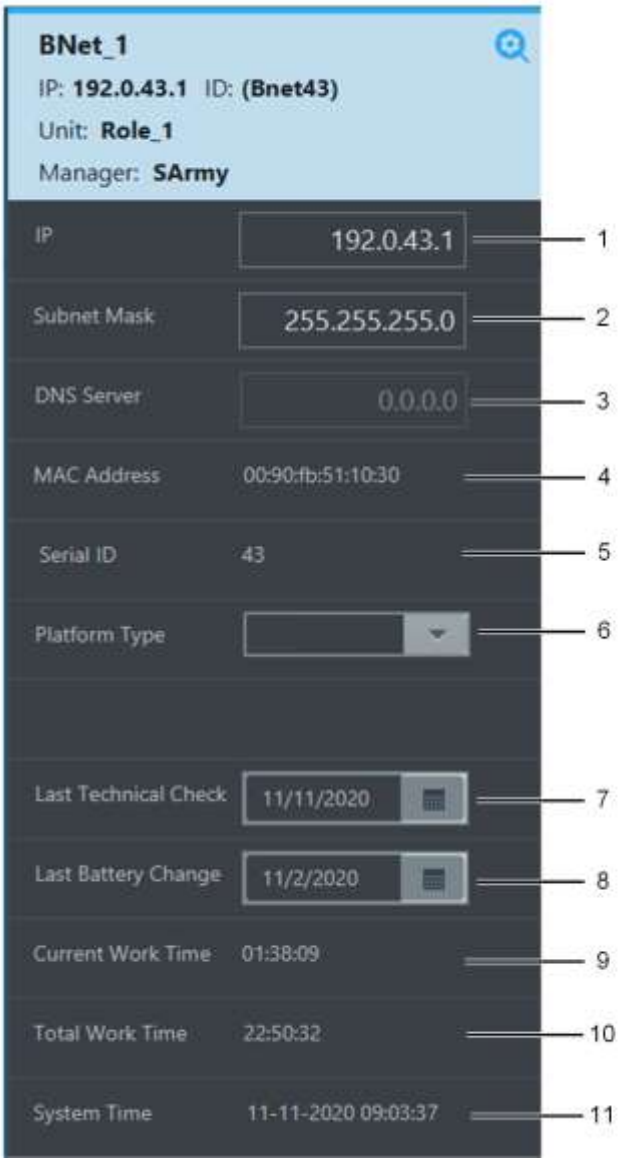


Figure 5-12: BNET Form – Advanced Configuration Pane

Table 5-13: BNET Form – Advanced Configuration Pane

No.	Name	Description
1.	IP	Box to configure the BNET IP address.
2.	Subnet Mask	Box to configure the BNET Subnet mask address.
3.	DNS Server	Box to configure the BNET DNS server address.
4.	MAC Address	Displays the BNET MAC address.
5.	Serial ID	Displays the BNET identifier.
6.	Platform Type	Box to select the BNET platform type – Vehicular.
7.	Last Technical Check	Box to select the date of the BNET last technical check.
8.	Last Battery Change	Box to select the date of the BNET last battery change.
9.	Current Work Time	Displays the time since the BNET was powered on.
10.	Total Work Time	Displays the total time of the BNET operation.
11.	System Time	Displays the date and time in which the entire system started operating.

5.3.6.2 Restarting BNET Pane

(See Figure 5-13 and Table 5-14)

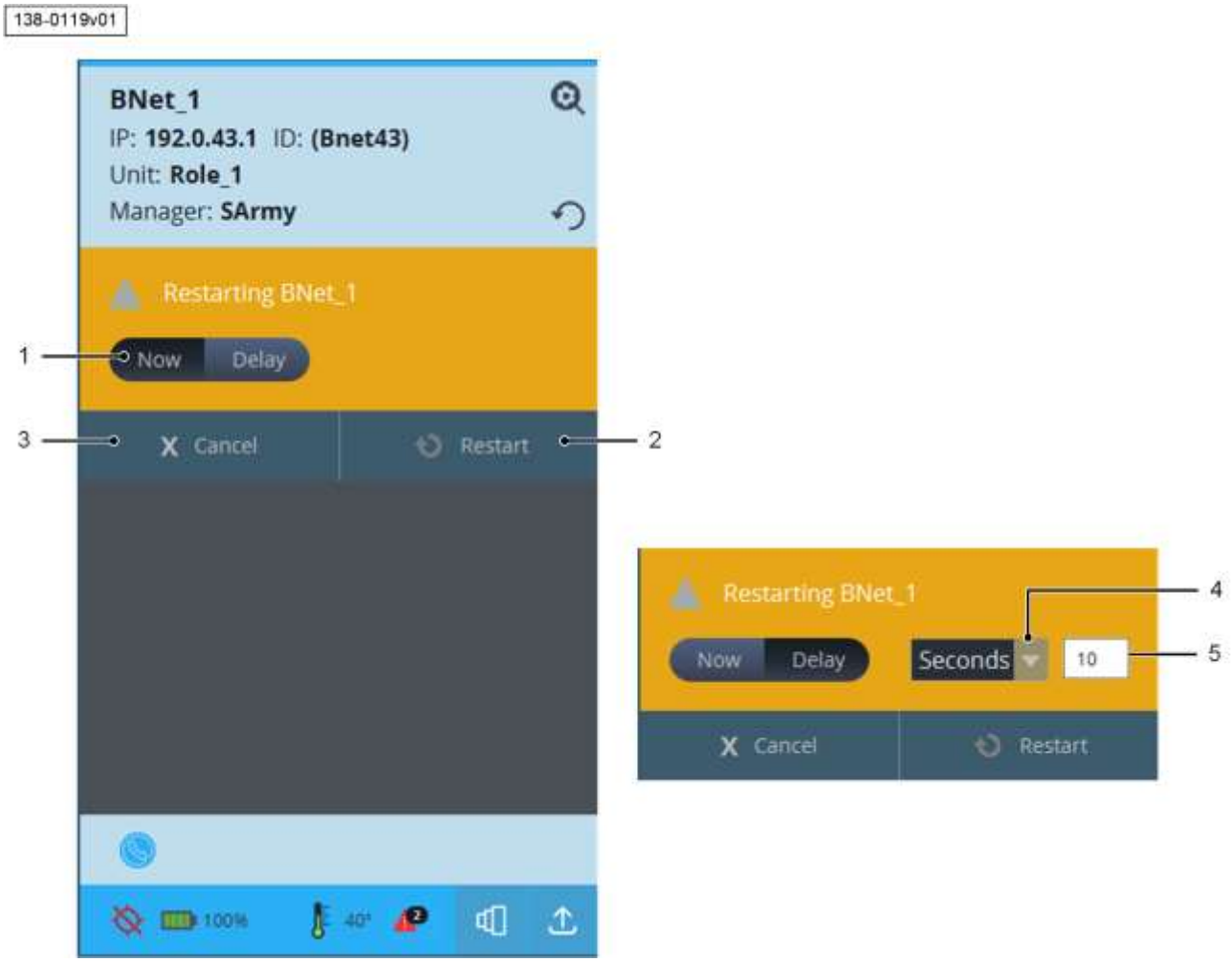


Figure 5-13: BNET Form – Restarting BNET Pane

Table 5-14: BNET Form – Restarting BNET Pane

No.	Name	Description
1.	Now/Delay	Toggle button to select the BNET restart timing: • Now – the BNET restarts immediately after clicking Restart (3). • Delay – opens a time and date selection window, to select when the BNET restarts.
2.	Restart	• When Now is selected (2), the BNET is immediately restarted. • When Delay is selected (2), the BNET restart process is delayed until the selected time and date.
3.	Cancel	Closes the pane without restarting the BNET.
4.	Delay time unit	Box to select the time unit for the time value (5): seconds, minutes, hours or days.
5.	Delay time value	Box to enter the time value for the BNET restart delay, according to the selected time unit (4).

5.3.6.3 Install Network Pane

(See Figure 5-14 and Table 5-15)

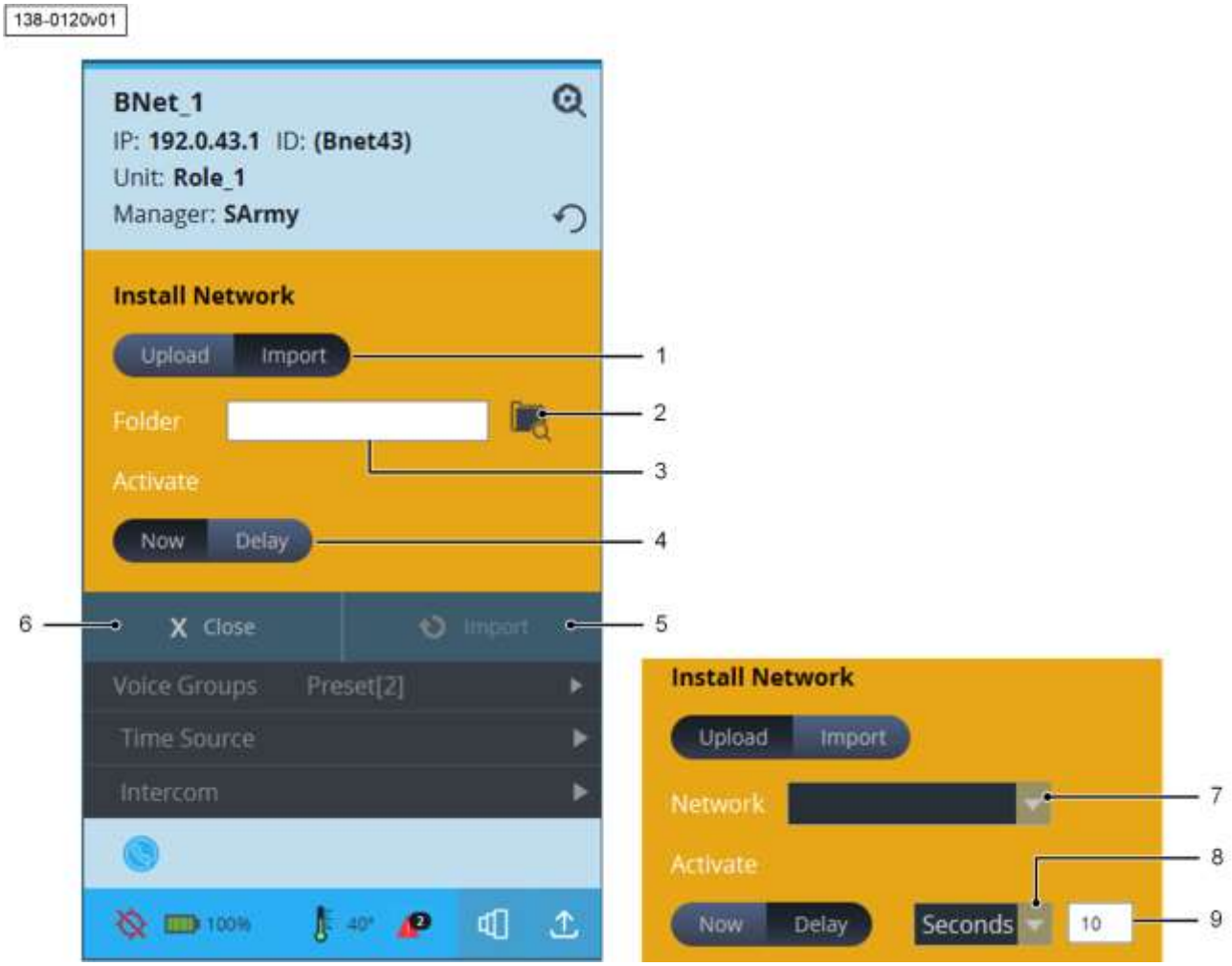


Figure 5-14: BNET Form – Install Network Pane

Table 5-15: BNET Form – Install Network Pane

No.	Icon/Name	Description
1.	Upload/Import	Toggle button to select the network parameters source: • Upload – opens the network selection box (7), to select an EMS network (parameters) for uploading to the BNET. • Import – opens the Folder button and box (2, 3), to enter/select a folder for importing a network parameters file to the EMS.
2.		Opens a file explorer, to select a network parameters file.
3.	Folder	• Box to enter the folder (and path) from which to import a network parameters file. • Displays the selected folder path.
4.	Now/Delay	Toggle button to select the timing for uploading the network parameters to the BNET: • Now – the upload/import process starts immediately after clicking Upload/Import (5). • Delay – opens time unit and value boxes, to set the time value of the delay before the upload process starts.
5.	Upload/Import	• When Now is selected (4), the selected network is immediately uploaded to the BNET or imported to the EMS, according to the selected Upload or Import action (1). • When Delay is selected (4), the upload/import process is delayed for the selected duration (8, 9).
6.	Close	Closes the pane.
7.	Network	Box to select a network from the EMS network list.
8.	Delay time unit	Box to select the time unit for the time value (9): seconds, minutes, hours or days.
9.	Delay time value	Box to enter the time value for how long to delay the BNET restart, according to the selected time unit (10).

5.3.6.4 BNET Form Status Bar

(See Figure 5-15 and Table 5-16)

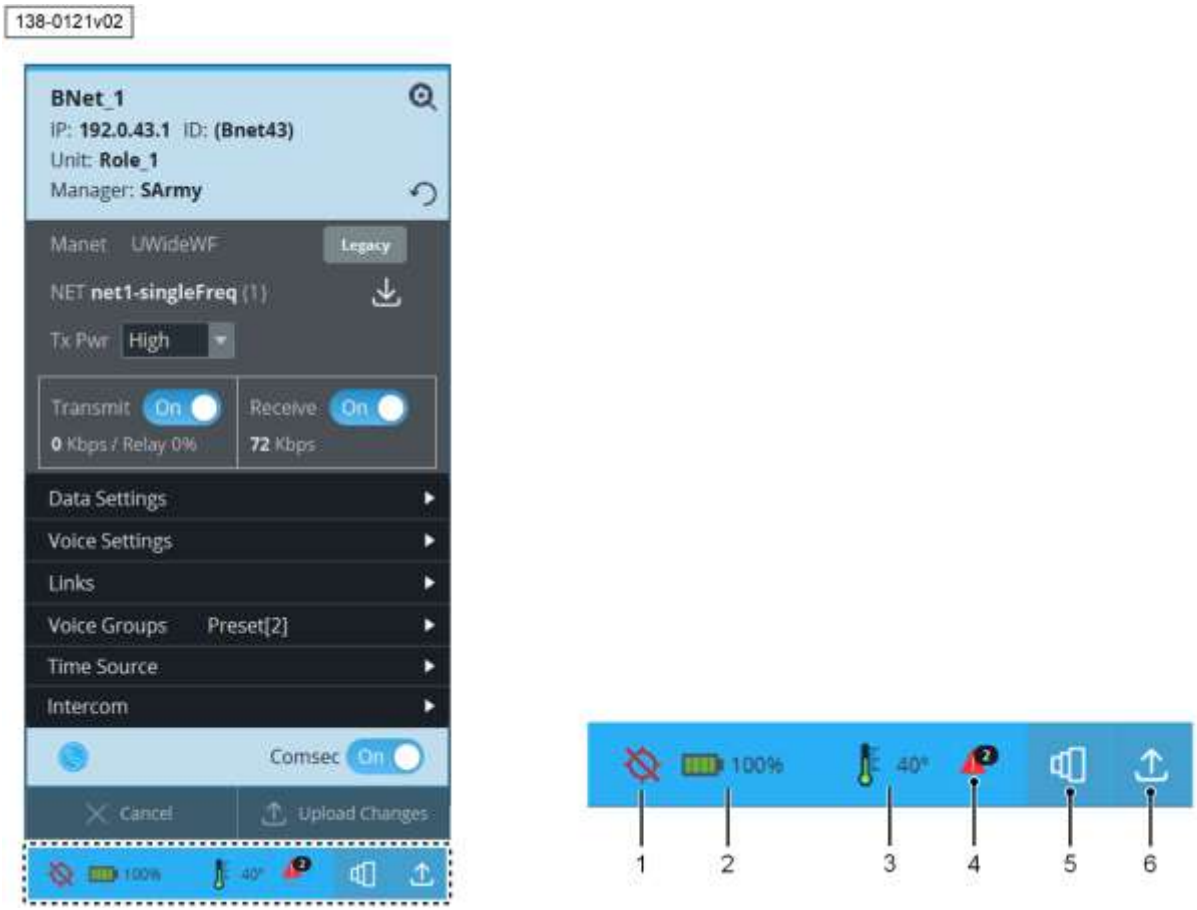


Figure 5-15: BNET Form Status Bar

Table 5-16: BNET Form Status Bar

No.	Icon	Name	Description
1.		GPS	• Displays an indication of the BNET GPS reception status: • – GPS is not locked. • – GPS is locked.
2.	100%	Battery usage	Displays an indication and percentage of the BNET battery usage level.
3.	42°	Temperature	• Displays an indication of the temperature level and numerical temperature of the BNET Single-Board Computer (SBC): • (green) – Good temperature level. • (orange) – High temperature level. • (red) – Critical temperature level.

No.	Icon	Name	Description
4.		Errors	• Displays a red indication that BNET errors are detected, and displays the number of detected errors. **Note:** when no errors are detected, the indication icon is not displayed. • Clicking displays the MFL Report pane (see section 5.3.6.4.1) for information of the BNET MFL(s).
5.		Versions	Clicking displays the Versions pane (see section 5.3.6.4.2).
6.		Upload File	Clicking displays the Upload File pane (see section 5.3.6.4.3).

5.3.6.4.1 MFL Report Pane

(See Figure 5-16 and Table 5-171)

138-0122v01

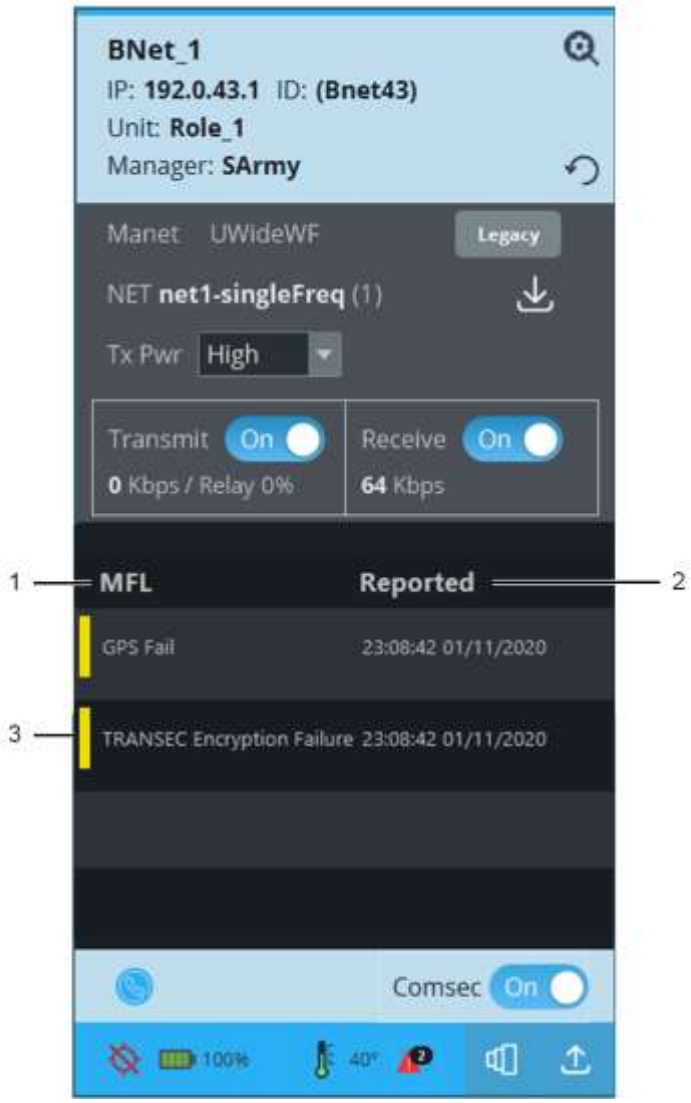


Figure 5-16: BNET Form – MFL Report Pane

Table 5-17: BNET Form – MFL Report Pane

No.	Name	Description
1.	MFL	Table column that displays a description of each BNET error.
2.	Reported	Table column that displays the time and date in which the BNET error was detected.

No.	Name	Description
3.	Severity level colour-code indication	Displays a colour-coded indication of the BNET error severity level: • Critical – red ( ) • Major – purple ( ) • Minor – orange ( ) • Warning – yellow ( )

5.3.6.4.2 Versions Pane

(See Figure 5-17 and Table 5-18)

138-0123v01

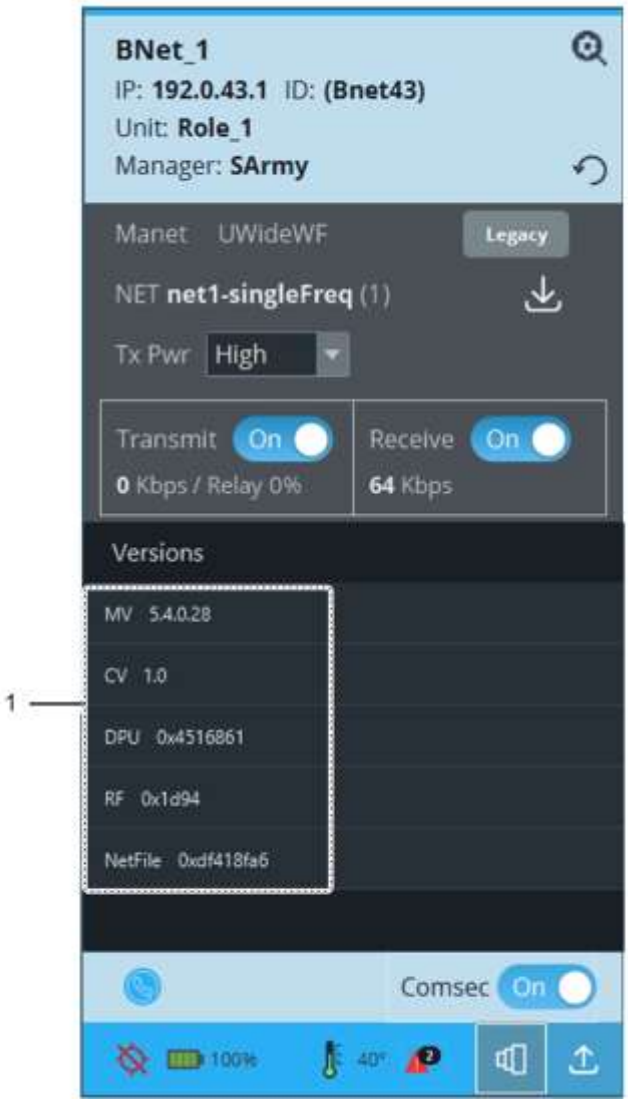


Figure 5-17: BNET Form – Versions Pane

Table 5-18: BNET Form – Versions Pane

No.	Icon/Name	Description
1.	Component version	Displays each BNET component software/firmware version.

5.3.6.4.3 Upload File Pane

(See Figure 5-18 and Table 5-19)

138-0124v01

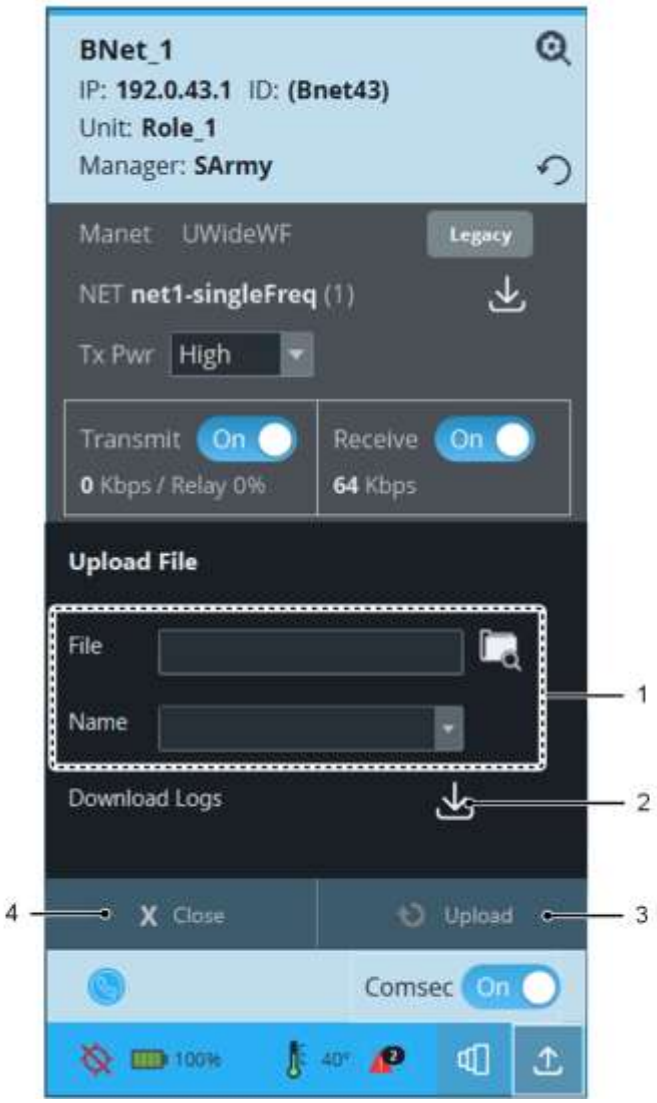


Figure 5-18: BNET Form – Upload File Pane

Table 5-19: BNET Form – Upload File Pane

No.	Icon/Name	Description
1.	File/Name	Not in use in this system.
2.	Download Logs	Downloads the BNET log files to the predefined EMS folder: EMS 3.2 RC#C/config/Device_logs
3.	Upload	Not in use in this system.
4.	Close	Closes the pane.

5.3.6.5 Data Settings Pane

(See Figure 5-19 and Table 5-20)

138-0125v02

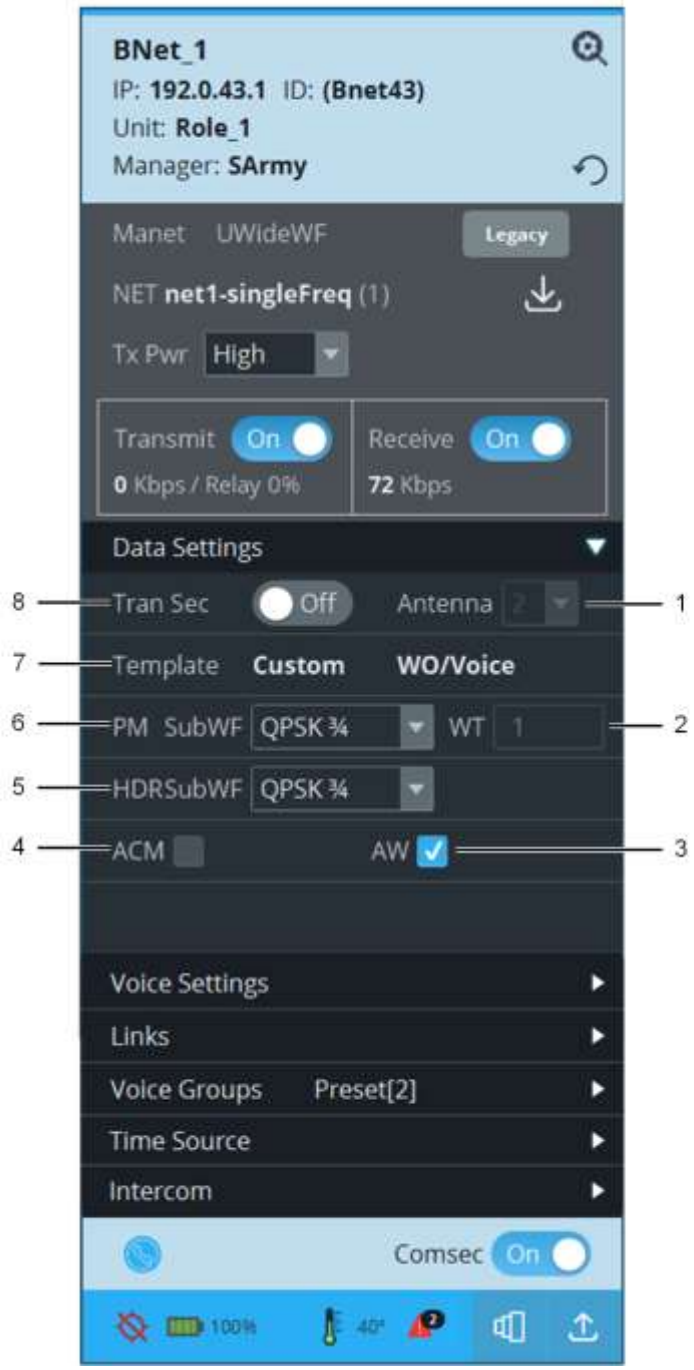


Figure 5-19: BNET Form in MANET Mode – Data Settings Pane

Table 5-20: BNET Form in MANET Mode – Data Settings Pane

No.	Name	Description
1.	Antenna	Not in use in this system.
2.	WT	Box to enter the network weight (time slot priority). **Note:** Enabled/disabled by the AW check box (3).

3.	AW	Adapted Weight (AW) check box:
		• Selected:
		  • Disables the WT selection box (2).
		  • Automatically calculates and sets the weight parameter for the network.
		• Cleared – enables the WT selection box (2) for the operator to set the weight parameter for the network.

4.	ACM	Adaptive Coding and Modulation (ACM) check box:
		• Selected:
		  • Disables the HDR SubWF and PM SubWF selection boxes (5, 6).
		  • Applies automatic transition between code rates (Sub-waveform), according to the transmission rate and transmission quality.
		• Cleared – enables the PM and HDR SubWF selection boxes (5, 6) for the operator to set the BNET code rate (SubWF).

5.	HDR SubWF	Box to select the SubWF High Definition Rate (HDR): • QPSK $^1/_2$ • QPSK $^3/_4$ • 16QAM $^1/_3$ • 16QAM $^1/_2$ • 16QAM $^3/_4$ • Default
6.	PM SubWF	Box to select the SubWF Pulse Modulation (PM): • QPSK $^1/_2$ • QPSK $^3/_4$ • QPSK $^1/_3$ • 16QAM $^1/_3$ • 16QAM $^1/_2$ • 16QAM $^3/_4$ • Default
7.	Template	• Custom – displays the template of the selected network. • WO/Voice – displays a voice service, if available.
8.	Tran Sec	Enables/Disables (On/Off) Tran Sec (encrypted communication).

5.3.6.6 Voice Settings Pane

(See Figure 5-20 and Table 5-21)

138-0126v02

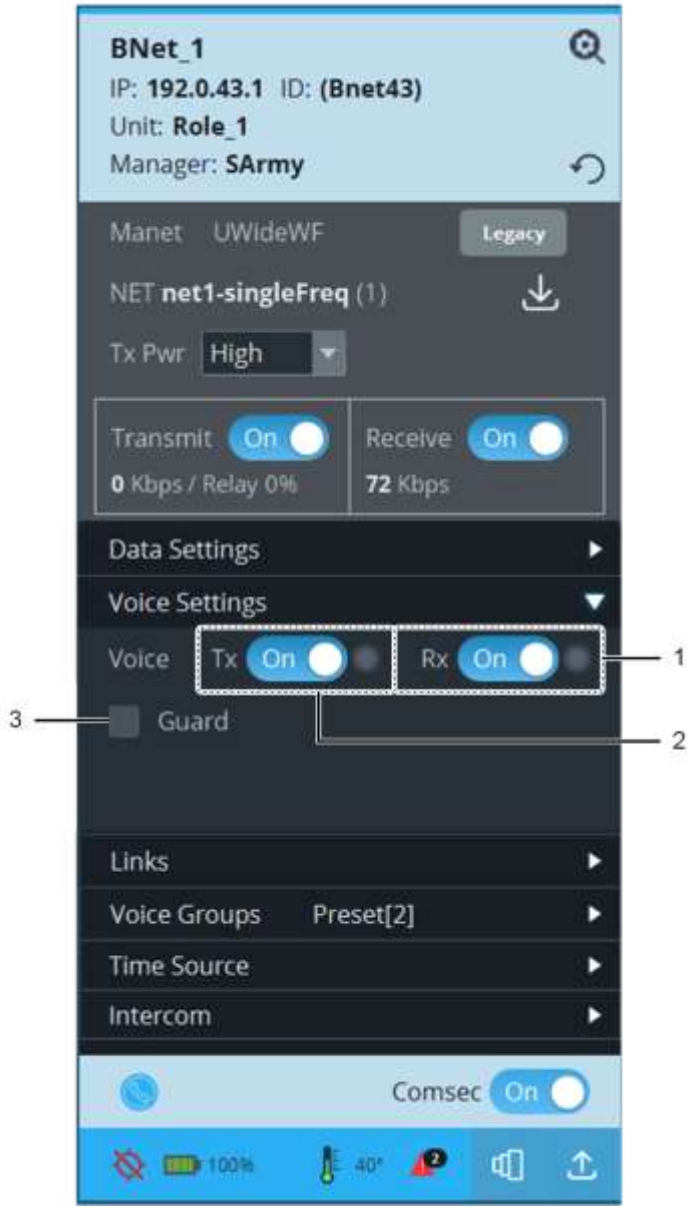


Figure 5-20: BNET Form in MANET Mode – Voice Settings Pane

Table 5-21: BNET Form in MANET Mode – Voice Settings Pane

No.	Name	Description
1.	Voice Rx	• On/Off button – enables/disables receiving voice messages. • Indicator – lit green when the BNET receives voice messages.
2.	Voice Tx	• On/Off button – enables/disables transmitting voice messages. • Indicator – lit green when the BNET transmits voice messages.
3.	Guard	Not in use in this system.

5.3.6.7 Links Pane

(See Figure 5-21 and Table 5-22)

138-0160v01

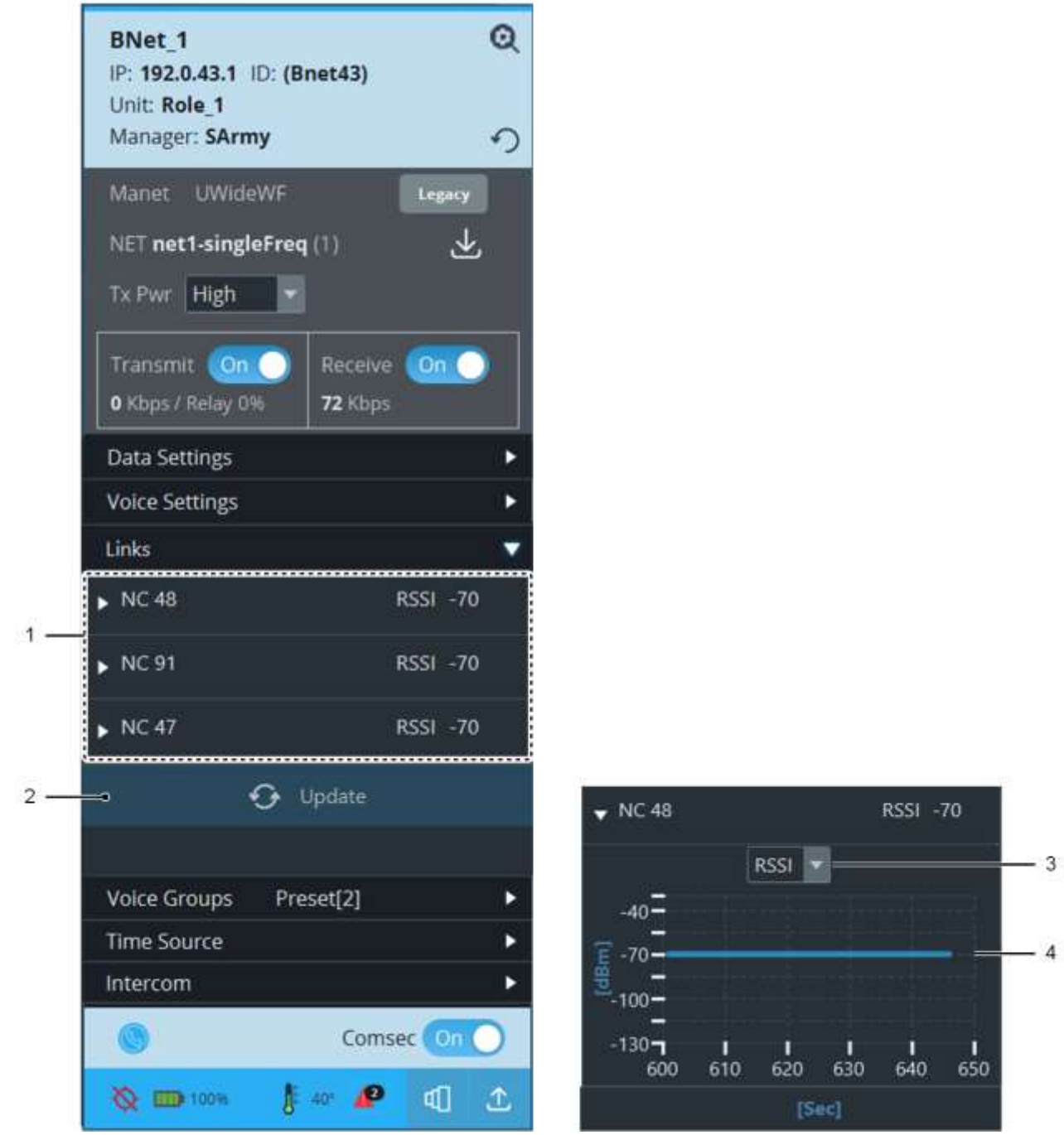


Figure 5-21: Local BNET Form in MANET Mode – Links Pane

Table 5-22: Local BNET Form in MANET Mode – Links Pane

No.	Name	Description
1.	Links list	Displays the details of up to 10 links, evaluated by their quality, according to their RSSI level (best or worst): • BNET Name. • Numeric RSSI Level. •  – expands/collapses the link graph (4). **Note:** • The links are displayed in a list created when the Links list is expanded. • If no links are available, the list displays: No Active Links.
2.	Update	Updates/refreshes the top 10 links list.
3.	RSSI	Box to select the link display in the graph (4). **Note:** In this version, only RSSI level can be selected.
4.	Link graph	Displays the link RSSI level in dBm over a period of 50 second. **Note:** The graph refreshes every second.

5.3.6.8 Voice Groups Pane

(See Figure 5-22 and Table 5-23)

138-0127v02

Figure 5-22: BNET Form in MANET Mode – Voice Groups Pane

Table 5-23: BNET Form in MANET Mode – Voice Groups Pane

No.	Name	Description
1.	PRESET	Box to select a voice group preset number (0-9) for the BNET.

2.	No Preset	Check box to disable/enable the BNET Conf (voice) selector (see section 4.2.1.3):
		• Selecting the check box and clicking Upload Changes (4):
		  • Disables the BNET Conf (voice) selector.
		  • Sets Preset 0 as the active preset configuration.
		• Clearing the check box and clicking Upload Changes (4):
		  • Enables the BNET Conf (voice) selector.
		  • Sets the preset currently selected by the BNET Conf (voice) selector as the active preset configuration.

3.	Voice group preset table	Contains boxes that display and enable changing the selected preset (1) three voice group settings: • Name – displays the voice group name. • Tx – box to select the voice group for transmission. **Note:** Only one preset voice group can be selected for transmission. • Rx – box to select the voice group for reception. **Note:** Up to three preset voice groups can be selected for reception.
4.	Upload Changes	Uploads the changes to the BNET.
5.	Cancel	Cancels the changes.

5.3.6.9 Time Source Pane

(See Figure 5-23 and Table 5-24)

138-0128v02

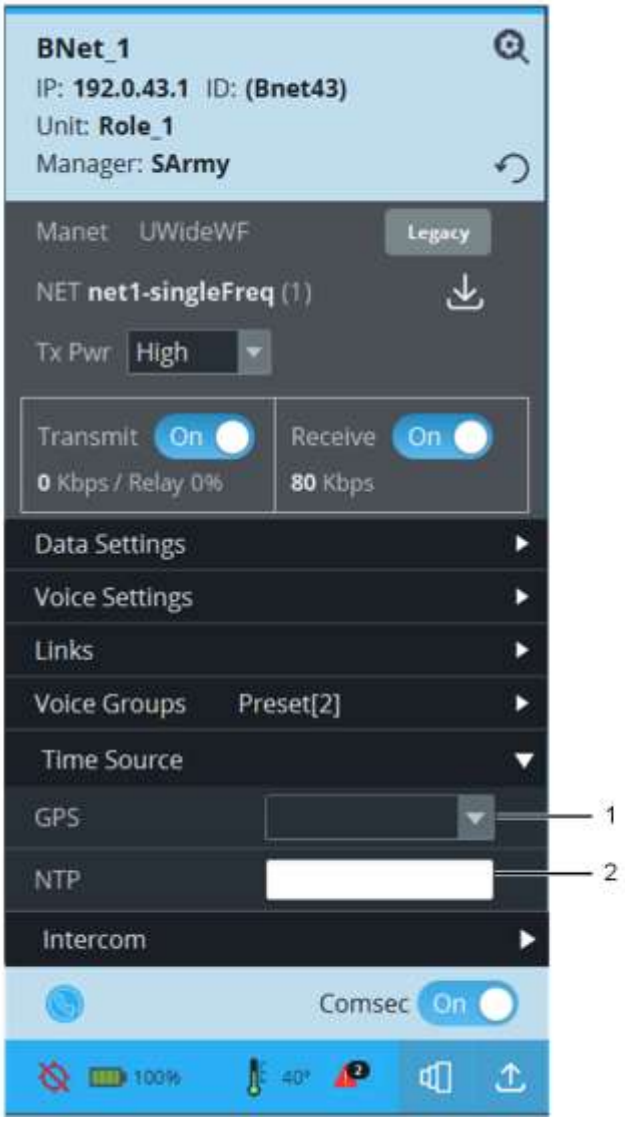


Figure 5-23: BNET Form in MANET Mode – Time Source Pane

Table 5-24: BNET Form in MANET Mode – Time Source Pane

No.	Name	Description
1.	GPS	Box to select the BNET GPS source: • Internal – GPS antenna connected to BNET J8 connector. • External – 1PPS and TOD source connected to BNET J14 connector.
2.	NTP	Box to enter the Network Time Protocol server address.

5.3.6.10 Intercom Pane

(See Figure 5-24 and Table 5-25)

138-0129v02

Figure 5-24: BNET Form in MANET Mode – Intercom Pane

Table 5-25: BNET Form in MANET Mode – Intercom Pane

No.	Name	Description
1.	Intercom	Turns On/Off the BNET intercom audio.

5.3.6.11 BNET Form Window in Legacy Mode

(See Figure 5-25 and Table 5-26)

138-0115v01

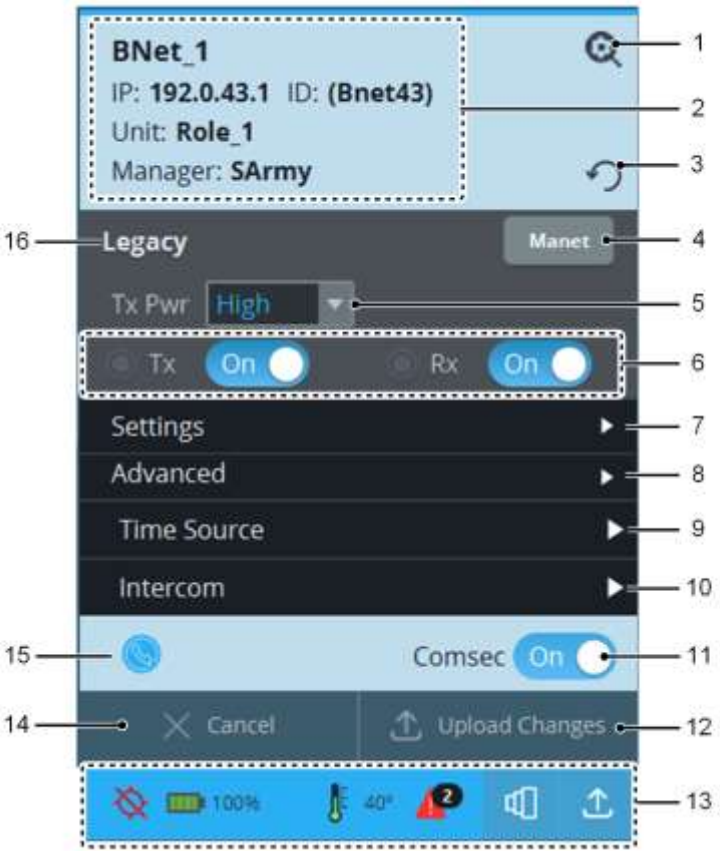
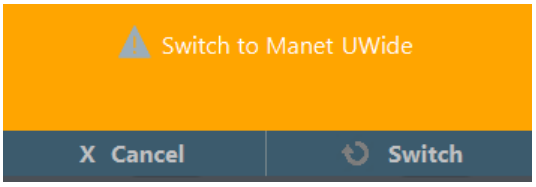


Figure 5-25: BNET Form Window in Legacy Mode

Table 5-26: BNET Form Window in Legacy Mode

No.	Icon	Name	Description
1.		Advanced Configuration	Opens the Advanced Configuration pane (similar to MANET mode – see section 5.3.6.1).
2.	-	BNET	Displays the BNET device name.
		IP	Displays the BNET IP address.
		ID	Displays the BNET identifier number.
		Unit	Displays the name of the BNET managing unit.
		Manager	Displays the name of the distributed mission plan, which includes the BNET.
3.		Restart	Opens a Restarting BNET confirmation pane (similar to MANET mode – see section 5.3.6.2).

No.	Icon	Name	Description
4.	-	Manet	• Clicking opens the Switch to Legacy dialogue box:  • Clicking Switch switches to MANET mode (see section 5.3.6).
5.	-	Tx Pwr	Box to select the BNET transmission power: • High – 44 dBm • Medium – 34 dBm • Low – 24 dBm
6.	-	Tx	• Enables/disables (On/Off) the BNET transmission capability. • Indicator – lit green when the BNET transmits voice messages.
		Rx	• Enables/disables (On/Off) the BNET reception capability. • Indicator – lit green when the BNET receives voice messages.
7.		Settings	Expands/collapses the Settings pane (see section 5.3.6.11.1).
8.		Advanced	Expands/collapses the Advanced pane (see section 5.3.6.11.2), to set the Legacy network frequency.
9.		Time Source	Expands/collapses the Time Source tab (similar to MANET mode – see section 5.3.6.9).
10.		Intercom	Expands/collapses the Intercom tab (similar to MANET mode – see section 5.3.6.10).
11.	-	Communications Security (Comsec)	Enables/disables (On/Off) encrypted communication for the RF head.
12.		Upload Changes	• Appears only after a setting is changed. • Uploads the changed settings to the BNET.
13.	-	Status Bar	Displays BNET status indications and buttons for additional actions (similar to MANET mode – see section 5.3.6.4).
14.		Cancel	• Appears only after a setting is changed. • Cancels the settings change.
15.		Landline	Not in use in this system.
16.	-	Waveform	Displays the current waveform (Legacy).

5.3.6.11.1 Settings Pane

(See Figure 5-26 and Table 5-27)

138-0130v01

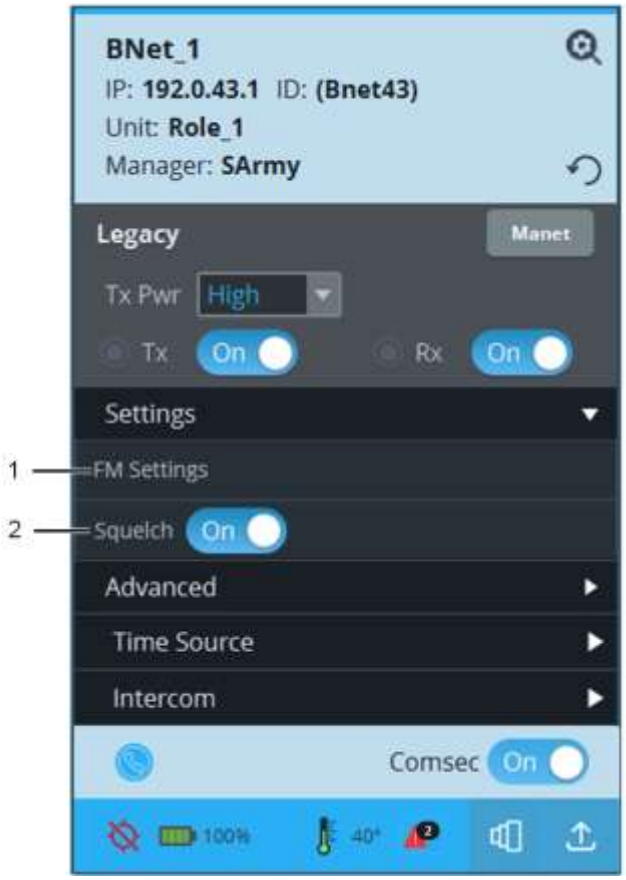


Figure 5-26: Local BNET Form in Legacy Mode – Settings Pane

Table 5-27: Local BNET Form in Legacy Mode – Settings Pane

No.	Icon/Name	Description
1.	FM Settings	Indicates that the pane contains Frequency Modulation settings. **Note:** Amplitude Modulation (AM) is not in use in this system.
2.	Squelch	On/Off switch to enable/disable the squelch.

5.3.6.11.2 Advanced Pane

(See Figure 5-27 and Table 5-28, Figure 5-28 and Table 5-29)

138-0131v01

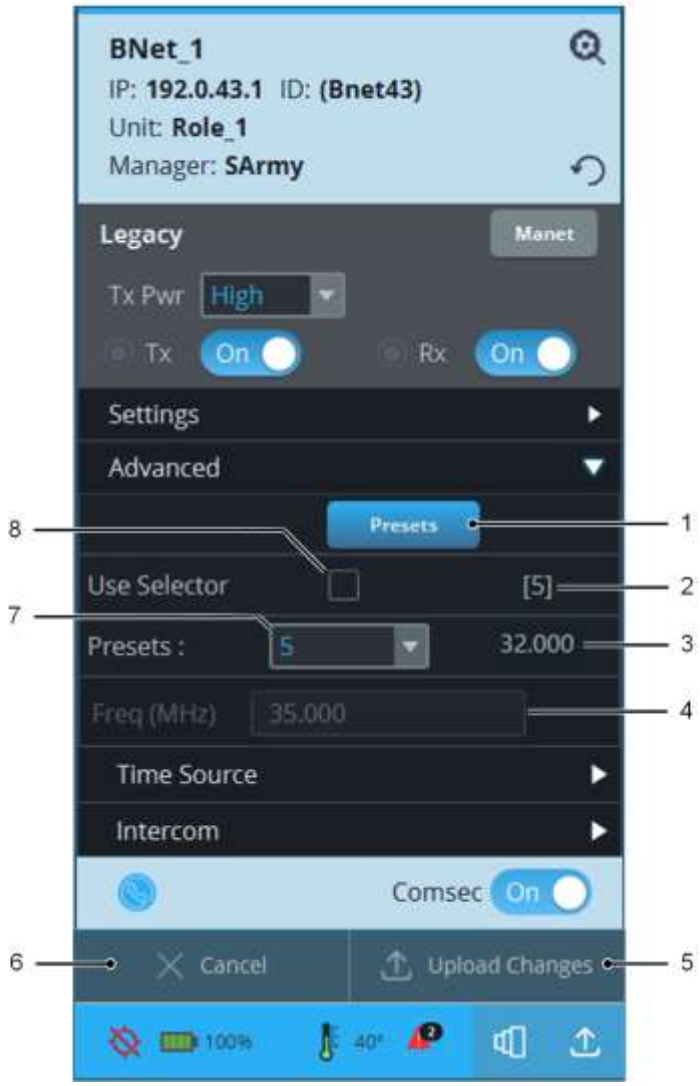


Figure 5-27: Local BNET Form in Legacy Mode – Advanced Pane

Table 5-28: Local BNET Form in Legacy Mode – Advanced Pane

No.	Name	Description
1.	Presets	Opens the Preset pane (see Figure 5-28 and Table 5-29).
2.	[x]	Displays the BNET Conf selector currently selected preset (see section 4.2.1.3).
3.	BNET preset frequency	• Displays the BNET current preset frequency. • Updated after selecting a different preset (7) and clicking Upload Changes (5).
4.	Freq (MHz)	• When a preset is selected (7), box that displays the BNET frequency in Megahertz. • When manual frequency setting is selected (7), the operator can manually calibrate the frequency by entering it. **Note:** Legacy frequencies are between 30 MHz and 88 MHz.
5.	Upload Changes	Uploads the changes to the BNET.
6.	Cancel	Cancels the change(s).
7.	Presets	Box to select between a manual frequency setting or a preset (1-9) for the BNET. **Note:** When manual frequency setting is selected, Freq (MHz) box (4) is enabled.

8.	Use Selector	Check box to disable/enable the BNET Conf selector (see section 4.2.1.3):
		• Clearing the check box and clicking Upload Changes (5):
		  • Disables the BNET Conf selector.
		  • Enables the Presets selection box (7).
		  • Displays the BNET current preset frequency (3).
		• Selecting the check box and clicking Upload Changes (5):
		  • Enables the BNET Conf selector.
		  • Disables the Presets selection box (7).
		  • Hides the BNET current preset frequency (3).

138-0132v01

Figure 5-28: BNET Form in Legacy Mode – Preset Pane

Table 5-29: BNET Form in Legacy Mode – Preset Pane

No.	Name	Description
1.	#	Displays the preset serial number.
	Name	• Displays the preset name. • Clicking enables changing the name.
	Freq	• Displays the preset frequency. • Clicking enables changing the frequency.
	MHz	Displays the frequency unit (Megahertz).
	FM	Displays the preset modulation. **Note:** AM is not in use in this system.
2.	Upload Changes	Uploads the changed preset parameters to the BNET.
3.	Close	• Closes the pane. • Changes to Cancel after changing a parameter.

No.	Name	Description
	Cancel	Clicking Cancels the change(s).

5.3.7 Network Configuration Screen

(See Figure 5-29 and Table 5-30)

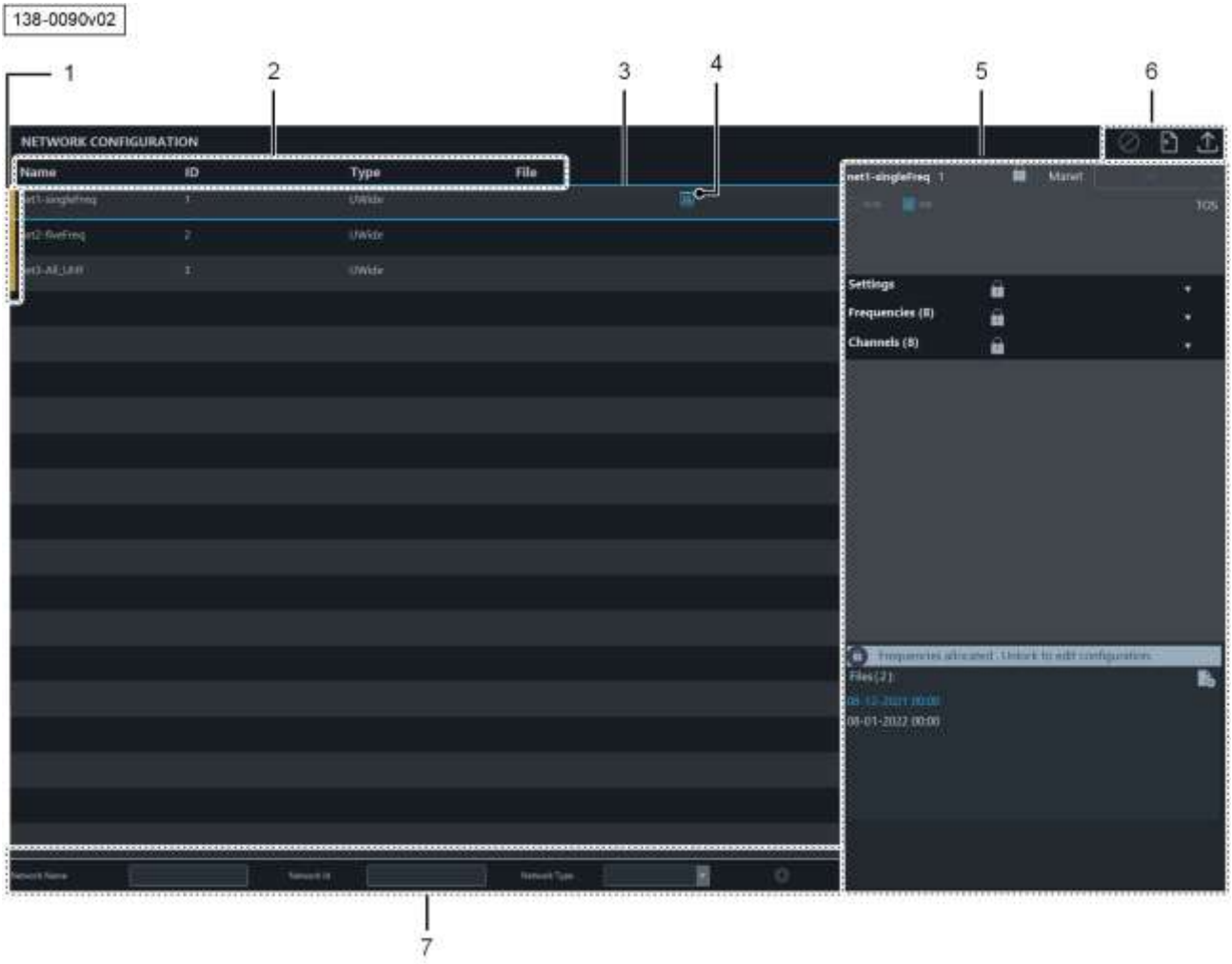


Figure 5-29: Network Configuration Screen

Table 5-30: Network Configuration Screen

No.	Icon/Name	Description
1.	Network table colour bar	Indicated that the network, listed in the table row, includes at least one BNET device with error(s) of the severity level indicated in the colour-coded bar: • Critical – red ( ) • Major – purple ( ) • Minor – orange ( ) • Warning – yellow ( )
2.	Network table headings	
	Name	Displays the network name.
	ID	Displays the network ID.
	Type	Displays the network type: UWide, UNarrow.
	File	Displays the name of the uploaded network parameters file.
3.	Selected network	• Highlighted in a blue transparent colour. • Selected network parameter values are displayed and can be changed in the network form (5).
4.		Deletes the selected network.
5.	Network form	Displays the selected network form, to view and configure the network parameters (see section 5.3.8).
6.		Not in use in this system.
		Opens the Network Import window, to import a configuration file to the selected network (see section 5.3.7.1).
		Opens the Network Distribution window, to distribute a network configuration file OTA to the network BNET devices (see section 5.3.7.2).
7.	Network add pane	
	Name	Box to enter the new network name.
	ID	Box to enter the new network identification number.
	Type	Box to select the new network type: UWide or UNarrow.
		• Enabled after the details of a new network are entered (name, ID and type). • Adds the new network to the top of the list. **Note:** The new network is selected and its parameters can be configured in the network form (5).

5.3.7.1 Network Import Window

(See Figure 5-30 and Table 5-31)

138-0093v02

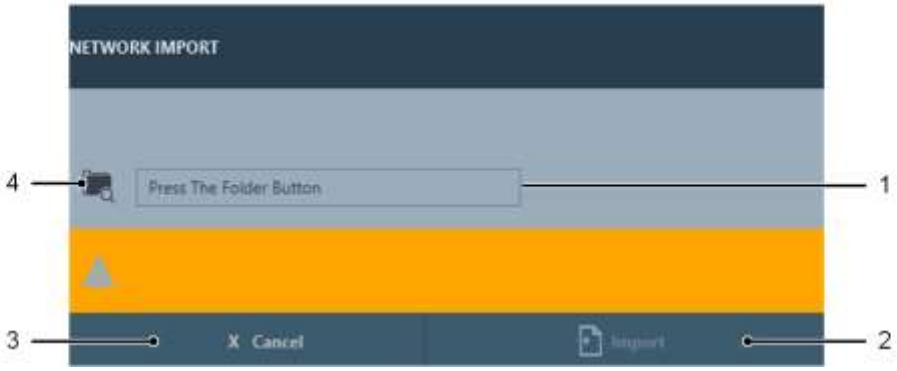


Figure 5-30: Network Import Window

Table 5-31: Network Import Window

No.	Icon/Name	Description
1.	Folder path	Box that displays the selected folder path.
2.	Import	Imports the selected network parameters file to the NMS application.
3.	Cancel	Closes the window without importing.
4.		Opens a file explorer, to select a network configuration file on the NMS computer, to import to the NMS application.

5.3.7.2 Network Distribution Window

(See Figure 5-31 and Table 5-32)

138-0092v02

Figure 5-31: Network Distribution Window

Table 5-32: Network Distribution Window

No.	Name	Description
1.	Distribute/ ToDisk	Toggle button to select the network configuration file destination: • Distribute – the file is to be distributed OTA to the BNET devices of the selected data group. • ToDisk – opens a file explorer, to select a folder on the NMS computer disk for saving the network configuration file.
2.	Network data groups table heading	
	Data Group	Displays the data group name.
	Check box	• Main (top) check box – selects all of the network data groups as destination for network distribution (3). • Row check box – selects a single data group as destination for network distribution (3).
	Units	Displays the number of units in each data group.

3.	Restart	• If Distribute (1) and Broadcast (6) are selected:
		  • Distributes the network configuration file OTA to the selected data groups (2) members (BNET devices).
		  • After distribution, restarts the updated members (BNET devices).
		• If ToDisk (1) is selected:
		  • Opens a Windows File Explorer, to select a folder on the NMS computer.
		  • Saves the network configuration file to the selected folder.

4.	Cancel	Closes the window without distribution.
5.	Now/Delay	Toggle button to select the timing for distributing the network configuration file to the BNET: • Now – the distribution process starts immediately after clicking Restart (3). • Delay – opens time unit and value boxes, to set the time value of the delay before the distribution process starts.
6.	Broadcast	Check box to select to distribute the network configuration file OTA to the BNET devices of the selected data groups (2).

5.3.8 Network Form Window

(See Figure 5-32 and Table 5-33, Figure 5-33 and Table 5-34)

138-0091v02

Figure 5-32: Network Form Window

Table 5-33: Network Form Window

No.	Icon/Name	Description
1.	Network name and ID	Displays the network name and identifier.
2.	Manet	Box to select the Manet.
3.	TOS	Box to select the Type of Service – 1 to 6.
4.	Settings	Expands/collapses the Settings pane (see section 5.3.8.1).
5.	Frequencies (x)	• Expands/collapses the Frequencies pane (see section 5.3.8.2). • (x) – displays the number of frequencies configured for the selected network.
6.	Channels (x)	• Expands/collapses the Channels pane (see section 5.3.8.3). • (x) – displays the number of channels allocated for the selected network.
7.		• Adds a network configuration file containing the current parameter values. • Opens the Expiration pane, to set an expiration date and time for the new network configuration file (see Figure 5-33 and Table 5-34).

8.	Files(x)	• (x) – displays the number of network configuration files saved in the NMS database.
		• Displays a list of the network configuration files saved in the NMS database.
		• Clicking a file:
		  • Displays the file parameter values in the panes (4, 5, 6).
		  • Highlights the file in blue, as the active file.
		Note:
		• The files are named according to their expiration date and time.
		• Only one file is active at any given time.

9.		Unlocks the current network configuration file for editing.
10.	AW	Adapted weight check box: • Selected – automatically calculates and sets the weight parameter for the network. • Cleared – enables manually setting the weight parameter for the network.
11.	ACM	Adaptive Coding and Modulation check box: • Selected – applies automatic transition between code rates (SubWF), according to the transmission rate and transmission quality. • Cleared – enables the operator to set the BNET code rate (SubWF).

138-0138v01

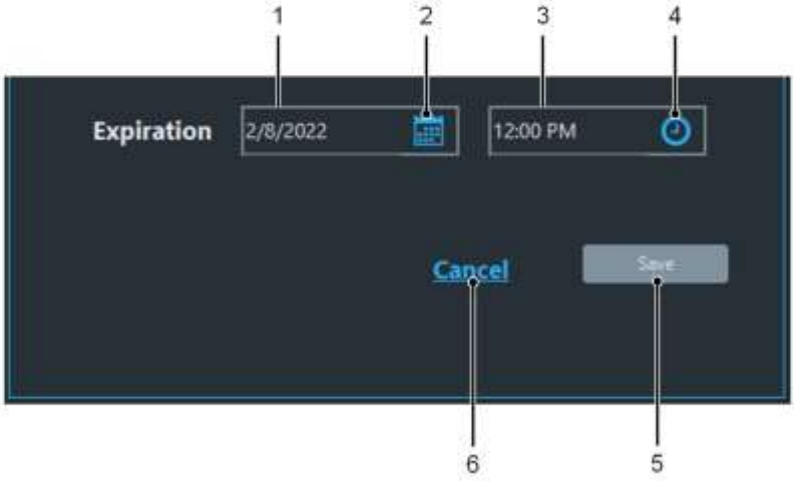


Figure 5-33: Network Form – Expiration Pane

Table 5-34: Network Form – Expiration Pane

No.	Icon/Name	Description
1.	Expiration date	Box to enter an expiration date for the network configuration file.
2.		Opens a calendar box, to select an expiration date for the network configuration file.
3.	Expiration time	Box to enter an expiration time for the network configuration file.
4.		Opens a clock box, to select an expiration time for the network configuration file.
5.	Save	Saves the expiration date and time as the network configuration file name, and closes the pane.
6.	Cancel	Closes the pane without saving the expiration date and time.

5.3.8.1 Settings Pane

(See Figure 5-34 and Table 5-35)

138-0135v02

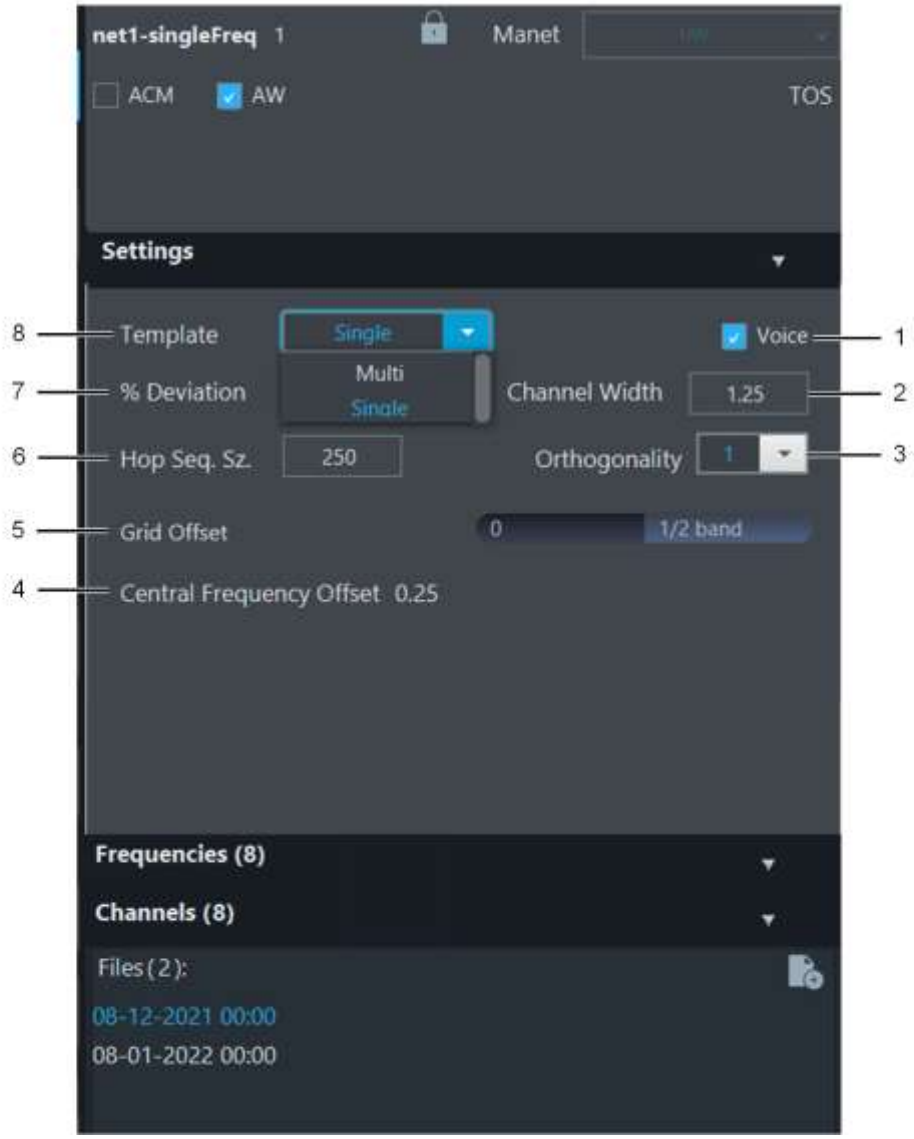


Figure 5-34: Network Form – Settings Pane

Table 5-35: Network Form – Settings Pane

No.	Name	Description
1.	Voice	Check box to enable (select) voice communication for all of the network channels.
2.	Channel Width	Box to enter the network channel width.
3.	Orthogonality	Box to select the network orthogonality value, which determines the number of sub-signals that the radio signal is divided into.
4.	Central Frequency Offset	Displays the central frequency offset.
5.	Grid Offset	Toggle button to select the grid offset: • 0 • 1/2 band
6.	Hop Seq. Sz.	Box to enter the network hopping sequence size for anti-jamming operation.
7.	% Deviation	Box to enter the percentage of frequency deviation, to describe the maximum difference between an FM modulated frequency and the nominal carrier frequency.
8.	Template	Box to select the template for the network – Single or Multi.

5.3.8.2 Frequencies Pane

(See Figure 5-35 and Table 5-36)

138-0136v03

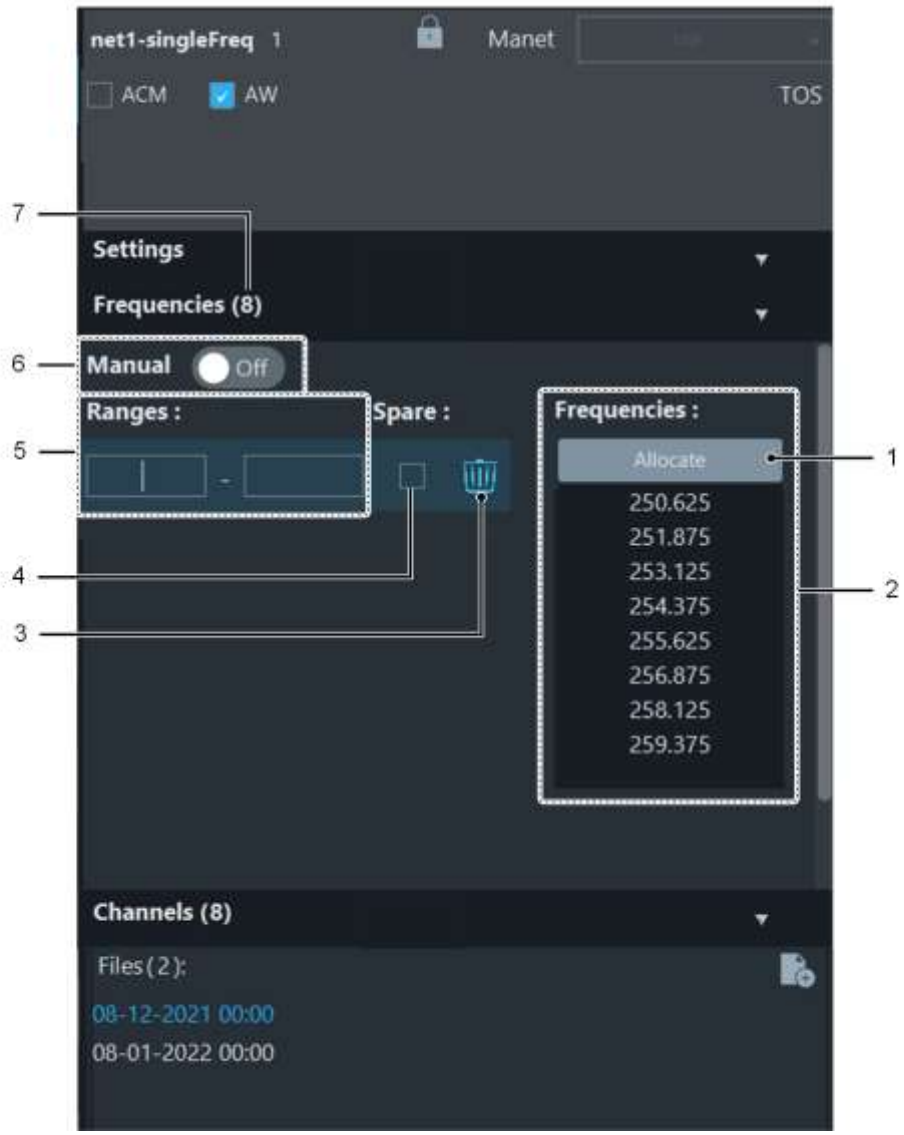
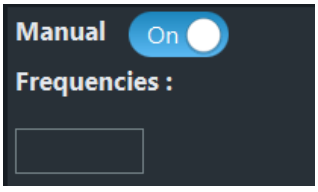


Figure 5-35: Network Form – Frequencies Pane

Table 5-36: Network Form – Frequencies Pane

No.	Icon/Name	Description
1.	Allocate	• In Manual Off mode (6) – allocates all the valid frequencies within the entered frequency range (5) to the network. **Note:** The MMS algorithm allocates frequencies, according to the channel width parameter set in the Settings pane (see section 5.3.8.1). • In Manual On mode (6) – allocates the entered frequency(ies) (5) to the network.
2.	Frequencies	Displays a list of the network allocated frequencies.
3.		Deletes the current Ranges (5) row.
		• Displayed after clicking Allocate (1). • Adds a new row of box(es) to enter a frequency or a frequency range (5).
4.	Spare	Not in use in this system.
5.	Ranges	• Displayed when Manual button (6) is set to Off. • Enables adding a frequency range, for the system to allocate (1) frequencies within the range to the network.
	Frequencies	• Displayed when Manual button (6) is set to On. • Box to enter a single frequency: 
6.	Manual	• Off – enable the operator to enter a frequency range (5), for the system to automatically allocate frequencies within the entered range. • On – enable the operator can manually enter a frequency (5).
7.	Frequencies (x)	(x) – displays the number of frequencies configured for the selected network.

5.3.8.3 Channels Pane

(See Figure 5-36 and Table 5-37)

138-0137v02

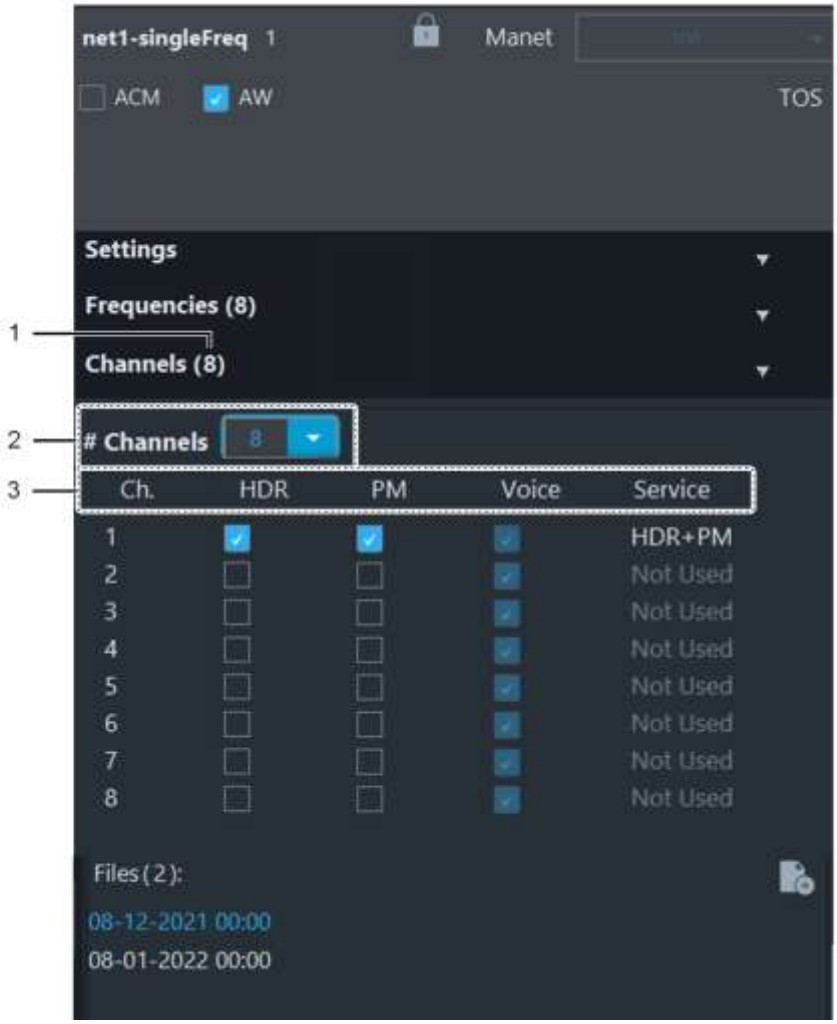


Figure 5-36: Network Form – Channels Pane

Table 5-37: Network Form – Channels Pane

No.	Name	Description
1.	Channels (x)	(x) – displays the number of channels allocated for the selected network.
2.	# Channels	Box to select the number of channels to allocate.
3.	Channel table headings	
	Ch.	Displays the network channel number.
	HDR	Check box to select HDR service for the channel.
	PM	Check box to select PM service for the channel.
	Voice	• Check box to enable (select) voice communication for the selected channel. • The check box is selected and disabled, when Voice is selected for all of the channels in the Settings pane (see section 5.3.8.1)

No.	Name	Description
	Service	Displays the channel selected service(s) – HDR and/or PM.

5.3.9 Error Report Screen

(See Figure 5-37 and Table 5-38)

138-0094v02

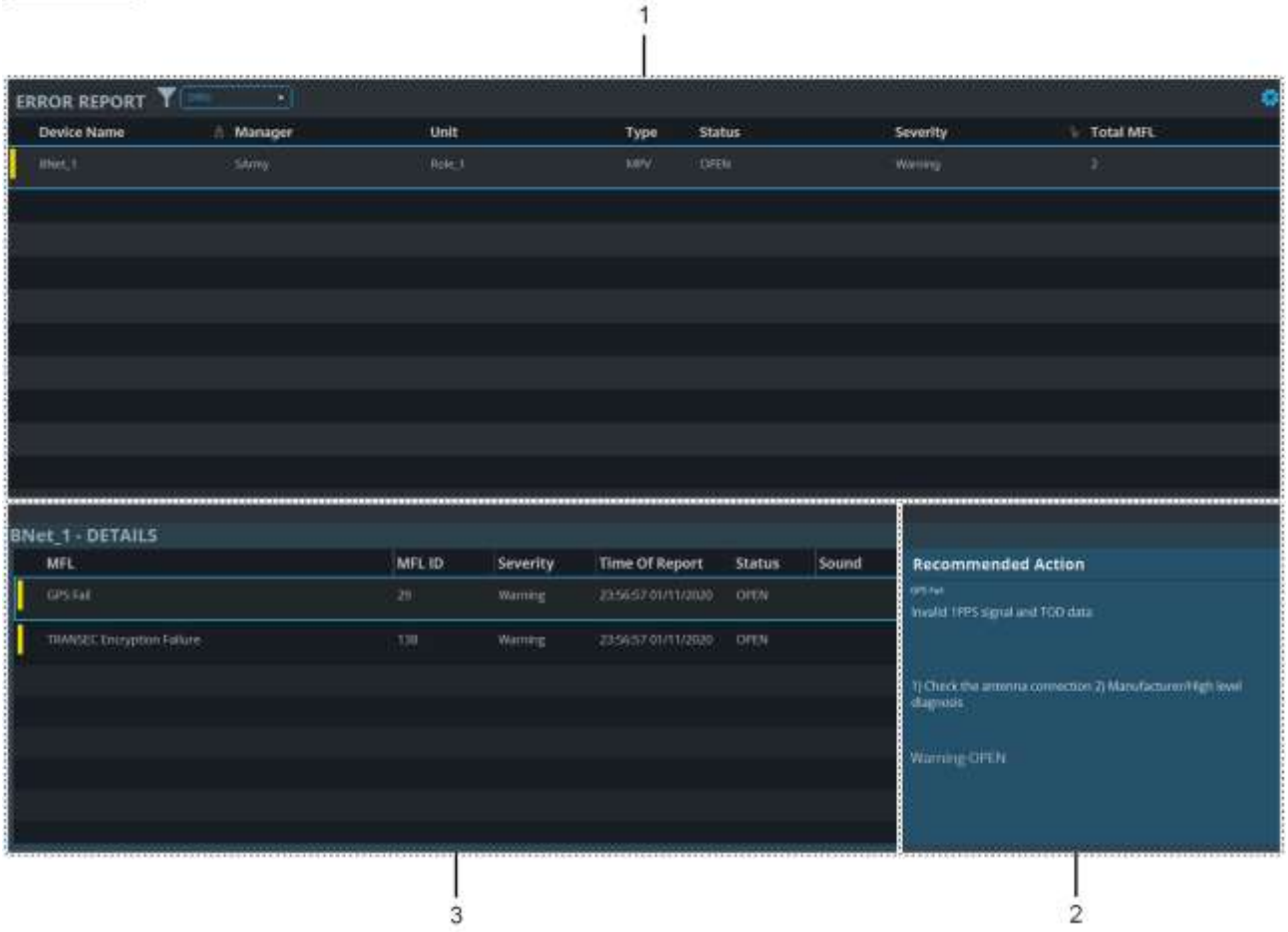


Figure 5-37: Error Report Screen

Table 5-38: Error Report Screen

No.	Icon/Name	Description
1.	Error Report pane	Displays a list with information about the malfunctioning BNET devices (see section 5.3.9.1).
2.	Details pane	Displays additional details about the error(s) of the BNET device selected in the Error Report pane (1) (see section 5.3.9.2).
3.	Recommended Action pane	Displays the recommended action(s) required for fixing the error selected in the Details pane (2) (see section 5.3.9.3).

5.3.9.1 Error Report Pane

(See Figure 5-38, Table 5-39, and Figure 5-39)

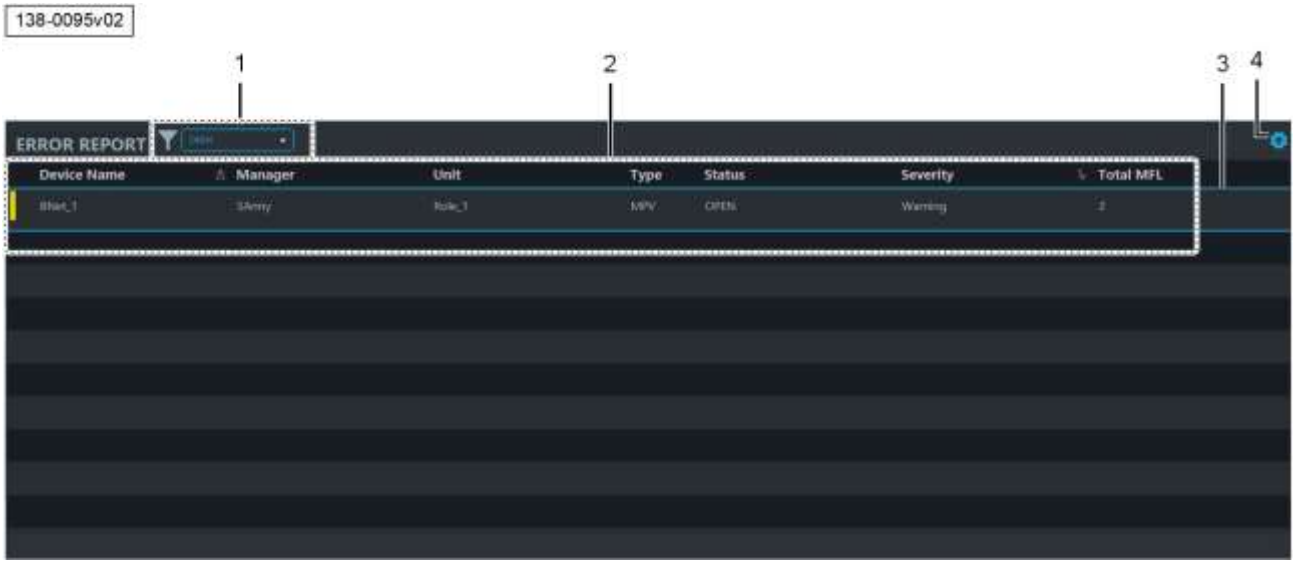


Figure 5-38: Error Report Pane

Table 5-39: Error Report Pane

No.	Icon/Name	Description
1.		Box to select a category to filter the BNET device listed in the Error Report table: • All – lists all BNET devices with errors. • Fixed – lists only BNET devices with fixed errors. • Open – lists only BNET devices with open errors. • Voice_Alarm – lists only BNET devices with errors which when detected, the system plays an audio alert.
2.	Error Report table headings	
	Severity level colour-code indication	Displays a colour-code of the BNET device error severity level, according to the error with the highest severity level: • Critical – red ( ) • Major – purple ( ) • Minor – orange ( ) • Warning – yellow ( )
	Device Name	Displays the BNET device name.
	Manager	Displays the BNET device grandparent name.
	Unit	Displays the BNET device unit.
	Type	Displays the BNET device type: MPV.
	Status	Displays the status of the BNET device errors: Open, Fixed.
	Severity	Displays the severity level of the BNET device errors: Critical, Major, Minor, Warning.
	Total MFL	Displays the total number of errors per BNET device.

No.	Icon/Name	Description
		• Indicates the heading (parameter) by which the table is currently sorted: descending (pointing downwards) or ascending (pointing upwards). • Clicking a heading (parameter) sorts the table rows, according to the selected parameter.
3.	Selected row	Clicking the BNET device row: • The selected row is highlighted in blue. • Displays all of the BNET device errors in the Details pane (see section 5.3.9.2).
4.		Opens the MFL Audio Alerts window (see Figure 5-39).

138-0133v01

Figure 5-39: MFL Audio Alerts Window

5.3.9.2 Details Pane

(See Figure 5-40, Table 5-40 and Figure 5-41)

NOTE

All of the values in the table can be sorted by clicking the table headings.

Figure 5-40: Details Pane

Table 5-40: Details Pane

No.	Name	Description
1.	Details table headings	
	Severity level colour-code indication	Displays a colour-code indication of the error severity level: • Critical – red ( ) • Major – purple ( ) • Minor – orange ( ) • Warning – yellow ( )
	MFL	Displays an error description.
	MFL ID	Displays the error ID number.
	Severity	Displays the error severity level: Critical, Major, Minor, Warning.
	Time of Report	Displays when the error was reported.
	Status	Displays the error status: Open, Fixed.
	Sound	Indicated whether the MFL generated a warning sound to the operator.
2.	Selected row	Clicking the error row: • The selected row is highlighted in blue Displays the action(s) recommended for fixing the selected error in the Recommended Action pane (see section 5.3.9.3).

5.3.9.3 Recommended Action Pane

(See Figure 5-41)

138-0097v02

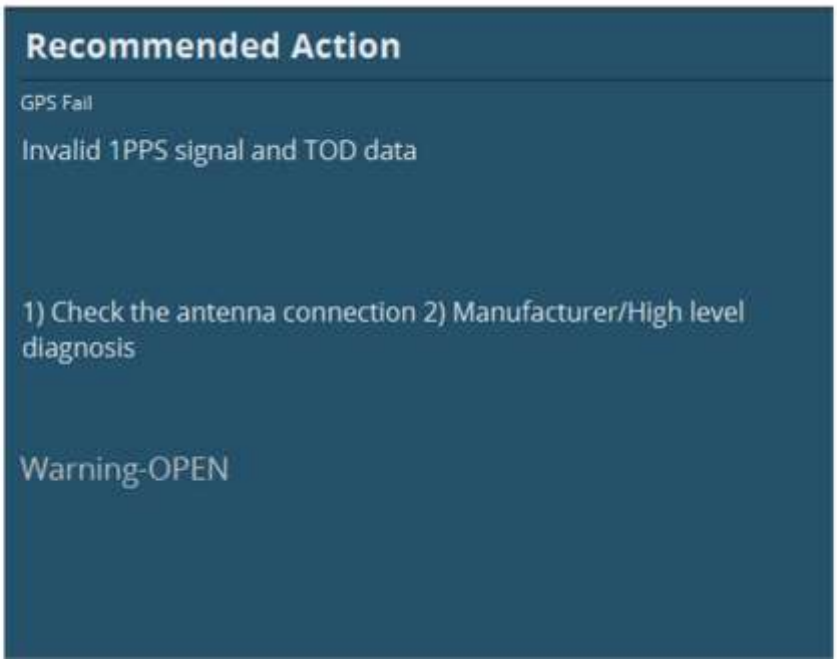


Figure 5-41: Recommended Action Pane

5.3.10 Network Sub-Waveform Configuration Screen

(See Figure 5-42 and Table 5-41)

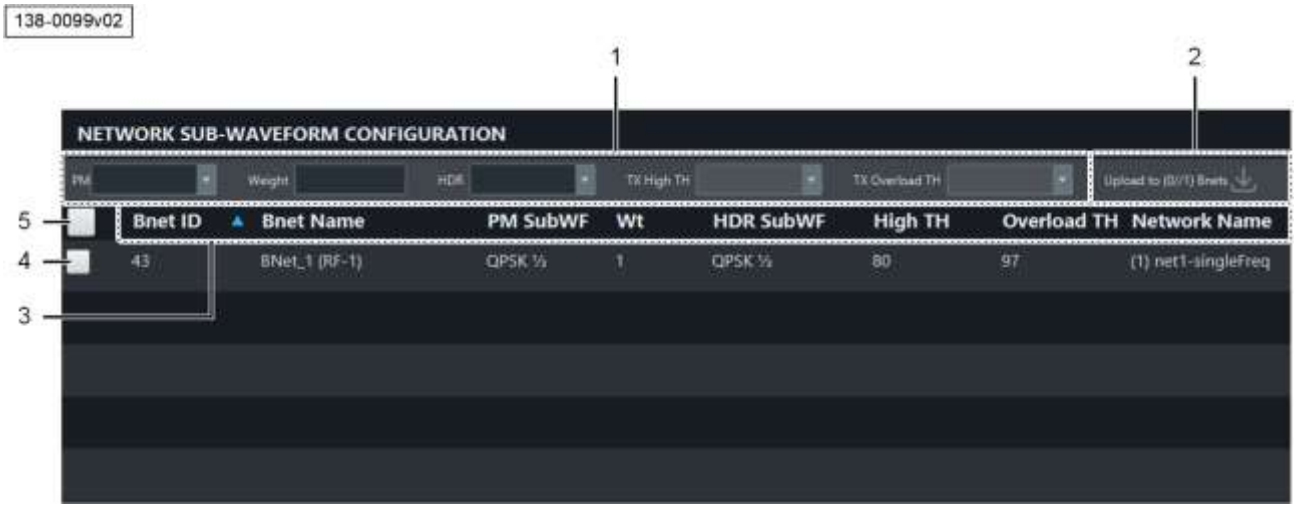


Figure 5-42: Network Sub-Waveform Configuration Screen

Table 5-41: Network Sub-Waveform Configuration Screen

No.	Icon/Name	Description
1.	Network SubWF configuration area for the selected BNET devices (4, 5).	
	PM	Box to select the SubWF PM: • QPSK 1/2 • QPSK 3/4 • QPSK 1/3 • 16QAM 1/3 • 16QAM 1/2 • 16QAM 3/4 • Default
	Weight	Box to enter the SubWF weight (time slot priority).
	HDR	Box to select the SubWF HDR: • QPSK 1/2 • QPSK 3/4 • 16QAM 1/3 • 16QAM 1/2 • 16QAM 3/4 • Default
	TX High TH	Box to select the transmission high threshold.
	TX Overload TH	Box to select the transmission overload threshold.
2.	Upload to (x/y) Bnets	• (x) – number of BNET devices selected using the table check boxes (4, 5). • (y) – total number of BNET devices in the table (3).
		Uploads the SubWF settings to the selected BNET devices (4, 5).

No.	Icon/Name	Description
3.	Network SubWF table headings	
	Bnet ID	
		• Indicates the heading (parameter) by which the table is currently sorted: descending (pointing downwards) or ascending (pointing upwards). • Clicking a heading (parameter) sorts the table rows, according to the selected parameter.
	Bnet Name	Displays the BNET name.
	PM SubWF	Displays the BNET SubWF PM.
	Wt	Displays the BNET SubWF weight.
	HDR SubWF	Displays the BNET SubWF HDR.
	High TH	Displays the BNET SubWF high TH.
	Overload TH	Displays the BNET SubWF overload TH.
	Network Name	Displays the name of the BNET network.
4.	Table check box	Selects all BNET devices in the table (3).
5.	Row check box	Selects the specific BNET device row in the table (3).

5.3.11 Mission Planning Screen

(See Figure 5-43 and Table 5-42)

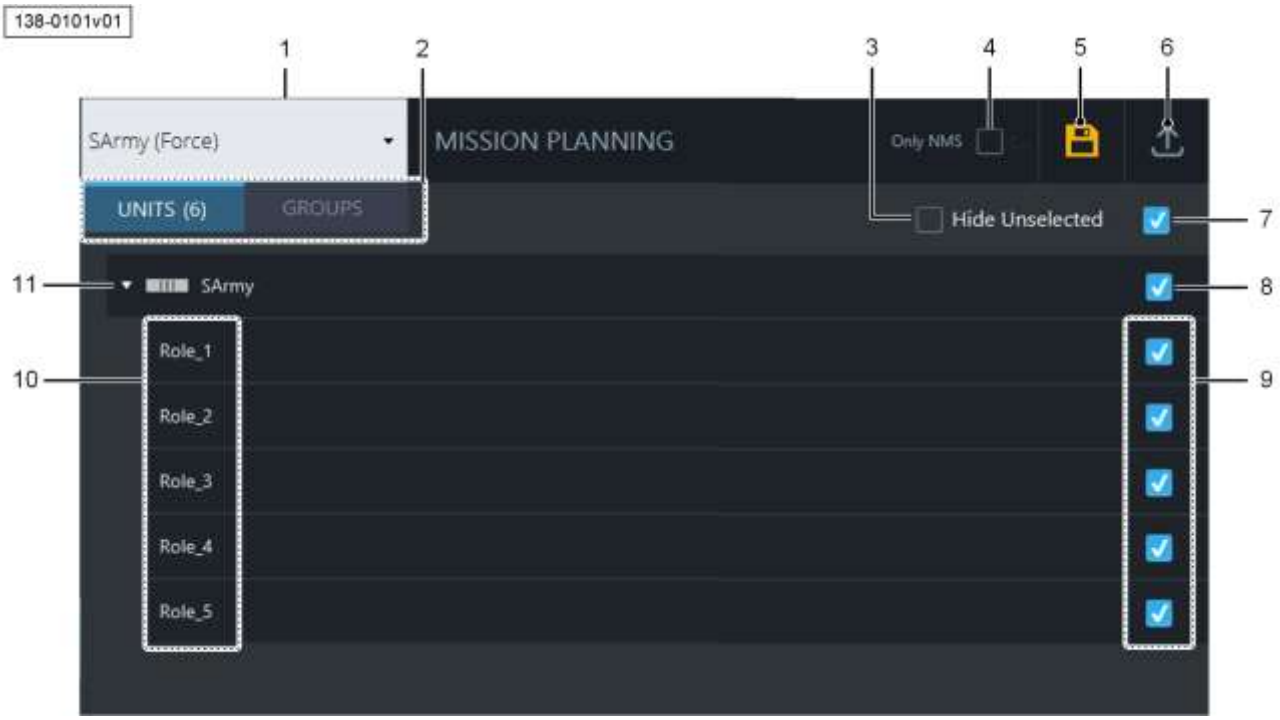


Figure 5-43: Mission Planning Screen

Table 5-42: Mission Planning Screen

No.	Icon/Name	Description
1.	Force selection	Box to select the force for the mission planning.
2.	Units/Groups	Toggle button to select which list to show: • Force units (8). • Force voice and data communication groups (see section 5.3.14).
3.	Hide Unselected	Hides the force/units whose check boxes (7) are cleared.
4.	Only NMS	Not in use in this system.
5.		Opens the Save MP window (see section 5.3.11.1), to save the mission plan of the selected force/unit (7) to the NMS database.
6.		Opens the Mission Deployment window (see section 5.3.11.2), to distribute the mission plan OTA to the BNET devices of the selected force/units (7, 8, 9).
7.	All	Check box to select all of the forces to which to distribute the mission plan (6).
8.	Force	Check box to select all force units to which to distribute the mission plan (6).
9.	Unit	Check boxes to select a unit or units to which to distribute the mission plan (6).
10.	Force units	Displays a list of the selected force (1) units. **Note:** When the toggle button (2) is set to Groups, two lists of the force voice and data communication groups are displayed (see section 5.3.14).
11.	Force	Expands/collapses the force units (8).

5.3.11.1 Save MP Window

(See Figure 5-44 and Table 5-43)

138-0139v01

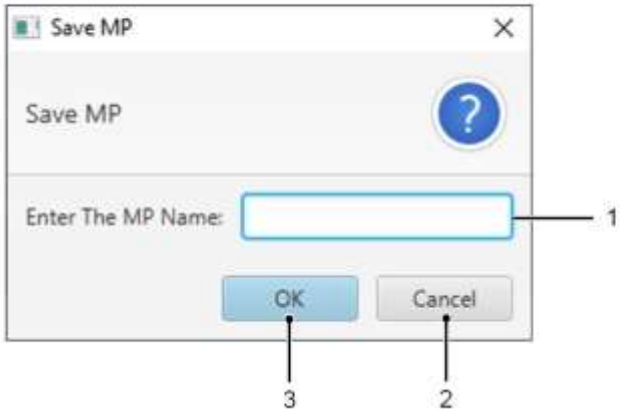


Figure 5-44: Mission Planning – Save MP Window

Table 5-43: Mission Planning – Save MP Window

No.	Name	Description
1.	Enter The MP Name	Box to enter the name of the mission plan.
2.	Cancel	Closes the window without saving the mission plan.
3.	OK	Saves the mission plan on the NMS database, and closes the window.

5.3.11.2 Mission Deployment Window

(See Figure 5-45, Table 5-44 and Figure 5-46)

138-0157v01

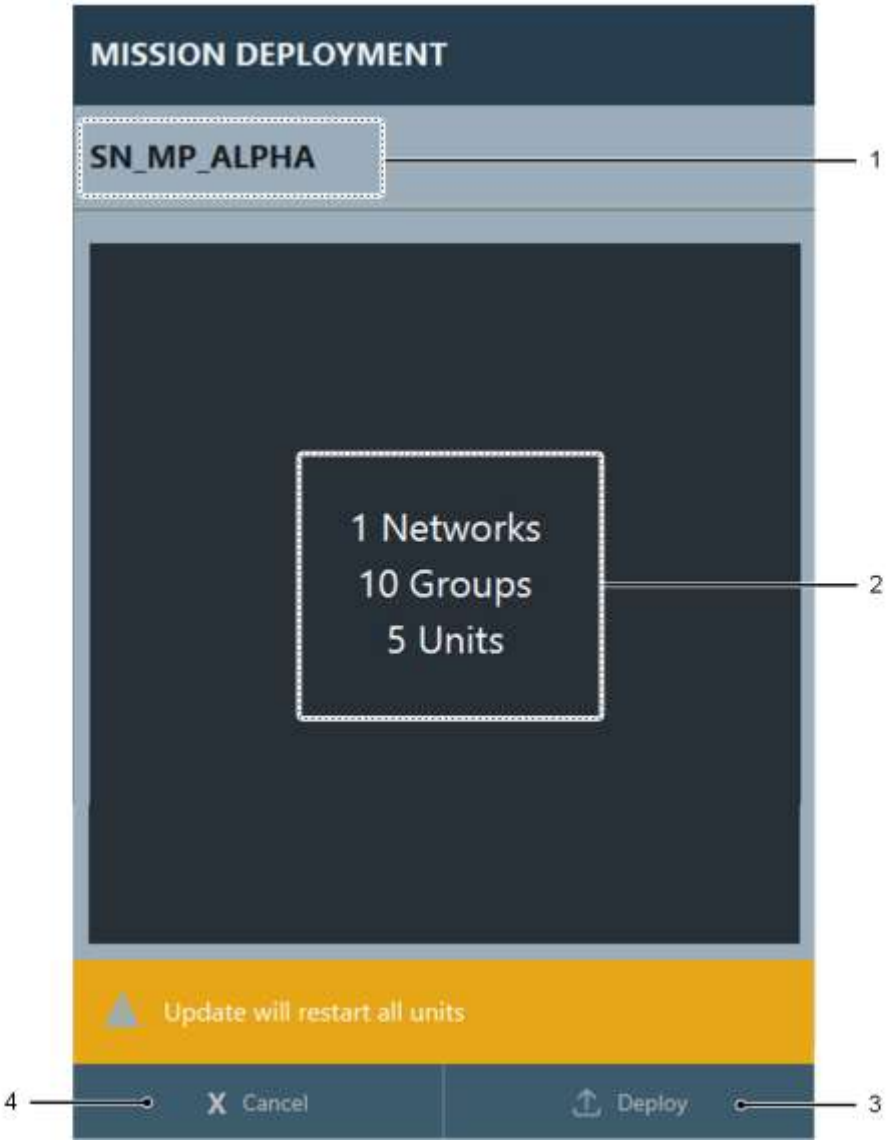


Figure 5-45: Mission Planning – Mission Deployment Window

Table 5-44: Mission Planning – Mission Deployment Window

No.	Name	Description
1.	Mission plan name	Displays the mission plan name.
2.	Mission plan content	Displays the number of networks, groups and units incorporated in the mission plan.

No.	Name	Description

3.	Deploy	• Distributes the mission plan OTA to the BNET devices of the force/units selected in the Mission Planning screen (see section 5.3.11).
		• After the deployment process is successfully completed:
		  • A Success message is displayed (see Figure 5-46).
		  • The updated BNET devices are restarted.

4.	Cancel	Closes the window without distributing the mission plan.

138-0158v01

Figure 5-46: Mission Deployment Success Message

5.3.11.3 Force Selection for Configuration

(See Figure 5-47 and Table 5-45)

138-0140v01

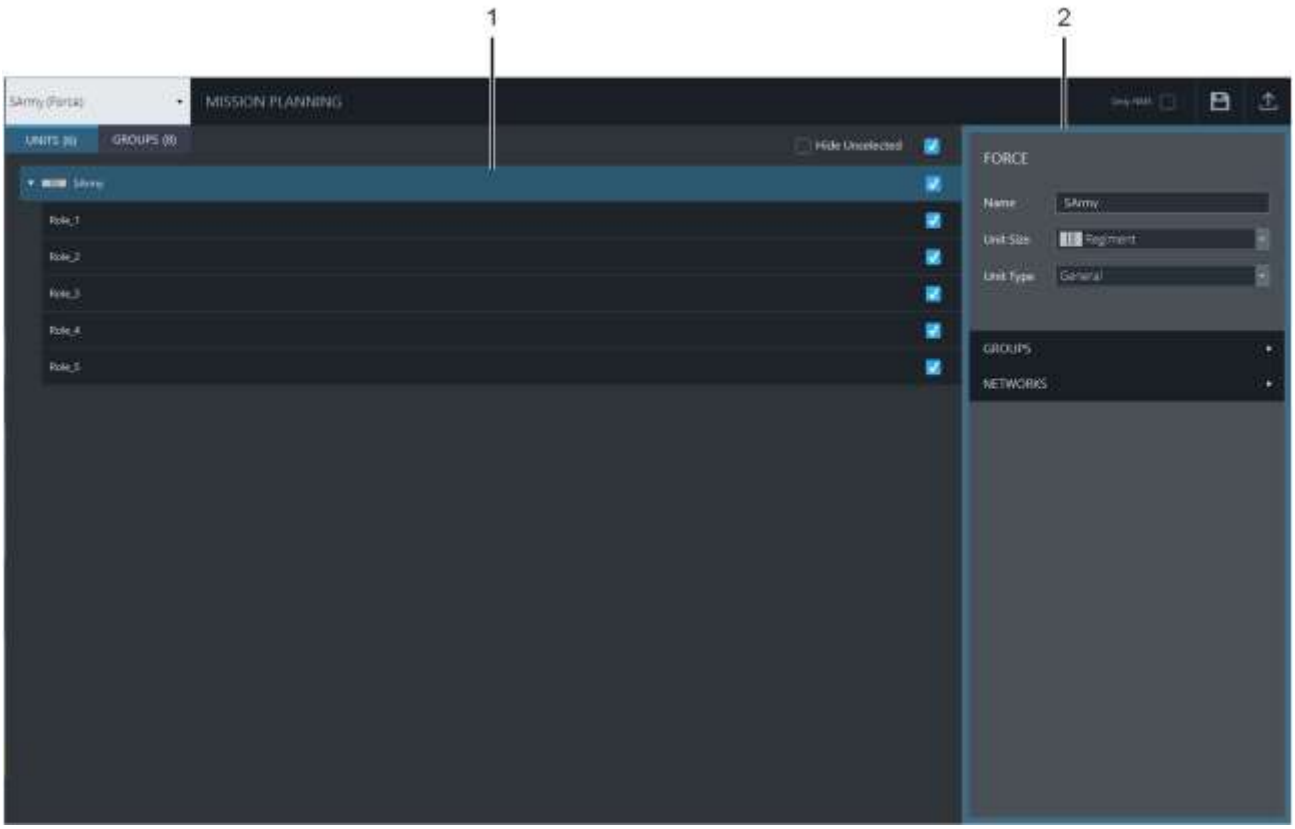


Figure 5-47: Mission Planning – Force Selection for Configuration

Table 5-45: Mission Planning – Force Selection for Configuration

No.	Name	Description
1.	Selected force	Selecting a force: • Highlights the row with a solid blue colour. • Opens the Force form window (2).
2.	Force form window	Enables to view and configure the selected force parameter values (see section 5.3.12).

5.3.11.4 Unit Selection for Configuration

(See Figure 5-48 and Table 5-46)

138-0141v01

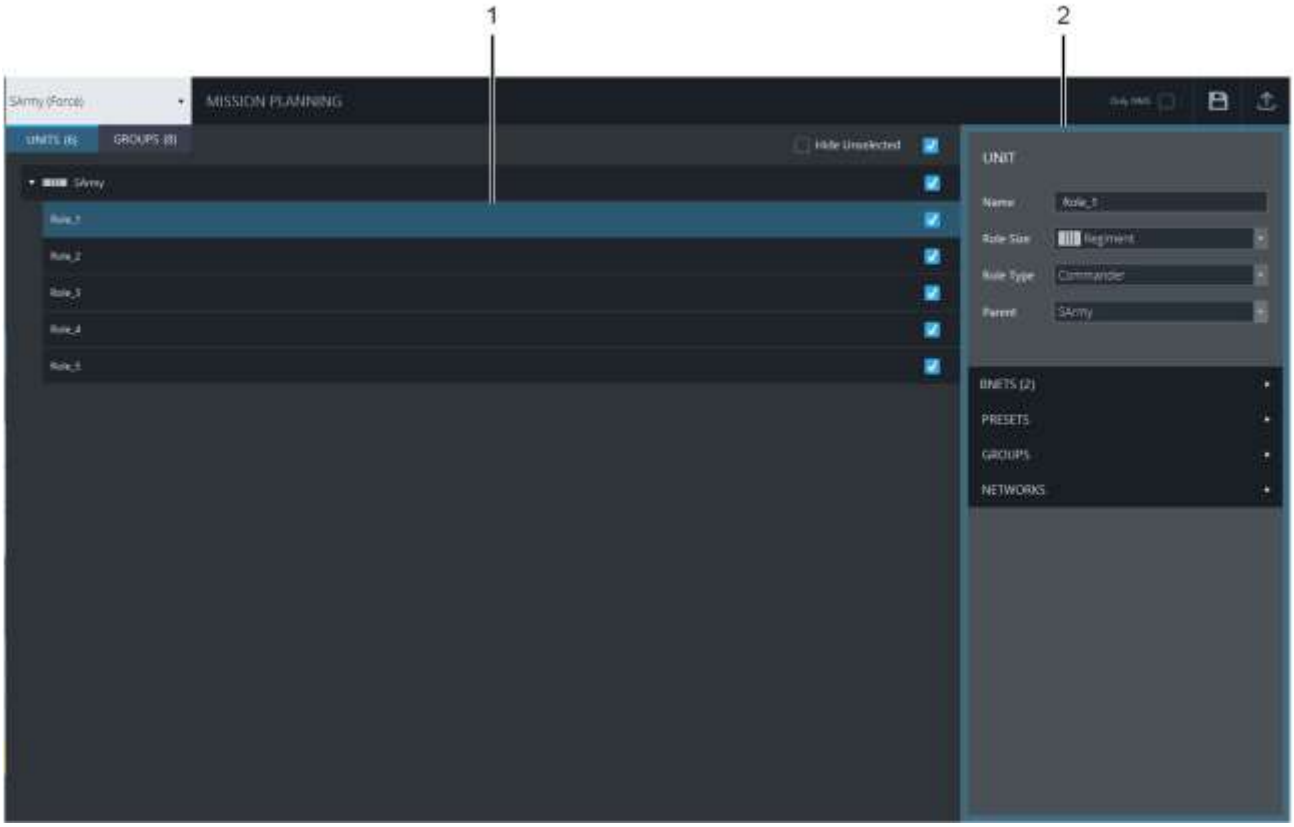


Figure 5-48: Mission Planning – Unit Selection for Configuration

Table 5-46: Mission Planning – Unit Selection for Configuration

No.	Name	Description
1.	Selected unit	Selecting a unit: • Highlights the row with a solid blue colour. • Opens the Unit form window (2).
2.	Unit form window	Enables to view and configure the selected unit parameter values (see section 5.3.13).

5.3.12 Mission Planning – Force Form Window

(See Figure 5-49 and Table 5-47)

138-0142v01

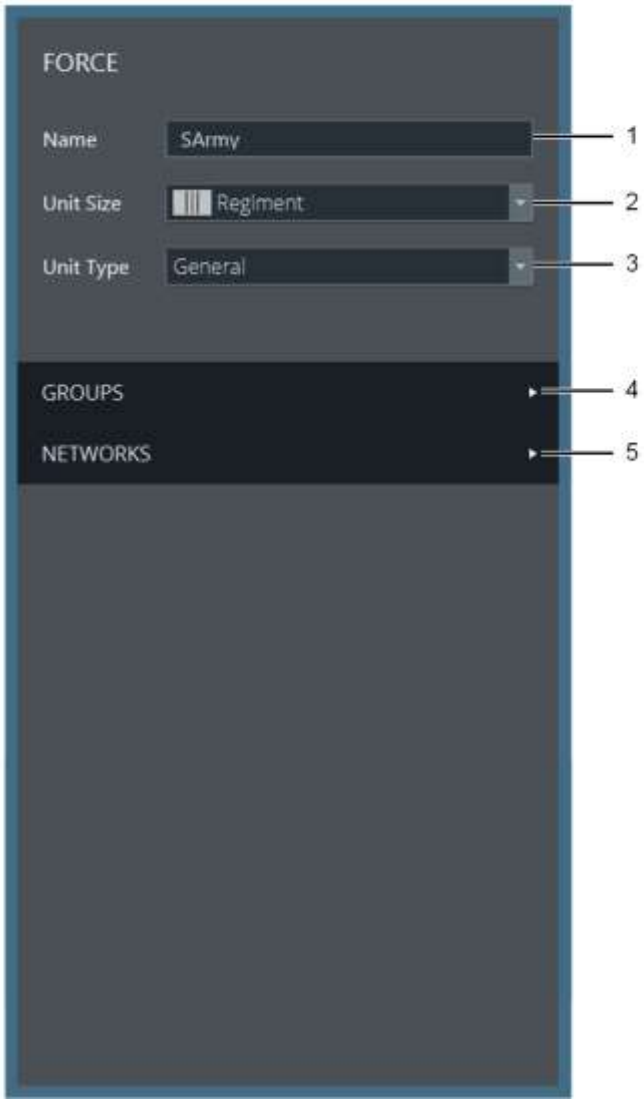


Figure 5-49: Mission Planning – Force Form Window

Table 5-47: Mission Planning – Force Form Window

No.	Name	Description
1.	Name	Box to enter the force name.
2.	Unit Size	Box to select the force size.
3.	Unit Type	Box to select the force type.
4.	Groups	Expands/collapses the Groups pane (see section 5.3.12.1), to view the force communication groups (voice and data).
5.	Networks	Expands/collapses the Networks pane (see section 5.3.12.2), to select a UHF/L-band network to allocate to the force.

5.3.12.1 Groups Pane

(See Figure 5-50 and Table 5-48)

138-0143v01

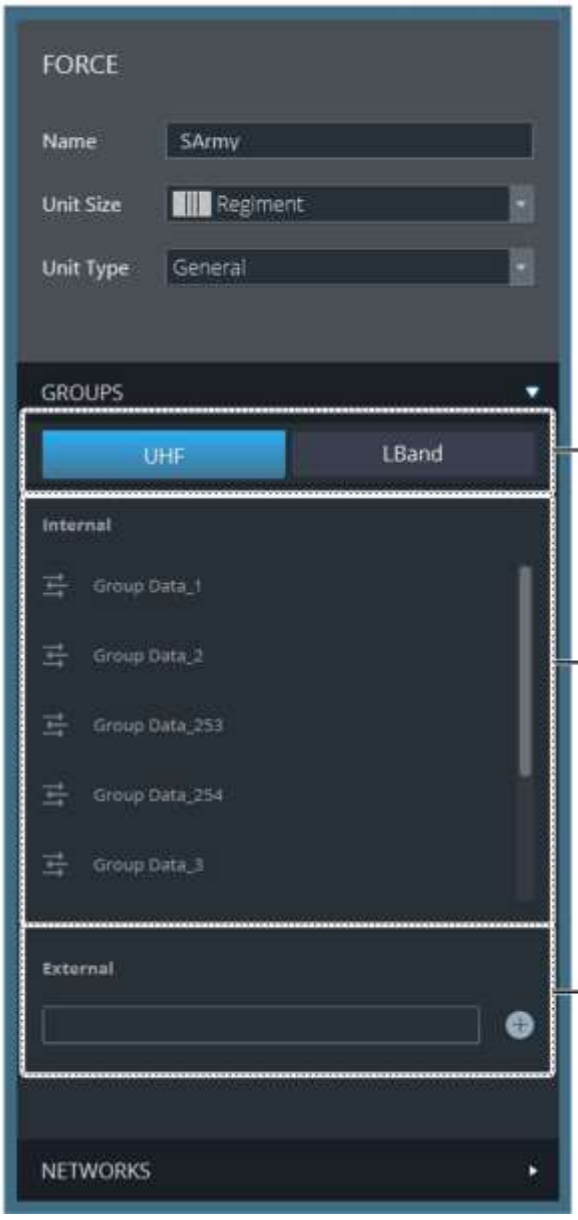


Figure 5-50: Force Form Window – Groups Pane

Table 5-48: Force Form Window – Groups Pane

No.	Name	Description
1.	UHF/LBand	Toggle button to select a network (UHF or L-band) for the force communication groups display (2).
2.	Internal	Displays the force voice and data groups to which the selected network (1) has been allocated. **Note:** See voice and data groups configuration in section 5.3.14.

No.	Name	Description
3.	External	Not in use in this system.

5.3.12.2 Networks Pane

(See Figure 5-51 and Table 5-49)

138-0144v01

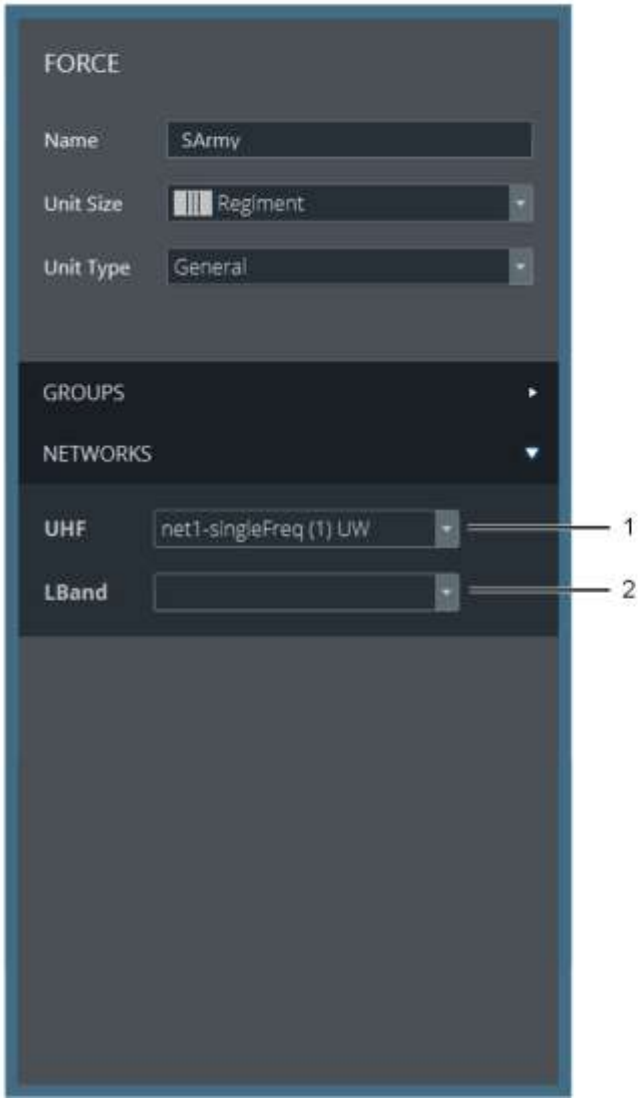


Figure 5-51: Force Form Window – Networks Pane

Table 5-49: Force Form Window – Networks Pane

No.	Name	Description
1.	UHF	Box to select a UHF network to allocate to the force.
2.	LBand	Box to select an L-band network to allocate to the force.

5.3.13 Mission Planning – Unit Form Window

(See Figure 5-52 and Table 5-50)

138-0145v01

Figure 5-52: Mission Planning – Unit Form Window

Table 5-50: Mission Planning – Unit Form Window

No.	Name	Description
1.	Name	Box to enter the unit name.
2.	Role Size	Box to select the size of the unit role.
3.	Role Type	Box to select the type of the unit role.
4.	Parent	Box to select the unit parent (i.e., force).
5.	BNETS (x)	• Expands/collapses the BNETS pane (see section 5.3.13.1), to configure the unit BNET devices. • (x) – displays the number of BNET devices included in the configured unit.
6.	Presets	Expands/collapses the Presets pane (see section 5.3.13.2), to configure the unit presets.
7.	Groups	Expands/collapses the Groups pane (see section 5.3.13.3), to configure the unit membership in the force communication groups (voice and data).
8.	Networks	Expands/collapses the Networks pane (see section 5.3.13.4), to select a UHF/ L-band network to allocate to the unit.

5.3.13.1 BNETS Pane

(See Figure 5-53 and Table 5-51)

138-0146v01

Figure 5-53: Unit Form Window – BNETS Pane

Table 5-51: Unit Form Window – BNETS Pane

No.	Icon/Name	Description
1.	BNET	Box to select the BNET device to configure.
2.		Refreshes the selected BNET device details (3 to 8).
		Deallocates the selected BNET device from the unit.
		Allocates the selected BNET device to the unit.
3.	ID	Box to enter the BNET device ID.
4.	IP	Box to enter the BNET device IP.
5.	Name	Box to enter the BNET device name.
6.	RF Heads	Not in use in this system.
7.	Type	Box to select the BNET device type – Vehicular.
8.	Wired	Check box to select if the BNET device is physically connected to the NMS computer.

5.3.13.2 Presets Pane

(See Figure 5-54 and Table 5-52)

138-0147v01

Figure 5-54: Unit Form Window – Presets Pane

Table 5-52: Unit Form Window – Presets Pane

No.	Name	Description
1.	UHF/LBand	Toggle button to select a UHF or L-band type network, to view the voice groups allocated with the selected type network.
2.	BNET ID	Displays the BNET identifier.
3.	Preset voice groups table column headings	
	Name	Displays the voice group name.
	Tx	Option button to select enable transmission for the voice group. **Note:** Only one voice group per preset can be set as transmission enabled.
	Rx	Check box to enable/disable (select/clear) reception for the voice group. **Note:** Up to three voice groups per preset can be set as reception enabled.

No.	Name	Description
4.	Preset	Box to select the preset number.

5.3.13.3 Groups Pane

(See Figure 5-55 and Table 5-53)

138-0148v01

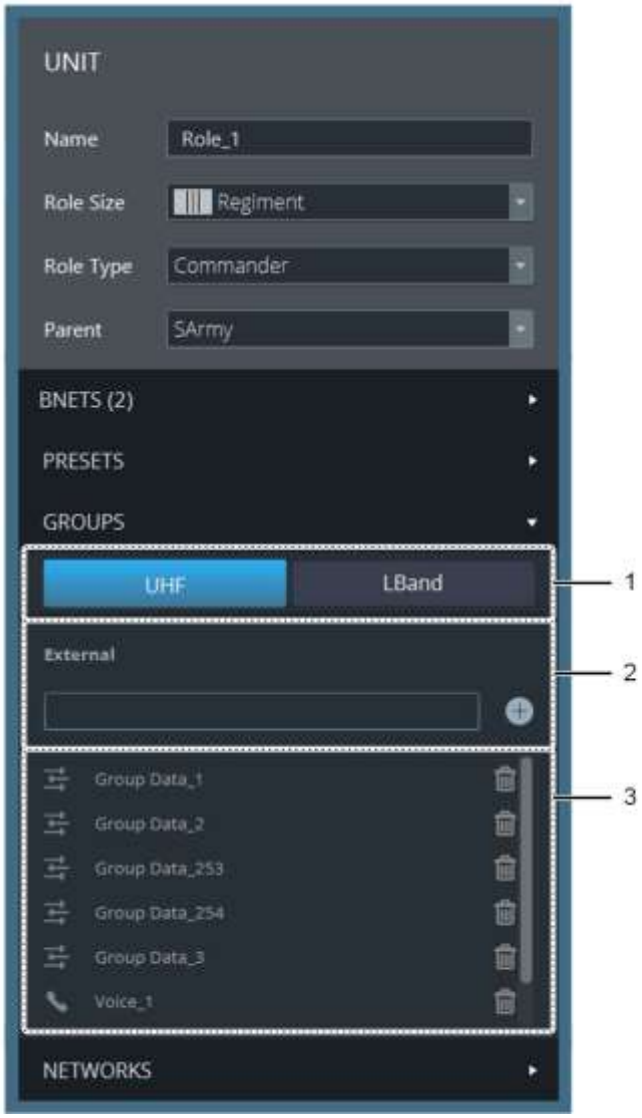


Figure 5-55: Unit Form Window – Groups Pane

Table 5-53: Unit Form Window – Groups Pane

No.	Icon/Name	Description
1.	UHF/LBand	Toggle button to select a UHF or L-band type network, to view the communication groups allocated with the selected type network.
2.	External	Not in use in this system.
3.	Groups list	Displays the voice and data groups of which the unit is a member.

No.	Icon/Name	Description
		Cancels the unit membership in the selected group.

5.3.13.4 Networks Pane

(See Figure 5-56 and Table 5-54)

138-0149v01

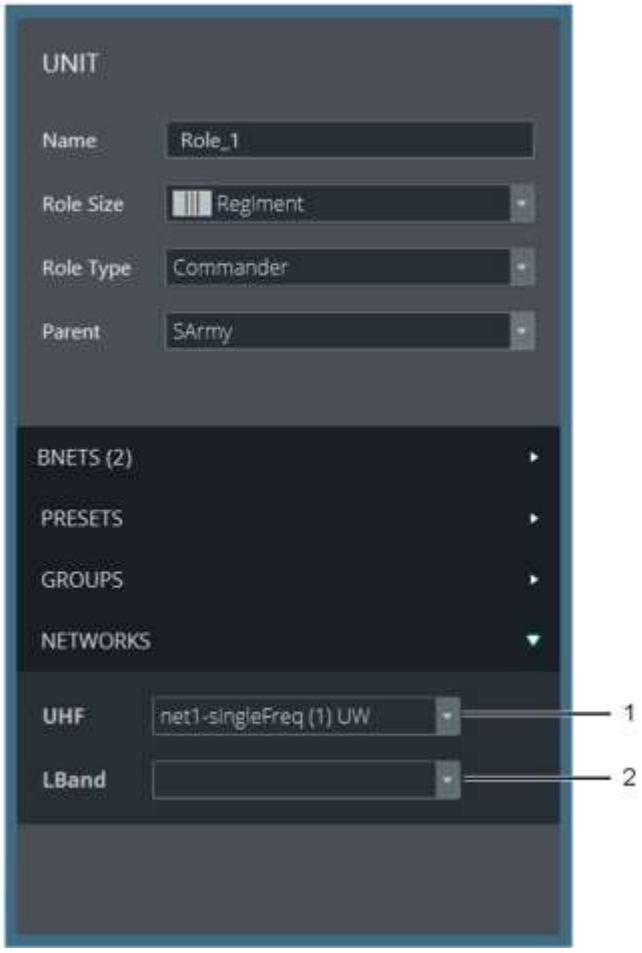


Figure 5-56: Unit Form Window – Networks Pane

Table 5-54: Unit Form Window – Networks Pane

No.	Name	Description
1.	UHF	Box to select the UHF network to allocate to the unit.
2.	LBand	Box to select the L-band network to allocate to the unit.

5.3.14 Mission Planning – Group List

(See Figure 5-57 and Table 5-55)

138-0150v01

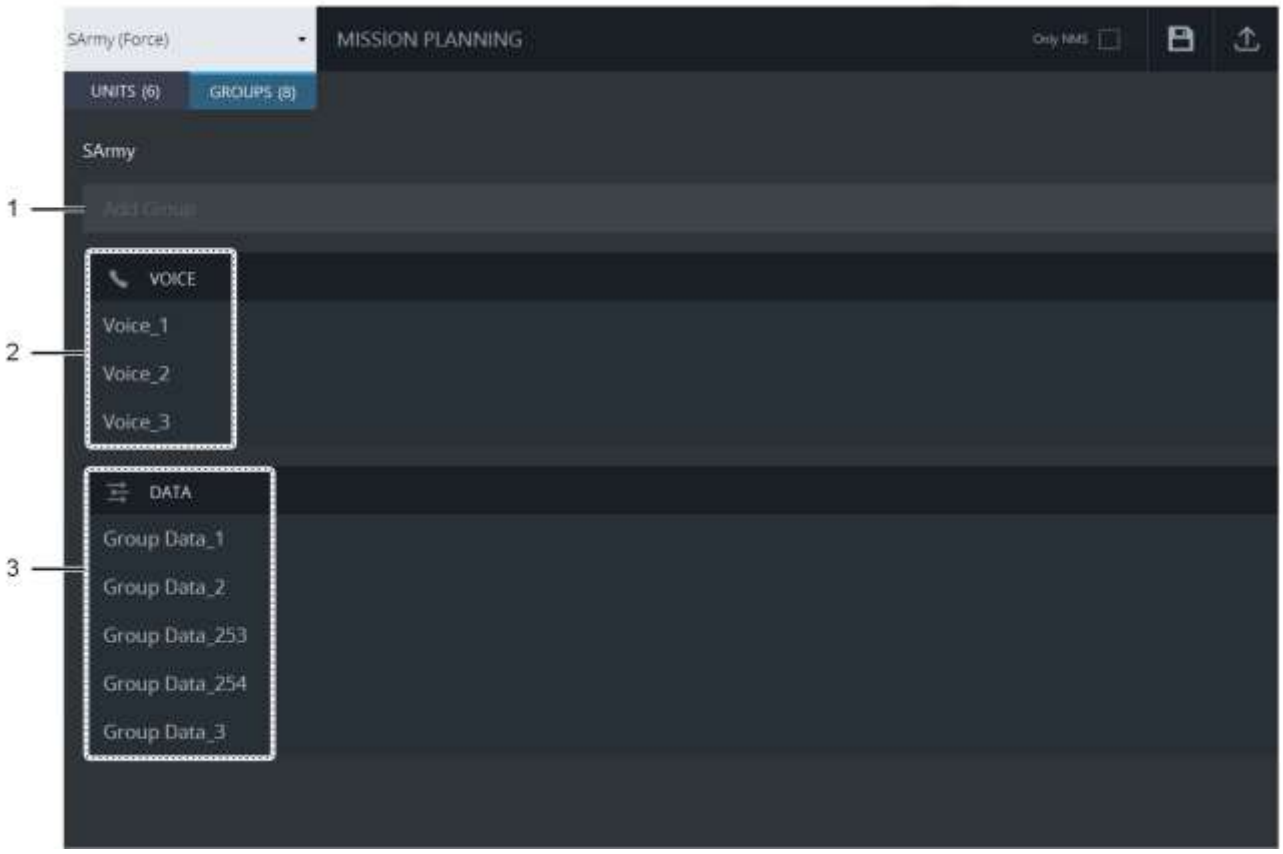


Figure 5-57: Mission Planning Screen – Group List

Table 5-55: Mission Planning Screen – Group List

No.	Icon/Name	Description
1.	Add Group	Clicking the box, displays a bar for adding a new group (see section 5.3.14.1).
2.	Voice	• Displays the list of voice groups added to the selected force. • Selecting a voice group, opens the voice group form (see section 5.3.14.2), to configure the selected group.
3.	Data	• Displays the list of data groups added to the selected force. • Selecting a data group, opens the data group form (see section 5.3.14.3).

5.3.14.1 Add a New Group Bar

(See Figure 5-58 and Table 5-56)

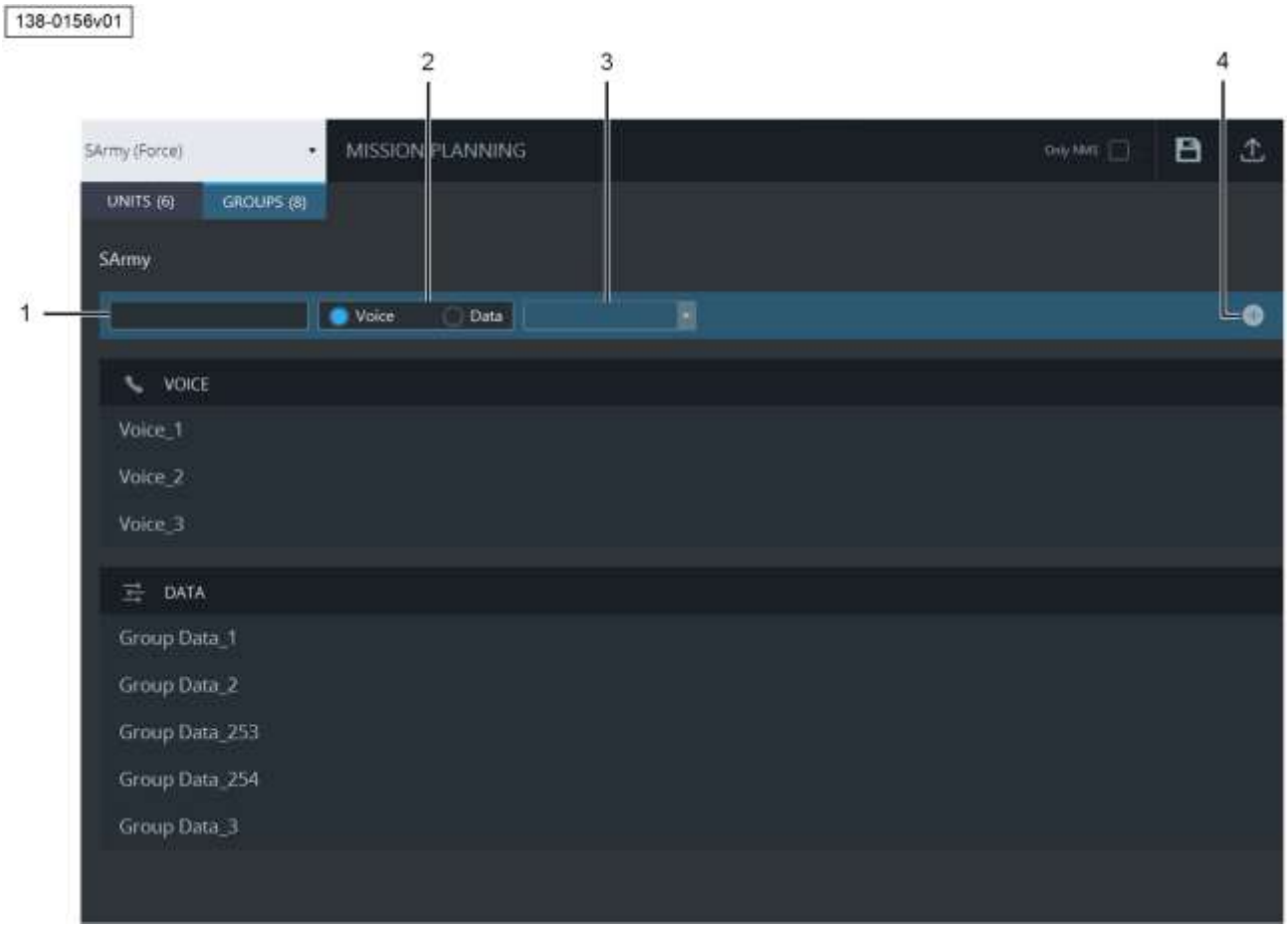


Figure 5-58: Mission Planning – Add a New Group Bar

Table 5-56: Mission Planning – Add a New Group Bar

No.	Icon/Name	Description
1.	Name	Box to enter the name of the new group.
2.	Voice/Data	Option buttons to set the new group method: Voice or Data.
3.	Type	Box to select the new group type: • All – intended for all army echelons. • Battalion to Squad – specific army echelon.
4.		Adds the new group to the relevant Voice or Data group list, according to the selected method (3).

5.3.14.2 Voice Group Selection for Configuration

(See Figure 5-59 and Table 5-57)

138-0154v01

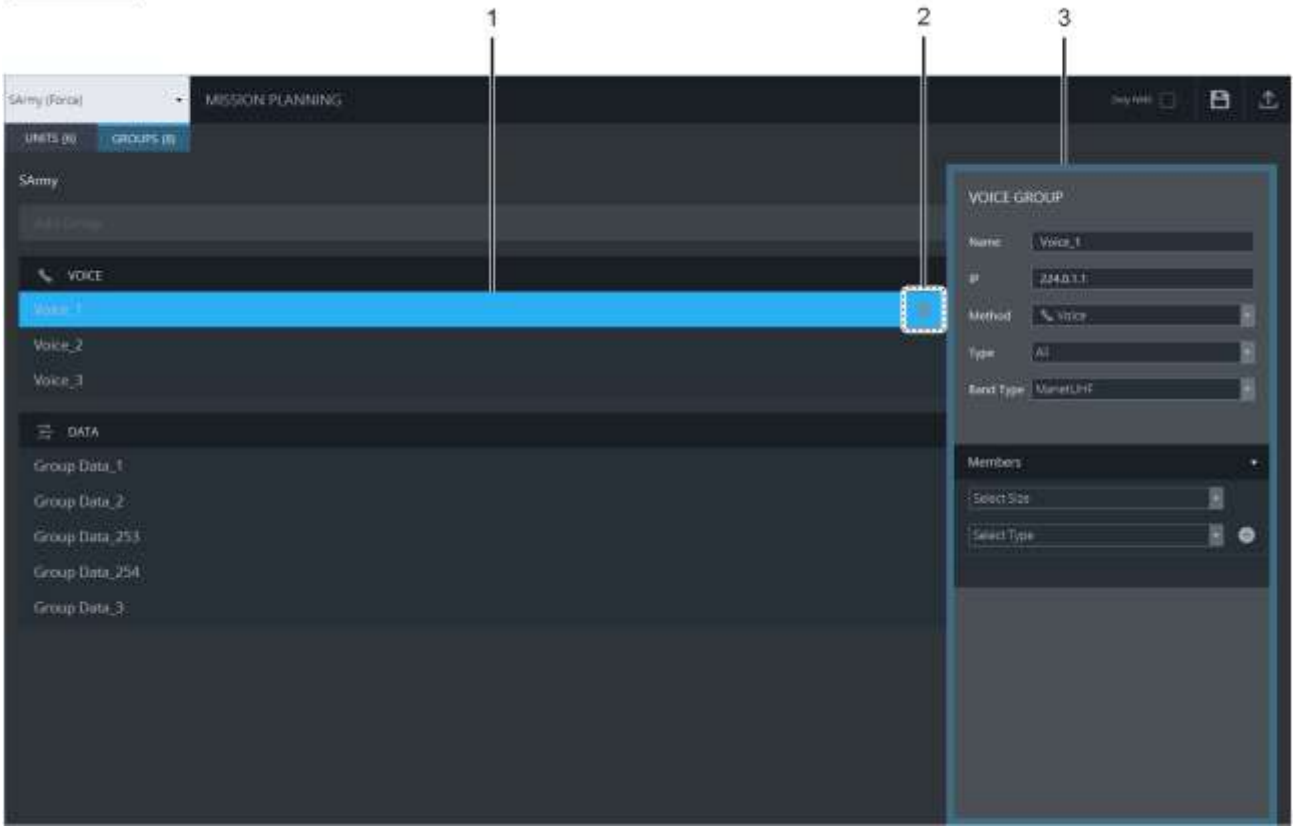


Figure 5-59: Mission Planning – Voice Group Selection for Configuration

Table 5-57: Mission Planning – Voice Group Selection for Configuration

No.	Icon/Name	Description
1.	Selected voice group	Selecting a voice group: • Highlights the row with a solid blue colour. • Opens the voice group form window (3).
2.		• Displayed when a voice group row is highlighted. • Clicking erases the selected voice group.
3.	Voice group form window	Enables to view and configure the selected voice group parameter values (see section 5.3.15).

5.3.14.3 Data Group Selection for Configuration

(See Figure 5-60 and Table 5-58)

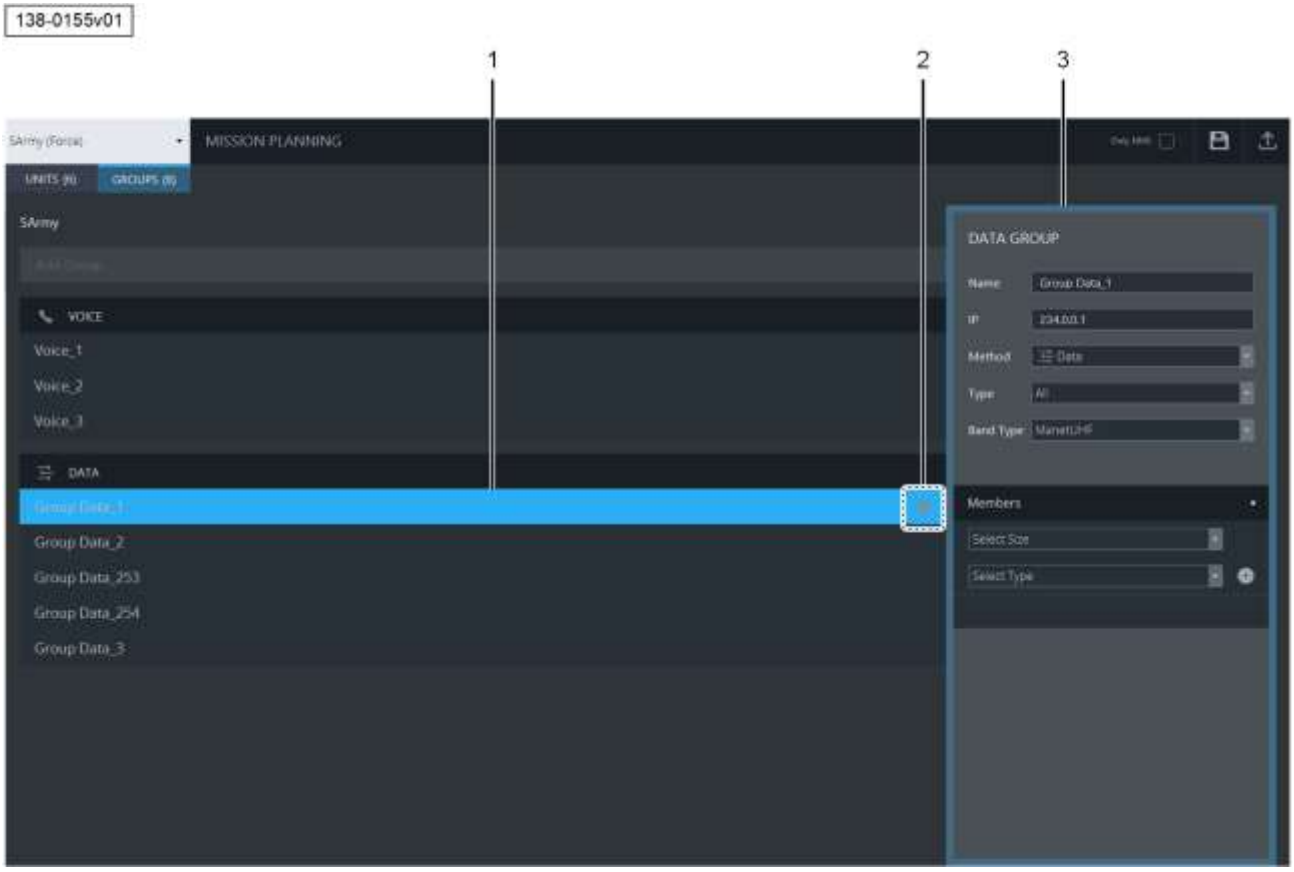


Figure 5-60: Mission Planning – Data Group Selection for Configuration

Table 5-58: Mission Planning – Data Group Selection for Configuration

No.	Icon/Name	Description
1.	Selected data group	Selecting a data group: • Highlights the row with a solid blue colour. • Opens the data group form window (3).
2.		• Displayed when a data group row is highlighted. • Clicking erases the selected data group.
3.	Data group form window	Enables to view and configure the selected data group parameter values (see section 5.3.16).

5.3.15 Mission Planning – Voice Group Form Window

(See Figure 5-61 and Table 5-59)

138-0152v01

Figure 5-61: Mission Planning – Voice Group Form Window

Table 5-59: Mission Planning – Voice Group Form Window

No.	Icon/Name	Description
1.	Name	Box to enter the voice group name.
2.	IP	Box to enter the voice group IP address.
3.	Method	Box to select the group method – Voice or Data. **Note:** Selecting Data moves the group to the Data groups list (see no. 3 in Figure 5-57).
4.	Type	Box to select the voice group type: • All – intended for all military echelons. • Battalion to Squad – intended for a specific military echelon, which includes all of the echelons beneath it.
5.	Band Type	Box to select the voice group band type – ManetUHF, ManetLBand, BothManetType.
6.	Members	Expands/collapses the Members pane (7 to 8).
7.	Select Size	Box to select an echelon as the size of the members group – Regiment to Crew.
8.		Adds a Select Type box (9), to enable multiple functionaries as group members.

No.	Icon/Name	Description
9.	Select Type	Box to select a military role for the members intended for the voice group – Commander to Operations Officer.

5.3.16 Mission Planning – Data Group Form Window

(See Figure 5-62 and Table 5-60)

138-0153v01

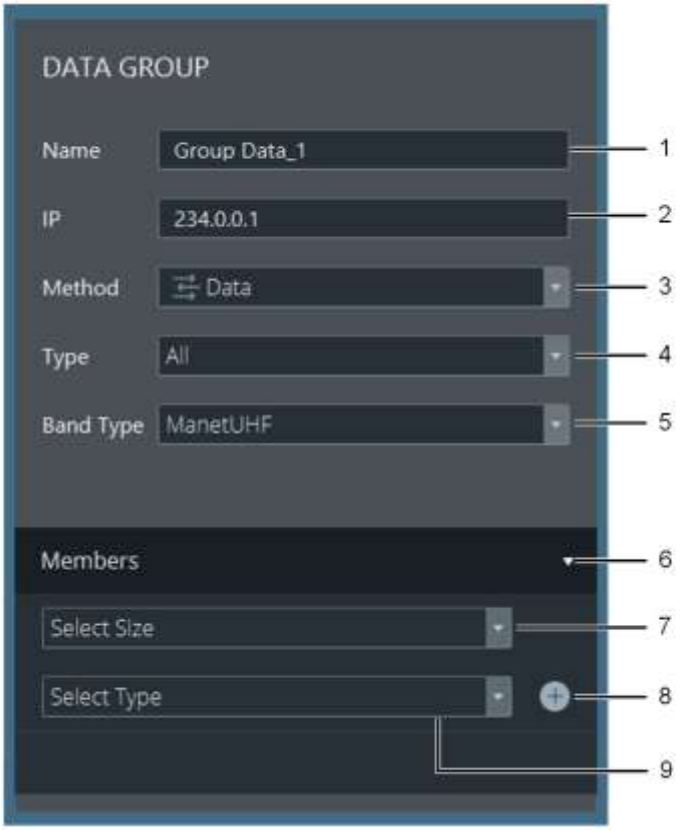


Figure 5-62: Mission Planning – Data Group Form Window

Table 5-60: Mission Planning – Data Group Form Window

No.	Icon/Name	Description
1.	Name	Box to enter the data group name.
2.	IP	Box to enter the data group IP address.
3.	Method	Box to select the group method – Data or Voice. **Note:** Selecting Voice, transfers the group to the Voice groups list (see no. 2 in Figure 5-57).
4.	Type	Box to select the data group type: • All – intended for all military echelons. • Battalion to Squad – intended for a specific military echelon, which includes all the echelons beneath it.
5.	Band Type	Box to select the voice group band type – ManetUHF, ManetLBand, BothManetType.

No.	Icon/Name	Description
6.	Members	Expands/collapses the Members pane (7 to 8).
7.	Select Size	Box to select an echelon as the size of the members group – Regiment to Crew.
8.		Adds a Select Type box (9), to enable multiple functionaries as group members.
9.	Select Type	Box to select a military role for the members intended for the data group – Commander to Operations Officer.

5.3.17 Versions Screen

(See Figure 5-63 and Table 5-61)

138-0103v02

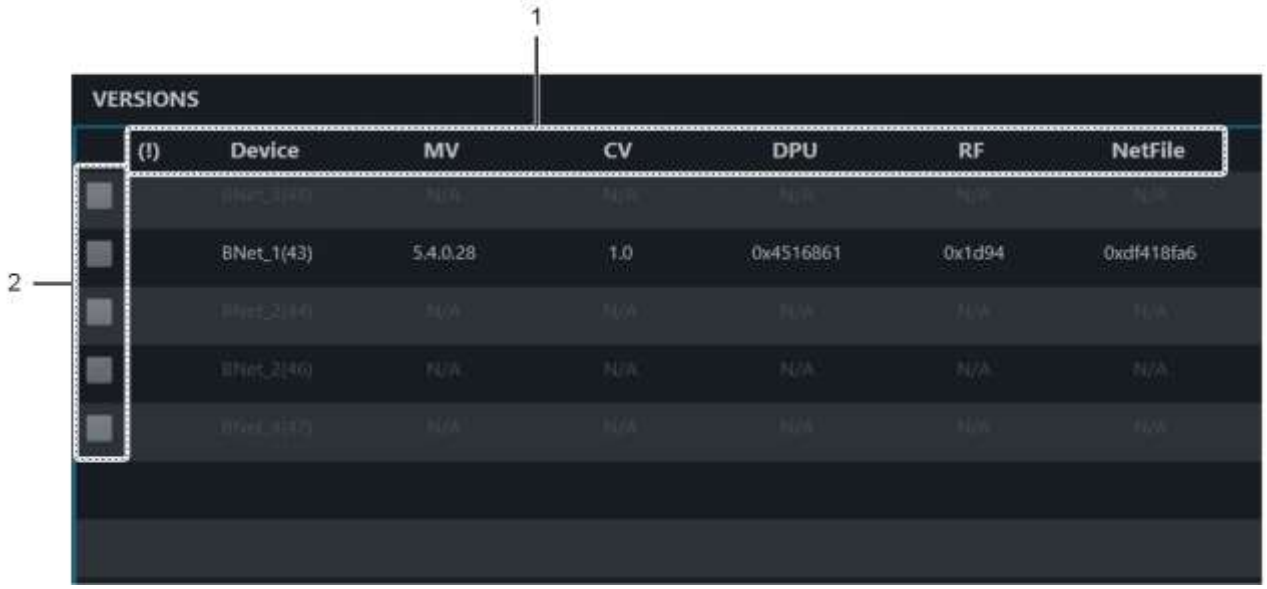


Figure 5-63: Versions Screen

Table 5-61: Versions Screen

No.	Name	Description
1.	Versions table headings	
	(!)	Indicates that one or more of the BNET component versions is not compatible with the latest version.
	Device	Displays the BNET name and ID.
	MV	Displays the BNET Master Version (MV).
	CV	Displays the BNET Customer Version (CV).
	DPU	Displays the BNET Data Processing Unit (DPU) component firmware version.
	RF	Displays the BNET RF component firmware version.
	NetFile	Displays the BNET Network File (NetFile) version.
2.	BNET Version check box	Not in use in this system.

5.3.18 Active User Window

(See Figure 5-64 and Table 5-62)

138-0104v05

Figure 5-64: Active User Window – Settings Pane

Table 5-62: Active User Window – Settings Pane

No.	Icon/Name	Description
1.	Username	Displays the logged operator name.
2.	Settings	Expands/collapses the Settings pane (3 to 9)
3.	App Version	Displays the version of the NMS application.
4.	Links (Top 10) Best/Worst	Toggle button to select whether to display the top 10 Best or Worst links on the map.
5.	RSSI	Box to display the top 10 links on the map, according to Radio Signal Strength Indication (RSSI) parameter value.
6.	Show Labels	Check box to select to display information labels on each BNET on the map.
7.	Show Trace	Not in use in this system.
8.	No GPS	Toggle button to select whether to display BNET devices on the map, according to their GPS map coordinates or to the NMS predefined logic: • Off: a. The NMS refers to the BNET devices as receiving a GPS signal. b. Therefore, the NMS locates the BNET devices on the map, according their actual map coordinates. c. If two or more BNET devices are located at the same map coordinates, they appear on the map as an aggregation (see map icon in section 5.3.4.1). • On: a. The NMS refers to the BNET devices as not receiving a GPS signal. b. Therefore, the NMS locates the BNET devices on the map, according to a predefined logic. c. As a result, the BNET devices appear close to each other on the map.
9.	( ) Upload	Not in use in this system.
10.	IP Configurations	Expands/collapses the IP Configurations pane (see Figure 5-65 and Table 5-63).
11.	Logout ( )	Logs out of the active user session, and returns to the Log-in screen (see section 5.3.1).

138-0161v01

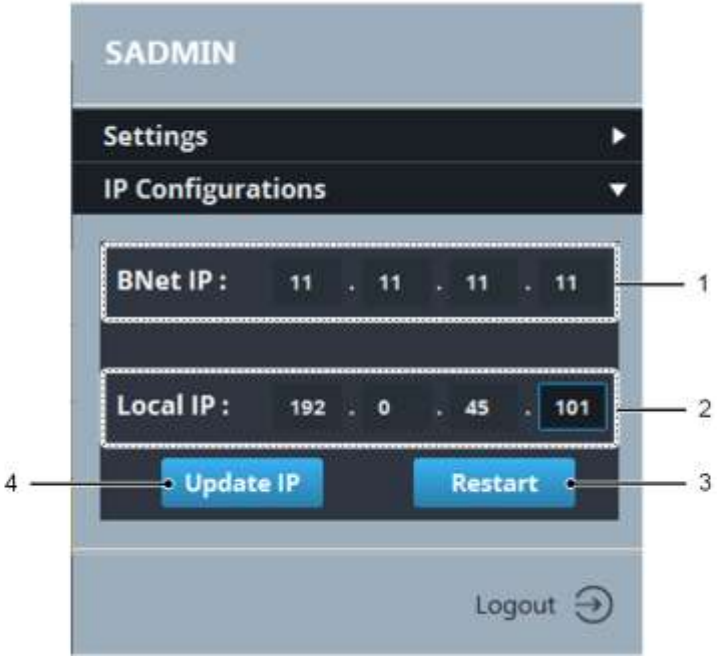


Figure 5-65: Active User Window – IP Configurations Pane

Table 5-63: Active User Window – IP Configurations Pane

No.	Name	Description	
1.	BNET IP	Box to configure the local BNET IP address.	
2.	Local IP	Box to configure the NMS computer IP address.	**Note:** Appear only after clicking Update IP (4).
3.	Restart	Restarts the BNET, after updating the IP address (4).	
4.	Update IP	• Updates the IP address of the local BNET saved in the NMS application. • Displays the Local IP row (2) and Restart button (3)	

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CHAPTER 6

EMS DESCRIPTION

6.1 SCOPE

This chapter describes the EMS application screens.

6.2 EMS SCREEN DESCRIPTION

This section describes the EMS application screens.

NOTE

- The EMS application screens are presented using the administrator user.

  When using the operator user, the EMS screens are identical, however certain options, enabled to the administrator are disabled to the operator.
- All references to the BNET in the EMS screen description section refer to the BNET-V device connected to the EMS LTU.

6.2.1 Log-In Screen

(See Figure 6-1 and Table 6-1, Figure 6-2 and Table 6-2)

The Log-In screen is the first screen that appears when the application is activated.

138-0071v02

Figure 6-1: Log-in Screen

Table 6-1: Log-in Screen

No.	Name	Description
1.	User name	Box to enter the operator username.
2.	Password	Box to enter the operator password.
3.	Set Self BNet	Check box to enable changing the local BNET connection settings (see Figure 6-2 and Table 6-2).

4.	Connect	• Connects to the local BNET. • Opens the Local BNET Form window (see section 6.2.2).

138-0108v01

Figure 6-2: Log-in Screen – Local BNET Connection Settings

Table 6-2: Log-in Screen – Local BNET Connection Settings

No.	Name	Description
1.	Self BNET ID	Box to select the local BNET identifier.
2.	BNET IP	Box to display the local BNET IP address.
3.	Local IP	Box to display the EMS LTU IP address.
4.	Multicast	Box to display the EMS to BNET multicast address.
5.	Connect	• Connects to the selected BNET (1) via the multicast address (4). • Opens the Local BNET Form window (see section 6.2.2).

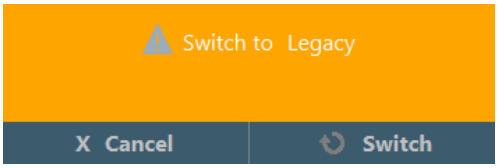
6.2.2 Local BNET Form Window in MANET Mode

(See Figure 6-3 and Table 6-3)

138-0074v03

Figure 6-3: Local BNET Form Window in MANET Mode

Table 6-3: Local BNET Form Window in MANET Mode

No.	Icon	Name	Description
1.		Advanced Configuration	Opens the Advanced Configuration pane (see section 6.2.2.1).
2.	-	BNET	Displays the BNET device name.
		IP	Displays the BNET IP address.
		ID	Displays the BNET identifier number.
		Unit	Displays the name of the BNET managing unit.
		Manager	Displays the name of the distributed mission plan, which includes the BNET.
3.		Restart	Opens a Restarting BNET confirmation pane (see section 6.2.2.2).
4.	-	Legacy	• Clicking opens the Switch to Legacy dialogue box:  • Clicking Switch switches to Legacy mode (see section 6.2.3).
5.		Install Network	Opens the Install Network pane, to upload the MANET network parameters to the BNET (see section 6.2.2.3).
6.	-	Tx Pwr	Box to select the BNET transmission power: • High – 40 dBm • Medium – 30 dBm • Low – 20 dBm
7.	-	Transmit	• Enables/disables (On/Off) the BNET transmission capability. • Displays the amount of transmitted data in Kbps. • Relay – displays the percentage of data transmitted via another BNET.
		Receive	• Enables/disables (On/Off) the BNET reception capability. • Displays the amount of received data in Kbps.
8.		Data Settings	Expands/collapses the Data Settings pane (see section 6.2.2.5).
9.		Voice Settings	Expands/collapses the Voice Settings pane (see section 6.2.2.6).
10.		Links	Expands/collapses the Links tab, which displays up to 10 top BNET links and their quality based on Radio Signal Strength Indication (RSSI) parameters (see section 6.2.2.7).
11.		Voice Groups	• Expands/collapses the Voice Groups tab (see section 6.2.2.8). • Preset [x] – displays the BNET Conf selector currently selected preset.
12.		Time Source	Expands/collapses the Time Source pane (see section 6.2.2.9).
13.		Intercom	Expands/collapses the Intercom pane (see section 6.2.2.10).

No.	Icon	Name	Description
14.	-	Communications Security (Comsec)	Enables/disables (On/Off) encrypted communication for the RF head.
15.		Upload Changes	Uploads the changed settings to the BNET. **Note:** Appears only after a setting is changed.
16.	-	Status Bar	Displays BNET status indications and buttons for additional actions (see section 6.2.2.4).
17.		Cancel	Cancels the settings change. **Note:** Appears only after a setting is changed.
18.		Landline	Not in use in this system.
19.	-	NET	Displays network name and ID number.
20.	-	Waveform and sub-waveform	Displays the current waveform (Manet) and sub-waveform: • UWideWF • UNarrowWF

6.2.2.1 Advanced Configuration Pane

(See Figure 6-4 and Table 6-4)

138-0078v03

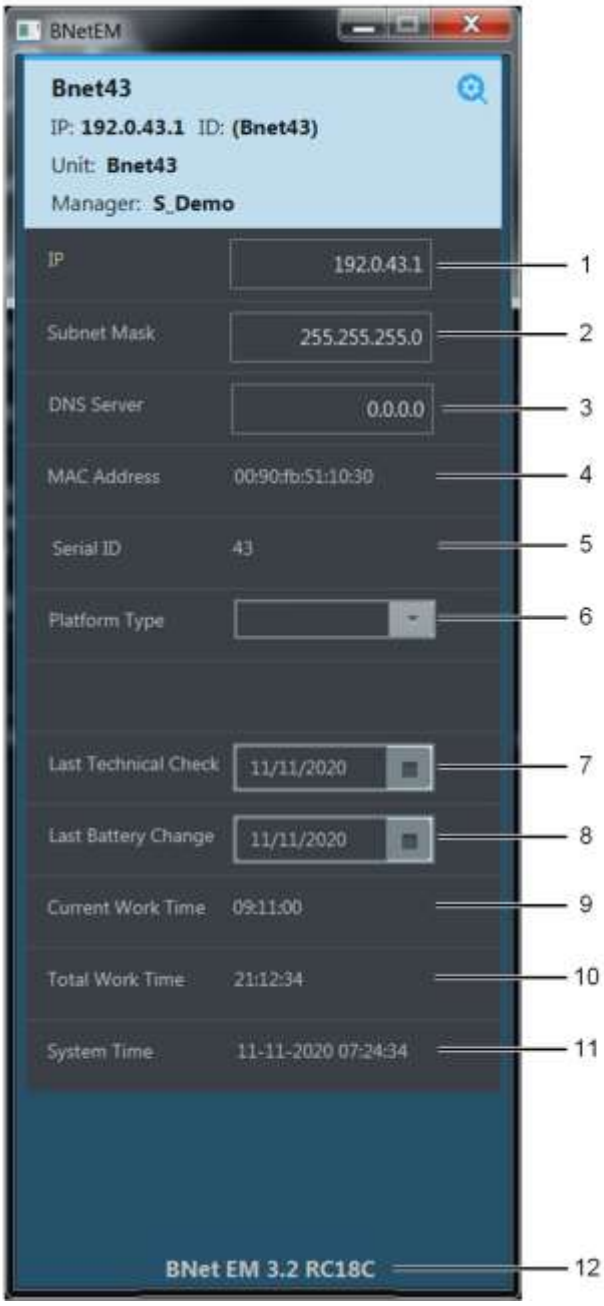


Figure 6-4: Local BNET Form – Advanced Configuration Pane

Table 6-4: Local BNET Form – Advanced Configuration Pane

No.	Name	Description
1.	IP	Box to configure the BNET IP address.
2.	Subnet Mask	Box to configure the BNET Subnet mask address.
3.	DNS Server	Box to configure the BNET DNS server address.
4.	MAC Address	Displays the BNET MAC address.
5.	Serial ID	Displays the BNET identifier.
6.	Platform Type	Box to select the BNET platform type – Vehicular.
7.	Last Technical Check	Box to select the date of the BNET last technical check.
8.	Last Battery Change	Box to select the date of the BNET last battery change.
9.	Current Work Time	Displays the time since the BNET was powered on.
10.	Total Work Time	Displays the total time of the BNET operation.
11.	System Time	Displays the date and time in which the system started operating.
12.	BNet EM	Displays the version of the EMS application.

6.2.2.2 Restarting BNET Pane

(See Figure 6-5 and Table 6-5)

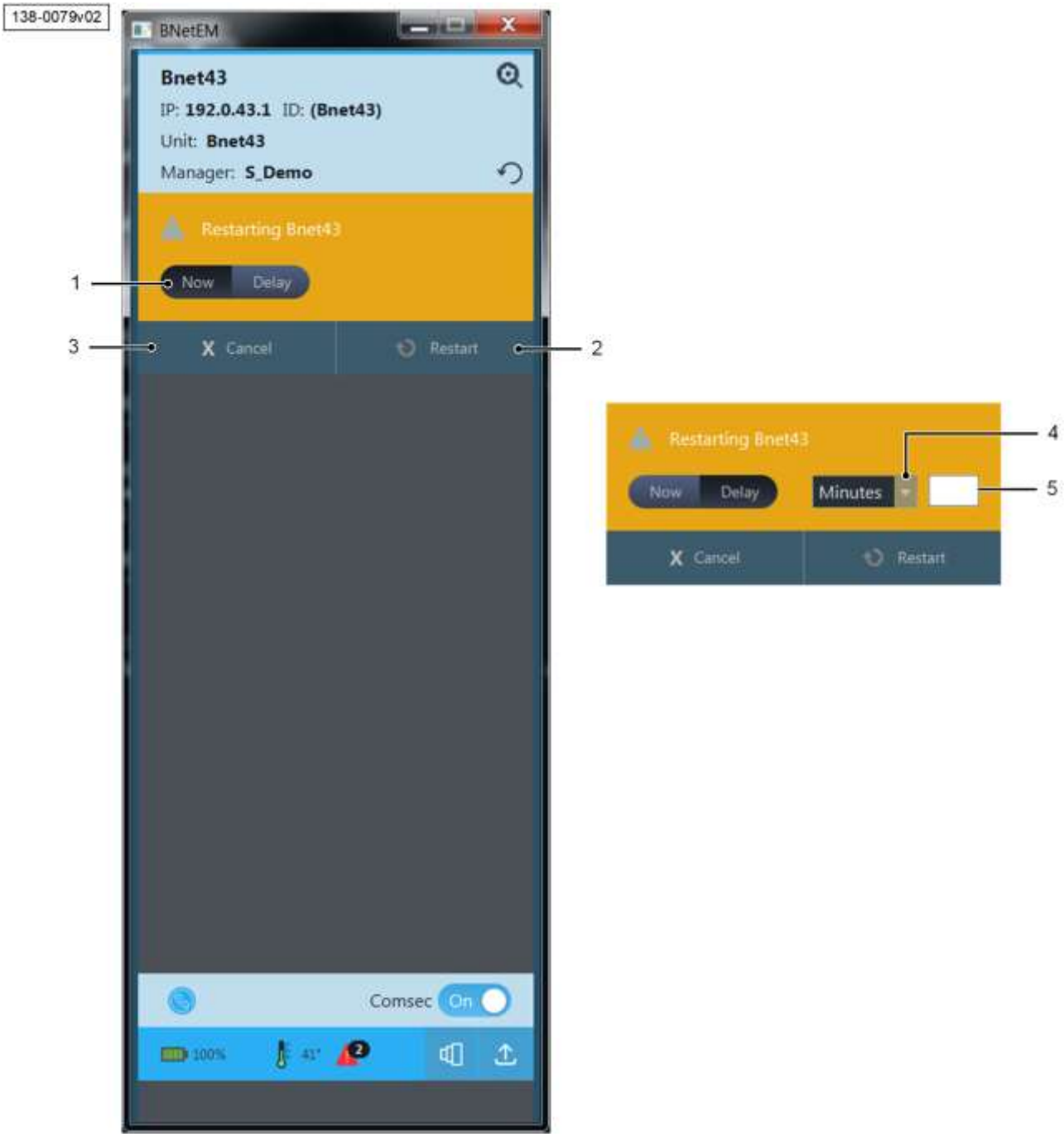


Figure 6-5: Local BNET Form – Restarting BNET Pane

Table 6-5: Local BNET Form – Restarting BNET Pane

No.	Name	Description
1.	Now/Delay	Toggle button to select the BNET restart timing: • Now – the BNET restarts immediately after clicking Restart (3). • Delay – opens a time and date selection window, to select when the BNET restarts.
2.	Restart	• When Now is selected (2), the BNET is immediately restarted. • When Delay is selected (2), the BNET restart process is delayed until the selected time and date.
3.	Cancel	Closes the pane without restarting the BNET.
4.	Delay time unit	Box to select the time unit for the time value (5): seconds, minutes, hours or days.
5.	Delay time value	Box to enter the delay time value before the BNET restarts, according to the selected time unit (4).

6.2.2.3 Install Network Pane

(See Figure 6-6 and Table 6-6)

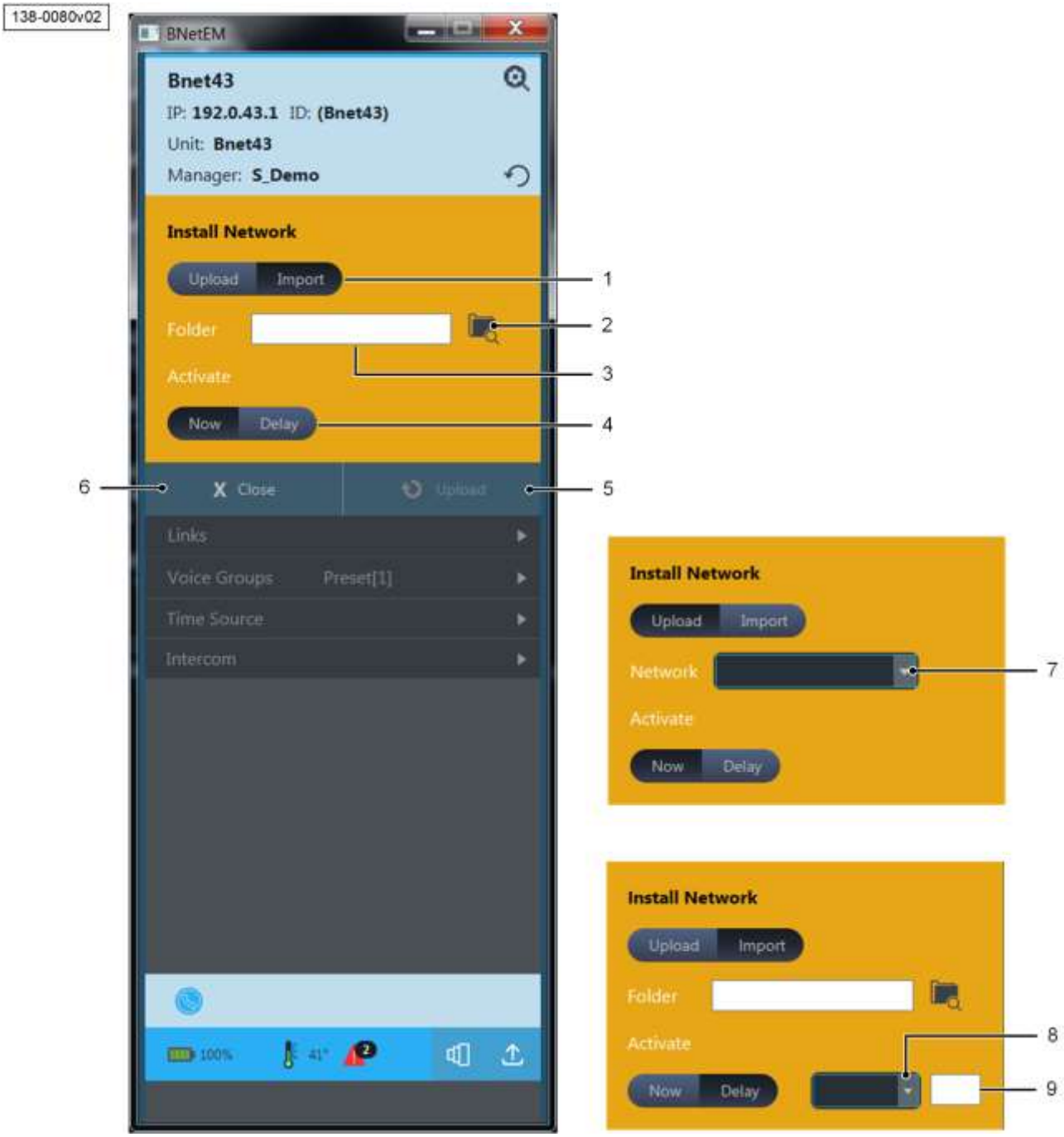


Figure 6-6: Local BNET Form – Install Network Pane

Table 6-6: Local BNET Form – Install Network Pane

No.	Icon/Name	Description
1.	Upload/Import	Toggle button to select the network parameters source: • Upload – opens the network selection box (7), to select an EMS network (parameters) for uploading to the BNET. • Import – opens the Folder button and box (2, 3), to enter/select a folder for importing a network parameters file to the EMS.
2.		Opens a file explorer, to select a network parameters file.
3.	Folder	• Box to enter the folder (and path) from which to import a network parameters file. • Displays the selected folder path.
4.	Now/Delay	Toggle button to select the timing for uploading the network parameters to the BNET: • Now – the upload process starts immediately after clicking Upload (5). • Delay – opens time unit and value boxes, to set the time value of the delay before the upload process starts.
5.	Upload	• When Now is selected (4), the selected network is immediately imported to the EMS or uploaded to the BNET, according to the selected Upload or Import action (1). • When Delay is selected (4), the upload process is delayed for the selected duration (8, 9).
6.	Close	Closes the pane without importing or uploading to the BNET.
7.	Network	Box to select a network from the EMS network list.
8.	Delay time unit	Box to select the time unit for the time value (9): seconds, minutes, hours or days.
9.	Delay time value	Box to enter the time value for how long to delay the BNET restart, according to the selected time unit (8).

6.2.2.4 Local BNET Form Status Bar

(See Figure 6-7 and Table 6-7)

138-0075v02

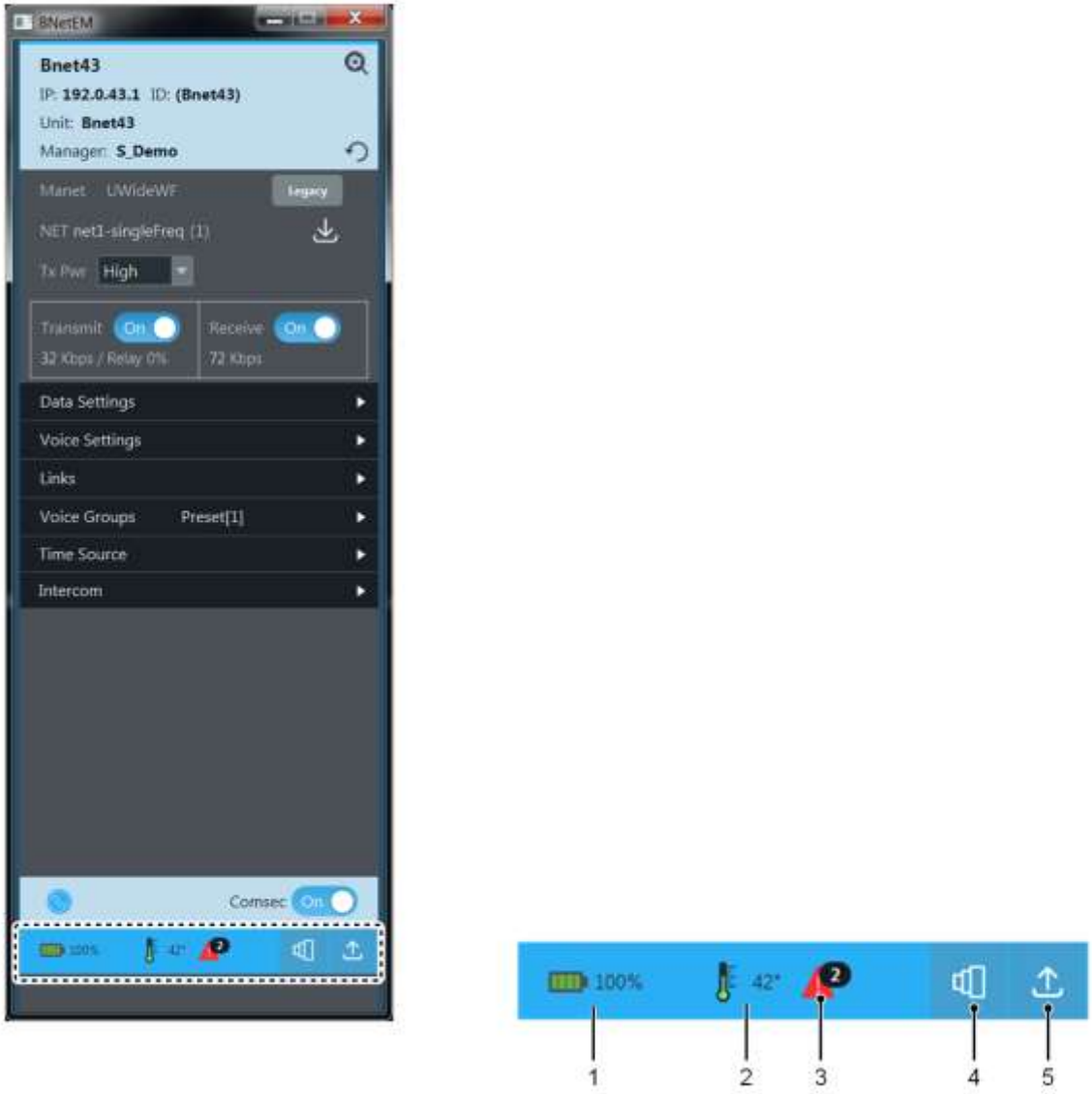


Figure 6-7: Local BNET Form Status Bar

Table 6-7: Local BNET Form Status Bar

No.	Icon	Name	Description
1.		Battery usage	Displays an indication and percentage of the BNET battery usage level.
2.		Temperature	• Displays the temperature level and numerical temperature indication of the BNET SBC: •  (green) – Good temperature level. •  (orange) – High temperature level. •  (red) – Critical temperature level.
3.		Errors	• Displays a red indication that BNET errors are detected, and displays the number of detected errors. **Note:** when no errors are detected, the indication icon is not displayed. • Clicking displays the MFL Report pane (see section 6.2.2.4.1) for information of the BNET MFL(s).
4.		Versions	Clicking displays the Versions pane (see section 6.2.2.4.2).
5.		Upload File	Clicking displays the Upload File pane (see section 6.2.2.4.3).

6.2.2.4.1 MFL Report Pane

(See Figure 6-8 and Table 6-8)

138-0082v02

Figure 6-8: Local BNET Form – MFL Report Pane

Table 6-8: Local BNET Form – MFL Report Pane

No.	Name	Description
1.	MFL	Table column that displays a description of each MFL.
2.	Reported	Table column that displays the time and date in which the MFL was detected.
3.	Severity level indication	Displays a colour-coded indication of the MFL severity level: • Critical – red ( ) • Major – purple ( ) • Minor – orange ( ) • Warning – yellow ( )

6.2.2.4.2 Versions Pane

(See Figure 6-9 and Table 6-9)

138-0081v02

Figure 6-9: Local BNET Form – Versions Pane

Table 6-9: Local BNET Form – Versions Pane

No.	Icon/Name	Description
1.	Component version	Displays each BNET component software/firmware version.

6.2.2.4.3 Upload File Pane

(See Figure 6-10 and Table 6-10)

138-0113v01

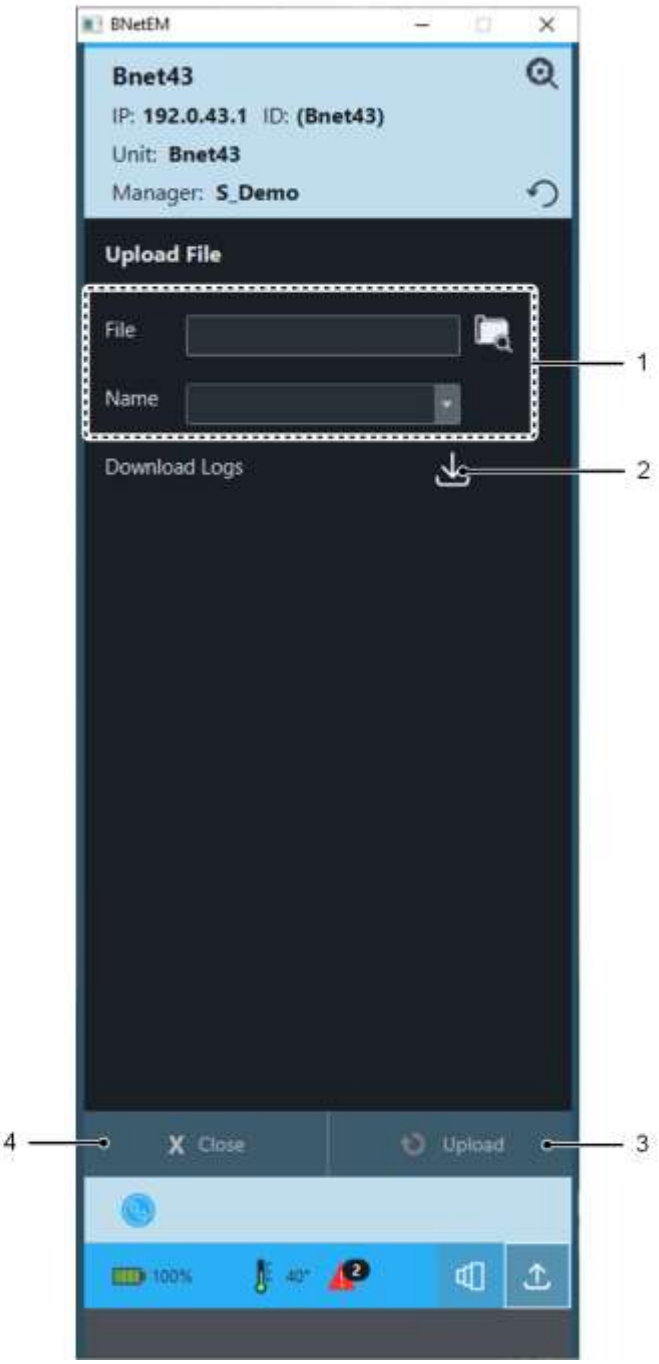


Figure 6-10: Local BNET Form – Upload File Pane

Table 6-10: Local BNET Form – Upload File Pane

No.	Icon/Name	Description
1.	File/Name	Not in use in this system.
2.	Download Logs 	Downloads the BNET log files to the predefined EMS folder: EMS 3.2 RC#C/config/Device_logs
3.	Upload	Not in use in this system.
4.	Cancel	Closes the pane.

6.2.2.5 Data Settings Pane

(See Figure 6-11 and Table 6-11)

138-0070v02

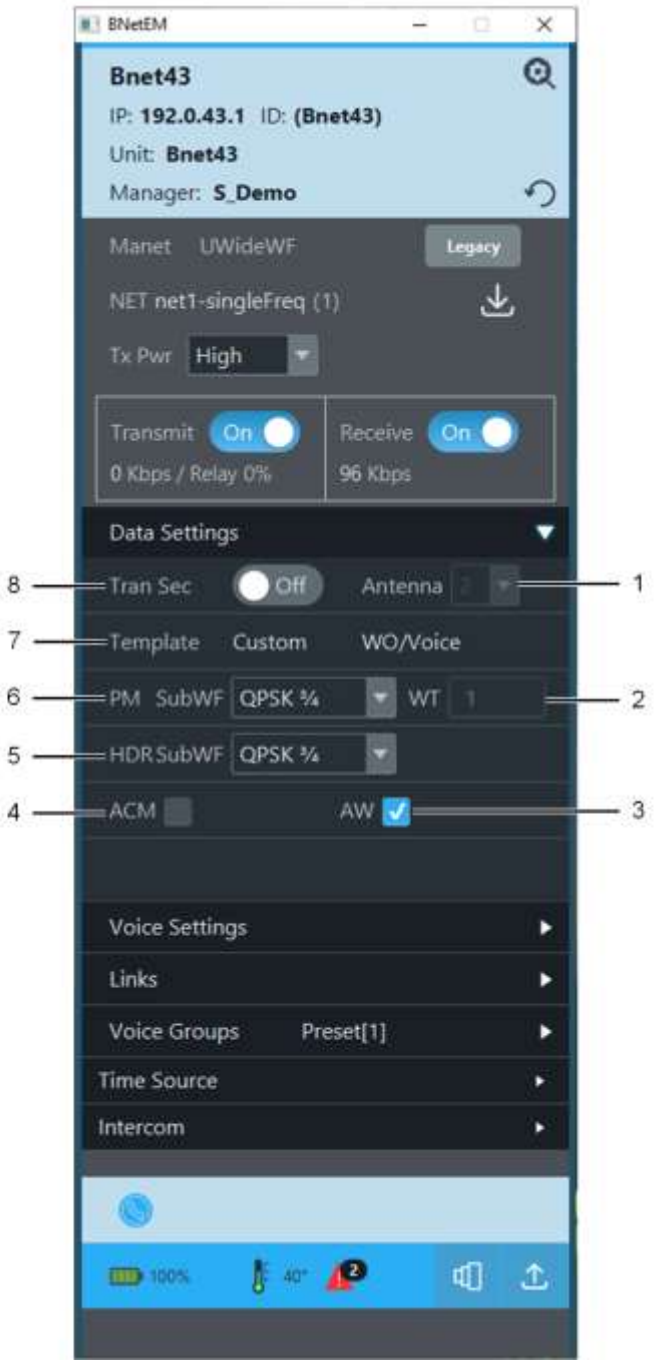


Figure 6-11: Local BNET Form in MANET Mode – Data Settings Pane

Table 6-11: Local BNET Form in MANET Mode – Data Settings Pane

No.	Name	Description
1.	Antenna	Not in use in this system.
2.	WT	Box to enter the network weight (time slot priority). **Note:** Enabled/disabled by the AW check box.

3.	AW	Adapted weight check box:
		• Selected:
		  • Disables the WT selection box (2).
		  • Automatically calculates and sets the weight parameter for the network.
		• Cleared – enables the WT selection box (2) for the operator to set the weight parameter for the network.

4.	ACM	Adaptive Coding and Modulation check box:
		• Selected:
		  • Disables the PM and HDR SubWF selection boxes (5, 6).
		  • Applies automatic transition between code rates (SubWF), according to the transmission rate and transmission quality.
		• Cleared – enables the PM and HDR SubWF selection boxes (5, 6) for the operator to set the BNET code rate (SubWF).

5.	HDR SubWF	Box to select the SubWF HDR: • QPSK $^1/_2$ • QPSK $^3/_4$ • 16QAM $^1/_3$ • 16QAM $^1/_2$ • 16QAM $^3/_4$ • Default
6.	PM SubWF	Box to select the SubWF PM: • QPSK $^1/_2$ • QPSK $^3/_4$ • QPSK $^1/_3$ • 16QAM $^1/_3$ • 16QAM $^1/_2$ • 16QAM $^3/_4$ • Default
7.	Template	• Custom – displays the template of the selected network. • WO/Voice – displays a voice service, if available.
8.	Tran Sec	Enables/disables (On/Off) Tran Sec (encrypted communication).

6.2.2.6 Voice Settings Pane

(See Figure 6-12 and Table 6-12)

138-0109v01

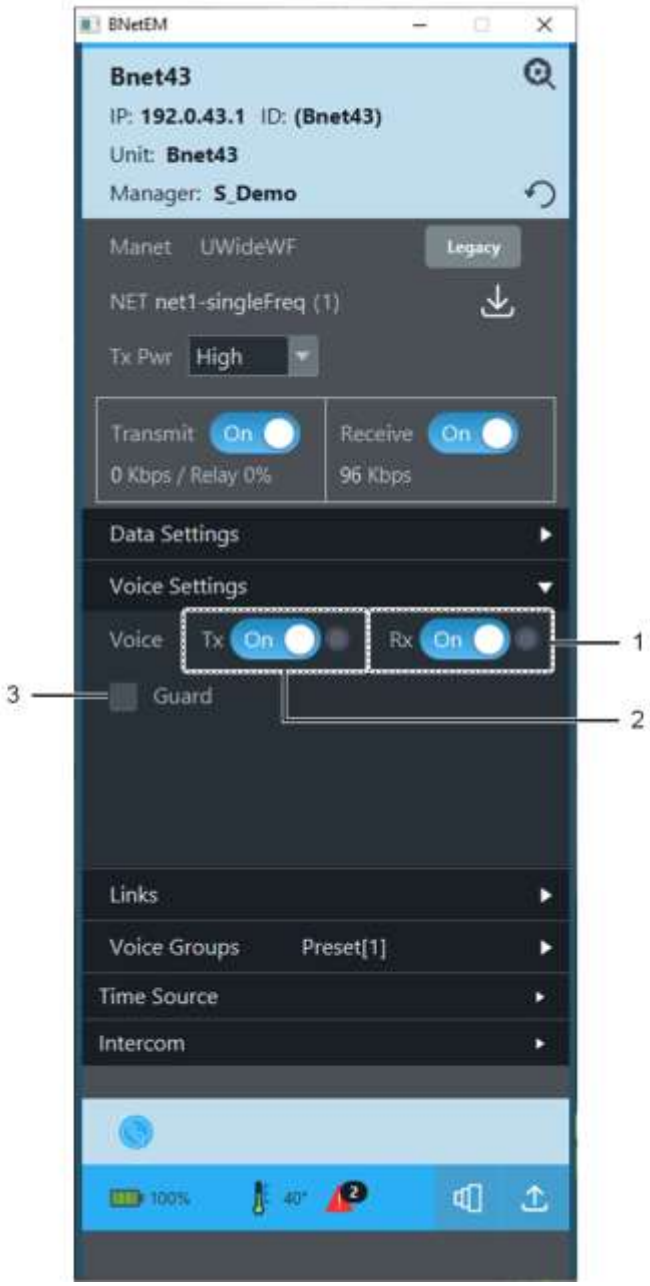


Figure 6-12: Local BNET Form in MANET Mode – Voice Settings Pane

Table 6-12: Local BNET Form in MANET Mode – Voice Settings Pane

No.	Name	Description
1.	Voice Rx	• On/Off button – enables/disables receiving voice messages. • Indicator – lit green when the BNET receives voice messages.
2.	Voice Tx	• On/Off button – enables/disables transmitting voice messages. • Indicator – lit green when the BNET transmits voice messages.
3.	Guard	Not in use in this system.

6.2.2.7 Links Pane

(See Figure 6-13 and Table 6-13)

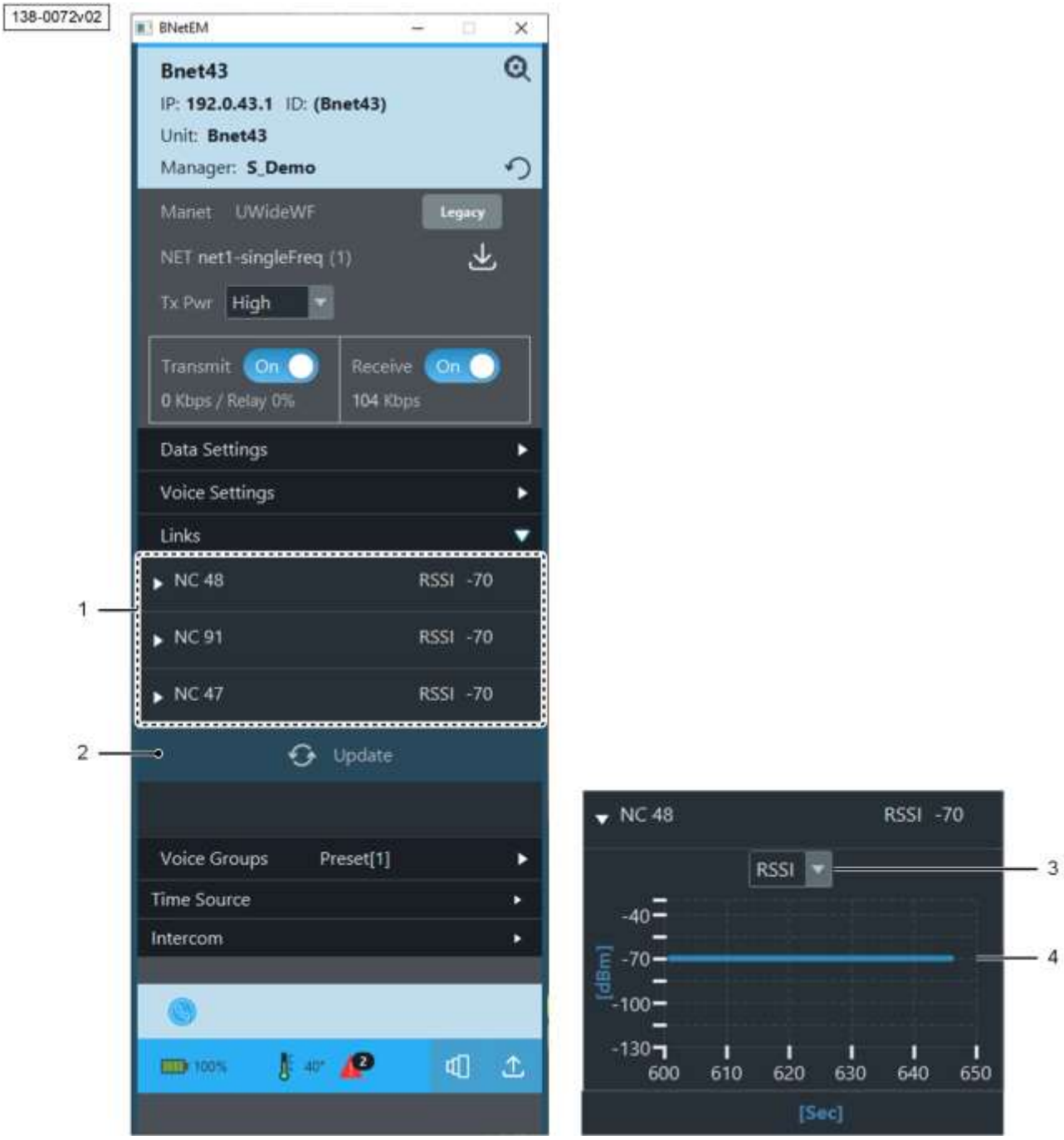


Figure 6-13: Local BNET Form in MANET Mode – Links Pane

Table 6-13: Local BNET Form in MANET Mode – Links Pane

No.	Name	Description
1.	Links list	Displays the details of up to 10 links, evaluated by their quality, according to their RSSI level (best or worst): • BNET Name. • Numeric RSSI Level. •  – expands/collapses the link graph (4). **Note:** • The links are displayed in a list created when the Links list is expanded. • If no links are available, the list displays: No Active Links.
2.	Update	Updates/refreshes the top 10 links list.
3.	RSSI	Box to select the link display in the graph (4). **Note:** In this version, only RSSI level can be selected.
4.	Link graph	Displays the link RSSI level in dBm over a period of 50 second. **Note:** The graph refreshes every second.

6.2.2.8 Voice Groups Pane

(See Figure 6-14 and Table 6-14)

138-0110v02

Figure 6-14: Local BNET Form in MANET Mode – Voice Groups Pane

Table 6-14: Local BNET Form in MANET Mode – Voice Groups Pane

No.	Name	Description
1.	PRESET	Box to select a voice group preset number (0-9) for the BNET.

2.	No Preset	Check box to disable/enable the BNET Conf (voice) selector (see section 4.2.1.3):
		• Selecting the check box and clicking Upload Changes (4):
		  • Disables the BNET Conf (voice) selector.
		  • Sets Preset 0 as the active preset configuration.
		• Clearing the check box and clicking Upload Changes (4):
		  • Enables the BNET Conf (voice) selector.
		  • Sets the preset currently selected by the BNET Conf (voice) selector as the active preset configuration.

3.	Voice group preset table	Contains boxes that display and enable changing the selected preset (1) three voice group settings: • Name – displays the voice group name. • Tx – box to select the voice group for transmission. **Note:** Only one preset voice group can be selected for transmission. • Rx – box to select the voice group for reception. **Note:** Up to three preset voice groups can be selected for reception.
4.	Upload Changes	Uploads the changes to the BNET.
5.	Cancel	Cancels the changes.

6.2.2.9 Time Source Pane

(See Figure 6-15 and Table 6-15)

138-0111v01

Figure 6-15: Local BNET Form in MANET Mode – Time Source Pane

Table 6-15: Local BNET Form in MANET Mode – Time Source Pane

No.	Name	Description
1.	GPS	Box to select the BNET GPS source: • Internal – GPS antenna connected to BNET J8 connector. • External – 1PPS and TOD source connected to BNET J14 connector.

No.	Name	Description
2.	NTP	Box to enter the Network Time Protocol server address connected to BNET J10.

6.2.2.10 Intercom Pane

(See Figure 6-16 and Table 6-16)

138-0112v01

Figure 6-16: Local BNET Form in MANET Mode – Intercom Pane

Table 6-16: Local BNET Form in MANET Mode – Intercom Pane

No.	Name	Description
1.	Intercom	Turns On/Off the BNET intercom audio.

6.2.3 Local BNET Form Window in Legacy Mode

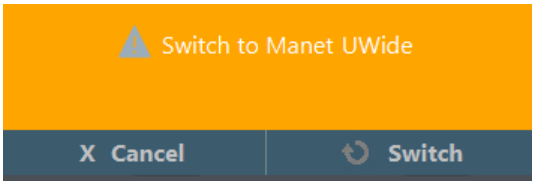
(See Figure 6-17 and Table 6-17)

138-0073v02

Figure 6-17: Local BNET Form Window in Legacy Mode

Table 6-17: Local BNET Form Window in Legacy Mode

No.	Icon	Name	Description
1.		Advanced Configuration	Opens the Advanced Configuration pane (similar to MANET mode – see section 6.2.2.1).

No.	Icon	Name	Description
2.	-	BNET	Displays the BNET device name.
		IP	Displays the BNET IP address.
		ID	Displays the BNET identifier number.
		Unit	Displays the name of the BNET managing unit.
		Manager	Displays the name of the distributed mission plan, which includes the BNET.
3.		Restart	Opens a Restarting BNET confirmation pane (similar to MANET mode – see section 6.2.2.2).
4.	-	Manet	• Clicking opens the Switch to Legacy dialogue box:  • Clicking Switch switches to MANET mode (see section 6.2.2).
5.	-	Tx Pwr	Box to select the BNET transmission power: • High – 44 dBm • Medium – 34 dBm • Low – 24 dBm
6.	-	Tx	• Enables/disables (On/Off) the BNET transmission capability. • Indicator – lit green when the BNET transmits voice messages.
		Rx	• Enables/disables the BNET reception capability. • Indicator – lit green when the BNET receives voice messages.
7.		Settings	Expands/collapses the Settings pane (see section 6.2.3.1).
8.		Advanced	Expands/collapses the Advanced pane (see section 6.2.3.2), to set the Legacy network frequency.
9.		Time Source	Expands/collapses the Time Source Pane (similar to MANET mode – see section 6.2.2.9).
10.		Intercom	Expands/collapses the Intercom Pane (similar to MANET mode – see section 6.2.2.10).
11.	-	Communications Security (Comsec)	Enables/disables encrypted communication for the RF head.
12.		Upload Changes	• Appears only after a setting is changed. • Uploads the changed settings to the BNET.
13.	-	Status Bar	Displays the BNET status indications and buttons for additional actions (similar to MANET mode – see section 6.2.2.4).
14.		Cancel	• Appears only after a setting is changed. • Cancels the settings change.
15.		Landline	Not in use in this system.
16.	-	Waveform	Displays the current waveform (Legacy).

6.2.3.1 Settings Pane

(See Figure 6-18 and Table 6-18)

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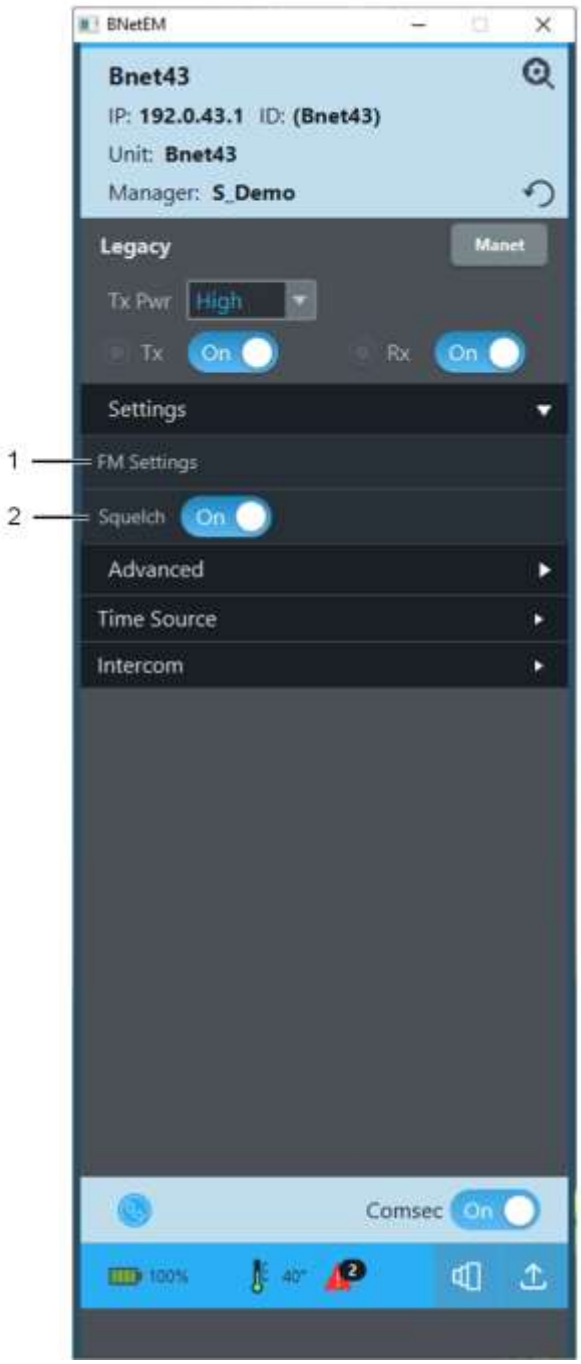

Figure 6-18: Local BNET Form in Legacy Mode – Settings Pane

Table 6-18: Local BNET Form in Legacy Mode – Settings Tab

No.	Icon/Name	Description
1.	FM Settings	Indicates that the pane contains Frequency Modulation settings. **Note:** Amplitude Modulation (AM) is not in use in this system.

No.	Icon/Name	Description
2.	Squelch	On/Off switch to enable/disable the squelch.

6.2.3.2 Advanced Pane

(See Figure 6-19 and Table 6-19, Figure 6-20 and Table 6-20)

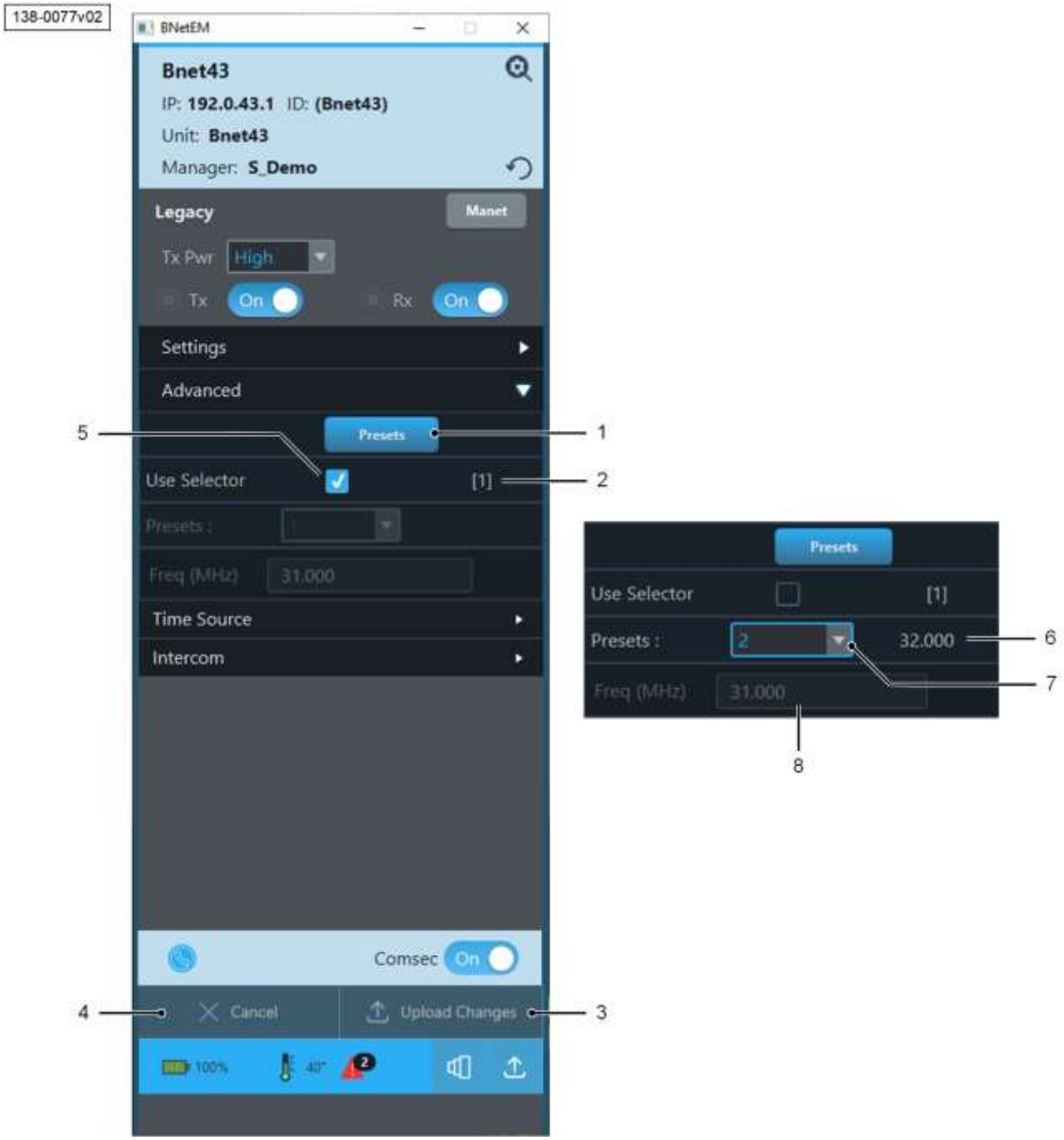

Figure 6-19: Local BNET Form in Legacy Mode – Advanced Pane

Table 6-19: Local BNET Form in Legacy Mode – Advanced Pane

No.	Name	Description
1.	Presets	Opens the Preset pane (see Figure 6-20 and Table 6-20).
2.	[x]	Displays the BNET Conf selector currently selected preset (see section 4.2.1.3).
3.	Upload Changes	Uploads the changes to the BNET.
4.	Cancel	Cancels the changes.

5.	Use Selector	Check box to disable/enable the BNET Conf selector (see section 4.2.1.3):
		• Selecting the check box and clicking Upload Changes (3):
		  • Enables the BNET Conf selector.
		  • Disables the Presets selection box (7).
		  • Hides the BNET current preset frequency (6).
		• Clearing the check box and clicking Upload Changes (3):
		  • Disables the BNET Conf selector.
		  • Enables the Presets selection box (7).
		  • Displays the BNET current preset frequency (6).

6.	BNET preset frequency	• Displays the BNET current preset frequency. • Updated after selecting a different preset (7) and clicking Upload Changes (3).
7.	Presets	Box to select between a manual frequency setting or a preset (1-9) for the BNET. **Note:** When manual frequency setting is selected, Freq (MHz) box (8) is enabled.
8.	Freq (MHz)	• When a preset is selected (7), box that displays the BNET frequency in Megahertz. • When manual frequency setting is selected (7), the operator can manually calibrate the frequency by entering it. **Note:** • Legacy frequencies are between 30 MHz and 88 MHz.

138-0114v01

Figure 6-20: Local BNET Form in Legacy Mode – Preset Pane

Table 6-20: Local BNET Form in Legacy Mode – Preset Pane

No.	Name	Description
1.	#	Displays the preset serial number.
	Name	• Displays the preset name. • Clicking enables changing the name.
	Freq	• Displays the preset frequency. • Clicking enables changing the frequency.
	MHz	Displays the frequency unit (Megahertz).
	FM	Displays the preset modulation. **Note:** AM is not in use in this system.
2.	Upload Changes	Uploads the changed preset parameters to the BNET.
3.	Close	• Closes the pane. • Changes to Cancel after changing a parameter.
	Cancel	Clicking Cancels the change(s).

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CHAPTER 7
BNET-V OPERATION

7.1 SCOPE

This chapter provides step-by-step instructions for powering up/down the BNET-V.

7.2 BNET-V POWER ON

(See Figure 7-1)

To power ON the BNET-V, perform the following steps:

a. Make sure that the power source is connected and turned ON.

b. Set the power switch (1) to the upper position (On).

c. Make sure that the indicator lamp (2) is lit green.

138-0004v02

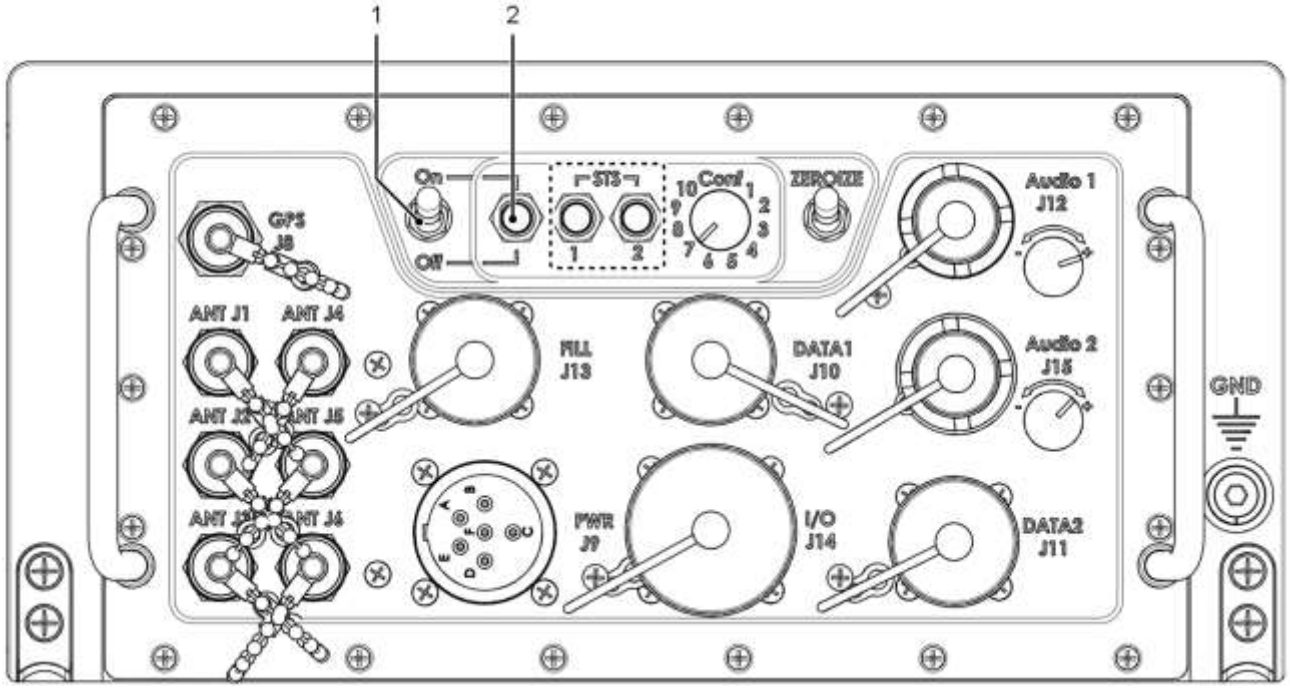

Figure 7-1: BNET-V Power ON/OFF

7.3 BNET-V POWER OFF

(See Figure 7-1)

To power OFF the BNET-V, perform the following steps:

a. Set the power switch (1) to the lower position (Off).

b. Make sure that the indicator lamp (2) is not lit.

CHAPTER 8

BNET-V DEPLOYMENT

8.1 SCOPE

This chapter provides step-by-step instructions for installing the BNET-V on an adapter tray mounted on a vehicle mount, as well as step-by-step instructions for removing the BNET-V after the operation completion.

8.2 BNET-V DEPLOYMENT

(See Figure 8-1)

To install the BNET-V device on an adapter tray, perform the following steps:

a. Make sure that the adapter tray (3) is properly mounted on the vehicle mount.

b. Place the BNET-V (1) on the adapter tray (3).

c. Carefully push the BNET-V (1) on the adapter tray (3), until the tray two guiding pins (5) are inserted to the BNET-V guiding bores (4).

138-0033v02

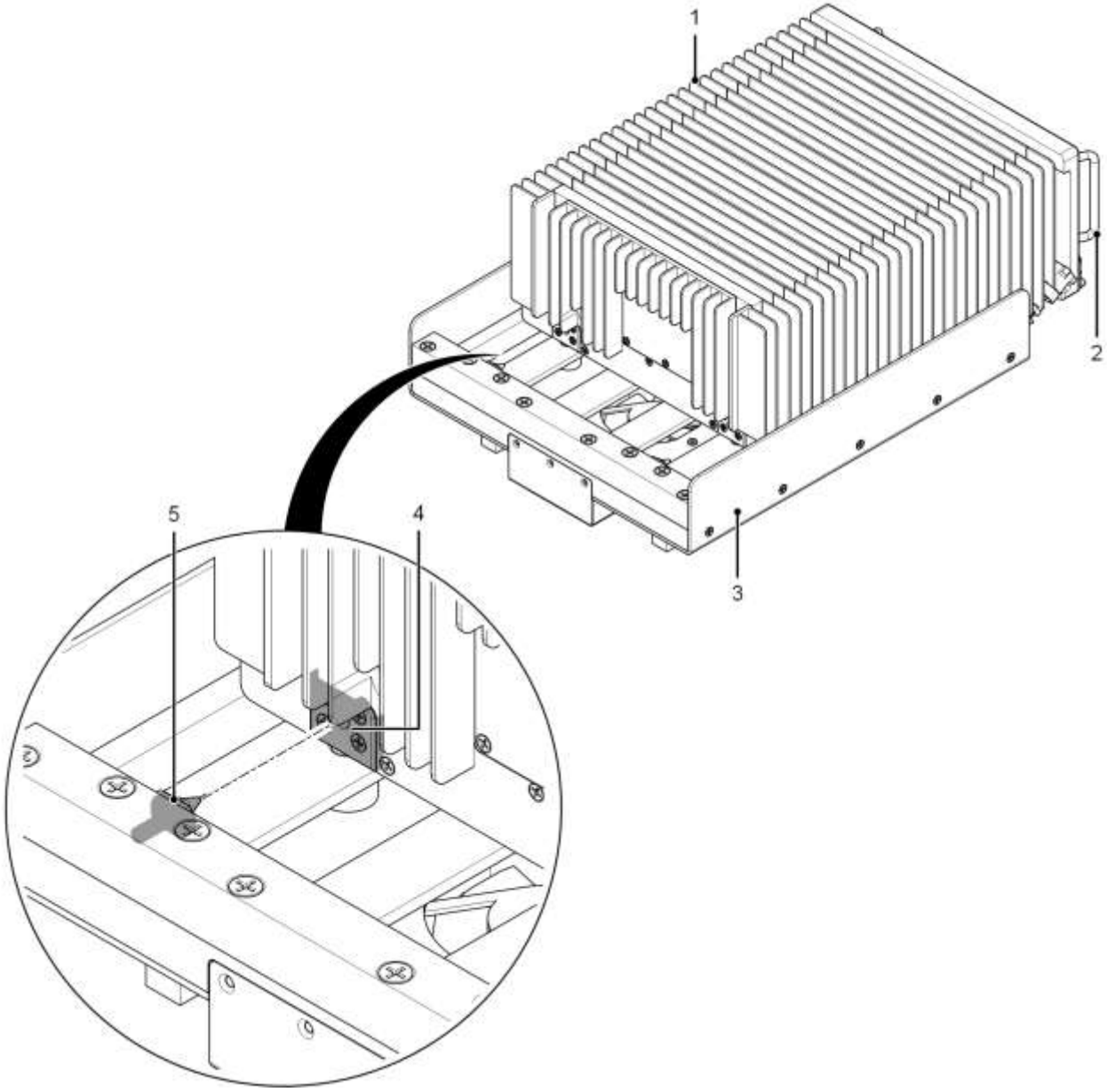

Figure 8-1: BNET-V Deployment (1 of 3)

(See Figure 8-2)

d. Pull out the tray two butterfly lockers (1), and place them on the BNET-V two mounting hooks (2).

e. Hand tighten the two butterfly lockers (1).

138-0032v01

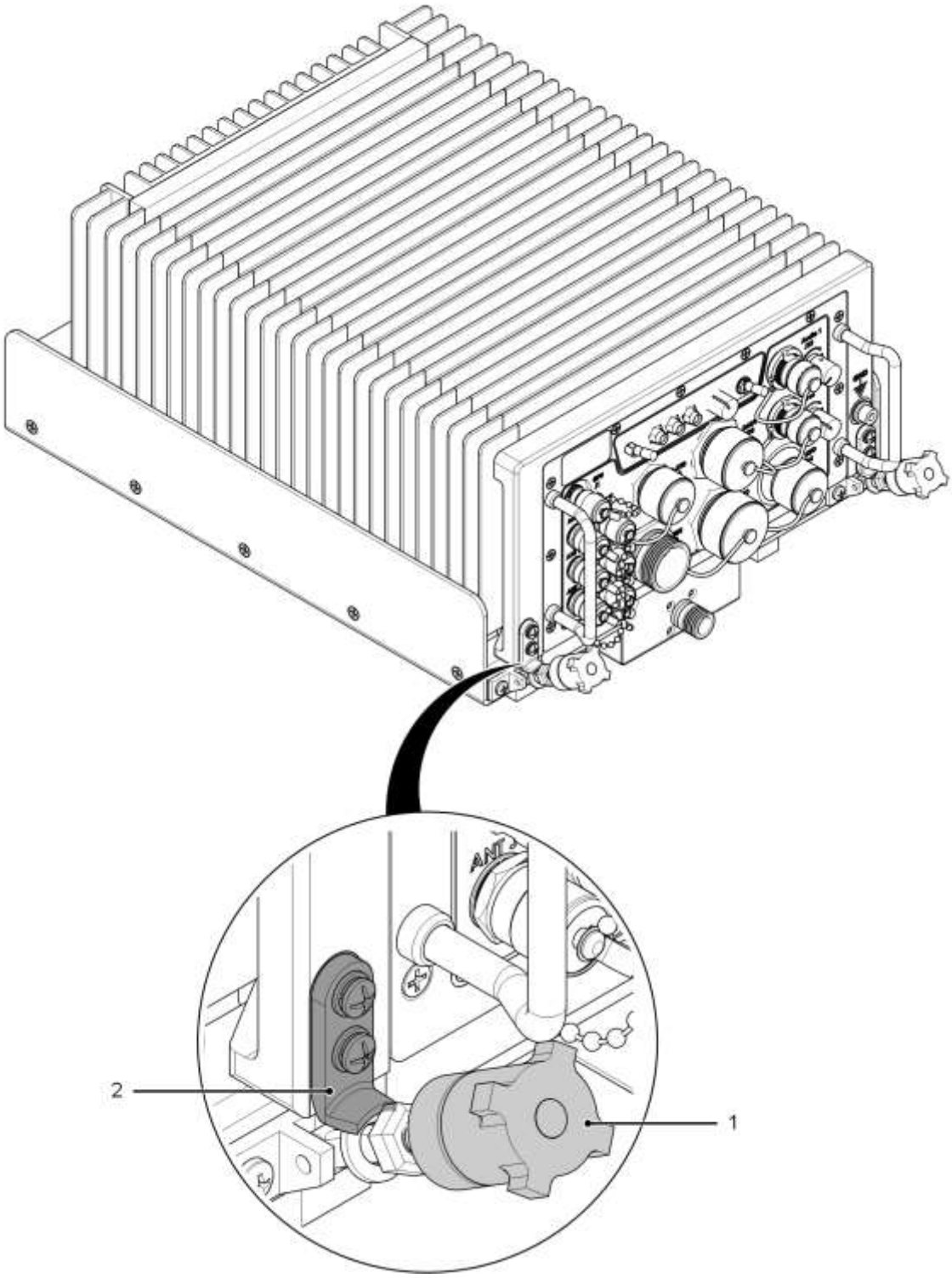

Figure 8-2: BNET-V Deployment (2 of 3)

(See Figure 8-3)

f. Turn OFF the vehicle 24V power source.

g. Connect the Loudspeaker or Handset cable to Audio 1/J12 connector (2).

h. Connect the NMS computer or EMS LTU ETH cable to Data2/J11 connector (3).

i. Connect the operational C2 ETH cable to Data1/J10 connector (4).

j. Connect the VHF/UHF antenna or VHF antenna GPS cable to J8 connector (1).

k. Connect the VHF/UHF antenna or VHF antenna cable to ANT/J2 connector (6).

l. Connect the 24V power cable to PWR/J9 connector (5).

m. Turn ON the vehicle 24V power source.

n. Power ON the BNET-V (see section 7.2).

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Figure 8-3: BNET-V Deployment (3 of 3)

8.3 BNET-V REMOVAL

To remove the BNET-V from the adapter tray, perform the following steps:

(See Figure 8-3)

a. Power OFF the BNET-V (see section 7.2).

b. Turn OFF the vehicle 24V power source.

c. Disconnect the 24 VDC power cable from PWR/J9 connector (5).

d. Disconnect the antenna cables from GPS/J8 and ANT/J2 connectors (1, 6).

e. Disconnect the ETH cables from Data2/J11 and Data1/J10 connectors (3, 4).

f. Disconnect the Audio cable from Audio 1/J12 connector (2).

(See Figure 8-2)

g. Release the tray butterfly lockers (1).

h. Pull the lockers (1) up and out, to remove from the BNET-V mounting hooks (2).

(See Figure 8-1)

i. Using the BNET-V carrying handles (2), carefully pull the BNET-V (1) from the adapter tray (3).

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CHAPTER 9
TROUBLESHOOTING

9.1 SCOPE

This chapter describes common malfunctions that can occur while using the NMS/EMS application, as well as the possible causes and corrective actions.

9.2 TROUBLESHOOTING

(See Table 9-1)

Table 9-1: Troubleshooting

No.	Failure Description	Possible Causes	Corrective Actions
1.	BNET icon on the map is colored red.	BNET MFL is detected.	Perform recommended actions to correct the failure.
2.	No communication between NMS and BNET.	Self-BNET actual IP address is different than the IP address saved in the NMS.	Change the IP address saved in the NMS.
		Hardware communication failure.	1. Make sure that the relevant BNET is powered ON. 2. Make sure that the site router is powered ON and properly connected. 3. Replace W02 cable (see section 12.7). 4. Replace BNET device (see section 0).
3.	BNET-V radio did not power ON.	Power or hardware failure.	1. Make sure site power source is turned ON and functional. 2. Replace W01 cable (see section 12.7). 3. Replace BNET device (see section 0).
4.	BNET-V radio does not receive RF communication.	Hardware failure	1. Replace W01 cable (see section 12.7). 2. Replace UHF antenna (see section 12.5). 3. Replace BNET device (see section 0).
5.	BNET-V radio does not receive a GPS signal.	Hardware failure	1. Replace W08 cable (see section 12.7). 2. Replace GPS antenna (see section 12.6). 3. Replace BNET device (see section 0).

No.	Failure Description	Possible Causes	Corrective Actions
6.	No audio is sounded via the handset.	Hardware failure	1. Make sure that the speaker is powered ON. If not, see failure no. 7. 2. Make sure that the handset is properly connected to the speaker. 3. Replace W04 cable (see section 12.7). 4. Replace handset (see section 12.4). 5. Replace speaker (see section 12.3).
7.	Speaker did not power ON.	Power or hardware failure.	1. Make sure site power source is turned ON and functional. 2. Replace W03 cable (see section 12.7). 3. Replace speaker (see section 12.3).

CHAPTER 10

MAINTENANCE POLICY

10.1 SCOPE

This chapter provides a description of the maintenance concept and preventive and corrective maintenance tasks for the BNET-V system Line Replaceable Units (LRUs), as well as tools and materials required for maintenance.

10.2 MAINTENANCE CONCEPT

(See Table 10-1)

The system maintenance concept consists of two maintenance categories:

- Preventive maintenance is usually self-imposed downtime. It consists of actions intended to prolong the operational life of the equipment and keep the system safe for operation.
- Corrective maintenance is based on replacing faulty LRUs. Repairs are kept to a minimum and, whenever possible, consist of replacement actions – remove and install. By replacing complete assemblies, the system downtime is minimized.

Table 10-1: Maintenance Concept

No.	Maintenance Level	Personnel	Main Tasks
1.	O-Level - Army Base	O-Level Army Technicians	• Perform preventive maintenance tasks. • Repair system by replacing faulty LRUs.
2.	I-Level - Maintenance Approved Contractor (MAC)	Maintenance Approved Contractor (MAC) Technicians and engineers	Repair faulty LRU by replacing SRU.
3	D-Level STE	Secured Module Original Equipment Manufacturer (OEM) Technicians and engineers	Repair faulty Secured Module.
4	D-Level Rafael	Original Equipment Manufacturer (OEM) Technicians and engineers	Repair faulty Modules.

10.3 PREVENTIVE MAINTENANCE

Preventive maintenance ensures that the equipment is in optimal condition and performs as required. The primary goal of preventive maintenance is to avoid or minimize the consequences of equipment failure. Preventive maintenance consists of partial or complete tasks performed at specific intervals.

Table 10-2 lists the preventive/periodic maintenance tasks required for the system and the intervals at which these tasks are performed.

Table 10-2: Preventive Maintenance Tasks

Interval	Preventive/Periodic Action	Task Procedure
Weekly	Visual inspection of system assemblies.	See section 11.2.1.
Monthly	Cleaning.	See section 11.2.2.

10.4 CORRECTIVE MAINTENANCE

Corrective maintenance is carried out after a failure has been detected. The primary goal of corrective maintenance is to correct a failure so that the unit/equipment can be restored to operational state.

Table 10-3 lists the system replaceable units.

Table 10-3: Replaceable Units

No.	LRU	Replacement Procedure
1.	BNET-V	See section 0.
3.	Speaker	See section 12.3.
2.	Handset	See section 12.4.
4.	UHF Antenna	See section 12.5.
5.	GPS Antenna	See section 12.6.

Table 10-4 lists the system replaceable cables.

Table 10-4: Replaceable Cables

No.	Cable No.	Replacement Procedure
1.	W01	See section 12.7.
2.	W02	
3.	W03	
4.	W04	
5.	W08	
6.	W09	
7.	Short adapting cable	

10.5 TOOLS AND MATERIALS

The following tools and materials are required for performing preventive maintenance and corrective maintenance tasks on the system LRUs:

1) Hex socket set

2) Soft brush

3) Cleaning rag

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CHAPTER 11

PREVENTIVE MAINTENANCE

11.1 SCOPE

This chapter provides instructions for performing preventive maintenance tasks by Operators and O Level maintenance technicians.

11.2 PREVENTIVE MAINTENANCE TASKS

This section provides a description of the preventive maintenance tasks.

11.2.1 Visual Inspection

CAUTION

When using pressurized air spray, follow the manufacturer instructions.

a. Personnel

Operators and O Level maintenance technicians.

b. Safety

See CHAPTER 2.

c. Tools

N/A

d. Materials

N/A

e. Preparation

N/A

f. Procedure

Visually inspect the system assemblies:

1) Make sure that all assemblies are intact and are not bent, dented, or damaged in any other way.

2) Make sure that all cables are intact, properly fixed and show no signs of burned wires.

3) Make sure that all cable connectors are properly secured, and show no signs of corrosion.

If required, replace the faulty LRU (see CHAPTER 12).

11.2.2 Cleaning

a. Personnel

Operators and O Level maintenance technicians.

b. Safety

See CHAPTER 2.

c. Tools

- Soft brush
- Cleaning cloth

d. Materials

N/A

e. Preparation

Make sure that the power source is disconnected.

f. Procedure

Using a soft brush and/or cleaning cloth, remove dust and dirt from the unit.

CHAPTER 12

CORRECTIVE MAINTENANCE

12.1 SCOPE

This chapter provides step-by-step instructions for replacing the system LRUs by O Level technicians.

12.2 BNET-V RADIO REPLACEMENT

(See Figure 8-1)

a. Personnel

O Level technician.

b. Safety

See CHAPTER 2.

c. Tools

According to customer instructions.

d. Materials

N/A

e. Preparation

1) Power OFF the BNET-V radio (see section 7.3).

2) Turn OFF the site power source.

f. Removal

1) Disconnect the power cable from the PWR J9 connector (6).

2) Disconnect the Audio cable from the Audio1/J12 connector (3).

3) Disconnect the ETH cable from the DATA1/J10 connector (5).

4) Disconnect the GPS antenna cable from the GPS J8 connector (2).

5) Disconnect the short adapting cable from ANT J3 connector (7).

6) Disconnect the short adapting cable from ANT J2 connector (8).

7) Release the rack mount lockers from the BNET-V radio two mounting hooks (4).

8) Using the carrying handles (1), extract the BNET-V radio from the rack mount.

9) Package the faulty BNET-V radio in its dedicated packing box, and transport to I-level maintenance (MAC) (see CHAPTER 13).

10) Send an email to Rafael engineering team describing the failure.

g. Installation

1) Obtain a serviceable BNET-V radio from the dedicated package.

2) Using the carrying handles (1), place the BNET-V radio in its original location.

3) Lock the rack mount lockers on the two mounting hooks (4).

4) Connect the Audio cable to the Audio1/J12 connector (3).

5) Connect the ETH cable to the DATA1/J10 connector (5).

6) Connect the GPS antenna cable to the GPS J8 connector (2).

7) Connect the short adapting cable to ANT J2 connector (8).

8) Connect the short adapting cable to ANT J3 connector (7).

9) Connect the power cable to the PWR J9 connector (6).

h. Return to Service

1) Turn ON the site power source.

2) Power ON the BNET-V radio (see section 7.2).

3) Log on to the BNET NMS application (see section TBD).

4) Verify that no BNET-V errors are detected (see section TBD).

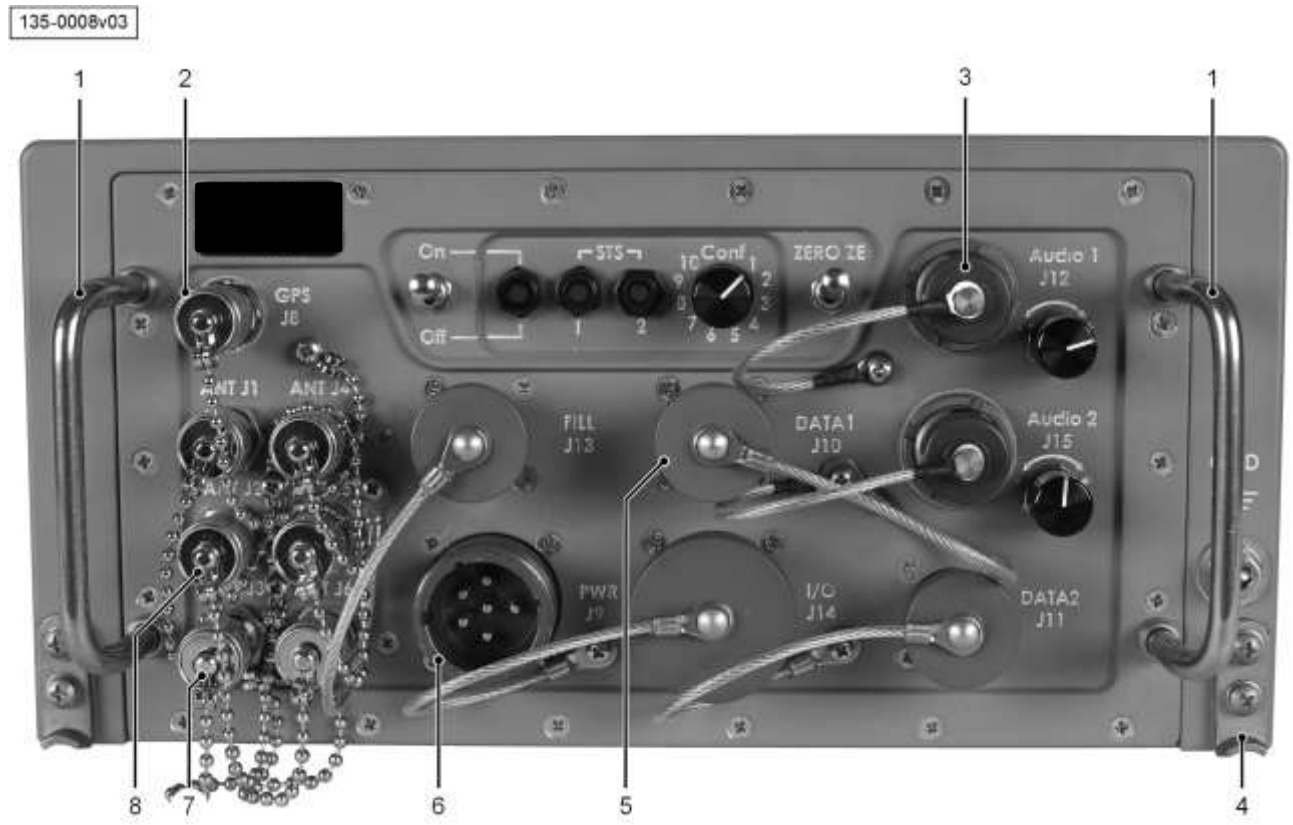

Figure 12-1: BNET-V Radio Replacement

12.3 SPEAKER REPLACEMENT

(See Figure 12-2)

a. Personnel

O Level technician.

b. Safety

See CHAPTER 2.

c. Tools

According to customer instructions.

d. Materials

N/A

e. Preparation

1) Turn OFF the site power source.

2) Disconnect the handset (2) cable from the HEADSET connector (3).

3) Remove the handset (2) from the speaker holder (1).

f. Removal

1) Disconnect the power cable from the POWER connector (5).

2) Disconnect the audio cable from the AUDIO IN connector (6).

3) Remove four mounting screws (4), according to customer instructions.

4) Extract the speaker from the rack.

5) Package the faulty speaker in its dedicated packing box, and transport to D-level maintenance (see CHAPTER 13).

6) Send an email to Rafael engineering team describing the failure.

g. Installation

1) Obtain a serviceable speaker from the dedicated package.

2) Place the speaker in its original location in the rack.

3) Install four screws (4), to mount the speaker to the rack, according to customer instructions.

4) Connect the audio cable to the AUDIO IN connector (6).

5) Connect the power cable to the POWER connector (5).

h. Return to Service

1) Connect the handset (2) cable to the HEADSET connector (3).

2) Place the handset (2) on the speaker holder (1).

3) Turn ON the site power source.

4) On the speaker:

a) Press the ON/OFF button (8).

b) Make sure that the POWER indicator lamp (9) is lit.

5) Call another BNET-V operator to test the communication.

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Figure 12-2: Speaker Replacement

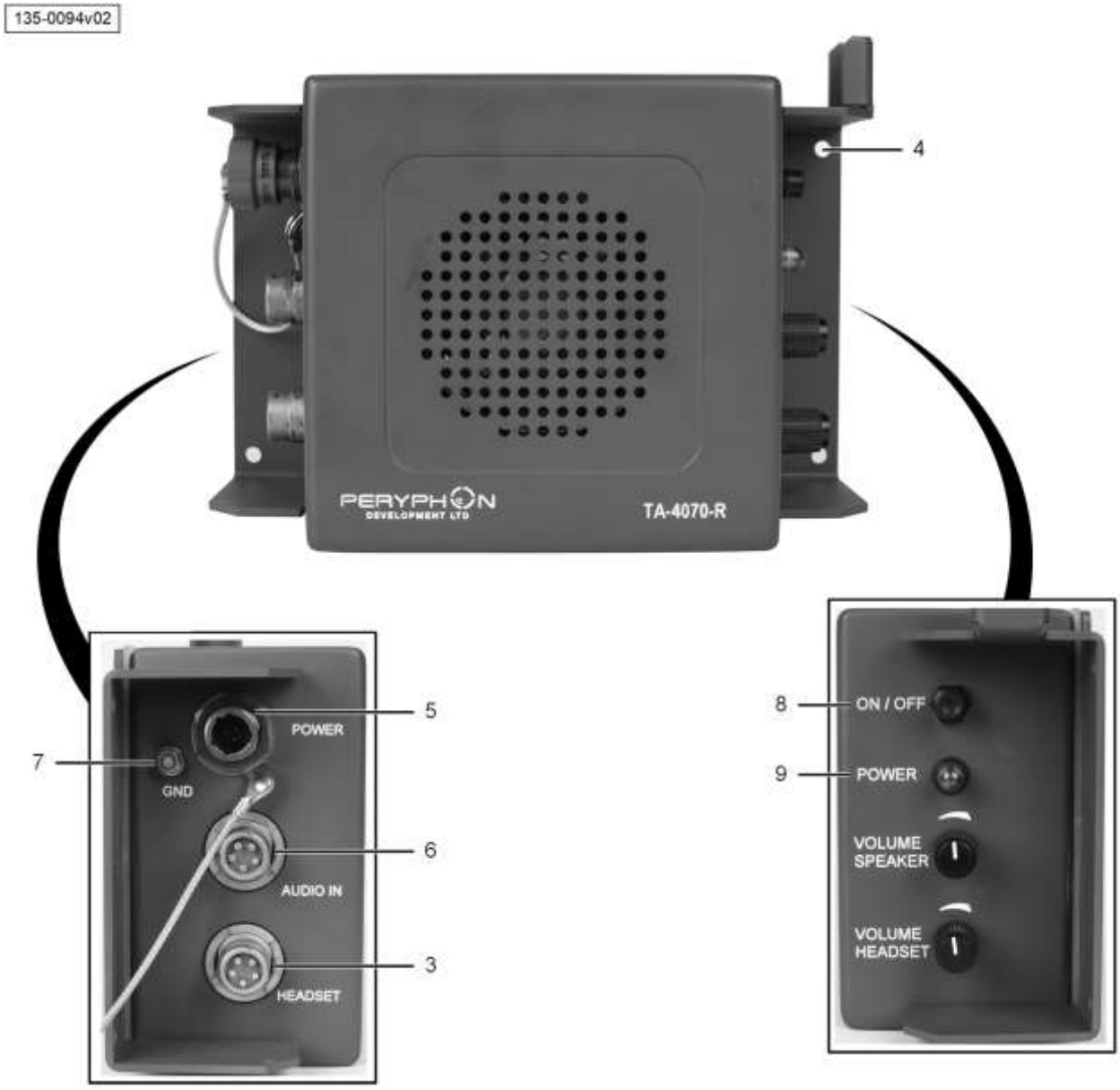

Figure 12-2: Speaker Replacement (cont'd)

12.4 HANDSET REPLACEMENT

(See Figure 12-3)

a. Personnel

O Level technician.

b. Safety

See CHAPTER 2.

c. Tools

N/A

d. Materials

N/A

e. Preparation

N/A

f. Removal

1) Disconnect the handset (2) cable from the Speaker HEADSET connector (3).

2) Remove the handset (2) from the speaker holder (1).

3) Package the faulty handset in its dedicated packing box, and transport to D-level maintenance (see CHAPTER 13).

4) Send an email to Rafael engineering team describing the failure.

g. Installation

1) Obtain a serviceable handset from the dedicated package.

2) Connect the handset (2) cable to the speaker HEADSET connector (3).

3) Place the handset (2) on the speaker holder (1).

h. Return to Service

Call another BNET-V operator to test the communication.

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Figure 12-3: Handset Replacement

12.5 UHF ANTENNA REPLACEMENT

(See Figure 12-4)

a. Personnel

O Level technician.

b. Safety

See CHAPTER 2.

c. Tools

According to customer instructions.

d. Materials

N/A

e. Preparation

1) Power OFF the BNET-V radio (see section 7.3).

2) Turn OFF the site power source.

f. Removal

1) Disconnect the RF cable from the UHF antenna connector (3).

2) Remove four nuts (2), according to customer instructions.

3) Extract the UHF antenna (1).

4) Package the faulty UHF antenna in its dedicated packing box, and transport to D-level maintenance (see CHAPTER 13).

5) Send an email to Rafael engineering team describing the failure.

g. Installation

1) Obtain a serviceable UHF antenna from the dedicated package.

2) Place the UHF antenna (1) in its original location.

3) Install four nuts (2) on the antenna screws, according to customer instructions.

4) Connect the RF cable to the UHF antenna connector (3).

h. Return to Service

1) Turn ON the site power source.

2) Power ON the BNET-V radio (see section 7.2).

3) Call another BNET-V operator to test the communication.

Figure 12-4: UHF Antenna Replacement

12.6 GPS ANTENNA REPLACEMENT

(See Figure 12-5)

a. Personnel

O Level technician.

b. Safety

See CHAPTER 2.

c. Tools

According to customer instructions.

d. Materials

N/A

e. Preparation

1) Power OFF the BNET-V radio (see section 7.3).

2) Turn OFF the site power source.

f. Removal

1) Disconnect the RF cable from the GPS antenna connector (4).

2) Remove four screws (1), according to customer instructions.

3) Extract the GPS antenna.

4) Package the faulty GPS antenna in its dedicated packing box, and transport to D-level maintenance (see CHAPTER 13).

5) Send an email to Rafael engineering team describing the failure.

g. Installation

1) Obtain a serviceable GPS antenna from the dedicated package.

2) Make sure that the GPS antenna gasket (3) is properly installed.

3) Place the GPS antenna in its original location, according to the arrow pointing to the installation direction.

4) Install four screws (1), according to customer instructions.

5) Connect the RF cable to the GPS antenna connector (4).

h. Return to Service

1) Turn ON the site power source.

2) Power ON the BNET-V radio (see section 7.2).

3) Log on to the BNET NMS application (see section TBD).

4) Verify that no BNET-V GPS errors are detected (see section TBD).

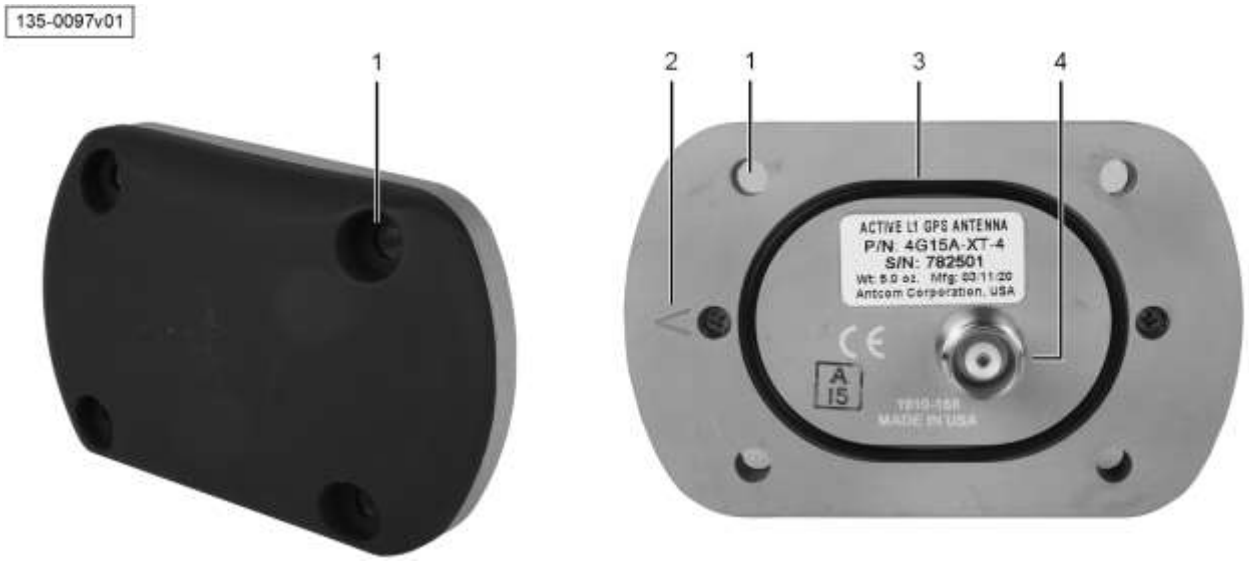

Figure 12-5: GPS Antenna Replacement

12.7 CABLE REPLACEMENT

a. Personnel

O Level technician.

b. Safety

See CHAPTER 2.

c. Tools

N/A

d. Materials

N/A

e. Preparation

1) Power OFF the BNET-V radio (see section 7.3).

2) Make sure that the site power source is disconnected.

f. Removal

1) Disconnect the cable connector from the units at both ends of the cable.

2) Package the faulty cable in its dedicated packing box, and transport to D-level maintenance (see CHAPTER 13).

3) Send an email to Rafael engineering team describing the failure.

g. Installation

1) Obtain a serviceable cable from the dedicated package.

2) Make sure that the new cable P/N matches the faulty cable P/N.

3) Connect the cable connector to its original location at both ends.

h. Return to Service

1) Turn ON the site power source to the BNET-V radio.

2) Power ON the BNET-V radio (see section 7.2).

3) Log on to the BNET NMS application (see section TBD).

4) Verify that no BNET-V errors are detected (see section TBD).

5) Call another BNET-V operator to test the communication.

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CHAPTER 13

PACKAGING AND TRANSPORTATION

13.1 SCOPE

This chapter provides a description of a packing box for transporting a faulty LRU, as well as instructions for packaging and transporting the faulty LRU.

13.2 PACKAGING

This section provides a general description of the packing box and general packaging instructions.

13.2.1 Packing Box Description

Figure 13-1 and Table 13-1 describe a typical packing box.

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Figure 13-1: Typical Packing Box

Table 13-1: Packing Box Description

No.	Item	Description
1.	Handle (x2)	Used for carrying the packing box.
2.	Tie-strap and buckle (x2)	Locks and secures the packing box cover.
3.	FRAGILE sticker	Use the sticker if the LRU might break.
4.	Cover	Covers the packing box.
5.	Unit in plastic bags	Represents the correct way for an LRU to be packed.
6.	Protective foam	Protects the unit from external damage during transportation and prevents unit movement inside the packing box.

13.2.2 Packaging Instructions

(See Figure 13-1)

a. Remove all cables and other connectors before packaging a unit for transportation.

b. Make sure that the unit surface is free of dust, dirt, oil or moisture. If necessary, clean and dry the unit using a soft cleaning cloth.

c. Cover electrical connectors with protective caps or plastic caps.

d. Attach serviceable tag to unit.

e. Make sure all cushioning pads (6) in the packing box are positioned correctly.

f. Carefully place unit in a plastic bag.

g. Place the covered unit in the packing box (5).

h. Put a desiccant bag in the packing box.

i. Close the cover (4) and secure the box using the tie-straps and buckles (2).

   If required, mark the box FRAGILE (3) to ensure careful handling.

13.3 TRANSPORTATION

Transportation guidelines:

a. Before transportation, make sure that the LRUs packing boxes are properly locked and secured (see section 13.2.2).

b. Transport LRUs only in their dedicated packages.

c. Make sure that the temperature inside the LRU transportation compartment is within the range of -30°C to +70°C.

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CHAPTER 14

IPC

14.1 SCOPE

This chapter contains the information required to detect and identify spare parts for the BNET-V 2.1 system and provides an explanation of the tables columns in the Parts List chapter, how to identify a part in the drawings and how to use the catalogue.

14.2 PARTS LIST TABLE DESCRIPTION

The parts list table includes the columns described in the following sub-sections.

14.2.1 No. – Item Number

This column contains the item number which corresponds with the item number in the figure. Item numbers are listed in an ascending order.

14.2.2 Item Name

This column provides the name of each part as described through the manual.

14.2.3 P/N – Part Number

This column contains the manufacturer part number.

14.2.4 Description

This column provides the full name of each part.

If a detailed breakdown of a part is provided in a separate listing, reference to the applicable figure number is provided in parentheses.

14.3 PARTS IDENTIFICATION IN DRAWINGS

Parts are identified in drawings by arrows, with the following types of identification:

- Plain item number (from Figure & Item Number column in the referring table row) – identifies a single part by one arrow, or by several arrows identifying different sections/components of the same part.
- Two or more item numbers separated by commas, such as 1, 3, 5 – identify multiple different parts attached together at the pointed location (such as a screw with its washers and nut).
- Item number followed by the text (Ref.) – identifies a part or a section of a part that is already identified elsewhere in the same figure. Only one appearance of a part in a figure is identified by a plain number, whereas all the other views or sections of the same part are identified by (Ref.) numbers.
- Textual reference to another figure (with no number) – identifies a part that is displayed in the shown figure as one part, has no part number when assembled and its parts are detailed in another figure.

14.4 HOW TO USE THE CATALOGUE

The catalogue can be used in one of the following ways:

- When the part number is known: see section 14.4.1
- When the part number is unknown: see section 14.4.2

14.4.1 When the Part Number is Known

To locate a part in the catalogue by a known Part Number, proceed as follows:

a. Locate Figure & Item Number in the index according to Part Number.

b. Go to parts list table of relevant Figure Number and locate the part in the list according to its Item Number.

c. If information on a part shape or location is required, locate part in the relevant figure according to item number.

14.4.2 When the Part Number is Unknown

To locate a part in the catalogue when the Part Number in unknown, proceed as follows

a. Go to the table of contents and locate the figure number of the installation or assembly in which the part is located.

b. Go to the appropriate figure in the parts list.

c. Locate the required part and its item number in the figure.

d. Go to the figure corresponding parts list table and locate the required information about the part using the item number in the figure.

14.5 IPC

This section depicts, using drawings, the system assemblies. The chapter also includes tables that list each part number (P/N) and the part description.

Table 14-1: IPC – BNET-V

No.	Item Name	Description	P/N
1.	BNET-V 2.1	EMP hardened software defined for broadband network.	U38642A

138-0018v02

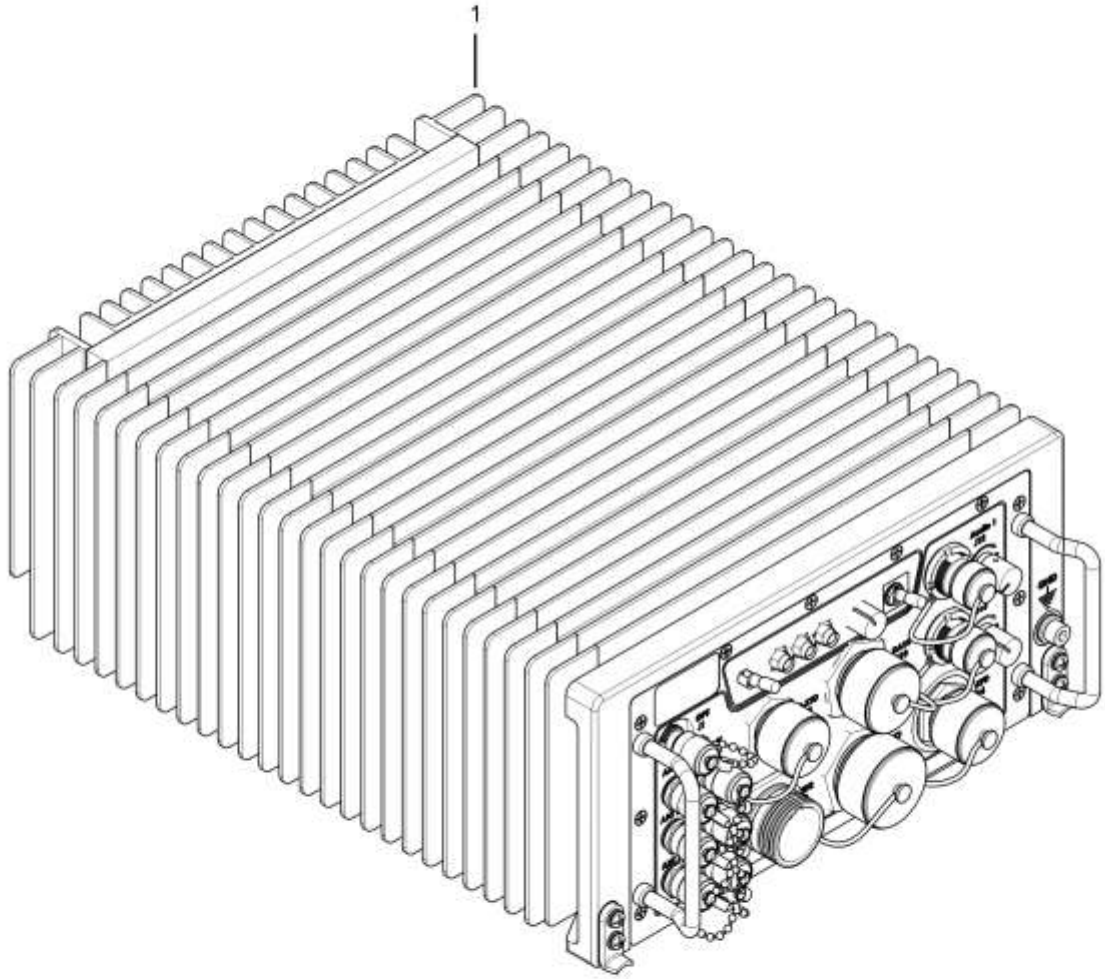

Figure 14-1: IPC – BNET-V 2.1

Table 14-2: IPC – Loudspeaker

No.	Item Name	Description	P/N
1.	Loudspeaker	Military 2 Watt loudspeaker operating in low distortion, and containing a clear audio active amplifier.	2680036326

Figure 14-2: IPC – Loudspeaker

Table 14-3: IPC – Handset

No.	Item Name	Description	P/N
1.	Handset	Microphone-receiver handset for tactical field communications.	2680036546

Figure 14-3: IPC – Handset

Table 14-4: IPC – VHF/UHF Antenna with integrated Passive GPS Antenna

No.	Item Name	Description	P/N
1.	VHF/UHF Antenna	VHF/UHF antenna with integrated passive GPS antenna	AD-18-D-3512

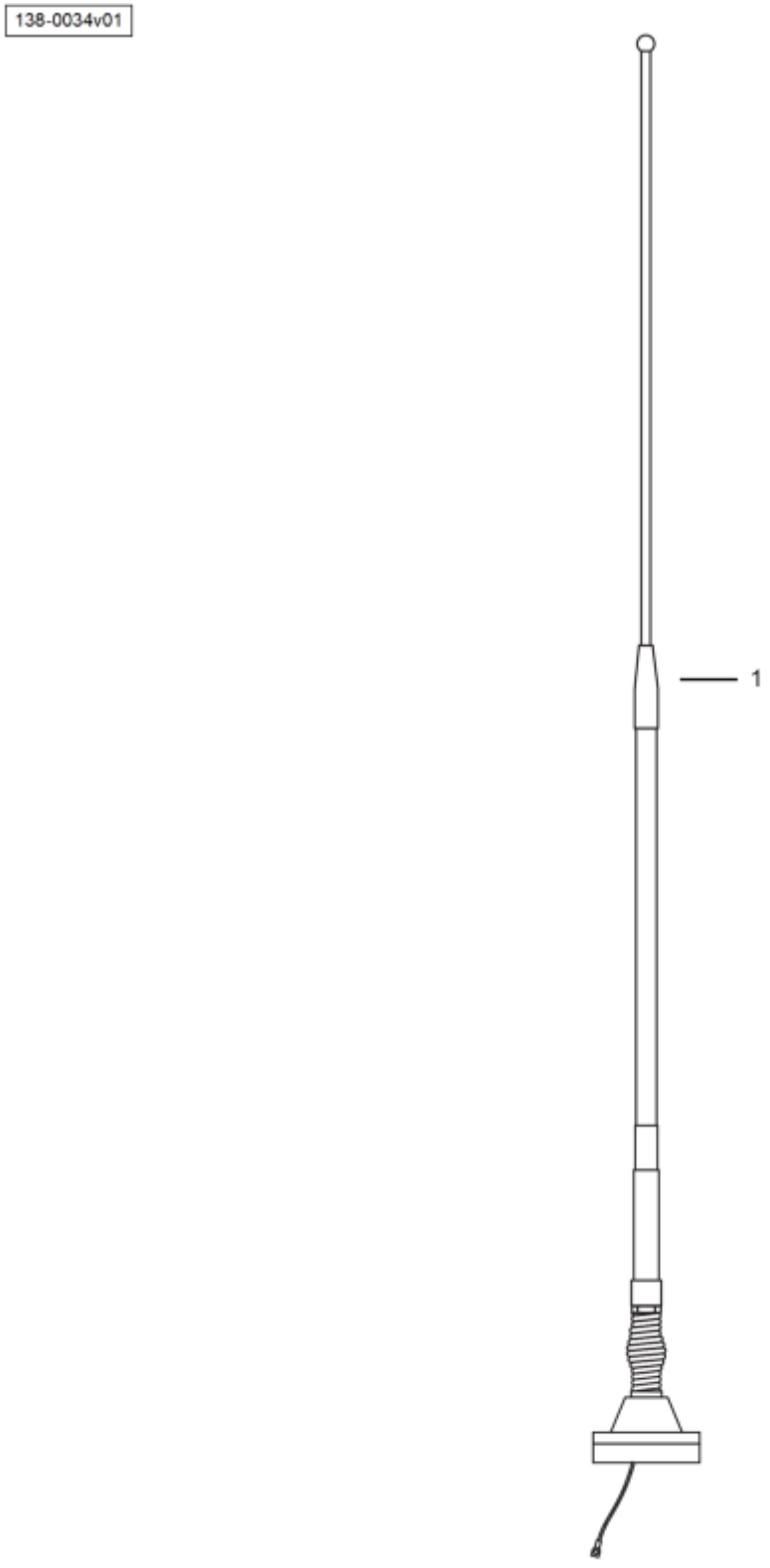

Figure 14-4: IPC – VHF/UHF Antenna with integrated Passive GPS Antenna

Table 14-5: IPC – VHF Antenna with integrated Passive GPS Antenna

No.	Item Name	Description	P/N
1.	VHF Antenna	VHF antenna with integrated passive GPS antenna	AD-18-D-3512

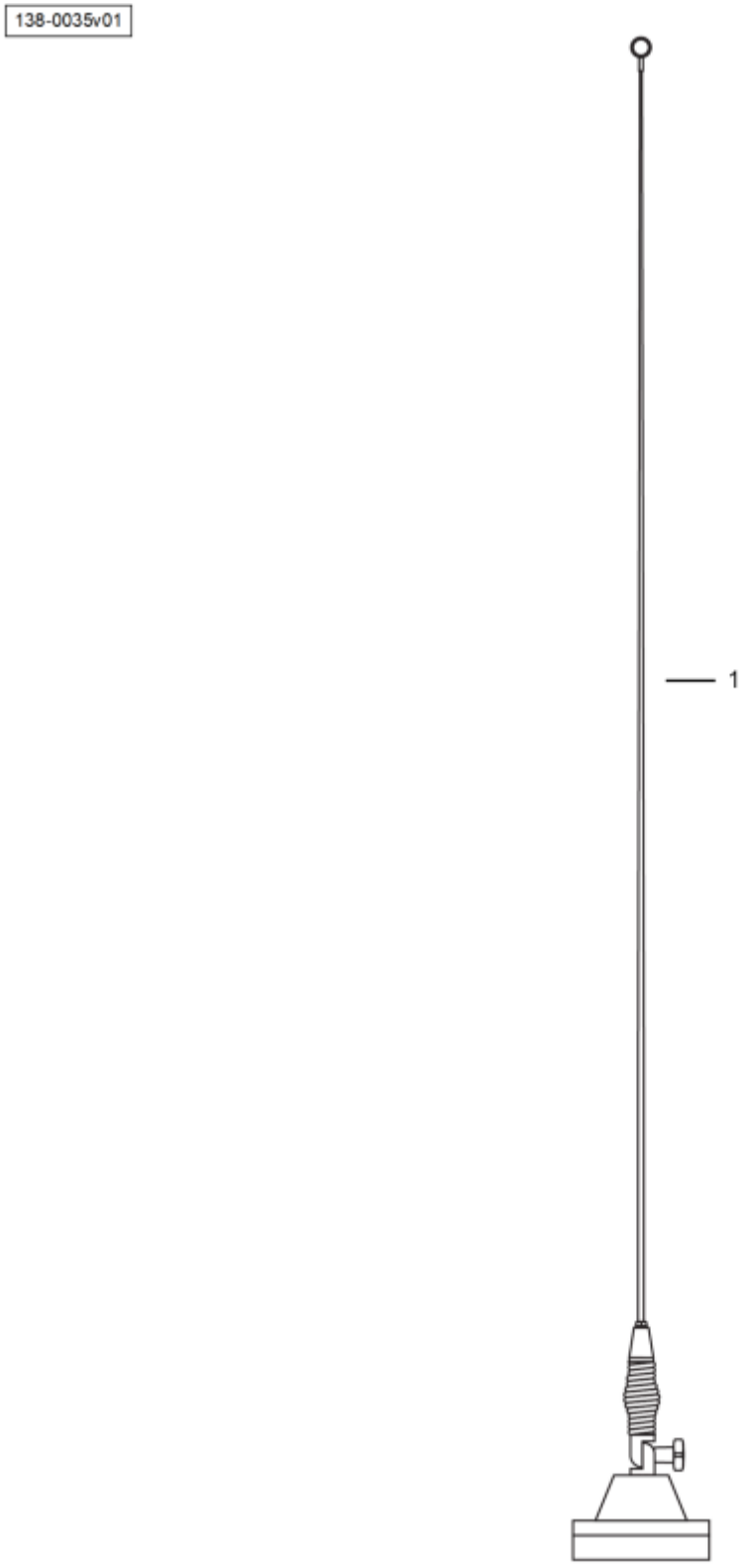

Figure 14-5: IPC – VHF Antenna with integrated Passive GPS Antenna

Table 14-6: IPC – Optional Passive GPS Antenna

No.	Item Name	Description	P/N
1.	GPS Antenna	Passive GPS antenna – mini ARINC configured.	1410236320

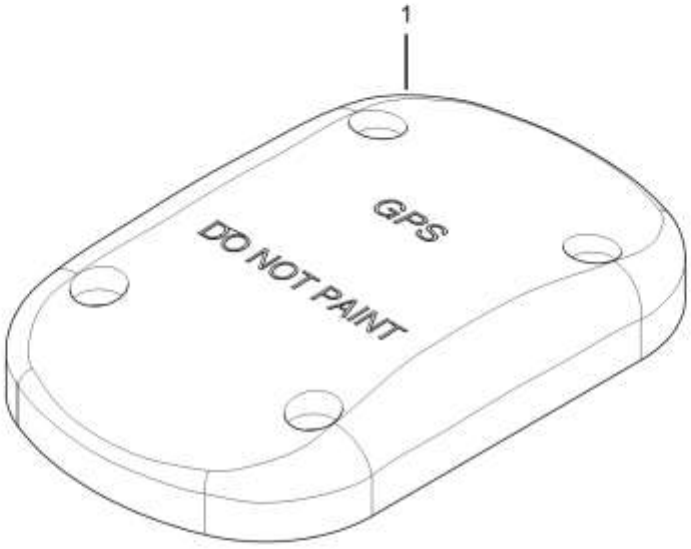

Figure 14-6: IPC – Optional Passive GPS Antenna

Table 14-7: IPC – System Cables

No.	Item Name	Description	P/N
1.	(To be updated)	(To be updated)	(To be updated)

CHAPTER 15

WIRING DIAGRAMS

15.1 SCOPE

This chapter provides wiring diagrams of BNET-V 2.1 system cables.

15.2 WIRING DIAGRAMS

(To be updated)

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