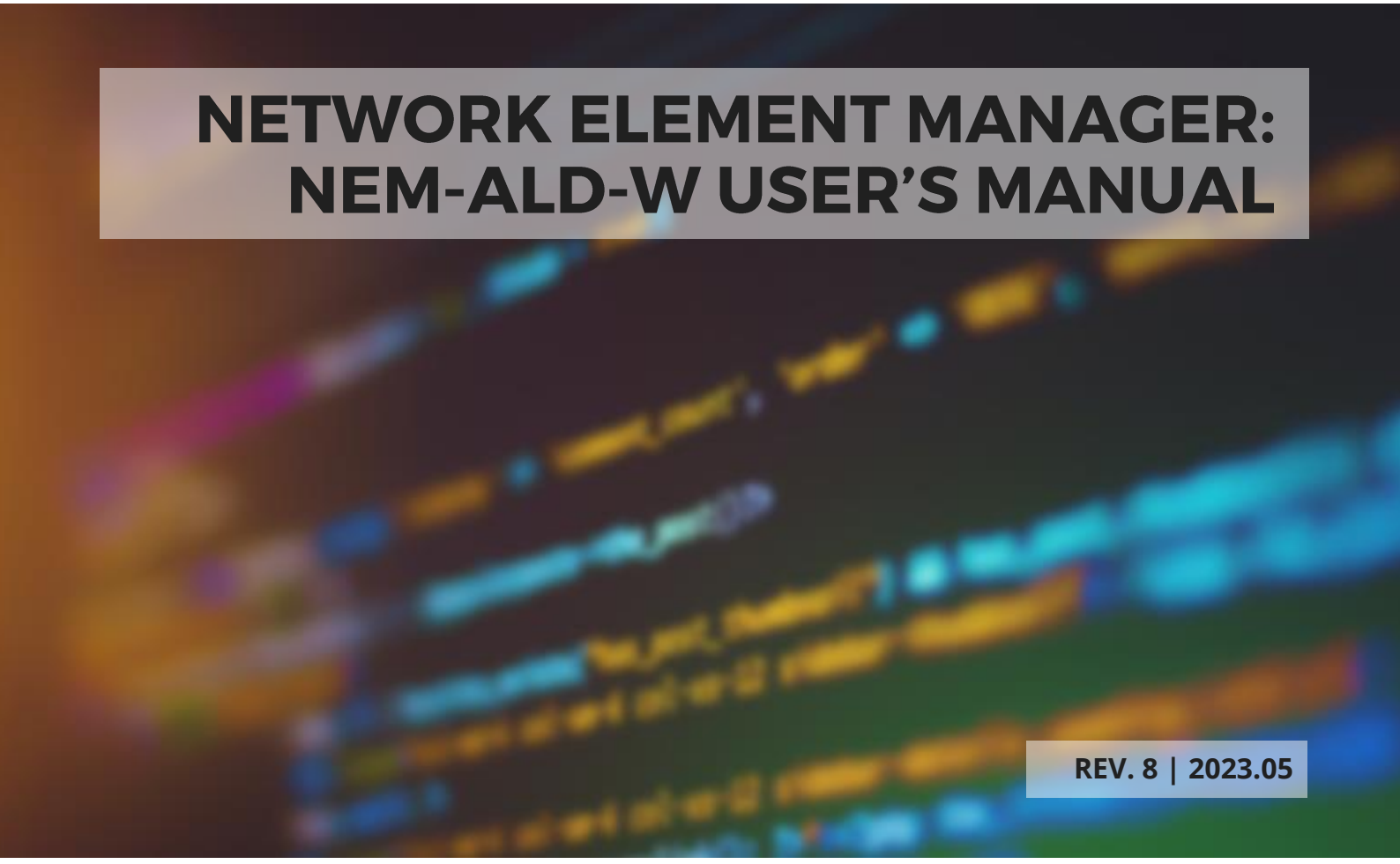
Amphenol
ANTENNA SOLUTIONS

Amphenol Antenna Solutions



NETWORK ELEMENT MANAGER: NEM-ALD-W USER'S MANUAL

REV. 8 | 2023.05

Network Element Manager Software: NEM-ALD-W

SUMMARY

1. General Information 4
1.1 System Overview 4
1.2 Organization of the Manual 4
2. System Summary 4
2.1 System Configuration 4
2.2 Device Types Supported 4
3. Getting started 5
3.1 PA-USB Installation 5
3.2 NEM-ALD-W Download 5
3.3 NEM-ALD-W Installation 6
3.4 First Execution 10
3.4.1 Product License Key 10
3.4.2 Configure COM Port 12
3.5 Views 13
3.5.1 Cell Site View 13
3.5.2 Antenna Tree View 14
3.5.3 ALD View 15
4. Using NEM-ALD-W 16
4.1 Main interface 16
4.1.1 Tool bar 16
4.1.2 Status Bar 17
4.2 Main window 18
4.2.1 Scanning 18
4.2.2 Cell Site 19
4.2.3 AISG Device 20
4.2.3.1 General data section 21
4.2.3.1.1 ALD Software update 22
4.2.3.1.2 User Data 24
4.2.3.2 Specific Data Section 25
4.2.3.2.1 Operator Data Section 26
4.2.3.2.2 Antenna Data Section 27
4.2.3.2.3 RET/MRET Data Section 28

Network Element Manager Software: NEM-ALD-W

4.2.3.2.4 MTS Data Section 30
4.2.3.2.5 TMA Data Section 31
4.2.4 Antennas Tree view 32
4.2.5 Antennas Graphic View 33
4.2.6 Sharing Mode 35
4.2.6.1 Export sharing file 39

Network Element Manager Software: NEM-ALD-W

1. GENERAL INFORMATION

The General Information section explains in general terms the system and the purpose for which it is intended.

1.1 System Overview

The NEM-ALD-W is designed to discover any device connected to an Antenna Line Device (ALD) network. It is compliant with the 3GPP and AISG 2.0 protocols.

Once all devices are discovered and data is collected from the ALD network, the NEM-ALD-W provides different views of the network and allows the user to control the individual devices (RET, MRET, MTS, TMA, RAE).

1.2 Organization of the Manual

The user's manual consists of four sections: General Information, System Summary, Getting Started, and Using NEM-ALD-W.

General Information explains in general terms the system and the purpose for which it is intended.

System Summary provides a general overview of the system. The summary outlines the uses of the system's hardware and software requirements, system's configuration, and system's behavior in case of any contingencies.

Getting Started explains how to acquire the NEM-ALD-W software and install it on a computer. The section briefly presents the system menu.

Using NEM-ALD-W provides a detailed description of the system functions.

2. SYSTEM SUMMARY

This section provides a general overview of the system. The summary outlines the uses of the system's hardware and software requirements, system's configuration, and system's behavior in case of any contingencies.

2.1 System Configuration

The NEM-ALD-W operates on a computer running a Windows® operating system. It is compatible with Windows 7 and higher versions. The application requires a connection to the our USB Protocol Adapter (used as a virtual USB serial COM port). The power can be supplied from the USB Protocol Adapter, or provided from an external source to feed all connected AISG devices (in this case only RS485 A and B lines has to be used). After installation on the computer, the NEM-ALD-W can be used immediately without any further configuration.

2.2 Device Types Supported

The NEM-ALD-W fully supports the following devices compliant with release 6 up to release 13 of the 3GPP standard (TS 25.460, 25.461, 25.462, 25.466) and the AISG 2.0 standard:

- RET (Single Remote Electrical Tilt)
- TMA (Multiple Tower Mounted Amplifier)
- MRET (Multiple Remote Electrical Tilt)
- RAE (Remote eAntenna Extension)

Network Element Manager Software: NEM-ALD-W

In addition, we offers a Mechanical Tilt Sensor (MTS) which is implemented as a standard pseudo RET. A special interface is included that supports all MTS functionality.

In the case of unsupported devices, they will be detected and assigned to a bus address to avoid any conflict with supported devices on the same network.

Other device types can be fully implemented on customer request. Please contact your representative for further details.

3. GETTING STARTED

This section explains how to acquire the NEM-ALD-W software and install it on a computer. The section briefly presents the system menu.

3.1 PA-USB Installation

NEM-ALD-W requires our USB Protocol Adapter.

Before plugging the protocol adapter into the USB port on the PC you need to install the driver first. The driver is available at the following address:

https://www.silabs.com/Support%20Documents/Software/CP210x_Windows_Drivers.zip

Unzip the driver installation file and launch the installation .exe. Once installed, you can now plug our USB Protocol adapter to your PC. Once detected and installed a virtual serial COM port number will be assigned to the protocol adapter.

This port is now ready to be discovered and used by the NEM-ALD-W.

3.2 NEM-ALD-W Download

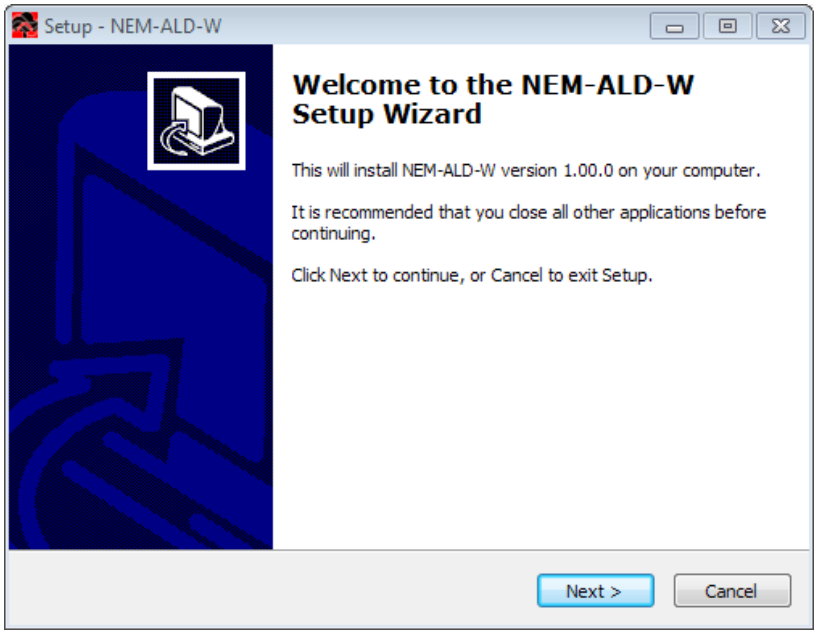
NEM-ALD-W installation setup is available on request from your contact representative or by email to techsupport@amphenol-antennas.com

The most up-to-date software version can be found and it is recommended to make sure you have the latest version before using it.

Network Element Manager Software: NEM-ALD-W

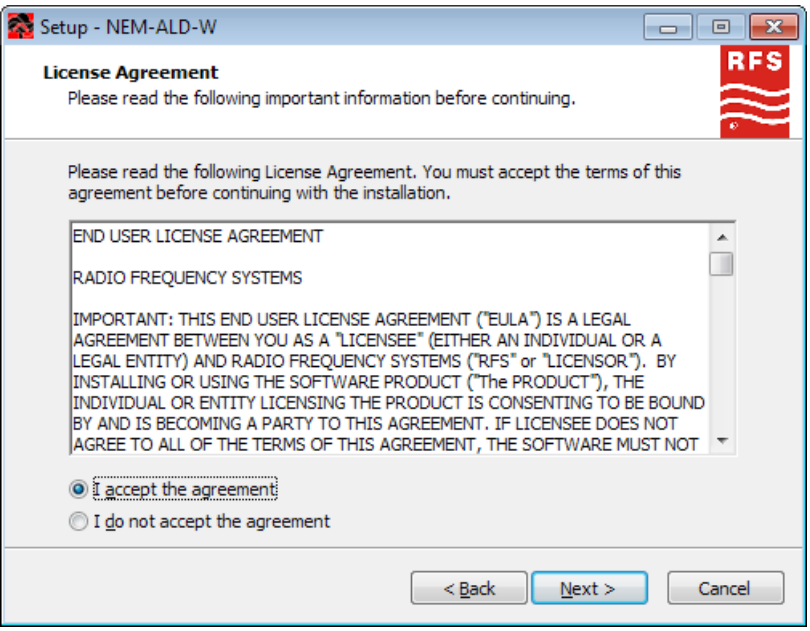
3.3 NEM-ALD-W Installation

Run the setup installation file.



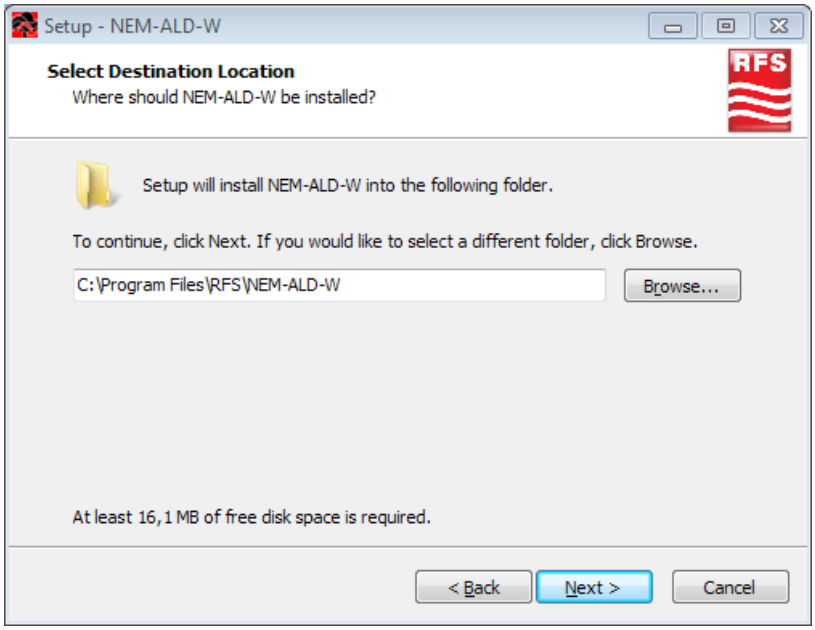
Press the Next button.

.



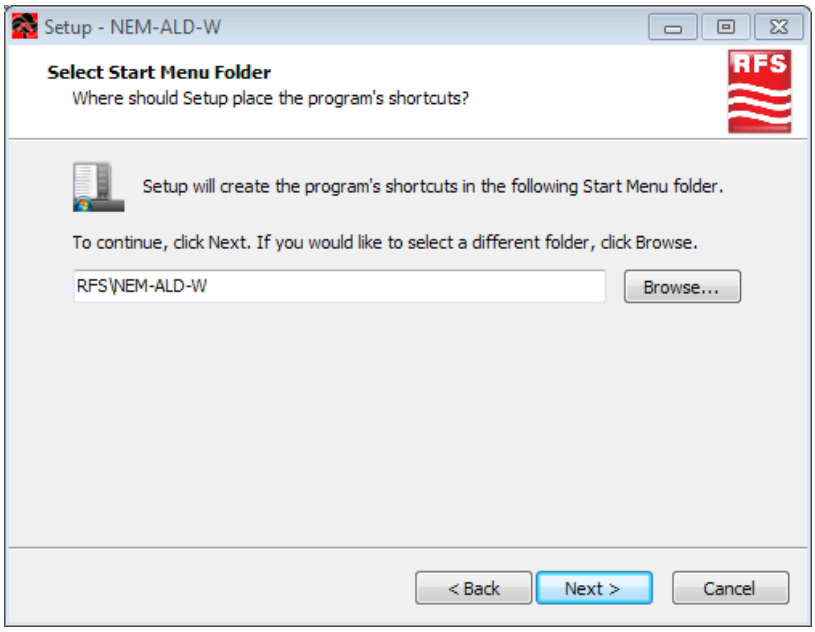
Read and accept EULA, then press the Next button

Network Element Manager Software: NEM-ALD-W



Select installation folder.

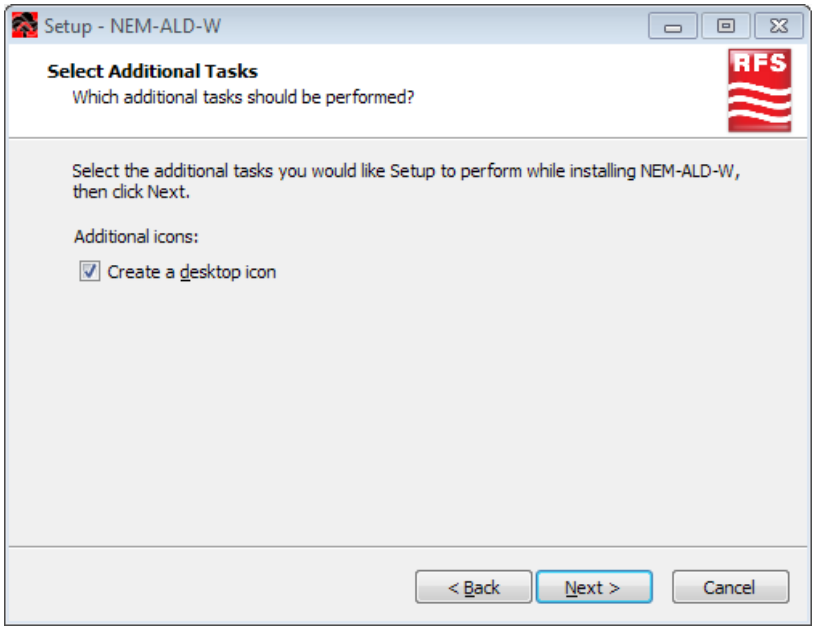
Press the Next button.



Select start menu folder.

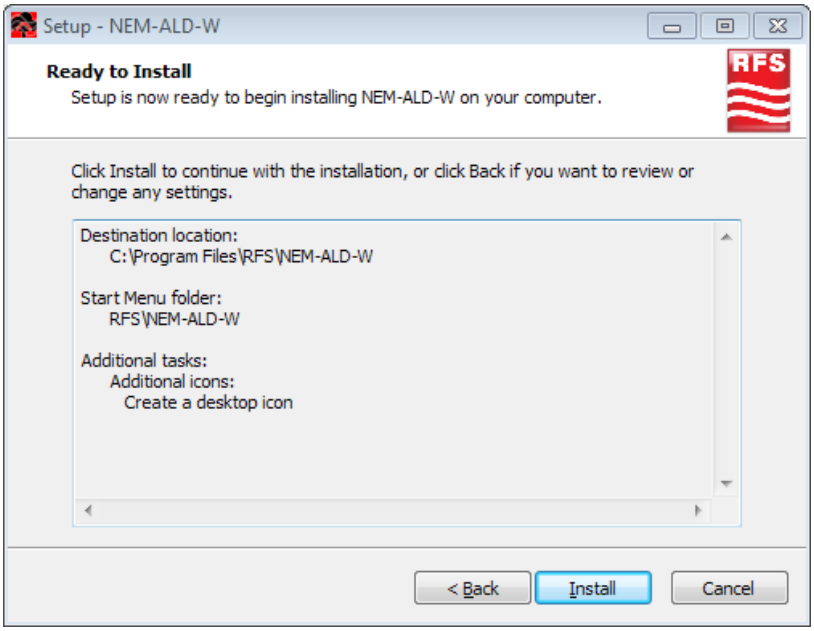
Press the Next button.

Network Element Manager Software: NEM-ALD-W



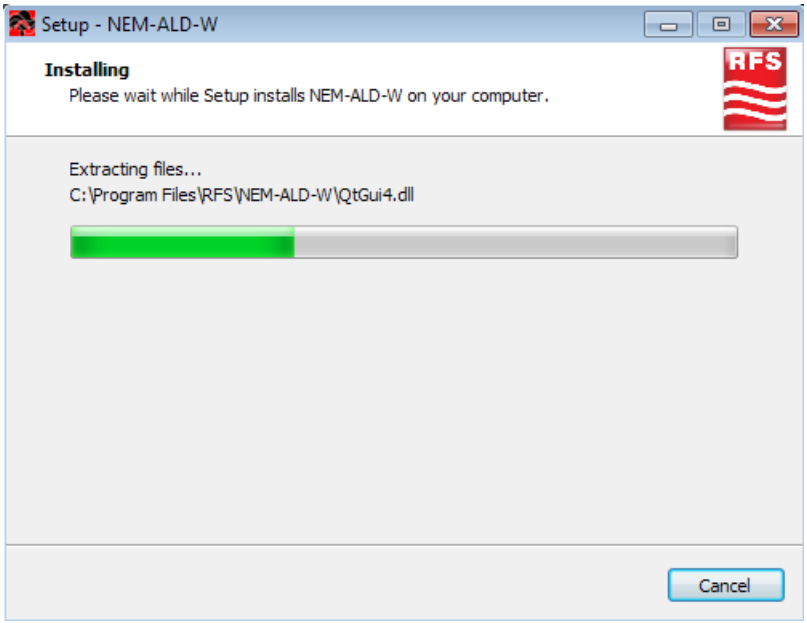
Select if you would like a desktop shortcut icon created.

Press the Next button.

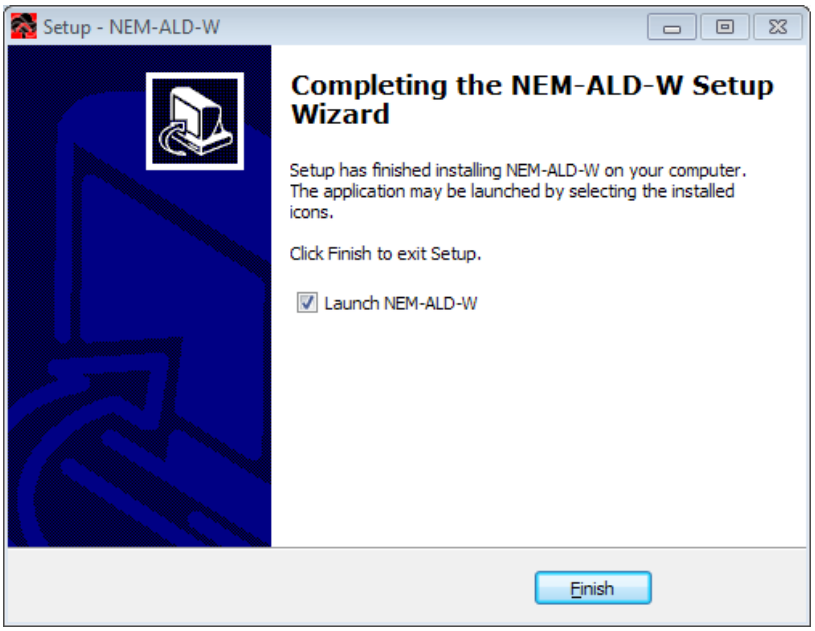


Press the Install button.

Network Element Manager Software: NEM-ALD-W



➔ The setup is installing NEM-ALD-W on the computer…



The installation is complete, select if you want to launch NEM-ALD-W now.

Press the Finish button.

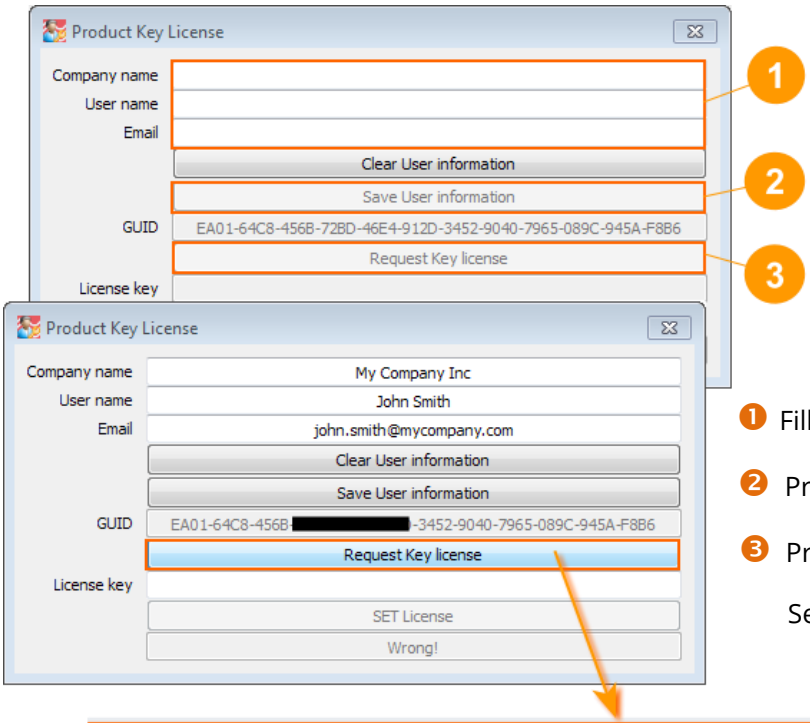
Network Element Manager Software: NEM-ALD-W

3.4 First Execution

On first execution, the NEM-ALD-W will check the product license key and the COM port used.

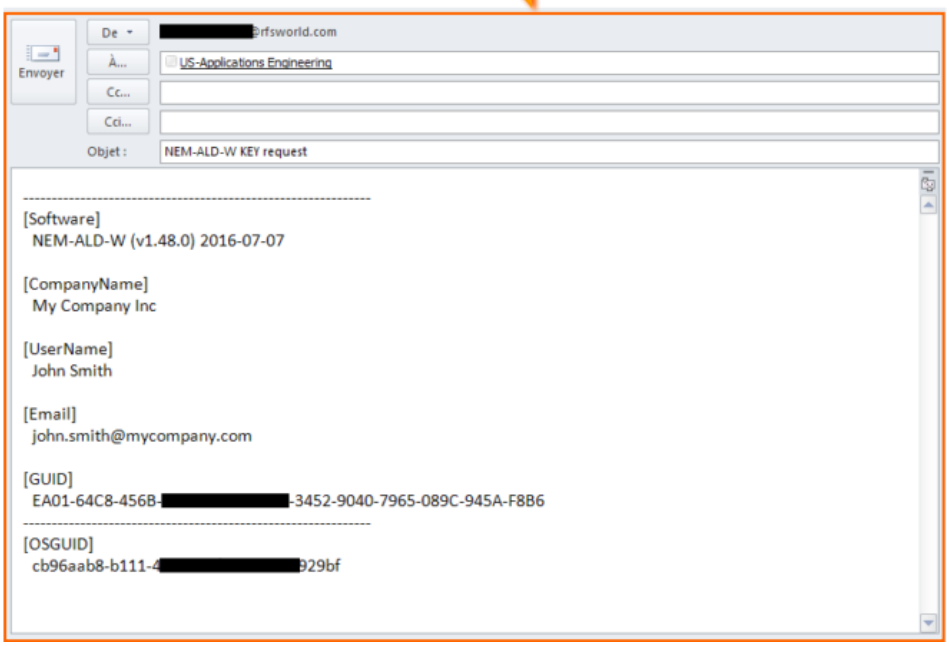
3.4.1 Product License Key

The NEM-ALD-W is secured against copy and distribution and requires a product license.



1. Fill the mandatory data
2. Press Save
3. Press "Request Key License"

   Send it to your contact.

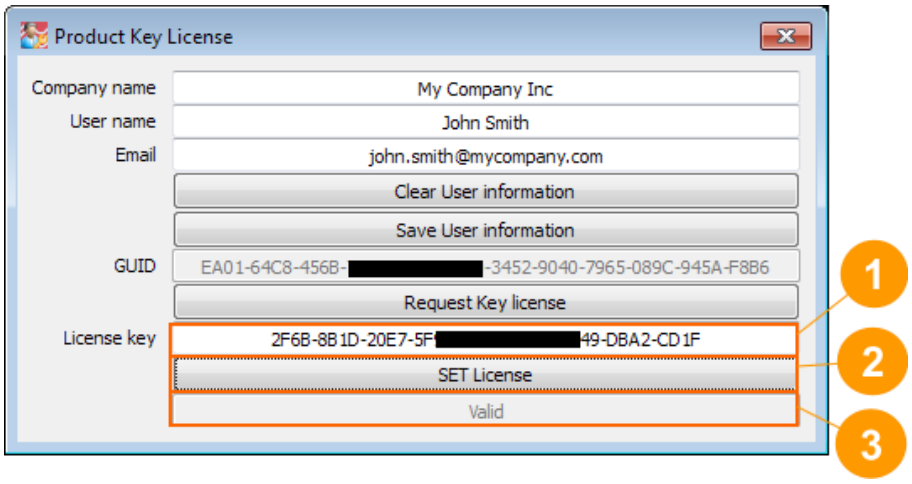


Network Element Manager Software: NEM-ALD-W

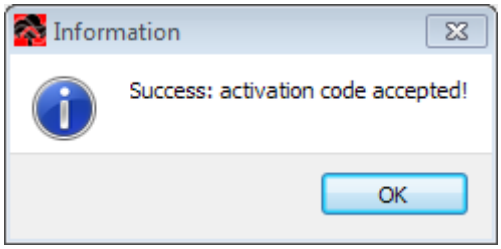
In case there is no email program available, requested data are also stored into the Windows clipboard and you can paste its content (CTRL+V) into a text file

```
----------------------------------------
[Software]
  NEM-ALD-W (v1.10.0) 2015-02-27

[CompanyName]
  My Company Inc

[UserName]
  John Smith

[Email]
  john.smith@mycompany.com

[GUID]
  EA01-64C8-456B-##############-3452-9040-A917-C05C-C40D-B0F6
----------------------------------------------------------
[OSGUID]
  cb96aab8-b111-4################929bf
```

Once Product Key License has been received from your contact, enter it into the Product Key License dialog box:



Once correctly set ❶, the 'SET License' button is enabled and you can press it ❷ and check the result "Valid" ❸ and with pop-up window information.



Network Element Manager Software: NEM-ALD-W

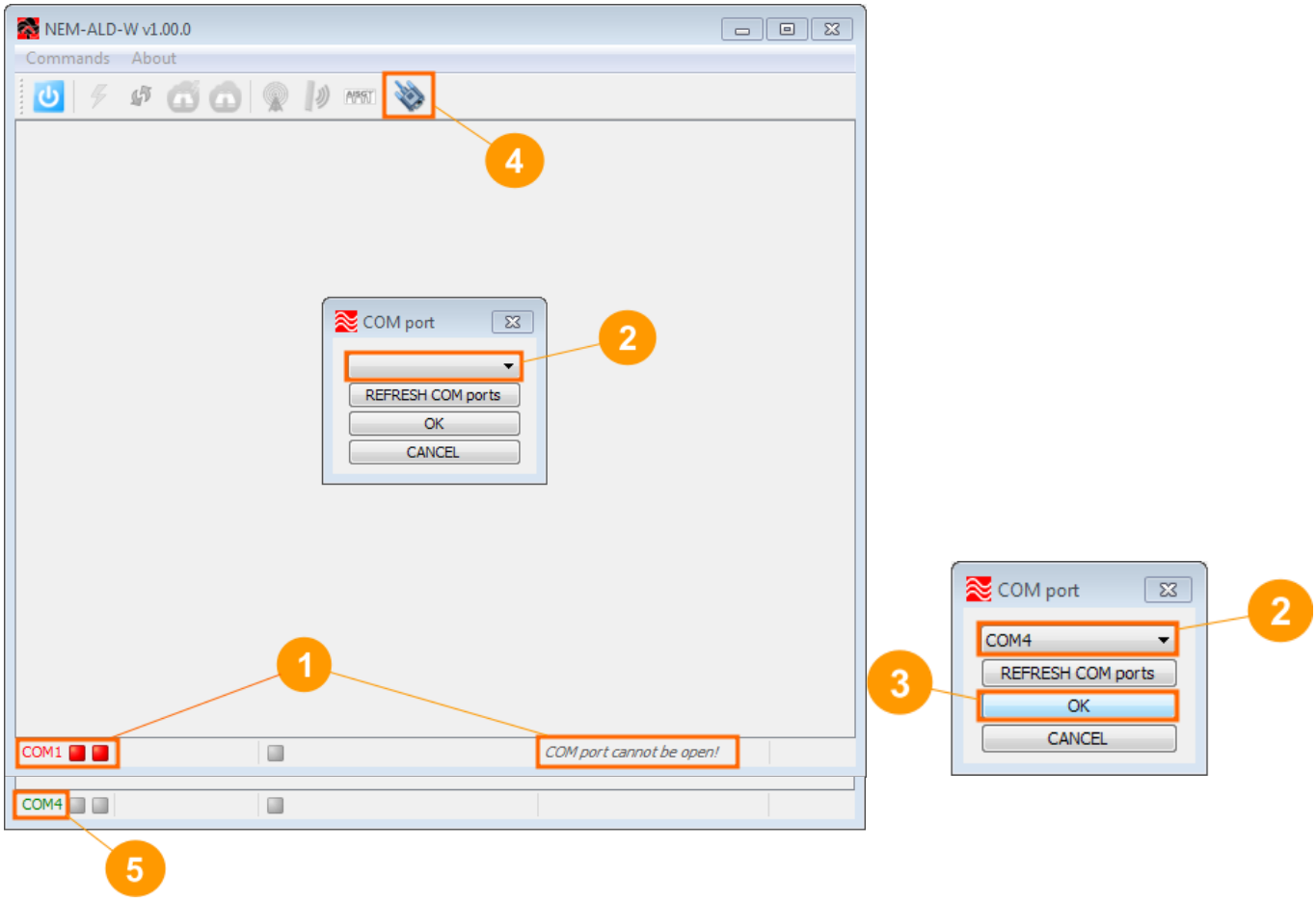
3.4.2 Configure COM Port

On first execution the NEM-ALD-W scans all virtual COM ports that are compatible with our USB Protocol adapter to communicate with the ALD. If only one protocol adapter is connected and correctly installed the user has nothing to configure.

If no COM port can be opened ❶ the NEM-ALD-W will provide a drop-down list ❷ and ask the user to select the correct one. Once selection is set ❸ it will be saved and restored each time the NEM-ALD-W is launched.

The user can select a new COM port ❹ at any time. The last COM port selection will always be restored the next time NEM-ALD-W is started.

In the lower left corner of the application the successfully opened COM port is displayed in green❺.



Network Element Manager Software: NEM-ALD-W

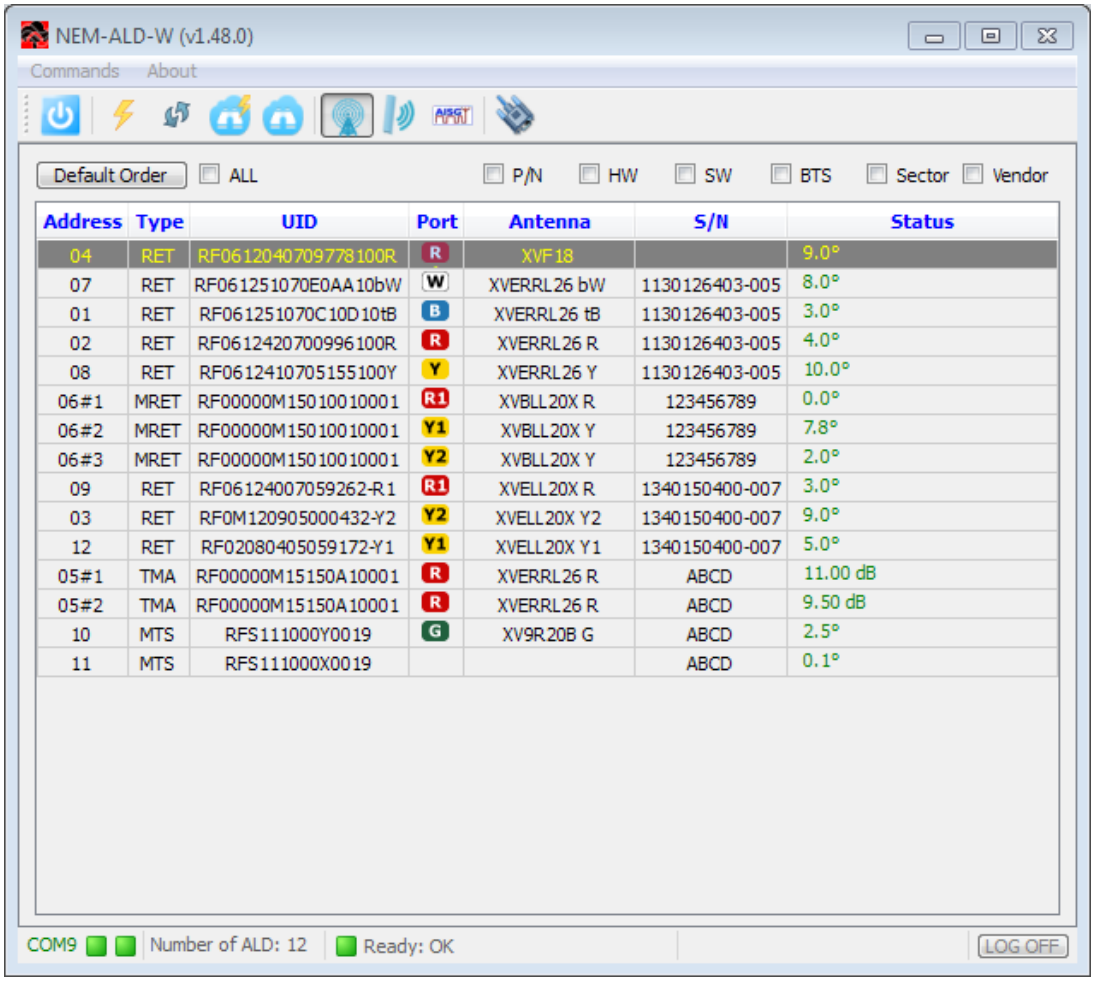
3.5 Views

Once the ALD network has been discovered, the NEM-ALD-W provides different views and control access to the user from all data collected. These views are selectable by the user and navigation is synchronized between them.

3.5.1 Cell Site View

Cell site view lists all devices and sub-devices in one global table. By default, the table is sorted first by device type, and then by Unique ID. The user can sort the table by clicking any of the column headers.

A double click on any line will display a detailed ALD view with controls for programming and testing.



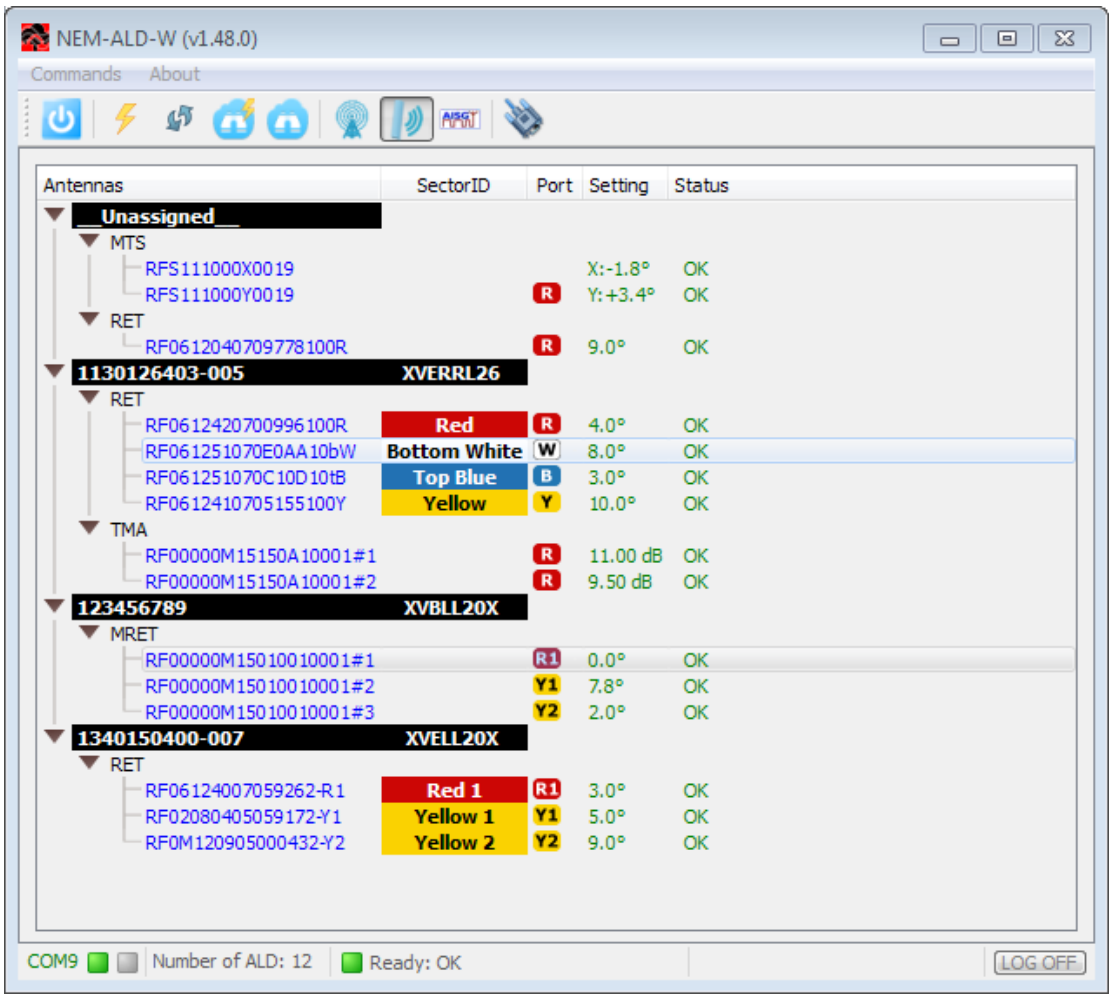
Address	Type	UID	Port	Antenna	S/N	Status
04	RET	RF061204070977 8100R	R	XVF18		9.0°
07	RET	RF061251070E0AA10bW	W	XVERRL26 bW	1130126403-005	8.0°
01	RET	RF061251070C10D10tB	B	XVERRL26 tB	1130126403-005	3.0°
02	RET	RF061242070099 6100R	R	XVERRL26 R	1130126403-005	4.0°
08	RET	RF061241070515 5100Y	Y	XVERRL26 Y	1130126403-005	10.0°
06#1	MRET	RF00000M15010010001	R1	XVBLL20X R	123456789	0.0°
06#2	MRET	RF00000M15010010001	Y1	XVBLL20X Y	123456789	7.8°
06#3	MRET	RF00000M15010010001	Y2	XVBLL20X Y	123456789	2.0°
09	RET	RF06124007059262-R1	R1	XVELL20X R	1340150400-007	3.0°
03	RET	RF0M120905000432-Y2	Y2	XVELL20X Y2	1340150400-007	9.0°
12	RET	RF02080405059172-Y1	Y1	XVELL20X Y1	1340150400-007	5.0°
05#1	TMA	RF00000M15150A10001	R	XVERRL26 R	ABCD	11.00 dB
05#2	TMA	RF00000M15150A10001	R	XVERRL26 R	ABCD	9.50 dB
10	MTS	RFS111000Y0019	G	XV9R20B G	ABCD	2.5°
11	MTS	RFS111000X0019			ABCD	0.1°

Note: additional fields can be displayed from the top selection boxes.

Network Element Manager Software: NEM-ALD-W

3.5.2 Antenna Tree View

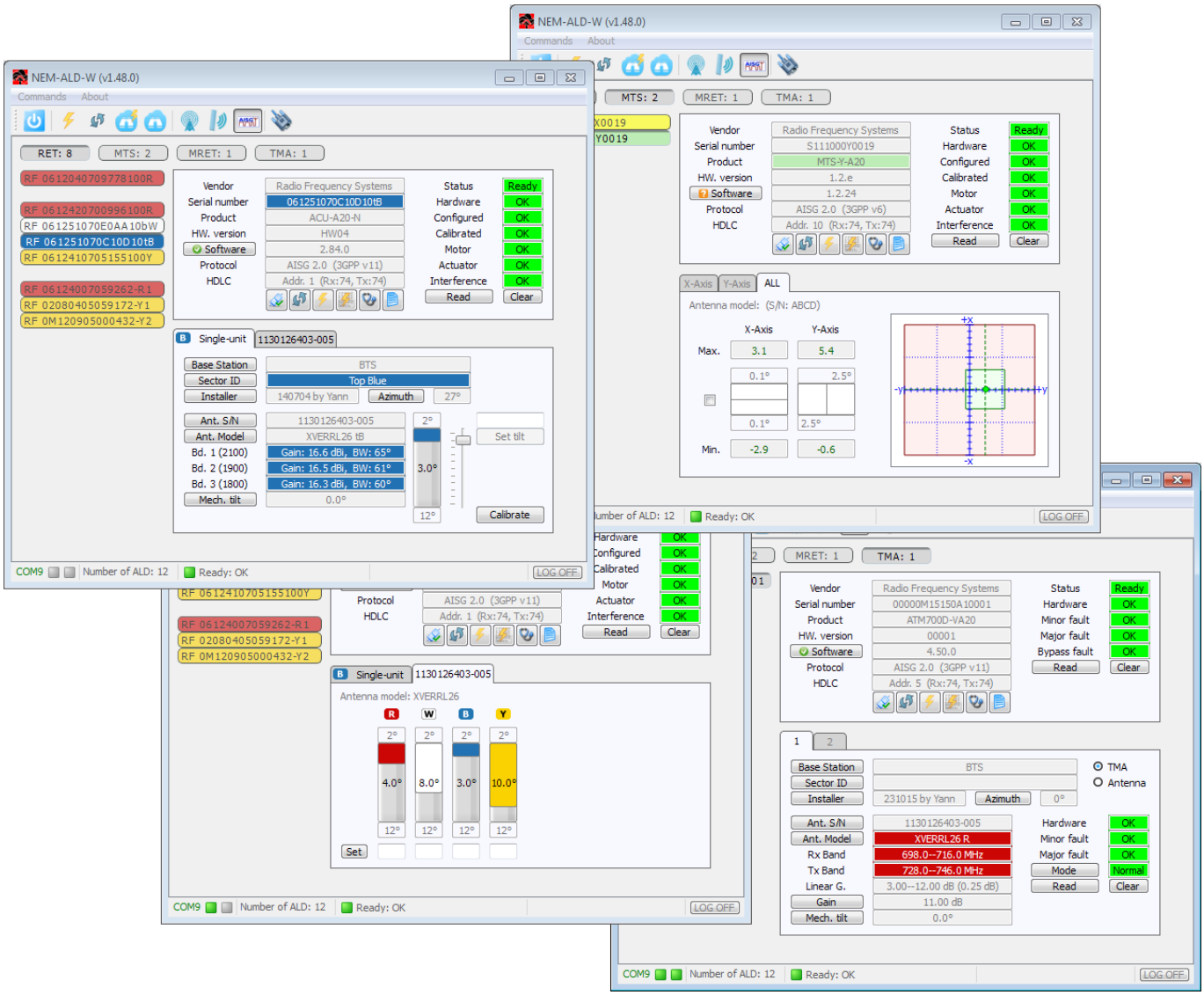
Antenna tree view regroups all devices and sub-devices assigned to one antenna. An antenna is identified by its serial number.



Network Element Manager Software: NEM-ALD-W

3.5.3 ALD View

ALD view shows all details and AISG controls of the currently selected ALD. Each ALD type has a specific view:



Network Element Manager Software: NEM-ALD-W

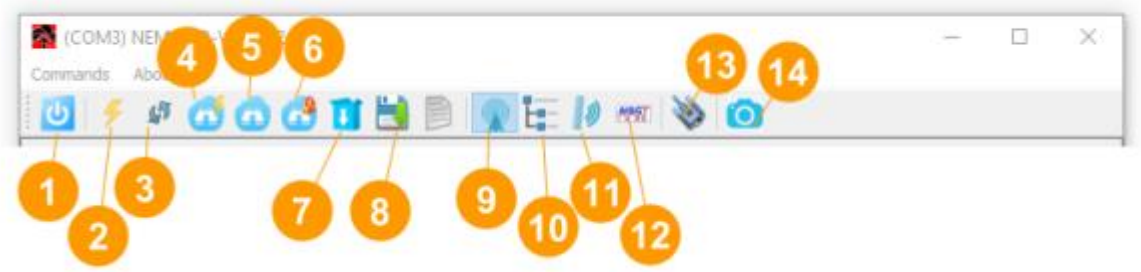
4. USING NEM-ALD-W

This section provides a detailed description of the system functions. It describes the organization of the tool, menus, views, how to discover the ALD network, control devices, configure antennas and organize the cell site.

4.1 Main interface

The main actions that impact the AISG network are accessible from the toolbar or 'Commands' top menu. The current status of the AISG network is displayed to advise the user about the communication status, number of ALDs present, ready and other specific information when applicable.

4.1.1 Tool bar



1. Quit the NEM-ALD-W application (Ctrl+Q)
2. Reset all ALDs in the AISG network (Ctrl+R)
3. Reload all data from all ALDs in the AISG network (Ctrl+L)
4. Reset & scan all ALDs in the AISG network (Ctrl+S)
5. Scan any new (no-addressed) ALD connected to the network (Ctrl+N)
6. Scan only ALD locked on the network (Ctrl+O)
7. ALD site Firmware download (Ctrl+F)
8. Export into .csv file the entire site discovered (CTRL+X)
9. Main cell site table view (CTRL+C)
10. Tree view list of all Antennas with all assigned ALDs (Ctrl+A)
11. Graphic view of all Antennas (Ctrl+A)
12. Detailed view of ALD (Ctrl+D)
13. COM port selection (CTRL+P)
14. Snapshot of current view

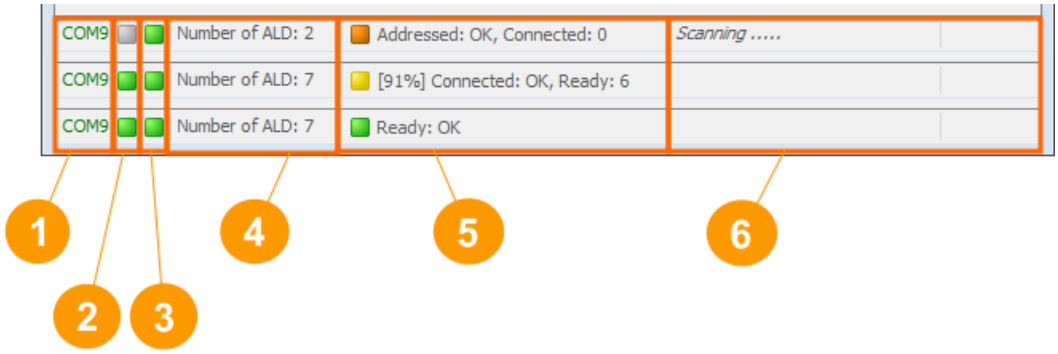
Note: in addition to keyboard shortcut (CTRL+key) available at any time, pressing the 'Alt' key allows underlined key letters to be pressed for keyboard navigation within the menu.

Network Element Manager Software: NEM-ALD-W

4.1.2 Status Bar

The bottom status bar provides information about the status of the COM port, transmit/receive AISG activity, number of ALDs identified, main status of all ALDs, and other specific information when applicable.

The status bar organization:



❶ COM port: port number is **green** when COM port is open, else it is **red**.

❷ Transmit line activity.

❸ Receive line activity.

no HDLC message
Addressed HDLC message
Broadcast HDLC message
No-address HDLC message
HDLC message with CRC error

❹ Current number of ALDs discovered.

❺ Current global status of the AISG network in the following steps:

1 or more ALDs not connected
All ALDs addressed
All ALDs connected + current database progress (%)
All ALDs ready

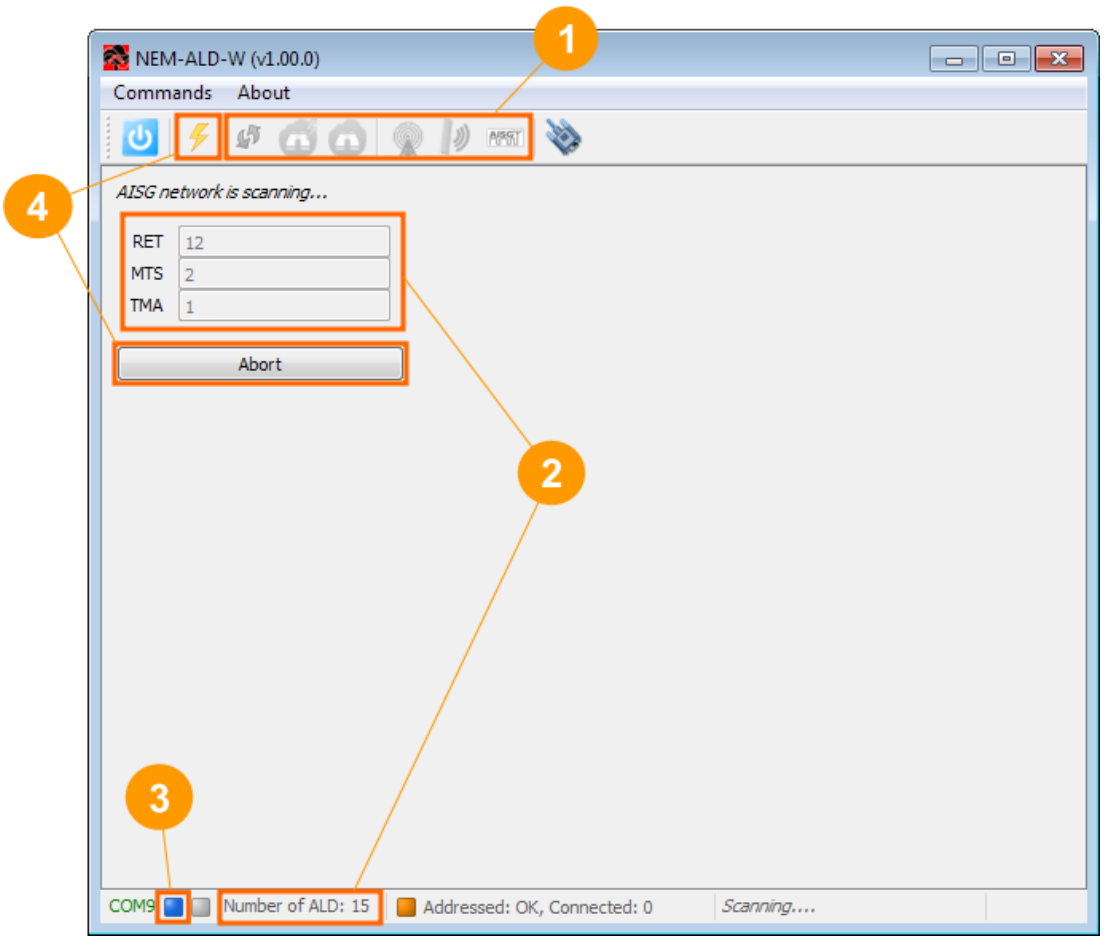
❻ Specific context message when applicable.
(e.g. "Scanning ....", "Resetting...", "RET 3 is tilting to 5.0°...")
(e.g. "Scanning ....", "Resetting...", "RET 3 is tilting to 5.0°...")

Network Element Manager Software: NEM-ALD-W

4.2 Main window

4.2.1 Scanning

The first operation is to scan the AISG network to discover all ALDs. This operation is launched automatically on NEM-ALD-W start-up if the COM port has already been selected and successfully opened. In addition, it can be requested at any time by the user (for more details please refer to chapter "Tool bar").



While the scan is running:

❶ ... most operations are disabled

❷ ... the current total number of ALDs of each device type are live updated

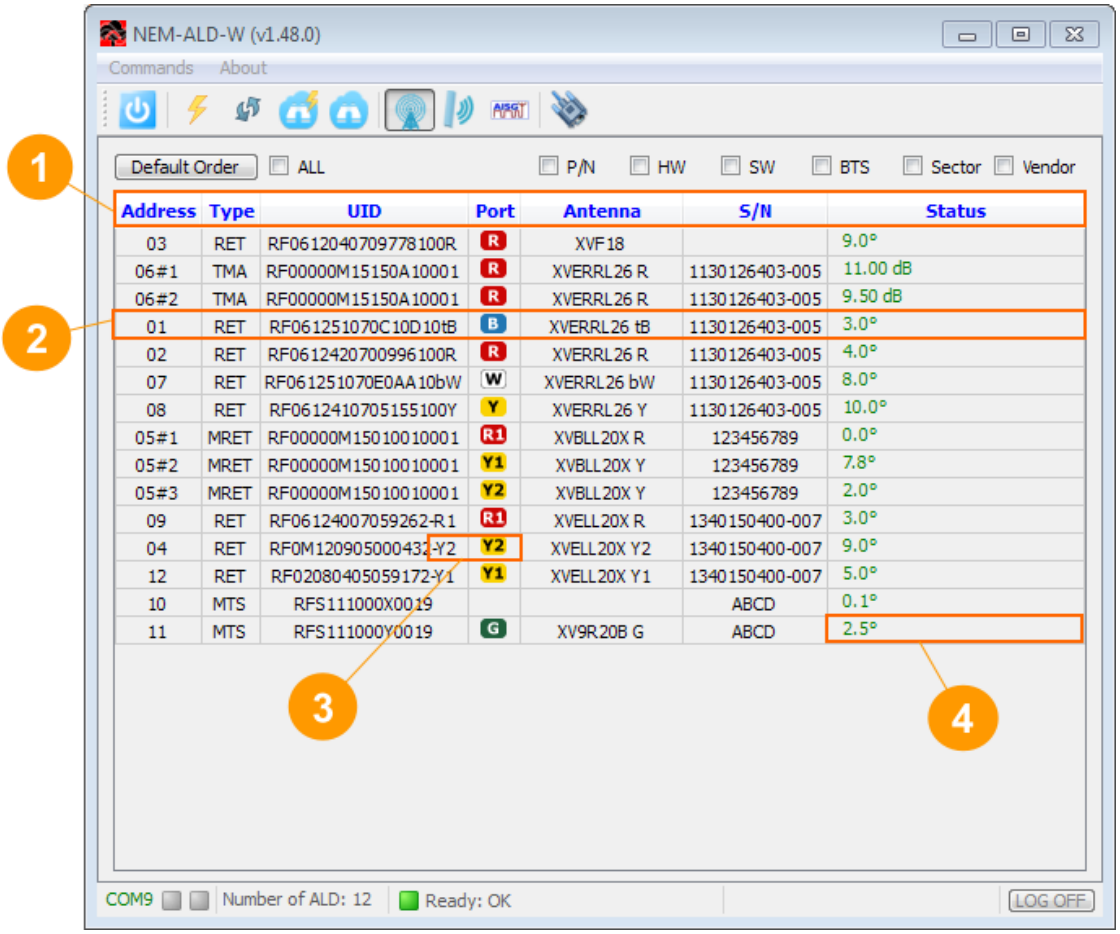
❸ ... broadcast XID scanning/addressing messages are sent (some collisions are expected)

❹ When 'Abort' or 'Reset all' is requested by the user then it stops the scanning operation. The AISG network discovered up to that point is not lost, and the database building operation starts with all ALD found.

Network Element Manager Software: NEM-ALD-W

4.2.2 Cell Site

Once the scanning operation has been executed or Cell site view has been selected by the user, the list of all discovered devices is displayed:



❶ When the user clicks on a column title the table is sorted* according to it:

Address	HDLC address. In case of multi device the subunit index ***n*** is added (***#n***)
Type	AISG/3GPP device type acronym
UID	Unique ID = concatenation of 2-ASCII vendor code and ALD serial number
Port	AISG port (AISG Antenna Port Color Coding v 2.0)
Antenna	Antenna model (AISG/3GPP additional data 0x01)
S/N	Antenna serial number (AISG/3GPP additional data 0x02)
Status	Current main status of ALD

** The default sorting order is by antenna S/N, then by port number (press the left top button).*

❷ A double click on any ALD line will open the detailed view for that ALD.

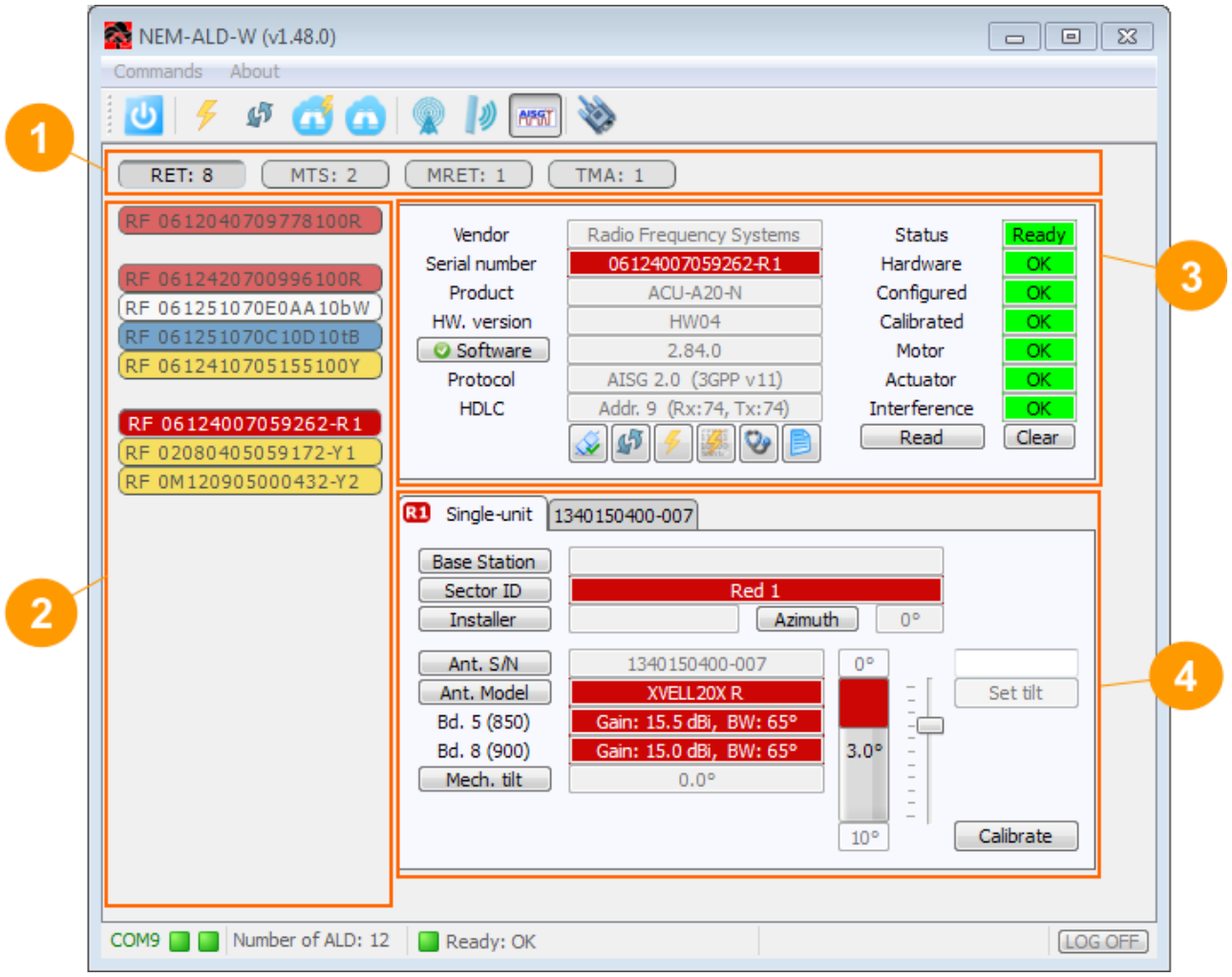
❸ The antenna column supports color coding Red, Green, Blue and Yellow if supported by device. Else, if "Sector ID" contains these reserved color names 'Red', 'Green', Blue', 'White' or 'Yellow', the color will also be applied.

❹ If an alarm is set then the text is displayed in red or in orange, else the status is green.

Network Element Manager Software: NEM-ALD-W

4.2.3 AISG Device

The AISG device view is divided into 4 sections:



❶ Device type selection: total count of ALDs per device type is indicated. If a button is outlined in red then at least one alarm is activated in the corresponding device type list.

❷ List of all ALD serial numbers for the selected device type. If a button is outlined in red then at least one alarm is activated for that device. RETs are regrouped by antenna serial number if information is available.

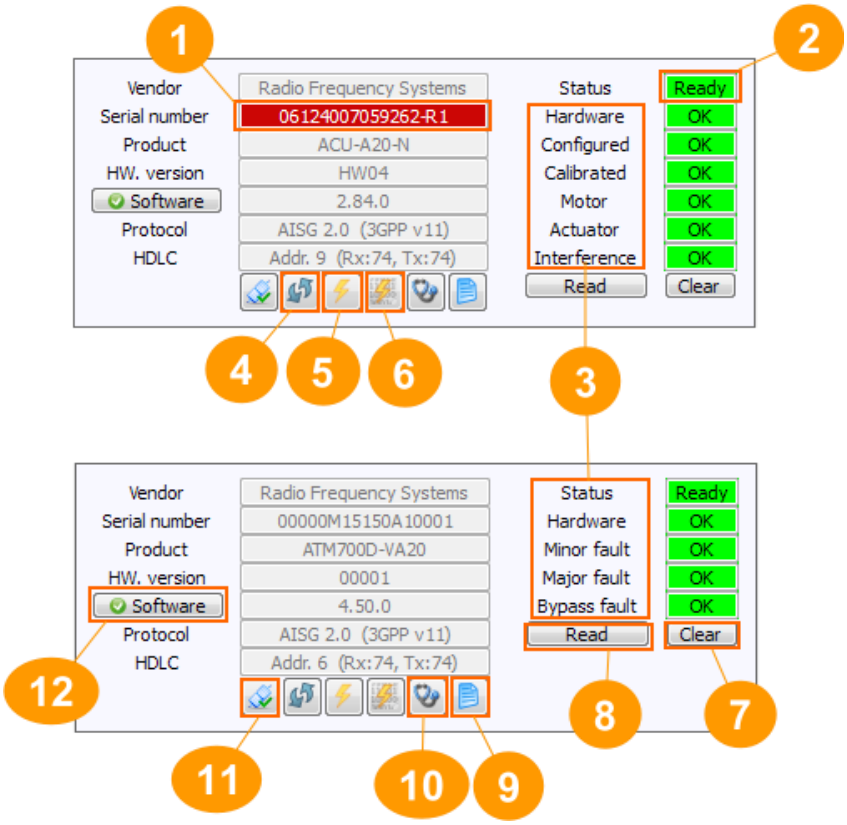
❸ General data and controls for the selected device.

❹ Specific data and controls for the device or the subunit of the selected device.

Network Element Manager Software: NEM-ALD-W

4.2.3.1 General data section

This section is common to every ALD device:



1. Device serial number: if RET then "AISG Antenna Port Color Coding v 2.0" is applied.
2. General status of ALD: "Ready" means ALD is connected and all data read
3. List of applicable alarm codes for device type and status for each alarm
4. Reload all ALD data
5. ALD hardware reset (AISG/3GPP command 'XID Reset')
6. ALD software reset (AISG/3GPP command 'ResetSoftware' 0x03)
7. Clear all device alarms (AISG/3GPP command 'ClearActiveAlarms' 0x06)
8. Read current alarm status on user request (status is maintained by Alarm Indication)
9. Read/Write User Data
10. ALD self-test (AISG/3GPP command 'SelfTest' 0x0A)
11. Enable/Disable polling RR-frame
12. ALD software update

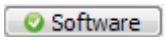
Network Element Manager Software: NEM-ALD-W

4.2.3.1.1 ALD Software update

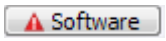
The ALD software can be updated when the user clicks on the "SW update" button from the general data section.

The software section is organized by vendor and the NEM-ALD-W supports the XML file distribution format specified by AISG group. In the installation folder there is a folder "Embedded Software Files". It contains at least our folder designed by the AISG vendor code "RF". All latest software versions of all ALD must be placed in this folder.

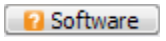
The "Software" button shows different icons:



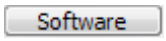
Latest known software is loaded (when .XML file exists only)



A more recent software is available (when .XML file exists only)



.XML file is missing for this device type

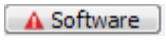


No device and no .XML file exists

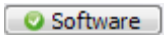
If additional vendor .XML files exist, create a dedicated folder in addition to "RF" with the 2-character ASCII AISG vendor code. Place .XML files into this folder and restart the NEM-ALD-W.

Additional folders named by AISG device type acronym ("RET", "MRET", "TMA"…) can be added into the vendor folder. Only the .xml or .bin extensions are supported.

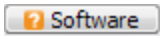
When the "Software" button is pressed the NEM-ALD-W behaves in different way:



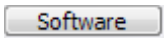
By default the latest known software in the XML file will be loaded



Are you sure?

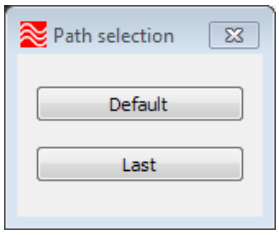


Select folder

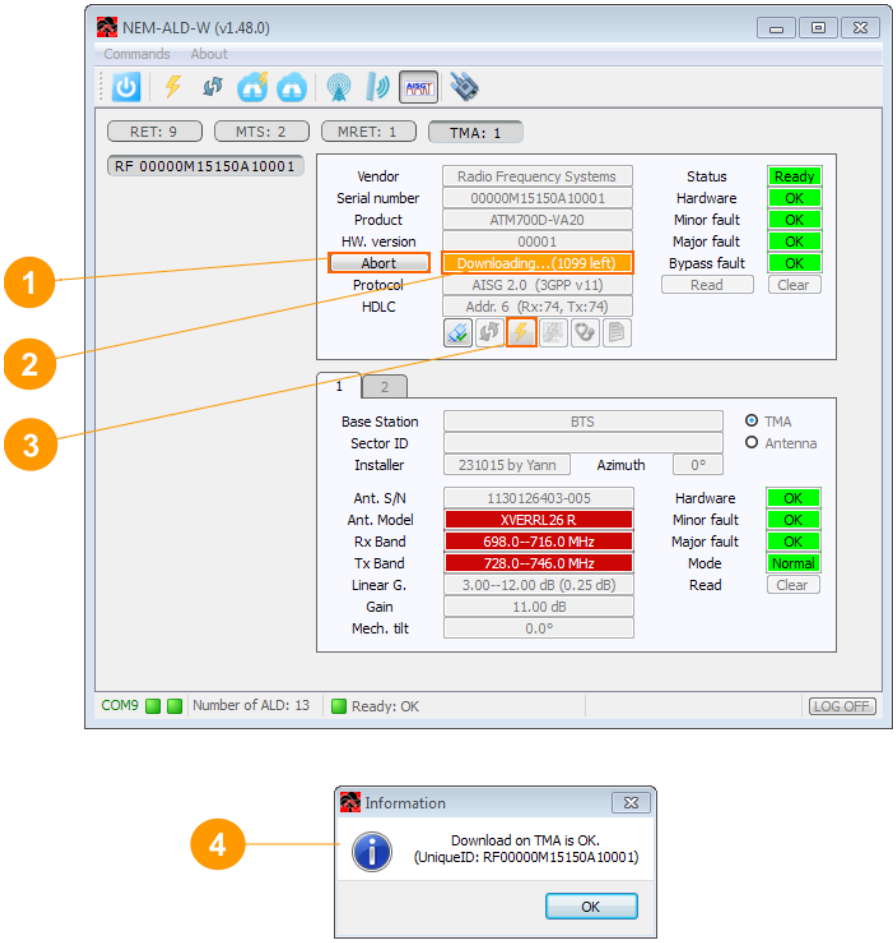


Select folder

The first time the NEM-ALD-W selects the default installation folder. If you can select another path, it will be stored for the next time, even after the NEM-ALD-W has been restarted.



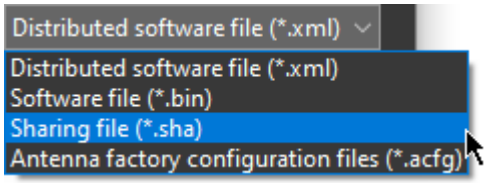
Network Element Manager Software: NEM-ALD-W



1. AISG/3GPP command 'Download End' 0x42 to abort ongoing download.
2. Downloading progress indicating number of I-Frame buffered.
3. AISG/3GPP command 'XID Reset' (will abort also the download)
4. Result of downloading

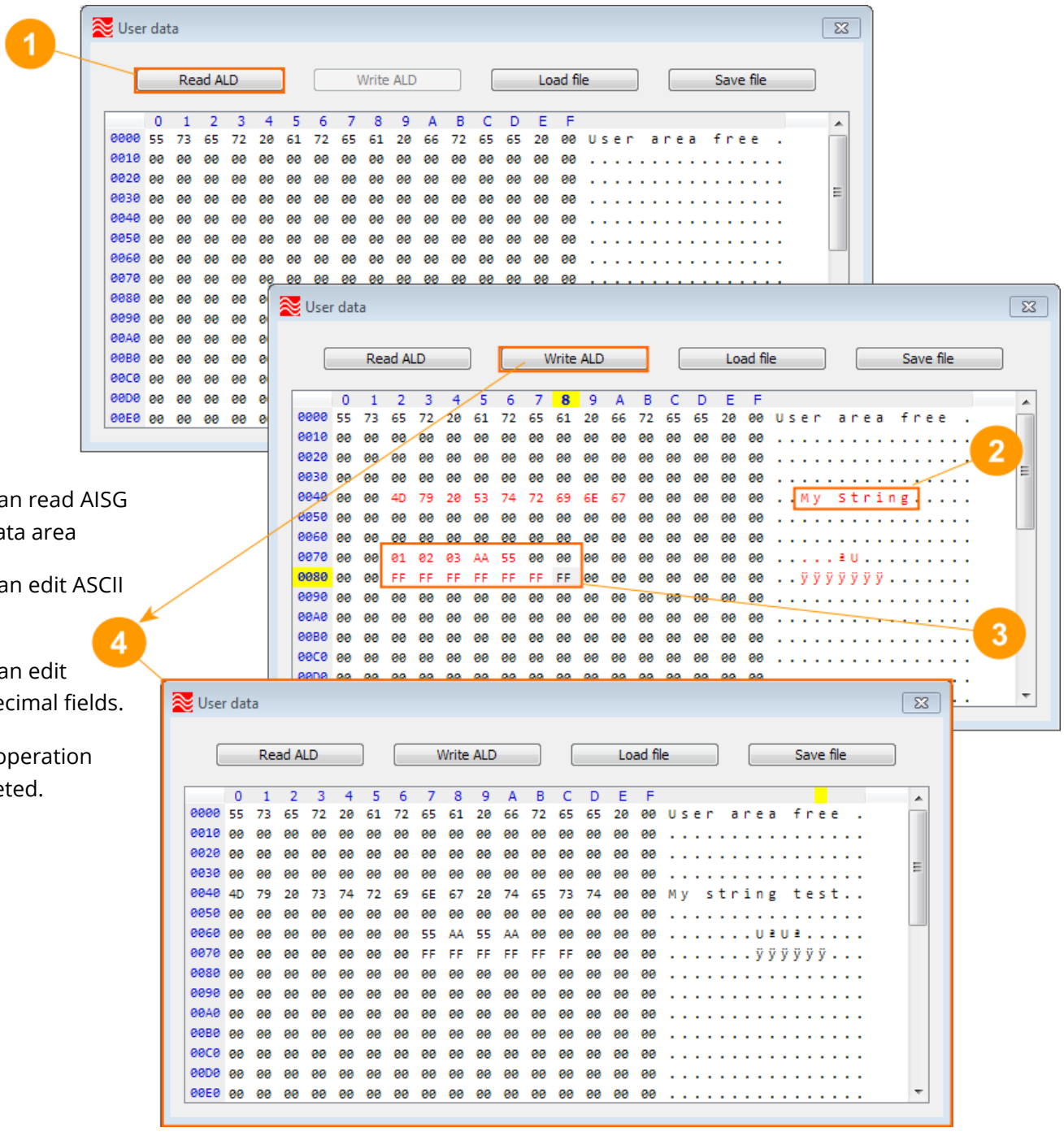
Note: some of our devices can support fast download using vendor specific commands at 115200 baud.

Note: our ACU-X20 product, which is Dual-primary capable, allow to download more than the FW file: it can download a sharing SHA file (see chapter 4.2.6 Sharing mode) and it can download a CFG file to configure the ACU-X20 product for a specific antenna model (in case we replace a defective ACU-X20 product we can replace it by any new product and download CFG file to configure it to the antenna model used).



Network Element Manager Software: NEM-ALD-W

4.2.3.1.2 User Data



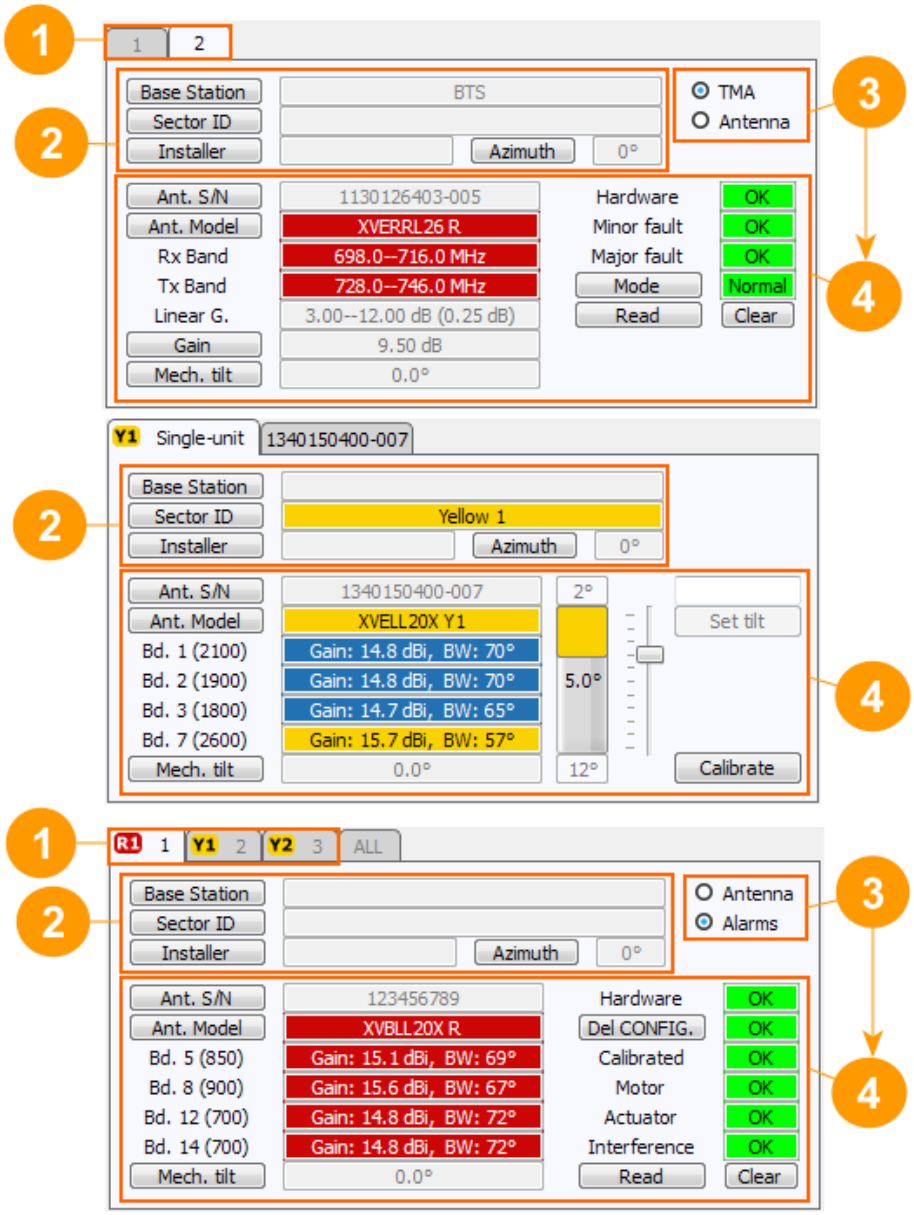
1. User can read AISG user data area
2. User can edit ASCII fields.
3. User can edit hexadecimal fields.
4. Write operation completed.

Note: user data size is vendor specific, our devices support a 512-byte area reserved for User Data.

Network Element Manager Software: NEM-ALD-W

4.2.3.2 Specific Data Section

This section provides access to the details of each subunit with specific device controls, alarms and data. If the device has no sub-unit level (RET, MTS) then general alarms are also unit alarms.

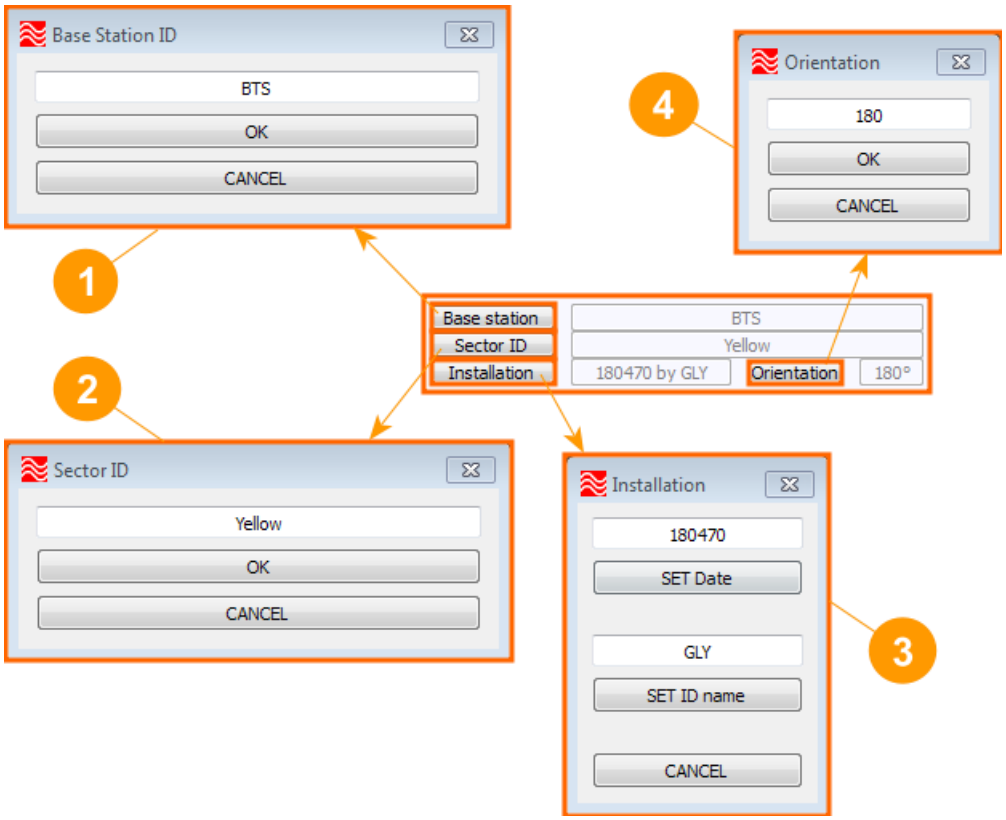


❶ If the ALD has subunits, tabs are available to switch between each subunit's details.
❷ Operator data settings (AISG/3GPP additional data 0x21 to 0x25).
❸ If applicable provides dynamic ❹ part content.
❹ Device-specific details. Always includes Antenna Model and Antenna SN assigned to the subunit.

Network Element Manager Software: NEM-ALD-W

4.2.3.2.1 Operator Data Section

This section allows the user to read/write AISG/3GPP operator additional data 0x21 to 0x25.



1. AISG/3GPP operator data 0x23: Base Station ID (32-ASCII).

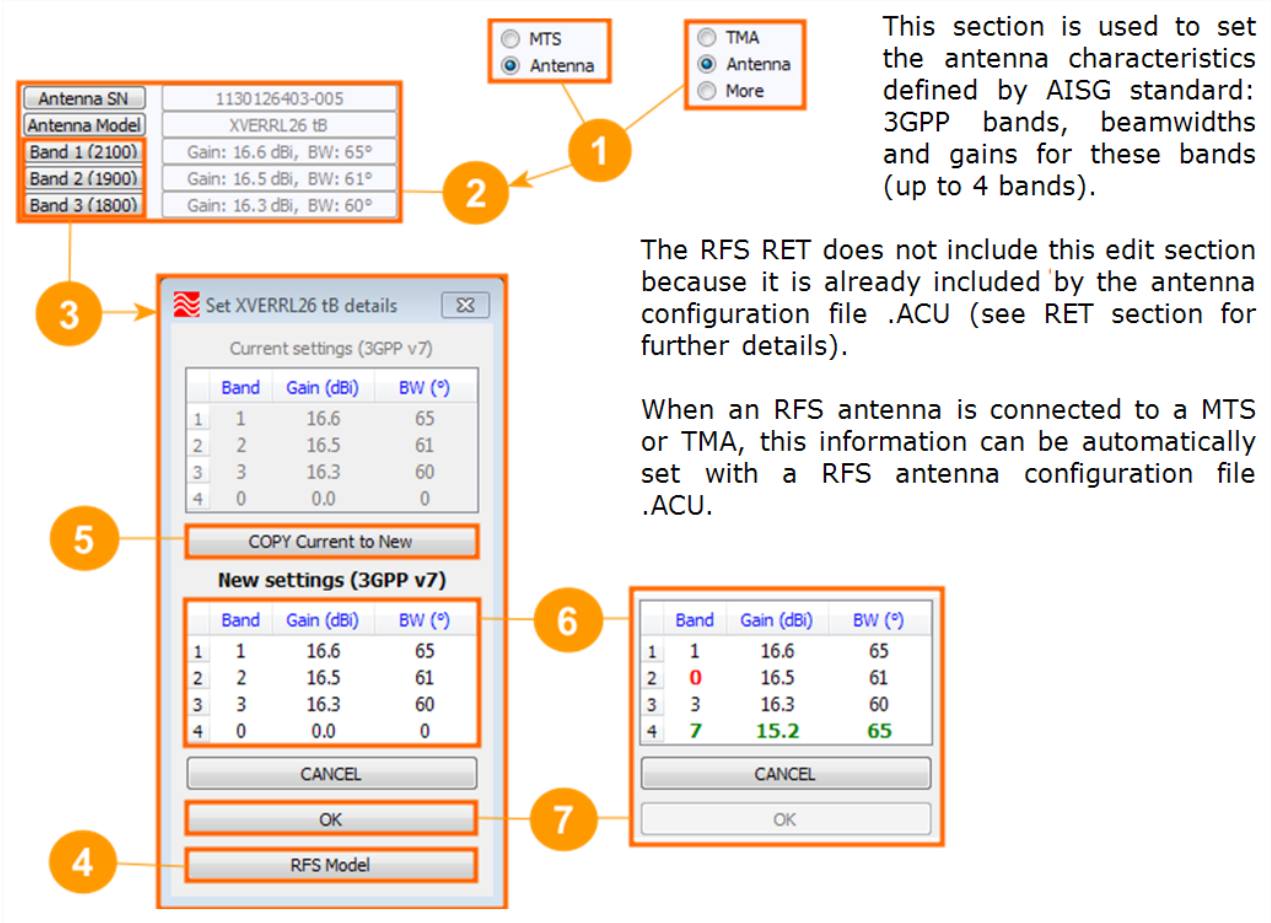
2. AISG/3GPP operator data 0x24: Sector ID (32-ASCII).

3. AISG/3GPP operator data 0x21: Installation Date (6-ASCII)
   AISG/3GPP operator data 0x22: Installer's ID (5-ASCII)

4. AISG/3GPP operator data 0x25: Antenna Bearing (0 to 359.9°)

Network Element Manager Software: NEM-ALD-W

4.2.3.2.2 Antenna Data Section



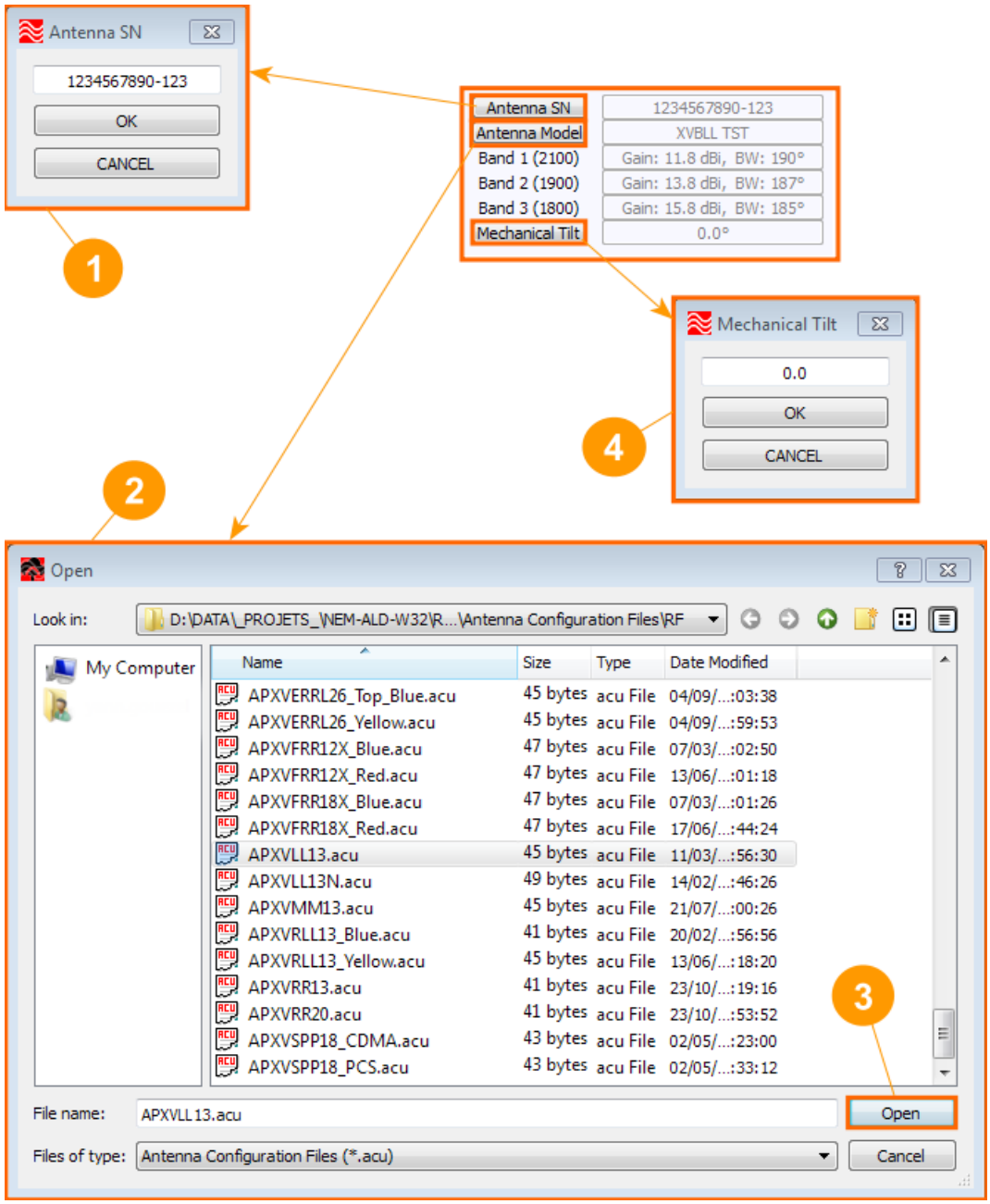
❶ Select Antenna view for MTS or TMA device (RET has this view only)
❷ Antenna characteristics (AISG/3GPP additional data 0x03 to 0x05, 0x08*, 0x09*)
❸ Edit antenna characteristics (press any "Band x" button)
❹ If our antenna is connected it is easier to select antenna configuration file .ACU.
❺ When editing, read values can be restored by pressing the "COPY" button.
❻ While editing, new valid settings are marked green and invalid settings are marked red.
❼ When all settings are OK, button is enabled and pressing it will apply the values.

* 3GPP extended bits supported by AISG/3GPP additional bit bands by data 0x08, 0x09 and 0x0A can be edited according to the negotiated 3GPP version between the NEM-ALD-W and the ALD (max supported release by 3GPP is 3GPP release 13).

Note: negotiated 3GPP release is indicated between parentheses (in this example 3GPP v7).

Network Element Manager Software: NEM-ALD-W

4.2.3.2.3 RET/MRET Data Section



❶ AISG/3GPP RET data 0x02: Antenna serial number (17-ASCII).

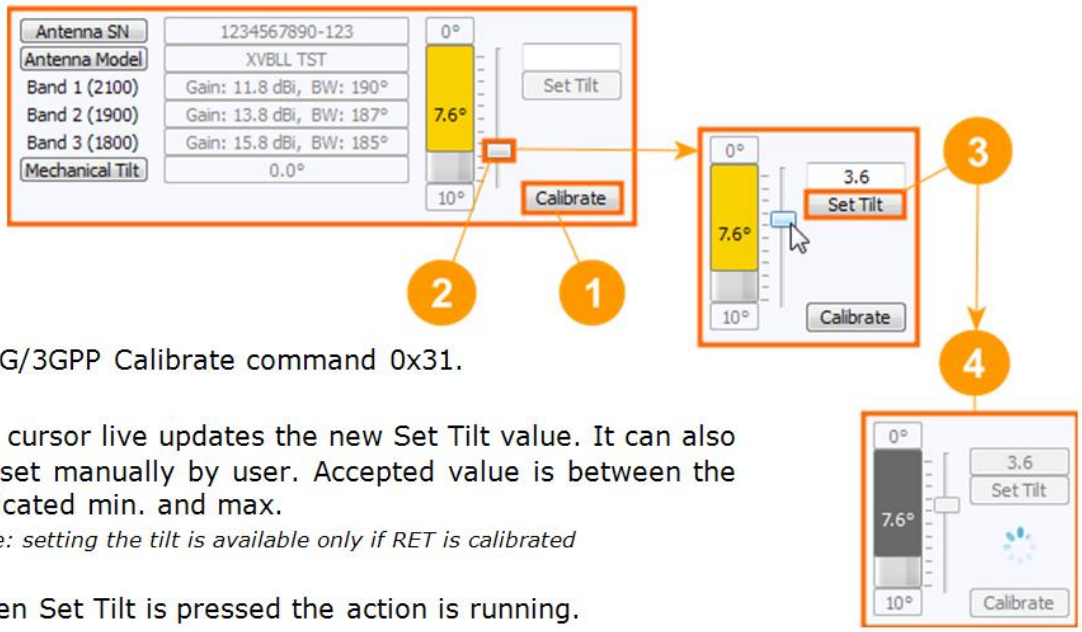
❷ User selects antenna configuration file. When "Open" button is pressed ❸ NEM-ALD-W configures device with the AISG/3GPP command SendConfigurationData 0x32.

Note: for us this command sets several antenna informative data: AISG/3GPP RET data 0x01 Antenna model, 0x03 operating bands, 0x04 beamwidths, 0x05 gains, 0x07 tilt min. and 0x08 tilt max.

❹ AISG/3GPP operator data 0x26: Installed mechanical tilt (-179.9 to 180°)

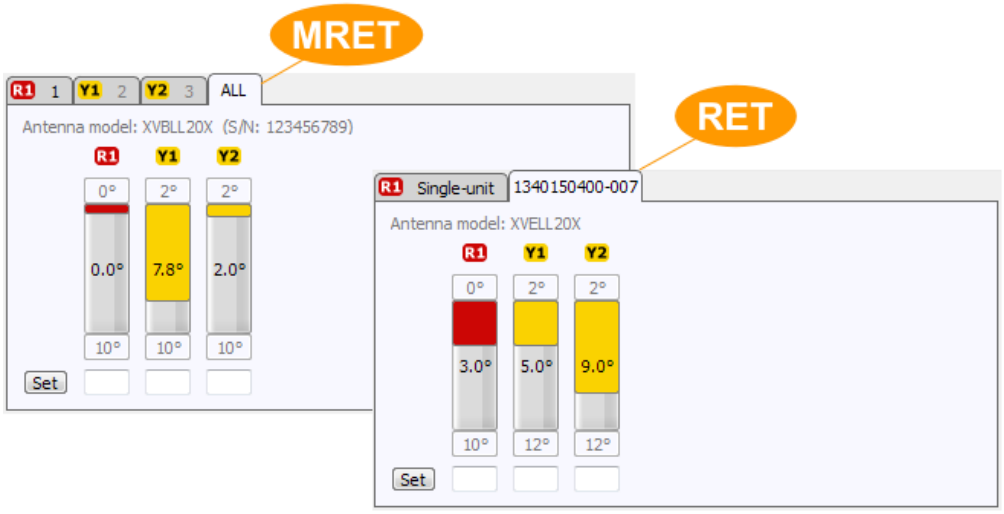
Network Element Manager Software: NEM-ALD-W

The NEM-ALD-W provides an interface to calibrate the RET and set the antenna tilt:



1. AISG/3GPP Calibrate command 0x31.
2. Tilt cursor live updates the new Set Tilt value. It can also be set manually by user. Accepted value is between the indicated min. and max.
   Note: setting the tilt is available only if RET is calibrated
3. When Set Tilt is pressed the action is running.
4. Action is running. Please note that all device control buttons are disabled while the command is running.

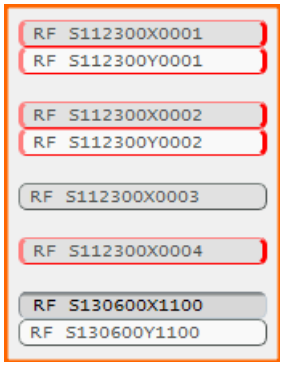
The MRET also provides an additional antenna view of all subunits. We can also have several RETs regrouped to one common antenna. If one or more RETs have the same antenna S/N set, then an additional tab is also added to view them associated to this antenna (same as MRET view).



The antenna S/N shall be set correctly and antenna model displayed is the common ASCII string part read from each RET. User can set a new tilt set plan to be applied at this antenna.

Network Element Manager Software: NEM-ALD-W

4.2.3.2.4 MTS Data Section

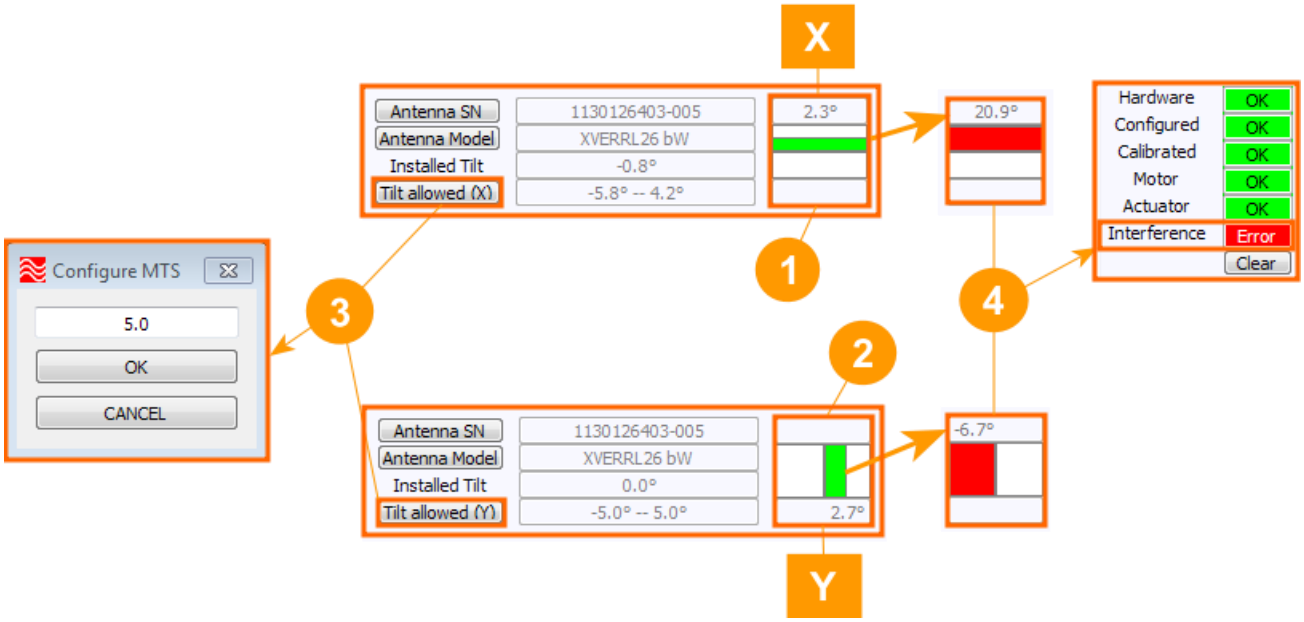


Mechanical Tilt Sensor (MTS) device exists in two versions: one with X-axis and another one with both X-axis and Y-axis.

All MTS are listed and X/Y are associated to identify MTS unit.

X-axis and Y-axis are live displayed with a graphical interface.

The installed tilt is the current tilt when tilt offset is configured. Tilt range allowed is this installed tilt +/- the tilt offset. The alarm 'Interference' 0x26 is set/cleared according to tilt allowed.



❶ Current mechanical X tilt.

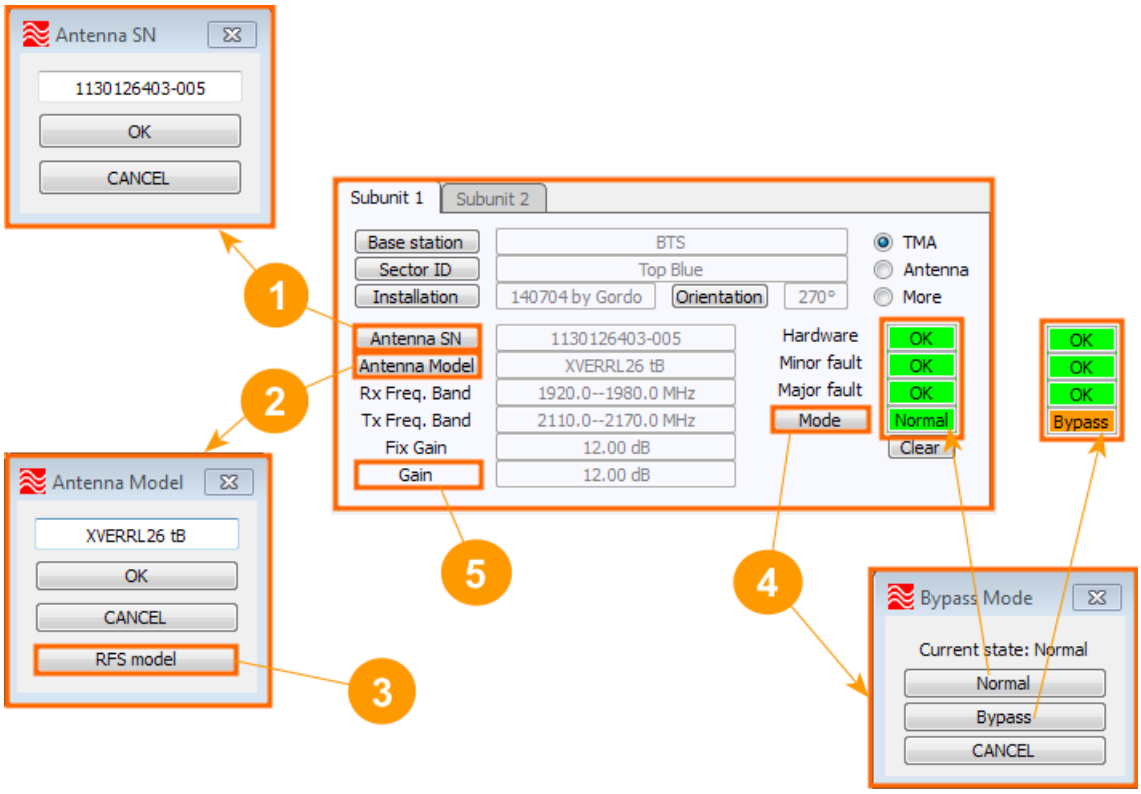
❷ Current mechanical Y tilt.
The reference, placed at the middle of the bar graph, is the installed tilt value. While the current tilt is within the allowed tilt range the bar graph is green. When it is outside the allowed tilt range the bar graph is red.

❸ Set the offset for allowed tilt range: more or less than the current tilt.
Note: this operation also updates the installed tilt to the same current tilt.

❹ AISG/3GPP alarm "Interference" 0x26 is generated when current tilt is outside the allowed tilt range.

Network Element Manager Software: NEM-ALD-W

4.2.3.2.5 TMA Data Section



❶ AISG/3GPP RET data 0x02: Antenna serial number (17-ASCII).

❷ AISG/3GPP RET data 0x01: Antenna model (15-ASCII).

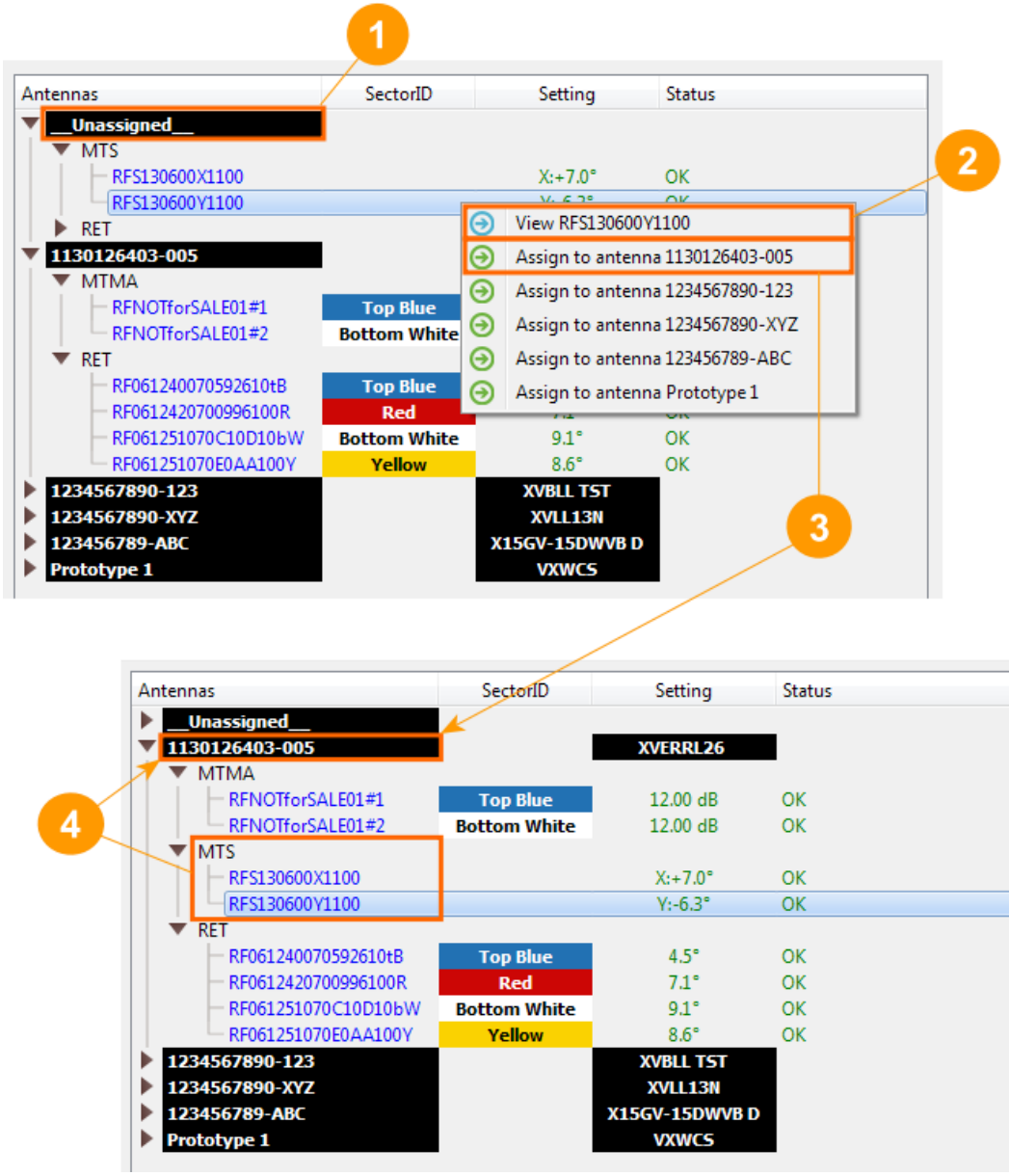
❸ In case where a TMA subunit is connected to our antenna, the user can select an antenna configuration file .ACU to get antenna model and other antenna characteristics (3GPP bands, beamwidths and gains)

❹ AISG/3GPP command SetMode 0x71: Normal or Bypass.

❺ AISG/3GPP command SetGain 0x72. This command is not available for TMAs with fixed gain.

Network Element Manager Software: NEM-ALD-W

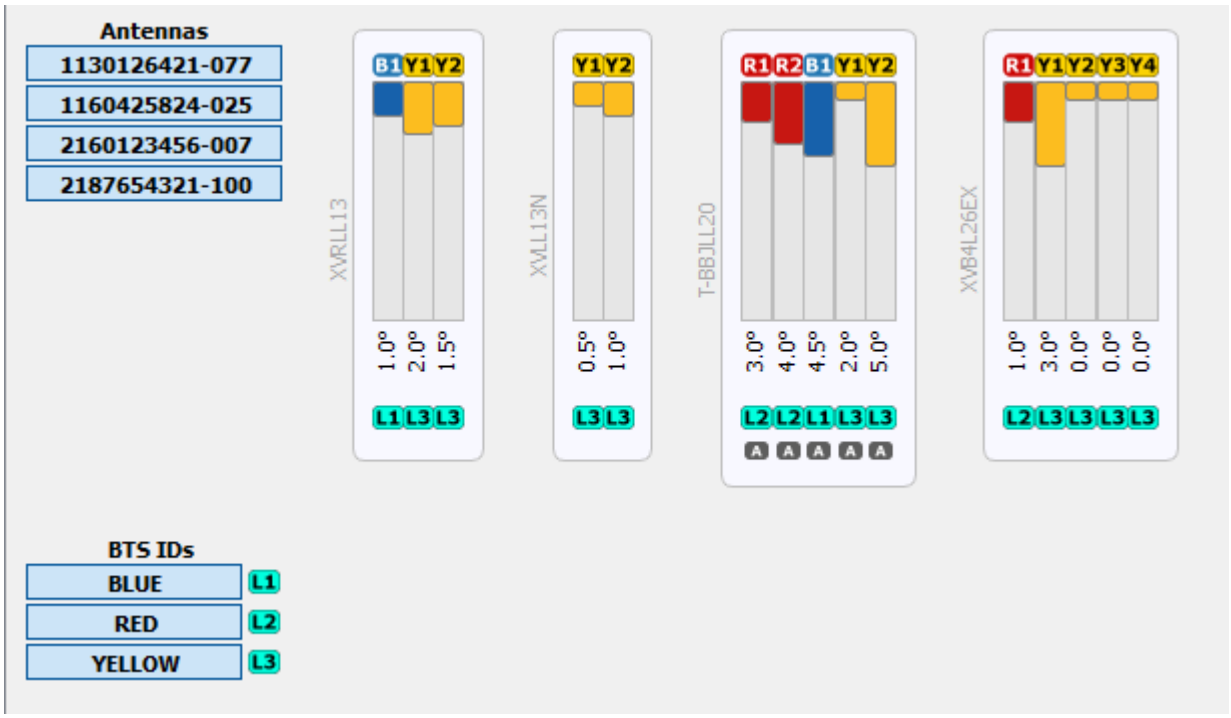
4.2.4 Antennas Tree view



1. All devices which have not been programmed with an antenna serial number are grouped as one unique antenna, under the label "__Unassigned__".
2. By clicking the context menu, the user can display the **ALD view** for more. In the ALD view, an antenna can be assigned to any device in the AISG network by programming the ALD's antenna serial number property.
3. By clicking the context menu, the user can directly select the antenna serial number from an ALD that has already been configured.
4. In the example the MTS-XY-A20 with the UniqueID "RFS130300X1100" has been assigned to the antenna model APVERRL26 with the serial number "1130126403-005".

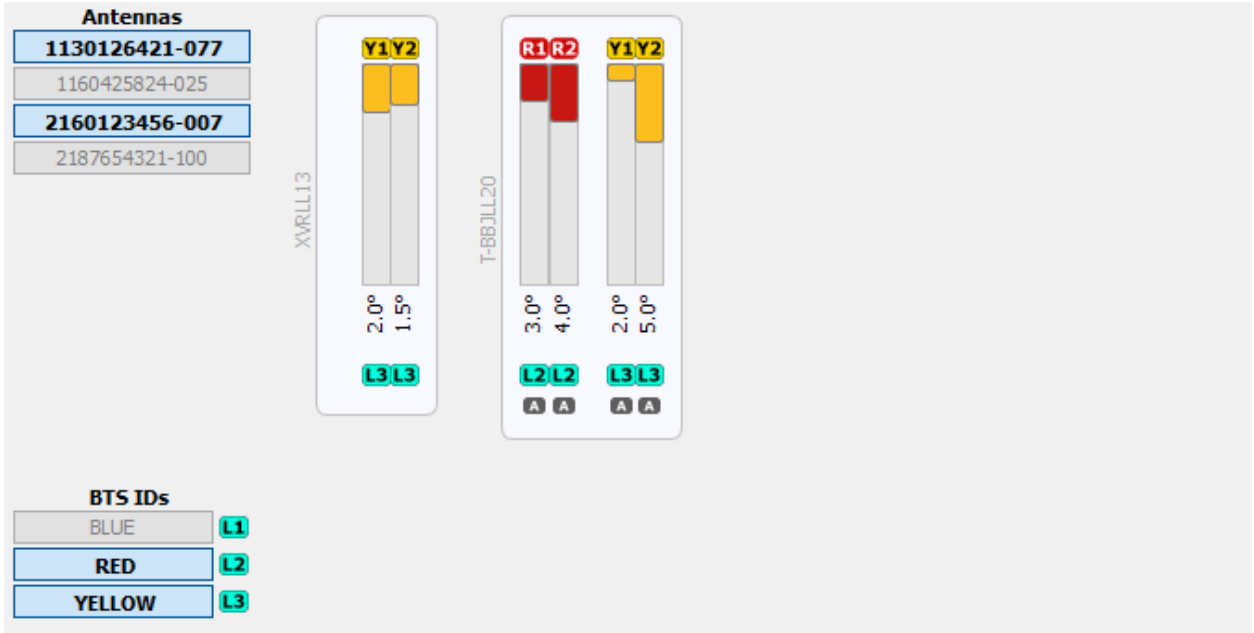
Network Element Manager Software: NEM-ALD-W

4.2.5 Antennas Graphic View



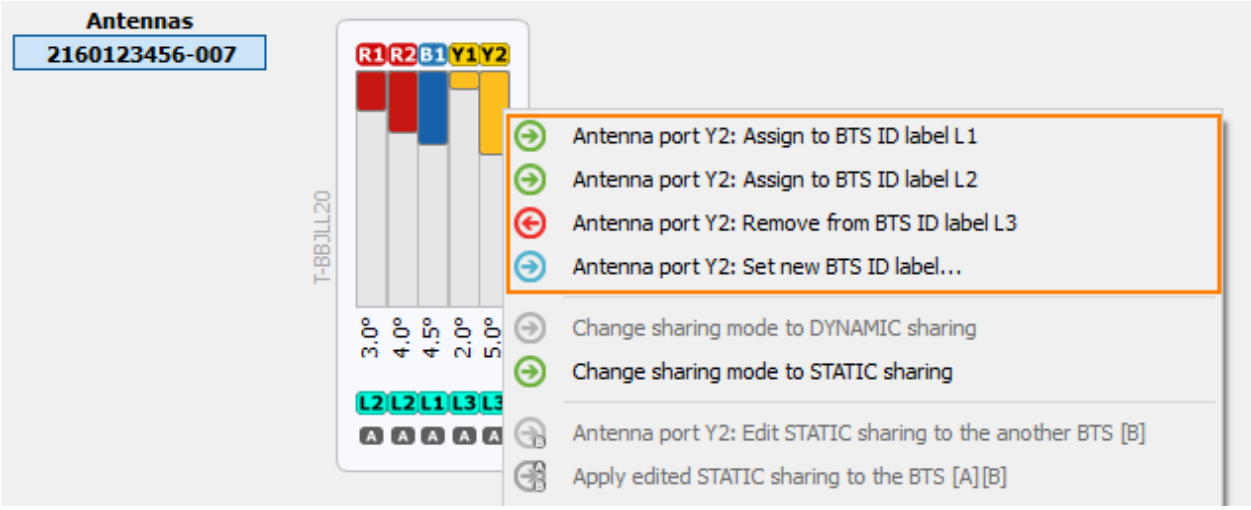
This view shows antennas built from RET units having same antenna S/N; it could be external daisy chained RET, subunits of MRET or virtual RET units.

It can be possible to filter antennas from antenna serial number list but also to filter arrays from BTS IDs identified by "Lx" cyan icons as shown below:



Network Element Manager Software: NEM-ALD-W

User can access by right-click mouse context menu from each array to specific menu to edit the BTS ID labels: assign, remove or add it.



In addition, in specific case where the Dual-Primary mode is supported by the product (e.g. ACU-X20) we can also edit the way we want to share the arrays between BTS Port A and BTS Port B. Refer to the next chapter for more details on the way the sharing mode can be used.

Network Element Manager Software: NEM-ALD-W

4.2.6 Sharing Mode

Our Product ACU-X20 is Dual-Primary capable. This product offers two sharing mode: Static or Dynamic.

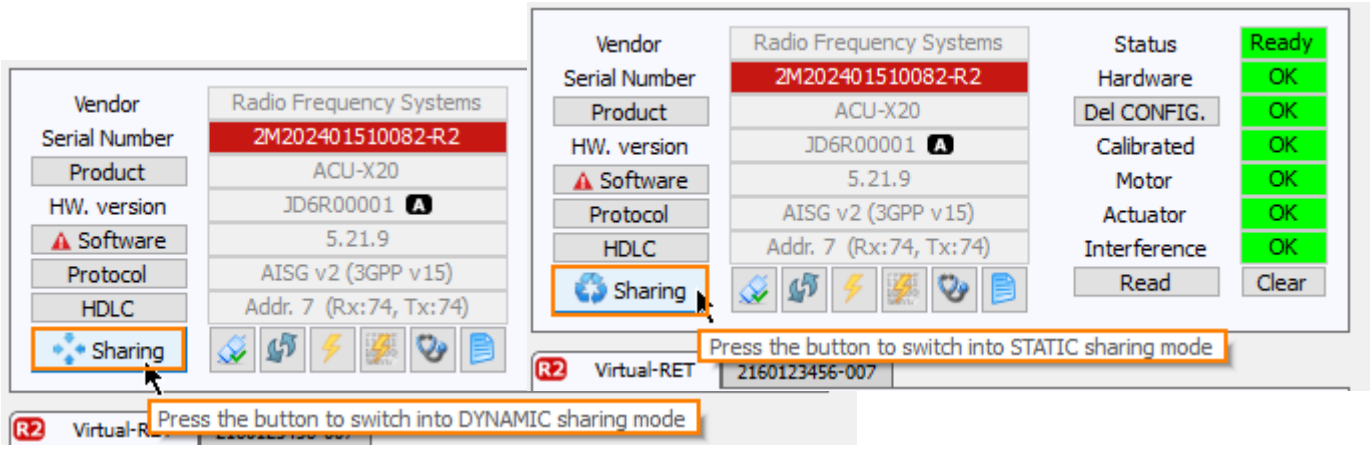
In case of Static Sharing arrays are split between BTS Port A and B in a fixed way, i.e. an array can be discovered, scanned, addressed, controlled only from the BTS Port assigned to this array. One array will never be seen by both BTS Ports.

When arrays use Dynamic Sharing mode the primaries decide where each array will be assigned. It is not under the control of the ACU-X20 product but by primaries. First BTS HDLC address assignment received becomes the master.

The dynamic implementation is simple: on Reset all arrays controlled by virtual Single-RET are in 'no-address' state and all 'no-address' can be discovered (i.e. seen by AISG standard XID scanning process). Once an address is set by a primary it becomes the master of this array and become hidden for the other BTS port. In other words, the first address assignment sets this BTS Port to this array while device is addressable, i.e. until any next reset ('no-address' state).

This Dynamic Sharing mode requires some synchronization between both primaries. Typically, one primary should start, browse, and discover all arrays. Next step from this primary is to deallocate arrays it does not want to use (i.e. reset some to 'no-address) and record UIDs it wants to use. Now the second primary can be started and deallocated arrays (with no-address) will be discovered and useable by this second primary. For next BTS starts, it may be more efficient for each primary to readdress recorded UID instead restart this process.

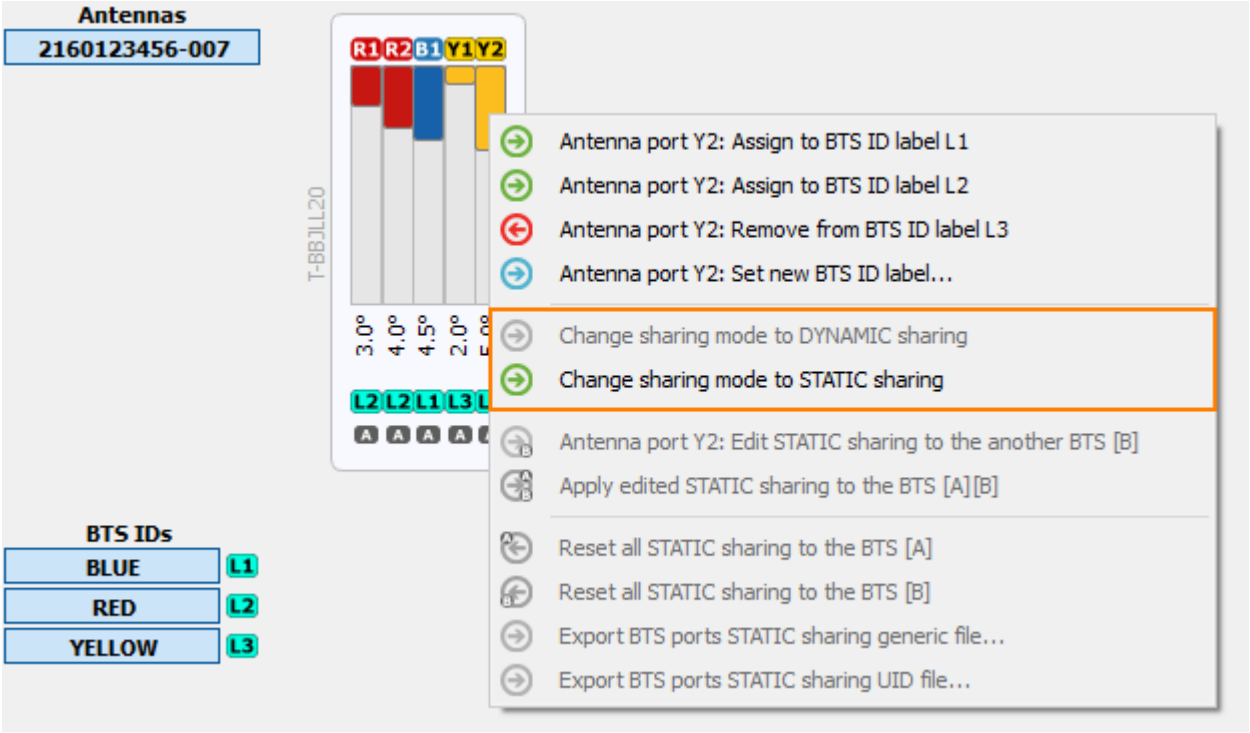
The NEM-ALD-W offers a direct access to assign DYNAMIC or STATIC sharing from a single button. Note that STATIC sharing activated from DYNAMIC sharing will fix the current dynamic configuration used.



Note: "HW. Version" field shows the current BTS Port A or B with black icon A or B

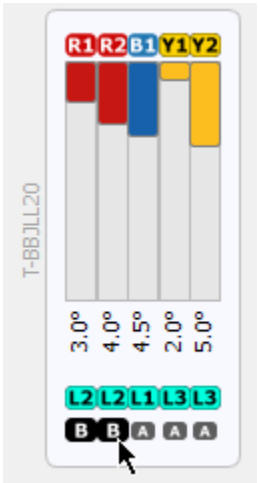
Network Element Manager Software: NEM-ALD-W

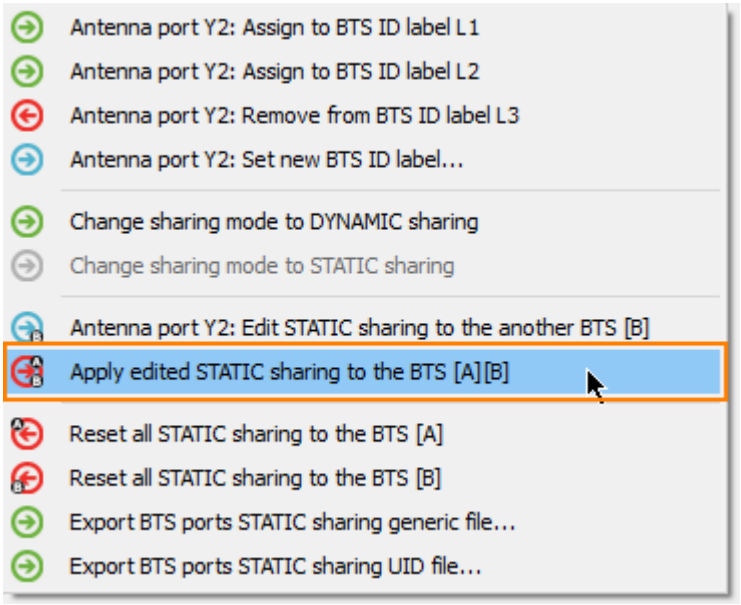
The sharing mode can be edited also from the "Antennas Graphic view". User can access to STATIC and DYNAMIC mode control from the mouse right-click context menu this way:



Example: when the current sharing mode is DYNAMIC.

In STATIC mode we can edit the current sharing by mouse click on black icons A or B at the bottom. Once editing is ready, from the mouse right-click context menu on any array select "Apply edited STATIC sharing to the BTS[A][B]":



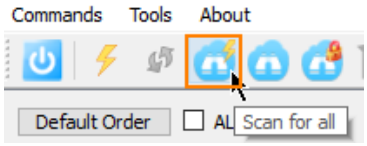


Note: direct access to reset all units to the same BTS are available.

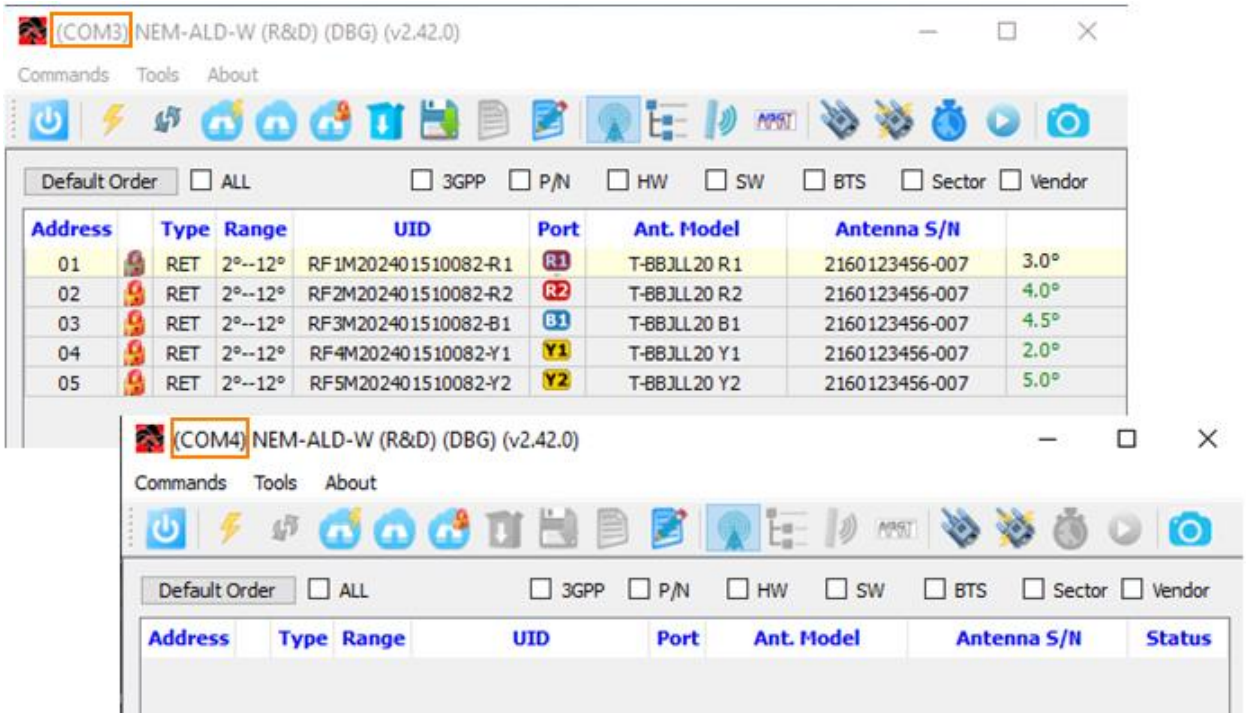
Network Element Manager Software: NEM-ALD-W

The DYNAMIC mode behavior on the field can be simulated if we connect two NEM-ALD-W, one on each ACU-X20 BTS port. In the example bellow COM3 is connected to BTS Port A and COM4 is connected to BTS Port B of the ACU-X20 product.

1) Connect NEM-ALD-W on BTS Port A and scan for all:



Result is:

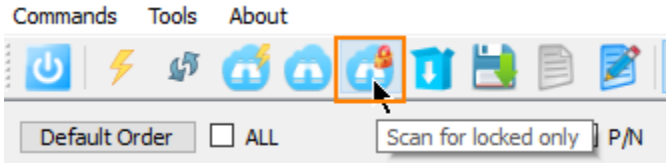


2) Unlock Y1 and Y2:

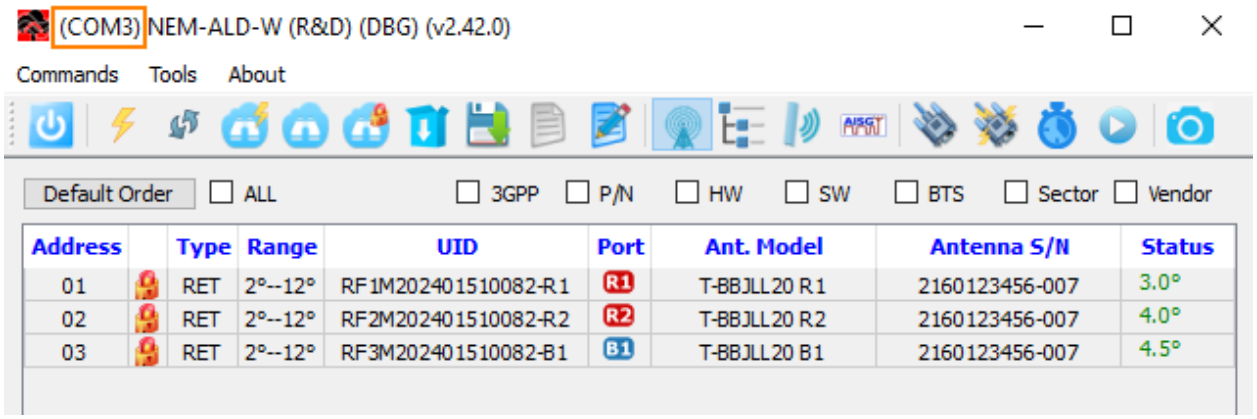
Address		Type	Range	UID	Port	Ant. Model	Antenna S/N	Status
01		RET	2°--12°	RF1M202401510082-R1	R1	T-BBJLL20 R1	2160123456-007	3.0°
02		RET	2°--12°	RF2M202401510082-R2	R2	T-BBJLL20 R2	2160123456-007	4.0°
03		RET	2°--12°	RF3M202401510082-B1	B1	T-BBJLL20 B1	2160123456-007	4.5°
04		RET	2°--12°	RF4M202401510082-Y1	Y1	T-BBJLL20 Y1	2160123456-007	2.0°
05		RET	2°--12°	RF5M202401510082-Y2	Y2	T-BBJLL20 Y2	2160123456-007	5.0°

Network Element Manager Software: NEM-ALD-W

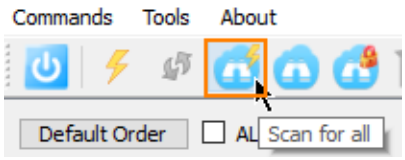
3) Rescan for only locked units:



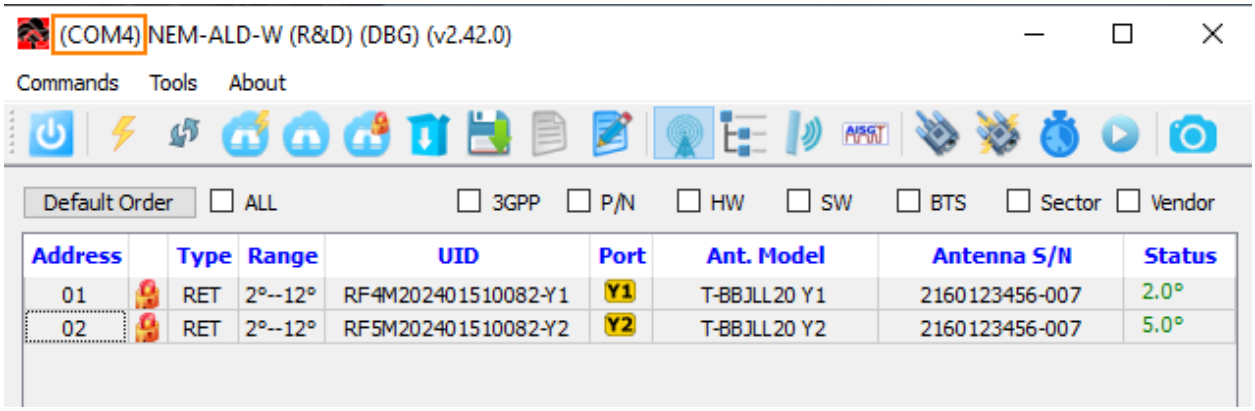
Result: now only R1, R2 and B2 are assigned to NEM-ALD-W connected to Port A:



4) Now we can scan from NEM-ALD-W to Port B:



Result: now NEM-ALD-W to Port B discover Y1 and Y2



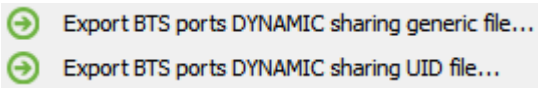
Network Element Manager Software: NEM-ALD-W

4.2.6.1 Export sharing file

We can export sharing file to allow new sharing configuration by simply downloading it the same standard AISG way we download for an FW. (see chapter **4.2.3.1.1 ALD Software update**)

Any configured Static or Dynamic Sharing exported SHA file once downloaded will applied the embedded sharing configuration once device is reset. (an auto reset is executed at the end of the download process)

According to the current sharing mode applied from the "Antennas Graphic view the mouse right-click context menu give access to this export function.



Or

Note a unique generic dynamic sharing .SHA file will activate any antenna model into DYNAMIC mode, but a generic shatic sharing .SHA file can only activate one antenna model into STATIC mode as many configurations exist. (AABBAA or AAAABBBB or ...)

About us

Amphenol has **acquired** the global Base Station Antenna business since May 15th 2023. We welcome all existing RFS base station antenna customers to Amphenol Antenna Solutions and ensure that we will honour existing agreements in regards to deliveries and product availability.

Amphenol Antenna Solutions is a premium **antenna solution provider** dedicated to the single objective of designing and manufacturing high performance antennas.

We are customer-centric antenna company that **partner** with our customers to develop **innovative and tailored** solutions, that secures optimal coverage and capacity under all circumstances. We are **independent** from any RAN vendor, but work with them all including vRAN vendors to create customized antenna solutions – this gives us a unique position in the preparation for Open RAN future.

With manufacturing and R&D team in Europe, Asia and America we offer local support to our customer – **Across the world. Around the corner.**

Europe Middle East Africa – Asia Pacific
Technical support

techsupport@amphenol-antennas.com

NETWORK ELEMENT MANAGER
NEM-ALD-W USER'S MANUAL

Amphenol
ANTENNA SOLUTIONS