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# EVB-T5DR Teseo V Dead-Reckoning evaluation board

Quick Start Guide





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# Introduction to EVB-T5DR

- The **EVB-T5DR** evaluation board is a complete standalone evaluation platform for Teseo V **STA8100GA dual-band multi-constellation** GNSS receiver IC with Dead-Reckoning software or Autonomous PVT
- The **Teseo V STA8100GA** is an easy-to-use dual-band (L1 and L5) Global Navigation Satellite System (GNSS) positioning receiver IC working on multiple constellations (GPS, GLONASS, Beidou, Galileo, and QZSS)



Top view



Front panel









Rear panel



# EVB-T5DR – Front and Rear panels




## Front panel



-  Boot button
-  Reset button
-  USB/UART Connector
-  PWR LEDs
-  PPS LED
-  On/Off Switch button

## Rear panel



-  SD/MMC connector
-  SMA Antenna connector
-  IO/ODO connector



# I/O-ODO Connector signals

I/O ODO Connect is a 14-pin connector providing these signals:

1	3	5	7	9	11	13
12V_CAR_BAT	FWD	INT-1	I2C_SCD	PPS_OUT	FAULT_ANT_ERROR	GND
12V_CAR_BAT	WHELLTICK	INT-2	I2C_SDA	E_OUT	NC	GND
2	4	6	8	10	12	14



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# Install Teseo-Suite and VCP driver

The **Teseo-Suite** (version 6.3.x required) is a powerful PC Tool able to manage the EVB-T5DR evaluation board

Download and install the Teseo-Suite from [www.st.com](http://www.st.com)

Download and install the Silab VCP Driver from [www.silabs.com](http://www.silabs.com)

A screenshot of the ST Teseo-Suite product page. The page features the ST logo and navigation menu at the top. The main content area includes the product name "TESEO-SUITE" with an "ACTIVE" status, a description of the tool, and a list of key features. The "GET SOFTWARE" button is highlighted in blue.

ST Teseo-Suite product page screenshot showing navigation, product description, and key features.

Navigation: Products, Applications, Solutions, Tools & Software, About ST, Sample & Buy, Support & Community, Login

Product Description: TESEO-SUITE ACTIVE. PC software tool to manage, configure and evaluate the performances of Teseo GNSS family.

Key Features:

- Multiple GNSS tracer
- Multiple protocol support
- GNSS firmware configuration tool
- GNSS flashing tool
- Dead reckoning panel
- NMEA diagnostic tool
- Satellites signal monitoring viewer
- Map viewer
- Log viewer





# Connect and start EVB-T5DR

- 1 Connect the USB cable between your PC's USB and the EVB-T5DR UART port
- 2 Connect the GNSS Antenna to the SMA input connector
- 3 Press the Power-on button
- 4 Verify that the RED Power LED is ON

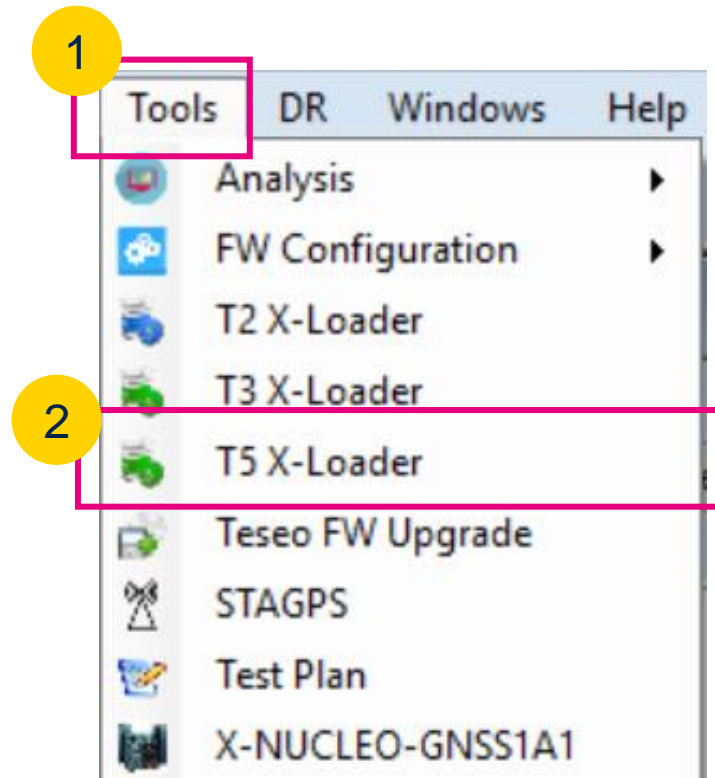




# Program the EVB-T5DR [1/2]

1 In the Teseo-Suite menu, select the **Tools** items

2 Select '**T5 X-Loader**'





# Program the EVB-T5DR [2/2]

1 Configure the COM port and the baud rate

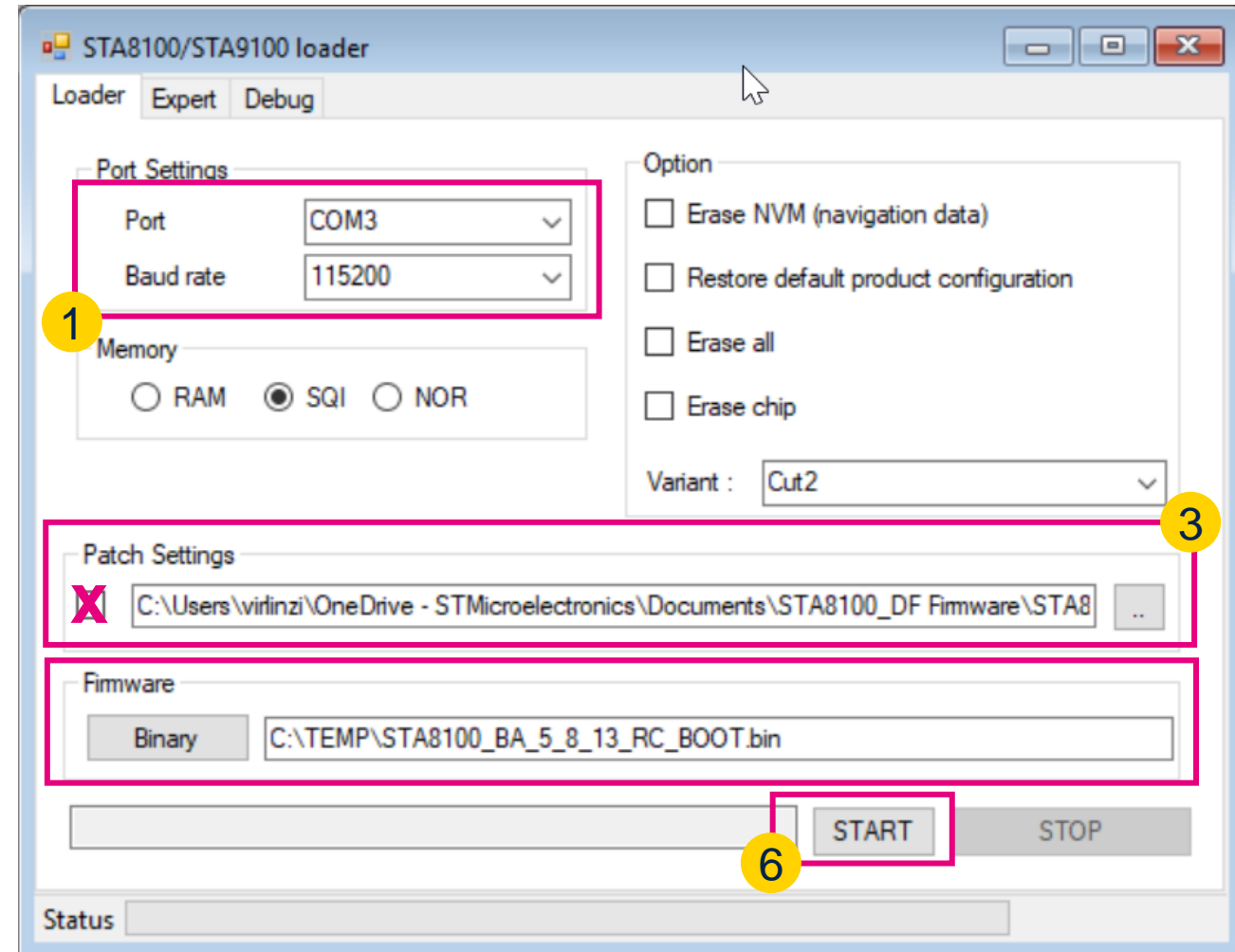
2 Select the T5 binary file (see next slide)

3 Enable and select the T5 patch file (see next slide)

4 Press and **maintain** the 'BOOT' button on the EVB-T5DR

5 Press the 'RESET' button on the EVB-T5DR

6 Press Start





# Firmware based on usage case

Two different firmwares are available for the EVB-T5DR (STA8100GA) :

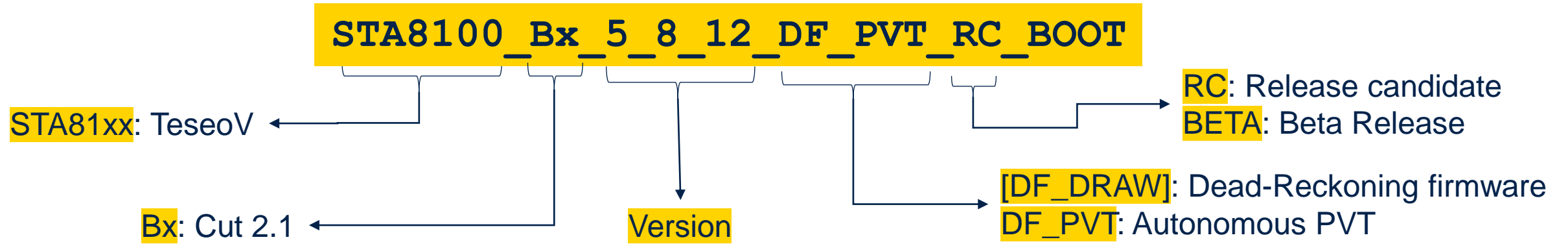
- **Dead-Reckoning Firmware** (aka: DF\_DRAW): Teseo V provides a complete Dead-Reckoning solution using the GNSS satellite data and on-board 6-axis inertial sensor
  
- **Autonomous PVT** (aka: DF\_PVT): Teseo V provides a complete dual-band L1&L5 autonomous Position, Velocity and Time (PVT).

Teseo V firmware is widely configurable.

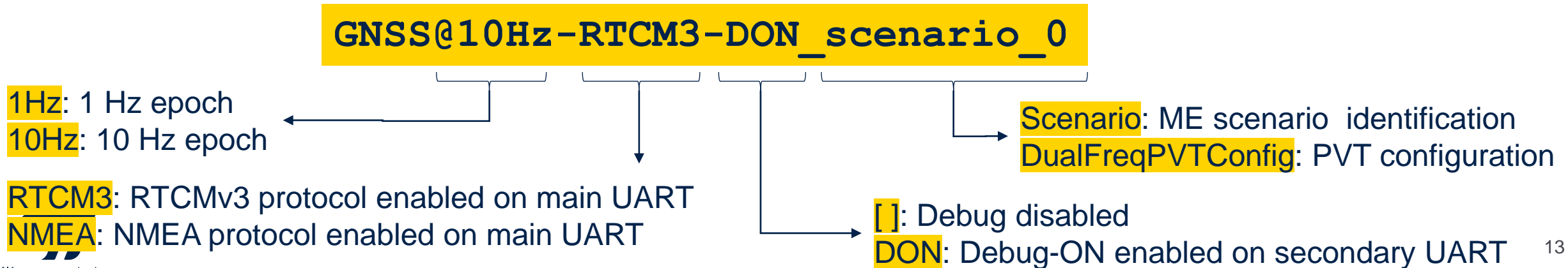


# Firmware and patch naming convention

## Firmware naming convention:



## Patch name convention:





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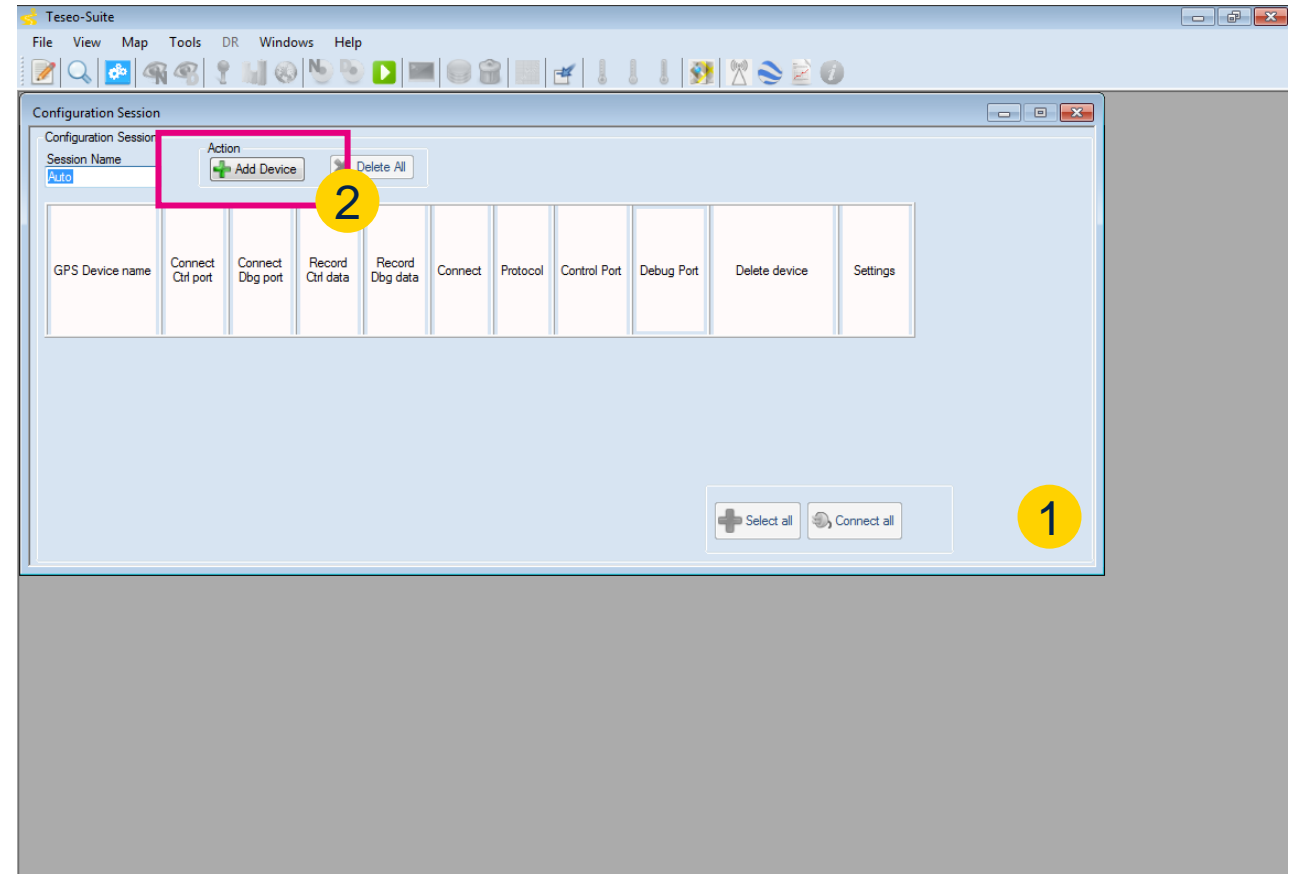
4

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# Teseo Suite - Start

- 1 During the application start-up, the **Configuration Session** panel is displayed
- 2 Click the **'Add Device'** button to add a new entry



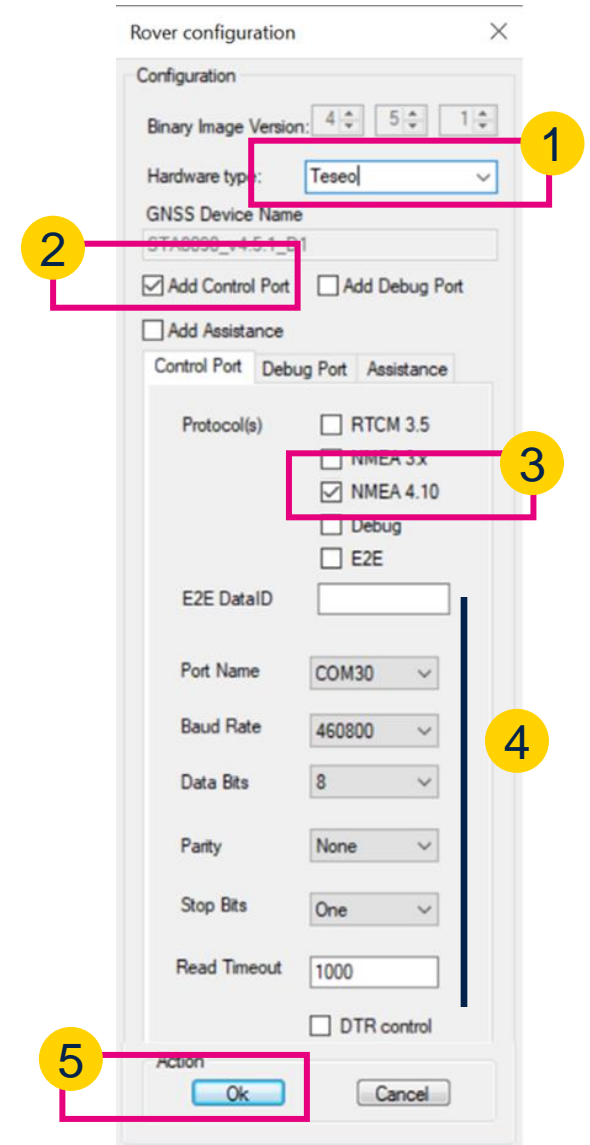


# Teseo Suite – Configuration device

- 1 Set the Hardware type: **STA8100GA**
- 2 Enable Add Control Port
- 3 Set the Protocol: **NMEA 4.1**
- 4 Set the Port Name: according to the discovered on the PC and Configure the port as following table:

Baud rate	Data bits	Stop Bits	Parity	Handshake
460800 bps	8 Bits	1 Bit	None	None

- 5 Click the Ok button

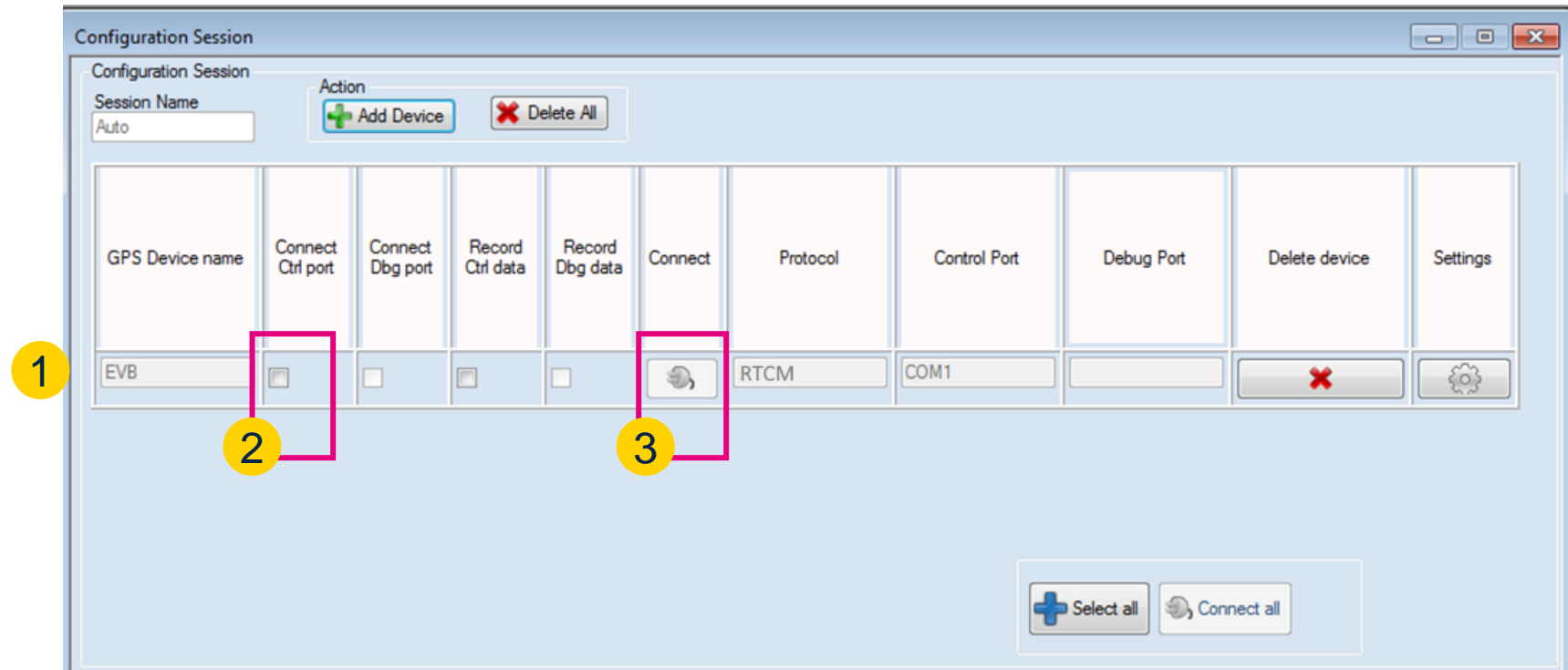






# Teseo Suite – Connect the device

- 1 In the **Configuration Session** panel, a new entry (row) is displayed
- 2 Enable **Connect Ctrl port**
- 3 Click the **Connect** button





# Teseo Suite – Device working

- 1 In the summary panel, the GNSS EVB-T5DR state is reported
- 2 Click on the NMEA output window to inspect the NMEA stream

The screenshot displays the Teseo Suite software interface. The main window is titled "Configuration Session" and contains a table of device configurations. A yellow circle with the number "2" highlights the "NMEA" icon in the toolbar. On the right side, a summary panel for the "EVB" device shows various status metrics, with a yellow circle and the number "1" highlighting the "Sats used" value of 0.

GPS Device name	Connect Ctrl port	Connect Dbg port	Record Ctrl data	Record Dbg data	Connect	Protocol	Control Port	Debug Port	Delete device	Settings
EVB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		RTCM	COM5			

EVB	
Latitude	.000000 °
Longitude	0.0000000 °
Altitude	82.00 m
Fix Mode	NO FIX
Sats used	0
PDOP	0
HDOP	99
2D Acc.	4710598.36
3D Acc.	4710598.36



# Teseo-Suite – Inspect device

1 The NMEA Decoding panel is shown

2 The NMEA Stream can be seen and inspected

The screenshot shows the 'Nmea Decoding - EVB-T3' application window. On the left, the 'Message Filter' panel lists various NMEA sentence types, all of which are checked. The main 'NMEA Message' area displays a stream of NMEA sentences, including \$PGSA, \$PSTMTG, \$PSTMSBAS, \$PSTMSBASMCH, \$PSTMCPU, \$GPRMC, \$GPGGA, \$GPGNS, \$GPVTG, \$GPGST, and \$GPGSA. On the right, the 'Decoding' panel is active for the '\$BDDTM' sentence. It shows a table with the following fields and values:

Label	Value
Local datum code	---
Local datum code ID	---
Latitude offset	---
N/S	---
Longitude offset	---
E/W	---
Altitude offset	---
Reference datum code	---



# Teseo Suite – Extra features

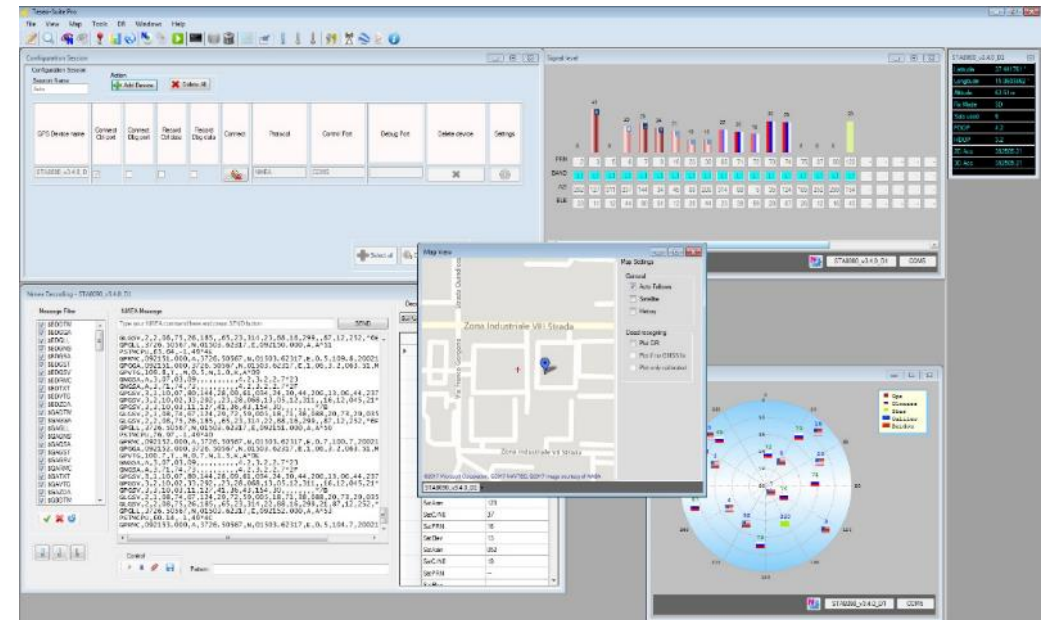
- 1 Click Help menu to access the User Manual
- 2 The User Manual gives a complete description

The screenshot shows the Teseo Suite Pro software interface. The 'Help' menu is highlighted with a red circle and a yellow circle containing the number '1'. The 'User Manual' option is also highlighted. Below the screenshot, there is a thumbnail of the 'Teseo Suite User Manual' document. The document cover features the ST logo and the text 'Automotive Product Group Automotive Infotainment Division Navigation & Multimedia System & Architecture Teseo-Suite User Manual'. The document content shows the 'Introduction' section, which states: 'This document contains the information necessary for correct use of the Teseo Suite, describes all its functionality. The functions offered by the tool can be divided into two main areas: 1. Viewer: NMEA or binary protocol decoding and display of some views. 2. Test plan: module for writing and running scripts on ST GNSS receivers.' A yellow circle with the number '2' is placed next to the second point of the list. The document footer includes the date '16 October 2017', the revision 'Rev 1.16', and the note 'For Confidential Use Only'.



# Enjoy the EVB-T5DR

Now you can enjoy the **EVB-T5DR** and explore all features of our **STA8100GA Teseo V Multi frequency GNSS receiver** with the **Teseo-Suite**





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# Join us in the ST GNSS community

Get involved in the

## ST GNSS community

Share ideas

Ask questions

The screenshot shows the ST Community website interface. At the top, there is a navigation bar with the ST logo, 'Community', and links for Home, Q&A, Groups, Share, Knowledgebase, Academy, and About ST Community. A 'Login' button is in the top right. Below the navigation is a dark blue banner with the text 'Get answers. Learn, Share and Collaborate. This is your ST Community!'. Underneath are icons for 'Questions & Answers', 'Learning', 'Projects', 'Ideas', 'Knowledge', and 'About the Community'. A search bar is located below these icons. A blue bar below the search bar contains the text 'Join the Community' and 'Registered members can participate and collaborate with your peers and ST!' along with a 'Login & Register' button. The main content area is divided into two columns. The left column is titled 'Trending Activity' and has tabs for 'Questions', 'Ideas', and 'Articles'. It shows '96770 Questions' with a search bar and a 'Sort by' dropdown set to 'Most Recent Activity'. A featured question is titled 'When updating from arm-trusted-firmware-v2.4-stm32mp-r1 to arm-trusted-firmware-v2.4-stm32mp-r2 I get PANIC on UART' by user 'cillipescu'. The right column is titled 'Our Top Contributors' and lists seven users with their profile pictures, names, and point counts: Tesla DeLorean (77100), waclawek.jan (52883), TDK (38670), Piranha (12775), Pavel A. (12296), Uwe Bonnes (9565), and a user with 8696 points.



<https://community.st.com/community/gnss>



# Documents & related resources

All documents are available on:

- [STA8100GA: Webpage](#)
  - Datasheet
- [EVB-T5DR: Webpage](#)
  - Datasheet
  - User Manual
  - Quick Start Guide
- [Teseo Suite: Webpage](#)
  - Datasheet
  - Install program

The image shows two screenshots from the STMicroelectronics website. The top screenshot is the product page for the STA8100GA, a Teseo V Multi frequency GNSS receiver. It features a 'Download datasheet' button and a link to 'Find all our CAD and simulation models'. The bottom screenshot is the TESEO-SUITE product page, which describes it as a PC software tool for managing and evaluating Teseo GNSS solutions. It includes a 'Download Datasheet' button and a table of resources.

Technical Documentation			
Product Specifications			
Description	Version	Size	
033228 - PC-CRT software to control, configure and perform analysis of Teseo GNSS family	1.0	164 KB	

License Agreement			
Description	Version	Size	
SLA2058 - Software license agreement	1.0	59 KB	



# Our technology starts with You



Find out more at [www.st.com](http://www.st.com)

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