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Teseo III and Teseo GNSS modules: geofencing subsystem

Quick Training Guide

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Contents

1	Introduction
2	Geofence in Polling mode
3	Geofence in Async mode
4	Documents & related resources



Contents

1

Introduction

2

Geofence in Polling mode

3

Geofence in Async mode

4

Documents & related resources



- Teseo III GNSS chips and modules also embed a Geofence subsystem able to notify the host if the current position falls inside/outside a set of pre-programmed circles.
- The Geofence subsystem supports
 - Up to 8 configurable circles (4 circle configurable in the firmware)
 - Polling and/or asynchronous notification
- The Geofence subsystem can be programmed using the NMEA command API



Contents

1	Introduction
2	Geofence in Polling mode
3	Geofence in Async mode
4	Documents & related resources



Geofence runtime polling mode

1 Configure a circle:

```
$PSTMGEOFENCECFG,<id>,<en>,<tol>,<lat>,<lon>,<rad>  
$PSTMGEOFENCECFG,0,1,1,37.441699,15.0602,150
```

2 Check the Geofence status:

```
$PSTMGEOFENCEREQ  
$PSTMGEOFENCEREQ
```

3 Replay Teseo III:

```
$PSTMGEOFENCESTATUS,<timestamp>,<datestamp>,<status_1>,...,  
<status_x>$PSTMGEOFENCESTATUS,092007,20200110,3,0,0,0,0,0,0,0
```

Circle–status meaning:

- 0: Status unknown: Circle disabled or No PVT solution available (i.e: during power-on)
- 1: PVT solution outside of the circle
- 2: PVT solution outside of the circle boundary
- 3: PVT solution inside of the circle



Contents

1	Introduction
2	Geofence in Polling mode
3	Geofence in Async mode
4	Documents & related resources



Prepare the geofence async mode

- 1 Configuring the firmware enabling the async `$PSTMGEOFENCE` message in the message-list (only once)

```
$PSTMSETPAR,1228,80000,1  
$PSTMSAVEPAR  
$PSTMSRR
```



Geofence runtime async mode

1 Configure a circle:

```
$PSTMGEOFENCECFG, <id>, <en>, <tol>, <lat>, <lon>, <rad>  
$PSTMGEOFENCECFG, 0, 1, 1, 37.441699, 15.0602, 150
```

2 When PVT solution updates a circle-status (i.e.: PVT solution enter/exit from a circle), Teseo III will send the message:

```
$PSTMGEOFENCE, 144553, 20200109, 0, 37.441703, 15.059990, 140.0, 10.7, 10.2, 3*1E
```

Take care that the `$PSTMGEOFENCE` is sent only once on circle-status-update



Documents & related resources available on st.Com

Teseo III: Webpage

- Datasheets

Teseo Modules: Webpage

- Datasheets

Teseo-Suite: Webpage

- Datasheet
- Install program
- User manual and Training material

GNSS ICs

ST's Teseo family of Global Navigation Satellite System ICs combines high positioning accuracy and indoor sensitivity with powerful processing capabilities, to simultaneously support multiple global navigation systems (BeiDou, Galileo, GLONASS, GPS, and QZSS).

Teseo III is the latest generation of GNSS ICs, and compared to Teseo II offers reduced power consumption, carrier-phase tracking for higher accuracy, and support for Ready-only Memory (ROM).

Our product offering includes standalone positioning chips (SAL) and configurable system-on-chips (SOCs). The standalone devices are offered with GNSS firmware embedded, to perform all positioning operations including tracking, acquisition, navigation and data output. The SoCs offer power processing and spare memory to enable customers and partners to easily and efficiently merge their code or specific IPs with ST's GNSS library to create a highly optimized platform.

Both solutions come with different package options and memory size, and are compatible with the TESEO-DRAW sensor fusion firmware for dead-reckoning and assisted navigation.

Teseo devices address e-call and telematics systems, personal navigation in PNDs and handheld devices, as well as marine and in-car navigation systems.

TESEO-SUITE

PC software tool to manage, configure and evaluate the performance of Teseo III GNSS solutions in parallel.

On each ST TESEO GNSS solution the Teseo Suite is able to read, modify and analyze NMEA sentences logging and analysis supported: NMEA message-list configuration.

Key Features

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

RESOURCES

Quick Links

Technical Documentation

Description	Version
DB3224: PC GUI software to control, configure and performance analyze of Teseo III GNSS family	1.0

Legal

Description	Version
SLA0006: Software license agreement	1.6

EVB-T3

TESEO III evaluation board

Teseo EVB board is a complete standalone evaluation platform for Teseo III GNSS ST solution.

Teseo III embeds the high performance ARM946 microprocessor with dedicated SRAM and several serial communication interfaces, including USB, SPI, PC, UART and CAN.

Performance and configuration can be analyzed using the ST TESEO-SUITE PC Tool2.

Key Features

- ST Teseo III GNSS platform;
- Multiconstellation GNSS: GPS, Galileo, Glonass, Beidou, QZSS are supported;
- USB Power Supply and battery charge;
- Internal battery for standalone usage;
- ON/OFF and Reset buttons available;
- NMEA over;

RESOURCES

Technical Documentation

Description	Version	Size
DB3223: Teseo III GNSS evaluation board	1.0	137 KB

