

1.1. Operational description CT150

This section contains a summary description of the main product functions.

The product is a vehicle OBD-II Dongle Telematics device with integrated WiFi hot-spot functionality, with 2 variants (fleet & retail) and supporting following main functions:

1.1.1. Sierra Wireless Smart Module

The Sierra Wireless Smart module is the center of the system and supports following functions:

- LTE modem
 - Cat. 4
 - Supports Rx diversity
 - Max. output power +24dBm (power class 3)
 - Used frequency bands:
 - B2: TX 1850–1910MHz / RX 1930–1990MHz
 - B4: TX 1710–1755MHz / RX 2110–2155MHz
 - B5: TX 824–849MHz / RX 869–894MHz
 - B12: TX 699–716MHz / RX 729–746MHz
 - Channel bandwidth: 1.4 – 20MHz
 - Embedded antennas
- WCDMA modem
 - Max. output power +24dBm (power class 3)
 - Used frequency bands:
 - B2: TX 1850–1910MHz / RX 1930–1990MHz
 - B5: TX 824–849MHz / RX 869–894MHz
 - Channel bandwidth: 5MHz
 - Embedded antennas
- GNSS tracking
 - Supports GPS L1, Galileo E1, BeiDou B1 & GLONASS L1 FDMA operation
 - Used frequency band: 1559 – 1606MHz
 - Embedded antenna

1.1.2. OBD interface

The product is connected to the car through the OBD-II interface and will support 2x CAN interfaces at up to 5 Mbps speed. The CAN transceivers will be CAN-FD capable, but will not be configured for CAN-FD (only CAN 2.0).

1.1.3. Wi-Fi connectivity

- Wi-Fi connectivity will be based on 802.11bgn (1x SISO), that is capable of simultaneous operation as STA (client) or access point (AP) by fast switching between the two modes.
- While in AP mode, the device will provide the ability to connect a minimum of 8 users at once
 - Supports 802.11b/g/n standard (1x SISO and only @ 2.4GHz)
 - Used frequency band: 2400 – 2483.5MHz
 - Channel bandwidth: 20 & 40MHz
 - Used modulation: DSSS, CCK & OFDM
 - Max. output power: +17dBm

- o Embedded antenna

1.1.4. Key Fob emulation

The Key Fob emulation function will implement a limited number of key fob commands:

- door lock/ unlock
- panic alarm
- panic alarm cancel
- remote engine start (is supported through the OEM installation only)
- remote start cancel

The Key Fob emulation will support following frequencies:

- Used frequencies: 314.950MHz, 315MHz, 433.589MHz, 433.920MHz, 434.251MHz, 902.375MHz & 903.425MHz
- Used modulation: ASK, OOK & 2G-FSK (max. deviation 20kHz)
- Max. output power: +5dBm
- Embedded antennas

1.1.5. Accelerometer and Gyroscope (6D MEMS)

The retail device will utilize a 3D MEMS sensor providing 3D accelerometer (low-G) only. This device will be used for shock detection that can inform the user if the vehicle has been "bumped".

The fleet device will utilize a 6D MEMS sensor providing 3D accelerometer (low-G only) and 3D gyroscope information. The sensor info will also be used for implementing dead reckoning algorithm that will be executed in the WP processor.

1.1.6. LED indicator

A tri-color (red, green, blue) LED indicator will be controlled through an I2C LED driver.

1.1.7. Power circuits

The dongle will be powered from the car battery and should be compatible with 12V battery systems (compatibility with 24V systems is not required).