Gemtek 4-8470-10 Tracking Device User Manual

Contents

Gemtek 4-8470-10 Tracking Device

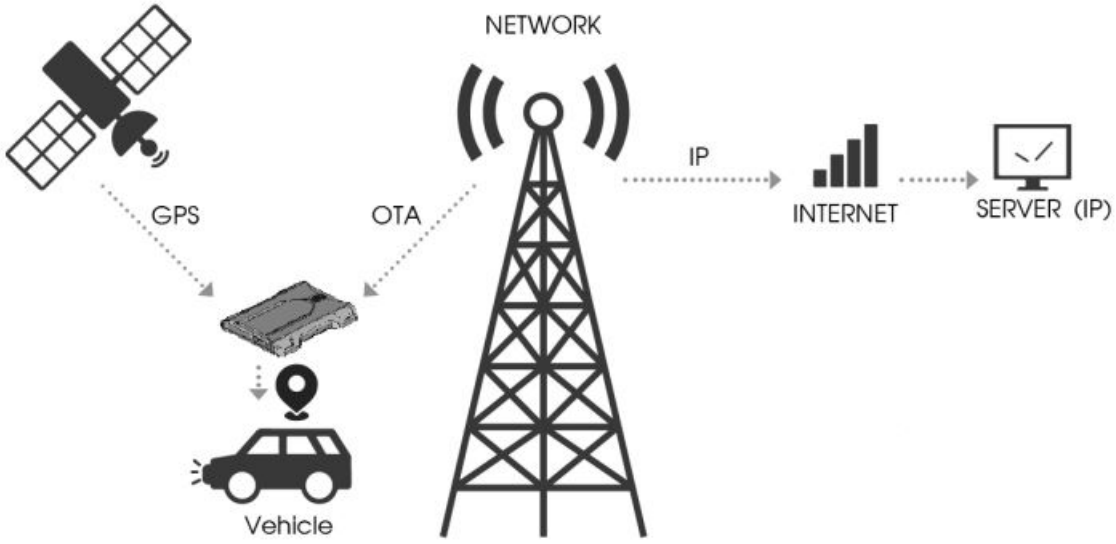
Introduction

The Dagger-QG is a self-contained tracking device that combines the GPS with LTE and BLE connectivity. The Dagger-QG is a single endpoint device to a user or a server application. It canbe quired, updated and configured either through a serial connection, or an over the air LTE IP- network. The Dagger-QG prescents itself over these connections as an enhanced cellular modem with attached functional elements.

These elements include:

- GPS location engine
- General Purpose I/O (GPIO) pins
- Serial UART port
- Voltage monitor
- BLES.0

Application scene:



Hardware Design

Basic Hardware

Items	Requirement
Baseband Chipset	Qualcomm Cat.M1
RF Transceiver	Qualcomm SDR
Memory	Internal
Air Interface	Support for LTE Cat.M1
Frequency	4G band support : Band 2/4/5/12/13/25/26 BLE5.0 band support : ISM 2.4GHz
Antenna	Internal Antenna / Chip Antenna
GPS Antenna	Dedicated high performance ceramic antenna
Interface	UART TX
	UART RX
	12V DC Input（1A current）
	GPI
	GPO
	GND
Battery Monitor	Supported
Watchdog	Supported
Motion Detect	Supported
LED	2 LEDs (Red and Green)
Battery	Built in battery（8.8A non-chargeable）
Power Cable connector type	6 pin
Power Consumption	< 5Watts

The Dagger-QG provides support for specialized hardware features through AT commands. The features supported include the following.

GPS
The major functionality of the GPS system is to compute the correlation results between the incoming signal and the selected PRN code based on certain Carrier Doppler Frequency, Code Doppler Frequency, code phase, carrier phase, and the particular satellite the system is tracking or acquiring.

GPIO
The GPIO pins are presented to the external environment on the main connector. They are general purpose bidirectional lines capable of providing system interrupts to generate a report or drive logic levels to external devices.

LEDs
Two LED status indicators are provided to verify correct installation (Red) and operation (Green).

USER MANUAL

UART
A UART port is provided for AT command and data interaction and optionally for application specific control.

Battery Monitor
The battery monitor is internal analog input scaled such that the DC valuc of the power input pin to the Dagger-QG system is measured.

Watchdog
Qualcomm chipset supports internal software and hardware Watchdog.

Motion Detect
This function will work with firmware power down options to keep the Dagger-QG in a very low power down state until motion is detected. Upon wakening, a report can then be generated.

Basic RF Performance

Over the Air	Requirements	Remark
TRP free space	CTIA	TRP free space
TIS free space	CTIA	TIS free space

Radio Frequency	
BLE5.0	
Band	ISM 2.4GHz
Rx Spec	Follow Chipset
Tx Spec	Follow Chipset
4G LTE Cat.M1	
Band	Band 2/4/5/12/13/25/26
Rx Spec	Follow 3gpp TS 36.521 Ch.7
Tx Spec	Follow 3gpp TS 36.521 Ch.6
GPS	
Frequency Support	L1-band (1.57542GHz)

Certification and Safety

Items	Requirement
Drop Design	0.8meter 6 direction standard drop test
Temperature Range	-20 to 60°C Operation -40 to +85°C Storage
Humidity:	20% to 90% Operation 10% to 95% Storage
FCC Certification	FCC Part 15/22/24/27/90
IC Certification	RSS-130/132/133/139/247
ESD Requirement	8KV non-Conductive

Test Items

Hardware

Test Item	Description
Function Test	• Power Input Test • Heat Dissipation Test • UART Stability Test • GPIO Level Test • LED Stability Test • Drop Down Test • ESD Test • High/Low Temperature Test
RF Test	• LTE Conformance Test • GPS Performance Test • BLE Performance Test • Antenna Performance Test

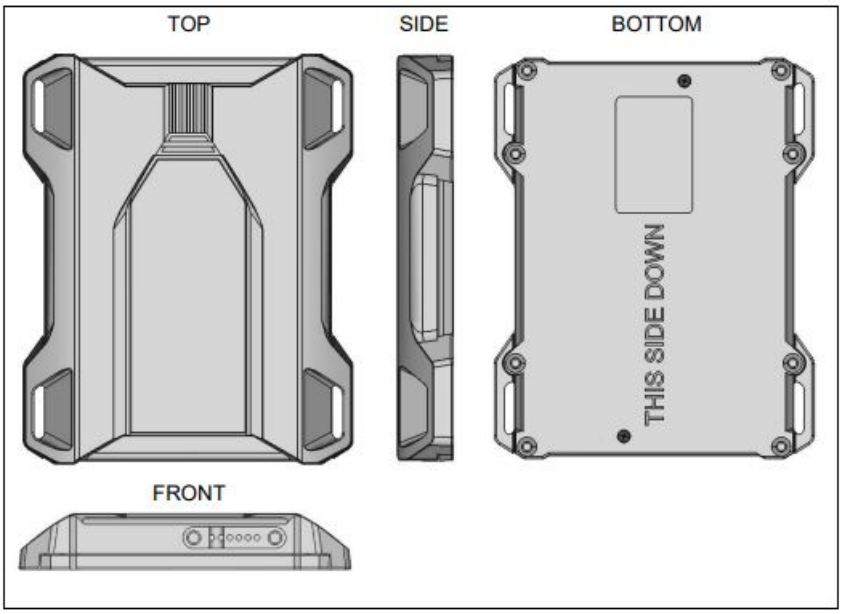
Software

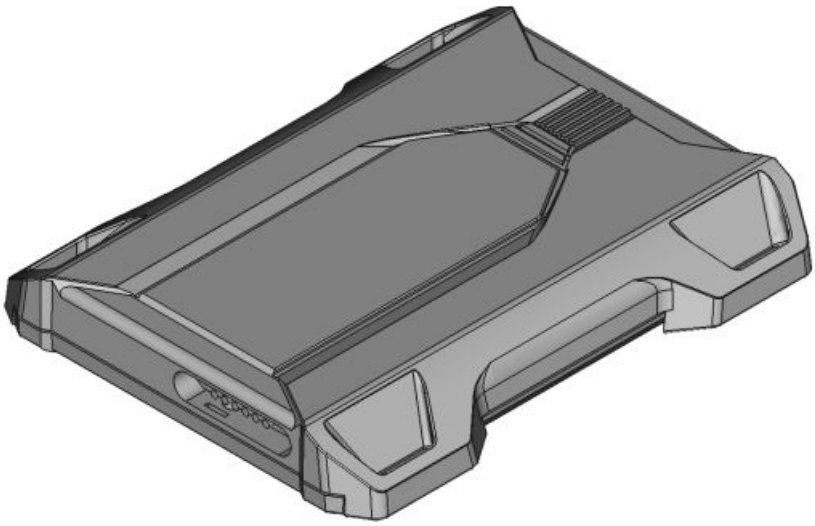
Test Environment Construct

➢ UART Test environment

1. Connect Dagger-QG to pc with console board.
2. Open Terminal tool and send the AT command.
3. Response can be shown at terminal window.

Mechanical Structure (115*16*92 mm)





Federal Communication Commission Interference Statement
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radiocommunications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio ortelevision reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance

could void the user's authority to operate this equipment.

IMPORTANT NOTE :

FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Documents / Resources

	Gemtek 4-8470-10 Tracking Device [pdf] User Manual DQG01, 2ASKH-DQG01, 2ASKHDQG01, 4-8470-10 Tracking Device, 4-8470-10, Tracking Device