**Introduction**

This manual describes about sample script which can be executed by scripting features on the “QE for Bluetooth Smart”.

**Target Device**

RL78/G1D

**Related documents**

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Document No.</th>
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<tbody>
<tr>
<td>QE for Bluetooth Smart</td>
<td>R20UT3692E</td>
</tr>
<tr>
<td>V1.0.0 [technical preview version] Release Documentation</td>
<td>R20UT3692E</td>
</tr>
<tr>
<td>Bluetooth Low Energy</td>
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<tr>
<td>RenasasBLE (For Android) Application</td>
<td>R01AN3015E</td>
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<tr>
<td>RenasasBLE (For iOS) Application</td>
<td>R01AN3016E</td>
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<tr>
<td>Bluetooth Low Energy Protocol Stack</td>
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<tr>
<td>User’s Manual</td>
<td>R01UW0095E</td>
</tr>
<tr>
<td>GUI Tool</td>
<td>R01AN2469E</td>
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**Explanation of Acronyms / Abbreviations and Terms**

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<tr>
<th>Acronyms / Abbreviation</th>
<th>Spelling</th>
<th>Note</th>
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<tr>
<td>QE</td>
<td>Quick and Effective tool solution</td>
<td></td>
</tr>
<tr>
<td>CSCP</td>
<td>Cycling Speed and Cadence Profile</td>
<td></td>
</tr>
<tr>
<td>RSCP</td>
<td>Running Speed and Cadence Profile</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
<th>Note</th>
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<tr>
<td>RenasasBLE</td>
<td>Smart Phone Demo Application</td>
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# Overview

This manual describes about sample script which can be executed by scripting features on the “QE for Bluetooth Smart”.

The “QE for Bluetooth Smart” is one of the solution toolkit that works on the Renesas e² studio, and it is a tool that specializes in application development for Renesas Bluetooth Low Energy microcomputer RL78/G1D. By using the scripting features on the “QE for Bluetooth Smart”, it is possible to call Bluetooth Low Energy protocol stack APIs sequentially on RL78/G1D. Therefore, you can try the communication of Bluetooth Low Energy with devices such as smartphones easily.

The following rBLE script files are provided as a sample script. You can confirm the connection behavior with your smartphone.

- Running Speed and Cadence Profile - Sensor Role
- Cycling Speed and Cadence Profile - Sensor Role

## Execution and Validation Environment

###  Execution Environment

In order to run the sample script requires the following environment.

- **Software environment**
  - Renesas e² studio
  - Renesas QE for Bluetooth Smart Plugin
  - Renesas Bluetooth Low Energy Protocol Stack
  - Renesas Bluetooth Low Energy Protocol Stack GUI Tool

- **Hardware environment**
  - RL78/G1D Evaluation Board (RTK0EN0001D01001BZ)

[Note] For the introduction of each environment, refer to the related documents.

### Validation Environment

Sample script has been validated with the following devices.

- **Smartphone**
  - Google Nexus6 (2013), Android6.0
  - Apple iPhone6, iOS8.4

- **Apps for smartphone**

[Note] About how to run the app for smartphone, refer to the related documents.
### 3. Description of Script

#### 3.1 RunningSpeedAndCadenceSensor.rble

<table>
<thead>
<tr>
<th>File Name</th>
<th>RunningSpeedAndCadenceSensor.rble</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional Overview</td>
<td>Operates as a sensor of Running Speed and Cadence Profile, and notifies the measurements.</td>
</tr>
<tr>
<td>GAP Role</td>
<td>RL78/G1D</td>
</tr>
<tr>
<td></td>
<td>Peripheral</td>
</tr>
<tr>
<td></td>
<td>Smartphone</td>
</tr>
<tr>
<td>Profile Role</td>
<td>RL78/G1D</td>
</tr>
<tr>
<td></td>
<td>Running Speed and Cadence Sensor</td>
</tr>
<tr>
<td></td>
<td>Smartphone</td>
</tr>
<tr>
<td></td>
<td>Running Speed and Cadence Collector</td>
</tr>
<tr>
<td>Operational Overview</td>
<td>(1) Start advertising and wait for a connection establishment from the smartphone.</td>
</tr>
<tr>
<td></td>
<td>(2) After the connection has been established, if the measurements notification of the sensor has been enabled by the smartphone, send the pseudo-measurements 100 times with 1 second intervals.</td>
</tr>
<tr>
<td>Note</td>
<td>It's necessary to write the firmware which has been enabled RSCP into RL78/G1D.</td>
</tr>
</tbody>
</table>

#### 3.2 CyclingSpeedAndCadenceSensor.rble

<table>
<thead>
<tr>
<th>File Name</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Functional Overview</td>
<td>Operates as a sensor of Cycling Speed and Cadence Profile, and notifies the measurements.</td>
</tr>
<tr>
<td>GAP Role</td>
<td>RL78/G1D</td>
</tr>
<tr>
<td></td>
<td>Peripheral</td>
</tr>
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</tr>
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</table>
Website and Support

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Inquiries
http://www.renesas.com/contact/

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## Revision History

<table>
<thead>
<tr>
<th>Rev.</th>
<th>Date</th>
<th>Description</th>
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<tr>
<td>1.00</td>
<td>Mar 22, 2016</td>
<td>First edition issued.</td>
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General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Handling of Unused Pins
   Handle unused pins in accordance with the directions given under Handling of Unused Pins in the manual.
   - The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible. Unused pins should be handled as described under Handling of Unused Pins in the manual.

2. Processing at Power-on
   The state of the product is undefined at the moment when power is supplied.
   - The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the moment when power is supplied. In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the moment when power is supplied until the reset process is completed. In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the moment when power is supplied until the power reaches the level at which resetting has been specified.

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   Access to reserved addresses is prohibited.
   - The reserved addresses are provided for the possible future expansion of functions. Do not access these addresses; the correct operation of LSI is not guaranteed if they are accessed.

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   After applying a reset, only release the reset line after the operating clock signal has become stable. When switching the clock signal during program execution, wait until the target clock signal has stabilized.
   - When the clock signal is generated with an external resonator (or from an external oscillator) during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Moreover, when switching to a clock signal produced with an external resonator (or by an external oscillator) while program execution is in progress, wait until the target clock signal is stable.

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   Before changing from one product to another, i.e. to a product with a different part number, confirm that the change will not lead to problems.
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