

[Released on the Web]

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Rev.1.00

Solution Toolkit QE for BLE[RA] V1.0.0:

May. 16, 2020

## Development Assistance Tool for Bluetooth® Low Energy

### Outline

QE for BLE[RA] V1.0.0 (development assistance tool for Bluetooth® low energy) will be released on the Web.

This product is available free of charge.

### 1. Product Features

QE for BLE[RA] is a dedicated tool for developing Bluetooth® low energy-based embedded systems. This solution tool kit runs in the e² studio integrated development environment. The combination of e² studio and QE for BLE[RA] makes it easy to test the communications features of RA4W1 group of RA family that supports BLE5 (supporting a longer range communication and faster data communication speed), thus reducing the time required in developing a product prior to its release on the market.

Adding Bluetooth functions to a product requires the addition and customization of complex Bluetooth profiles. The QE for BLE[RA] supports Bluetooth development for RA family devices with the following functions.

#### 1) Setting advertising and scanning

This tool supports settings for advertising, which is one of the features of BLE. You can specify details such as the timing and frequency of advertising and scan communications. Advertising mode and scanning mode can be configured in the Peripheral tab and Central tab, respectively.

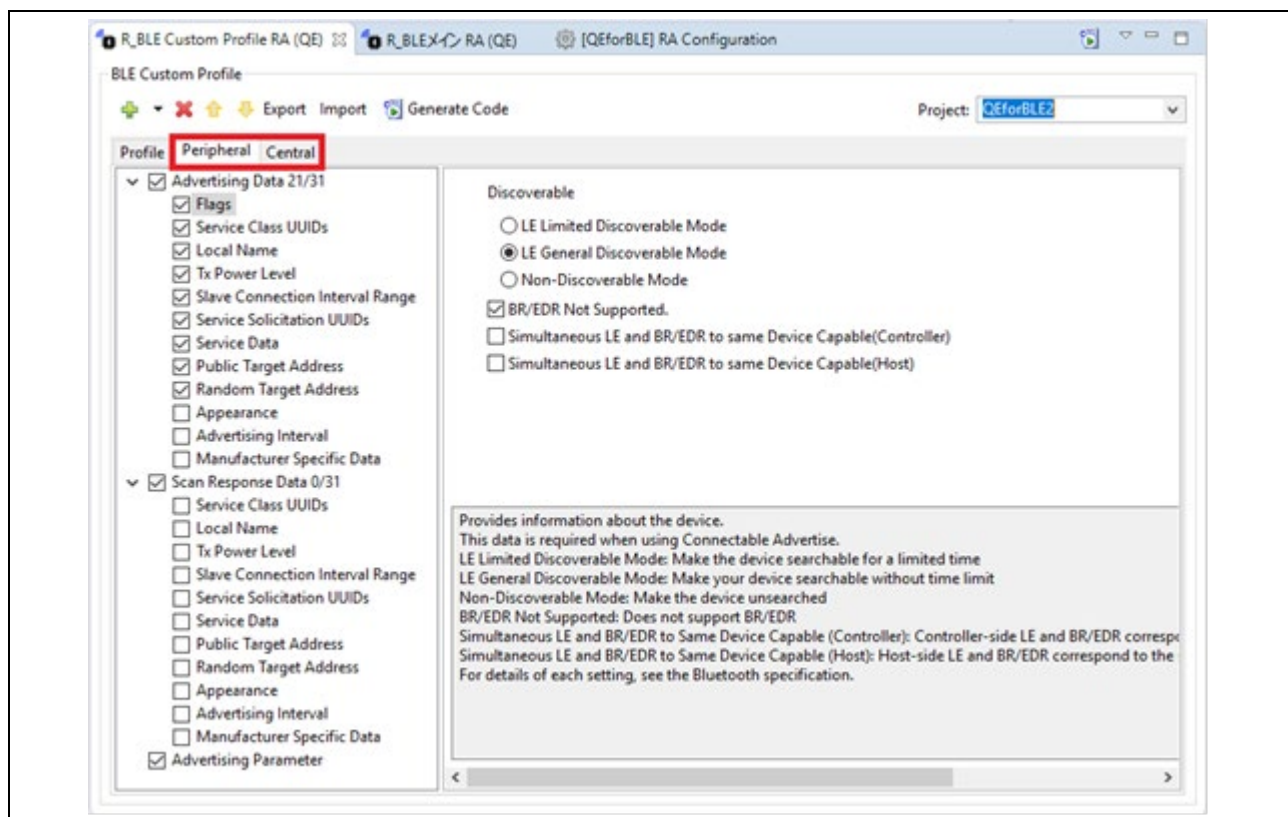


Figure 1 Peripheral and Central communication property settings

## 2) Designation of a profile provided by Bluetooth SIG

In the GUI of Smart Configurator, you can generate code by designating a Bluetooth profile provided by Bluetooth SIG Inc. (<https://www.bluetooth.com/>)

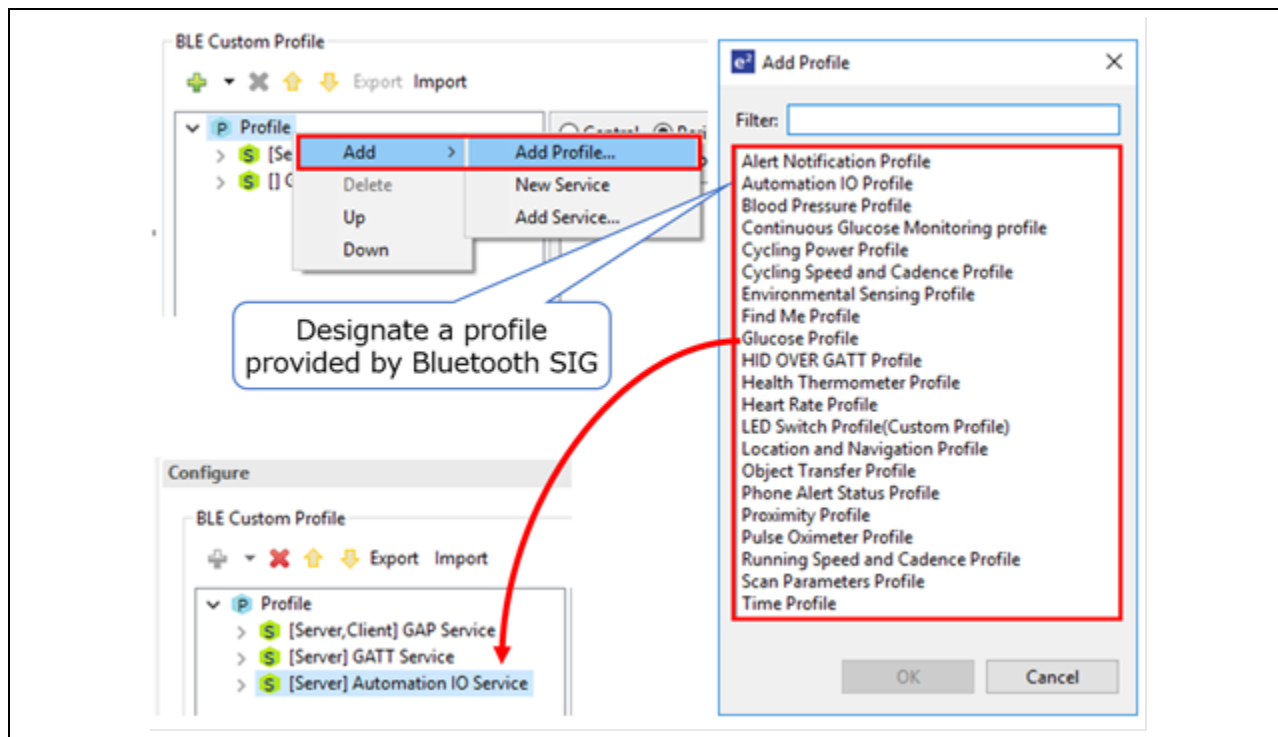


Figure 2 Designation of a Profile Provided by Bluetooth SIG

## 3) Definition of a proprietary profile

If you want to perform unique data communication (not through profiles provided by Bluetooth SIG), you must define a profile. In the GUI of Smart Configurator, you can modify a profile easily and generate code.

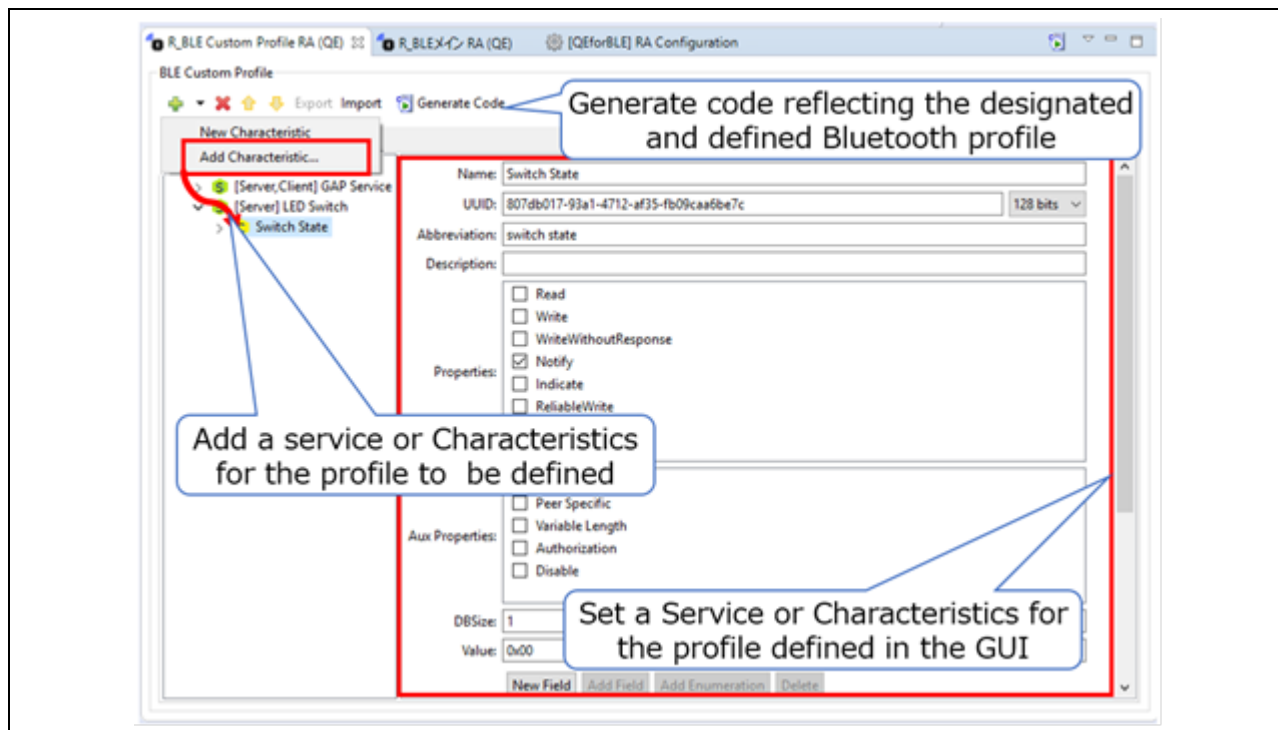


Figure 3 Proprietary Profile Definition and Code Generation

#### 4) Communication check by using a profile

Renesas provides an API for the Bluetooth protocol stack called "R\_BLE" to implement Bluetooth communication easily from an application program. The QE for BLE[RA] allows you to check profile-based communication by creating and executing an R\_BLE5 script that uses R\_BLE.

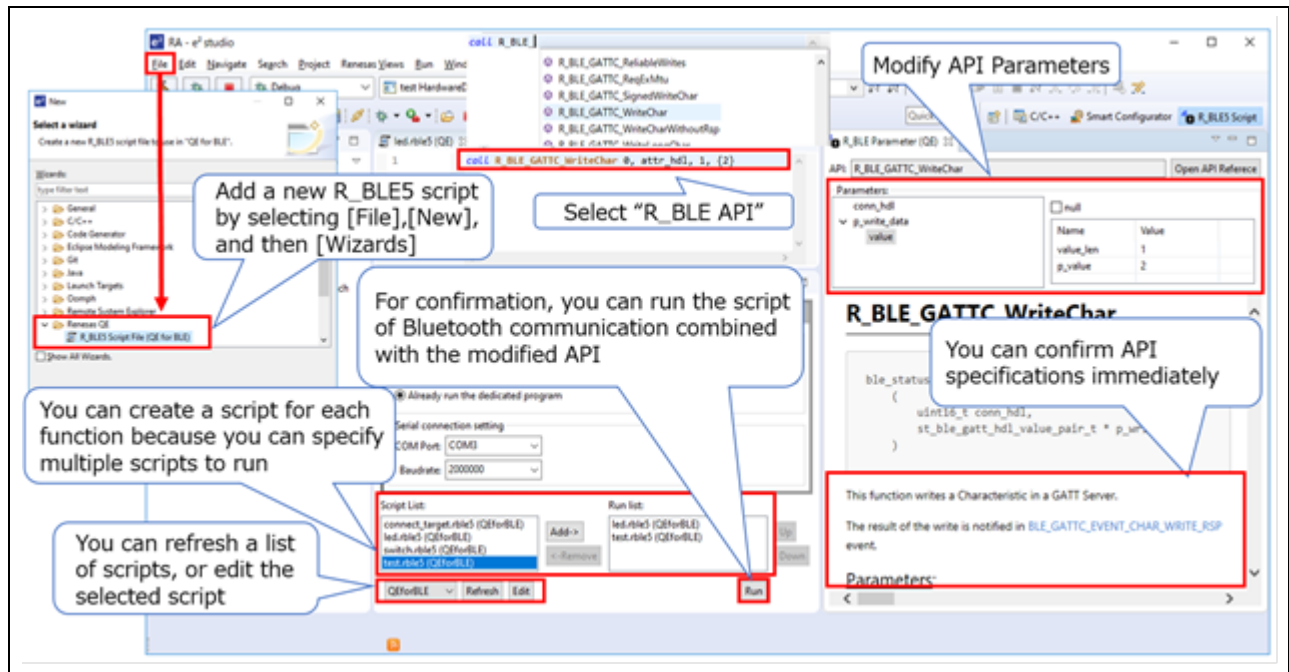


Figure 4 Checking Profile-Based Communication by Executing an R\_BLE5 Script

## 2. Supported Devices

RA family: RA4W1 group

## 3. Operating Environment

e<sup>2</sup> studio integrated development environment V7.8.0 or later,

You will also need to install Flexible Software Package (FSP) V1.1.0.

e<sup>2</sup> studio and FSP can be quickly installed using the installer available at the following URL:

<https://info.renesas.com/en-fsp-download>

## 4. Obtaining the Product

Obtain QE for BLE[RA] V1.0.0 from the URL below.

<https://www.renesas.com/qe-ble>

## 5. Installation

Use the following procedure to install the product.

- (1) Activate e<sup>2</sup> studio.
- (2) Click [Help], and then click the [Install New Software...] menu to open the [Install] dialog box.
- (3) Click the [Add...] button to open the [Add Repository] dialog box.
- (4) Click the [Archive...] button, select the installation file (zip file) in the opened file selection dialog box, and then click the [Open] button.
- (5) Click the [OK] button in the [Add Repository] dialog box.
- (6) Expand the [Renesas QE] item shown in the [Install] dialog box, select the [Renesas QE for BLE[RA] check box.  
Check off the [Contact all update sites during install to find required software] check box<sup>(Note)</sup>, and then click the [Next>] button.
- (7) Confirm that the installation target is correct, and then click the [Next>] button.
- (8) After checking the license, select the [I agree to the terms of use] radio button, and then click the [Finish] button.
- (9) When the dialog box for selecting a trusted certificate appears, check the displayed certificate, and then click the [OK] button to continue installation.
- (10) Restart e<sup>2</sup> studio according to the instructions on the screen.
- (11) Start this product from the [Renesas Views] - [Renesas QE] menu of e<sup>2</sup> studio.

For details about how to use this product, refer to the QE items from the [Help] menu of e<sup>2</sup> studio.

Note: To install plug-ins for e<sup>2</sup> studio other than QE, select [Contact all update sites during install to find required software] before proceeding with the following steps.

## Revision History

| Rev. | Date      | Description |                      |
|------|-----------|-------------|----------------------|
|      |           | Page        | Summary              |
| 1.00 | May.16.20 | -           | First edition issued |
|      |           |             |                      |

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