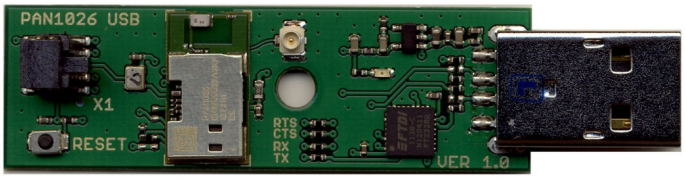
Application note

TOSHIBA TC35661 *Chiron*

EasyBLE quick start guide

Version 1.0.0.4



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1 Abstract

The purpose of this document is to explain how to install and use *EasyBLE*.

2 Introduction

EasyBLE is an application that demonstrates the Bluetooth Low Energy (BLE) functionality of the TOSHIBA TC35661 *Chiron* Bluetooth baseband LSI.

At the moment the following BLE profiles are supported by *EasyBLE*:

- Heart rate profile

We have tested *EasyBLE* with the following counterparts:

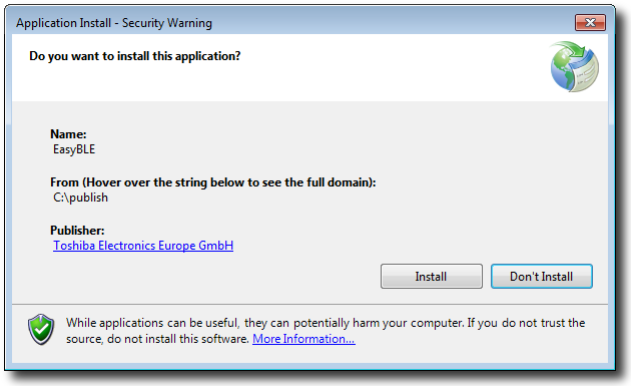
Device	Operating system	Application
iPhone 4S	iOS 6.1.3	Melody Smart 1.5
Nexus 7 (2013)	Android 4.3	BLE Heart Rate Monitor
Surface	Windows 8.1	BluetoothGattHeartRate (Windows 8.1 SDK)

2.1 Feedback

If you have a problem with *EasyBLE*, please contact TEEWirelessProducts@tee.toshiba.de.

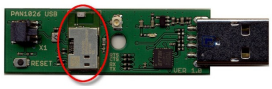
3 Installation

Please launch the installation of *EasyBLE* by executing *setup.exe* from the installation directory. Please make sure that the installation path does not include special characters like "&" or "!", because the installation might fail.



EasyBLE is a *ClickOnce* application and uses the *.NET framework*. If the *.NET framework* is not yet installed on your system, the installer will help you installing it.

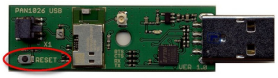
4 *PAN1026 USB stick* setup



The TOSHIBA TC35661 *Chiron* is contained in the PAN1026 module on the USB stick.

By using a USB-to-serial converter from FTDI the *PAN1026 USB stick* is ready-to-use in any system that has a free USB slot and has the FTDI drivers installed.

If the latter is not the case then Windows may not recognize the *PAN1026 USB stick* and complain about missing drivers. In that case please follow the instructions in the following chapter to install the necessary driver.



If something goes wrong and the module does not respond any more you can reset it by pressing the reset button. This will only reset the TC35661, not the FTDI adapter.

If you suspect a problem with the FTDI adapter you have to unplug and plug-in again the USB stick.

4.1 Installing a driver for the FTDI USB-to-serial converter

In case Windows does not have a driver for the USB-to-serial converter from FTDI installed already, you need to install the necessary driver manually.

Please download the "Virtual COM port driver" from the FTDI website and install them manually:

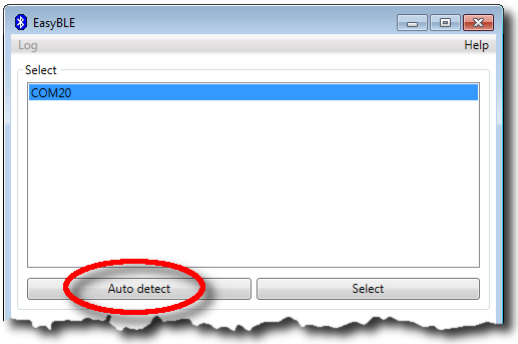
- http://www.ftdichip.com/Drivers/VCP.htm

5 Using *EasyBLE*

5.1 Device selection

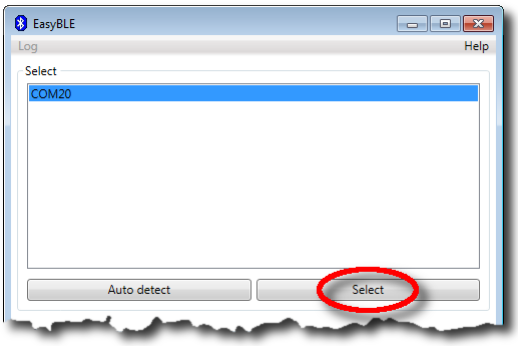
Please launch *EasyBLE* from the start menu. If no serial port is present, an error dialog will be displayed and the application cannot be started.

At the bottom of the window is a status bar that will inform you about any actions that are underway or, in case of problems, will show error messages.



If some serial ports were found the list box will be filled accordingly. If you are unsure which serial port is provided by the stick you can use the "Auto detect" button.

It will scan all serial ports and check for the TOSHIBA TC35661 *Chiron* device. Please note that TOSHIBA TC35661 *Chiron* must run in HCI mode. If you are unsure about the state the device is in or don't know what this means, please press the reset button before using "Auto detect".



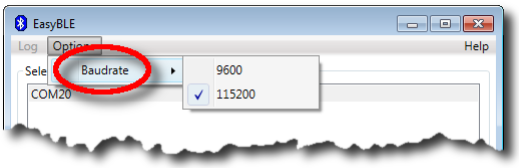
When the auto detection has finished all serial ports where TOSHIBA TC35661 *Chiron* devices were found will be labeled red. You can then select the desired serial port from the list and press "Select" to proceed.

5.2 Special options

5.2.1 Baudrate selection

TOSHIBA TC35661 *Chiron* uses a baud rate of 115200 by default.

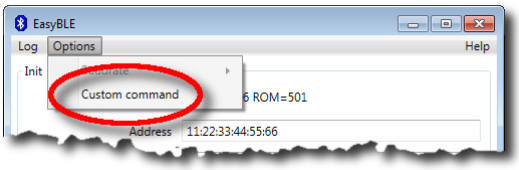
However, there are special versions of TOSHIBA TC35661 *Chiron* that use a baud rate of 9600 by default. Because this cannot be detected prior to initialisation a special option exists for a proper selection.



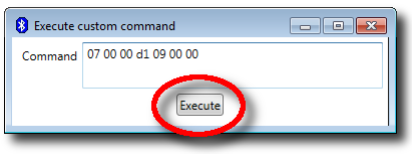
From the "Options" menu the baud rate may be selected if necessary. Please note that this information is not stored across application restarts.

The selection must be made every time the application is started.

5.2.2 Custom command



From the "Options" menu the "Execute custom command" dialog can be opened.

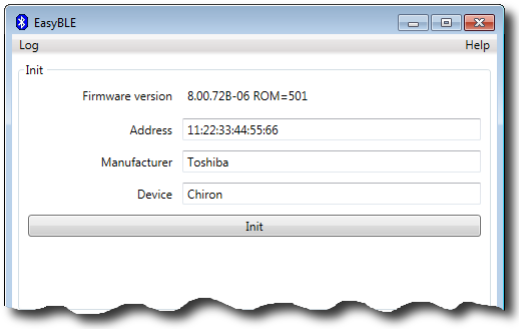


A sequence of raw bytes representing a valid HCI or TOSHIBA TC35661 *Chiron* TCU command can be entered into the text box. It does not matter if the bytes are prefixed with "0x" or if they are separated by spaces.

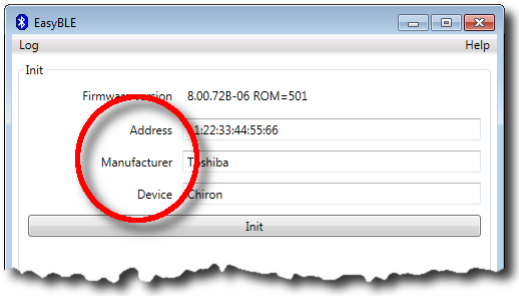
Clicking "Execute" will send the command to TOSHIBA TC35661 *Chiron*.

Please note that using the custom command feature may have a negative impact on the performance of *EasyBLE* or in the worst case make it malfunctioning. Only use it when you know what you are doing.

5.3 Initialisation



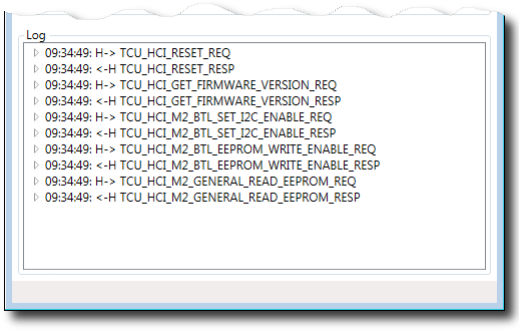
After the initial communication with TOSHIBA TC35661 *Chiron* is confirmed the initialisation dialog is shown. It will present the firmware version and some settings that affect the runtime behavior of TOSHIBA TC35661 *Chiron*.



Various settings can be configured:

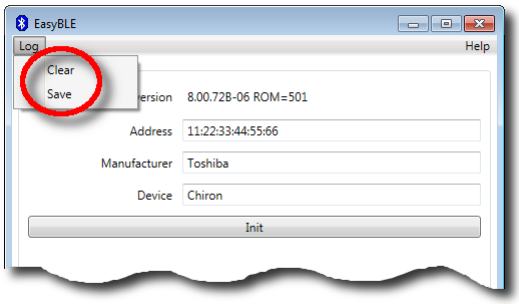
- The Bluetooth device address
- The manufacturer name
- The device name

These are runtime settings only that are written to TOSHIBA TC35661 *Chiron* after initialisation.

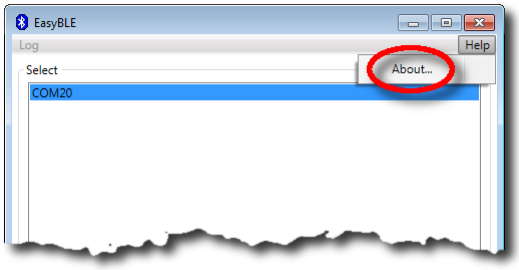


Please note the "Log" window in the lower half of the application window. It will print out detailed information about all the data that is exchanged with TOSHIBA TC35661 *Chiron*.

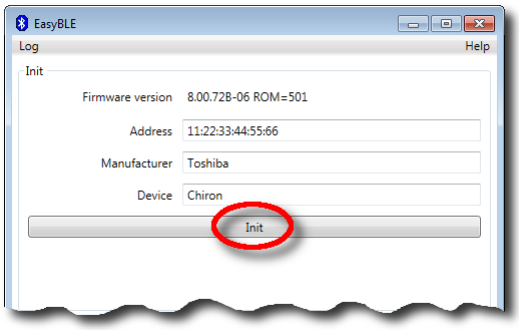
Depending on the mode TOSHIBA TC35661 *Chiron* is in, different levels of detail are available. If more details are available for one specific communication item, press on the "+" (or arrow) on the left of the item to reveal further information.



The "Log" menu entry can be used to save the log data to a file or clear the log information window.



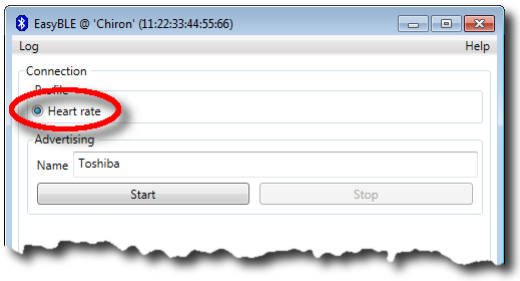
In "Help" menu entry you will find the option to display an "About..." box with useful information about the currently installed version of *EasyBLE*.



A click on the "Init" button will finally initialise TOSHIBA TC35661 *Chiron*.

5.4 Profile selection and advertising

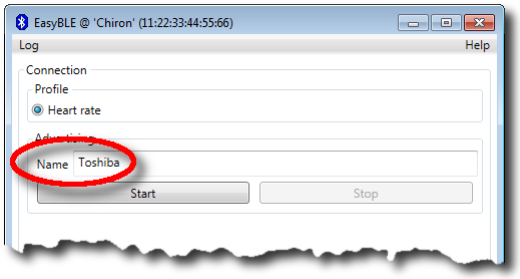
Once TOSHIBA TC35661 *Chiron* is correctly initialized, the BLE capabilities of *EasyBLE* can be configured.



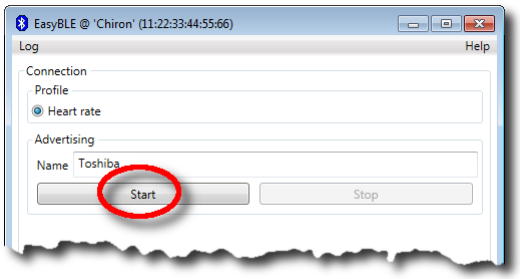
TOSHIBA TC35661 *Chiron* can simulate different profiles. At the moment, the following profiles are supported:

- Heart rate profile

Please choose the desired profile using the radio button.



The name to be used during advertising can also be chosen.

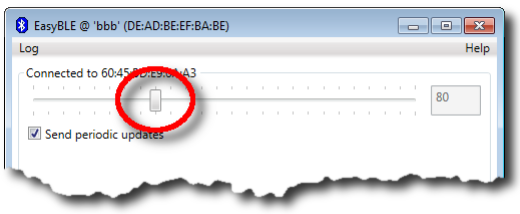


Pressing the "Start" button with make TOSHIBA TC35661 *Chiron* start advertising the selected profile and wait for incoming connections. Pressing the "Stop" button will stop advertising.

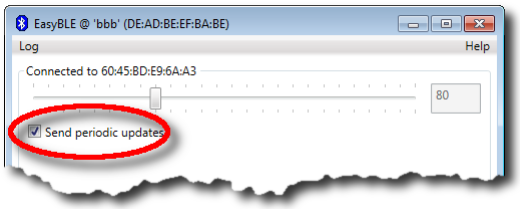
5.5 Connection

If a remote party connectes to the selected profile, the underlying service may be configured individually. If the remote device disconnects, *EasyBLE* will go back to the profile selection and advertising state.

5.5.1 Heart rate service



For the *Bluetooth heart rate service* the heart rate measurement characteristic can be controlled. By moving the slider the heart rate value can be changed.



Checking the "Send periodic updates" checkbox will make *EasyBLE* notify the connected device periodically.

This is the mandatory behaviour requested by the *Bluetooth heart rate service* specification, but can be disabled because it may disturb analysing the log information correctly.

6 Application examples

6.1 Bluetooth LE connection between the *PAN1026 USB stick* and an iOS device

6.1.1 Introduction

The purpose of this section is to explain how to set up a Bluetooth Low Energy connection between the *PAN1026 USB stick* and an iOS based Bluetooth device by using the software *EasyBLE* and the application Wahoo Utility.

The following instruction assumes that the required software is already installed on your devices and the initialization of the *PAN1026 USB stick* is completed.

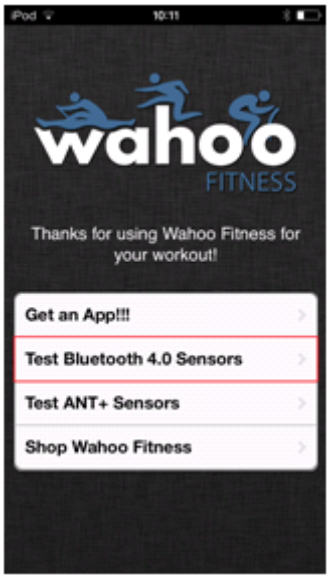
If this is not the case, please refer to the previous sections to install the software and to initialize the *PAN1026 USB stick*. The application Wahoo Utility is available at the App Store for free.

6.1.2 Instruction

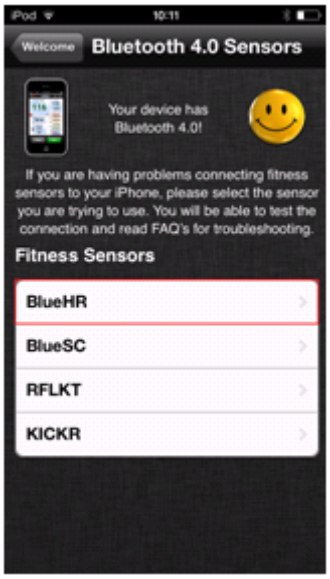
Please launch the *EasyBLE* software from the start menu and initialize the *PAN1026 USB stick* as it is described in the previous sections.

After that, switch over to the iOS based Bluetooth device, turn on Bluetooth and launch the Wahoo Utility application.

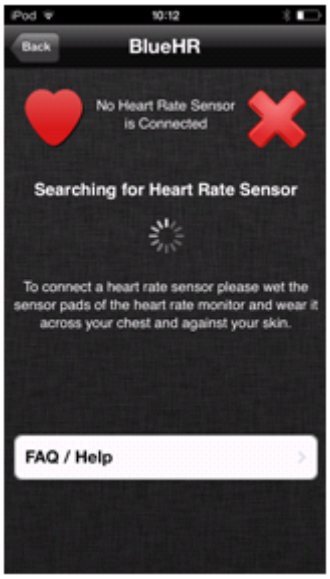
Please select “Test Bluetooth 4.0 Sensors” to connect to a fitness sensor, which is in this case simulated by the *PAN1026 USB stick* as a heart rate sensor.



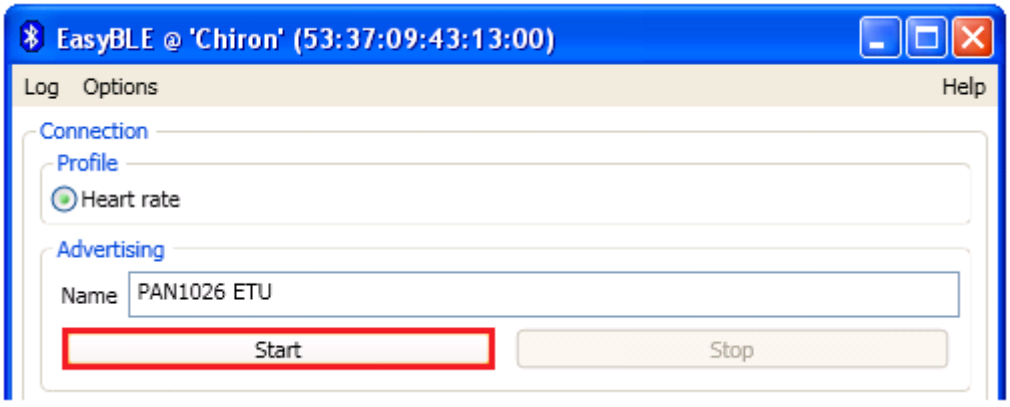
To search for the *PAN1026 USB stick* as a heart rate sensor, please select “BlueHR”.



Now, the iOS Bluetooth device is searching for a heart rate sensor until it will find one.

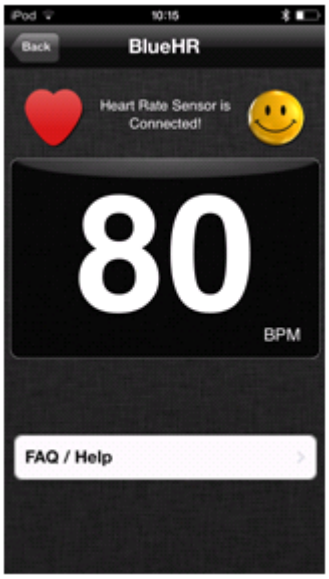


Please switch back to the *EasyBLE* software and press the “Start” button to start the simulation of a heart rate sensor.



Now, the connection between the *PAN1026 USB stick* and the iOS Bluetooth device is complete and can be used by moving the slider.

A look to the iOS Bluetooth device will show the heart rate which is set in *EasyBLE*.



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