Contact Information

Sales

www.silabs.com

Technical Support
http://www.silabs.com/support

WWW
www.silabs.com

SILICON LABS
Phone: +1 877.444.3032
400 West Cesar Chavez
Austin, TX 78701 USA

QSG134: DKBT *Bluetooth* Dual Mode Development Kit Quick Start Guide

Wednesday, 25 November 2020

Thank You for selecting Bluegiga

The DKBT Development Kit is meant to help you to get started and evaluate the Bluegiga *Bluetooth* Dual Mode modules like the BT121-A. The DKBT also allows you to easily test the features of the *Bluetooth* Dual Mode module and try out the example applications provided by Bluegiga and it can also be used for prototyping user applications.

This Quick Start Guide provides instructions on how to test the built-in demo application pre-installed into the BT121-A module of your DKBT and points you to additional software and documentation resources available for the BT121-A module and the DKBT.

Development Kit contents

- DKBT Main Board
- BT121-A Carrier Board
- Micro USB cable
- Printed Quick Start Guide and EULA
- 1.5V AAA battery

Preparing the DKBT

Step 1 : Connect the Carrier Board to the Main Board.

Step 2 : Make sure all the three jumpers are in place.

Step 3 : Turn the **SPI Display** switch **ON.**

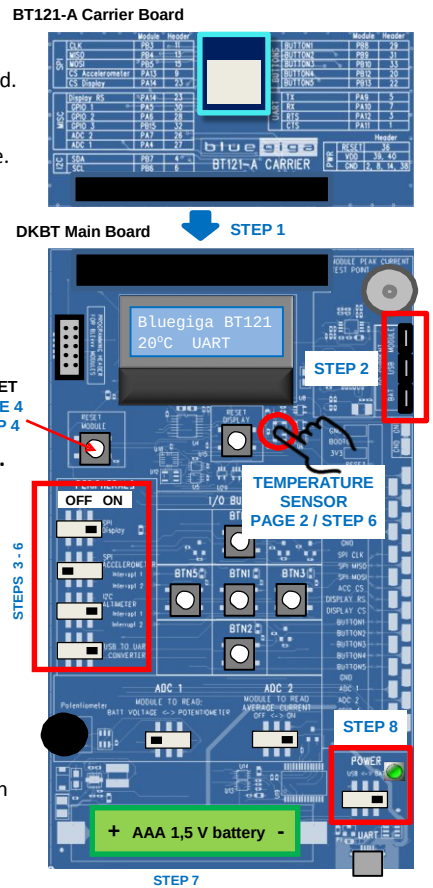
Step 4 : Turn the **SPI Accelerometer** switch **OFF.**

Step 5 : Turn the **I2C Altimeter** switch **ON.**

Step 6 : Turn the **USB to UART Converter** switch **ON.**

Step 7 : Install the AAA battery in to the holder.

Step 8: Turn the **POWER** switch to **BAT** position.



Verify:

- The power led next to the **POWER** switch turns **ON**.
- The display turns on and displays the text shown in the image on the right.

Learn more and get started with development

To learn more about the *Bluetooth* Dual Mode Modules and to try other demos and examples:

- Go to : www.silabs.com/register
- Create yourself an account and log in
- Go to http://www.silabs.com/products/wireless/bluetooth/bluetooth-smart-modules/Pages/bt121-bluetooth-dual-mode-module.aspx
- Download the ***Software Getting Started Guide*** to learn more about the *Bluetooth* Dual Mode software, SDK, tools and other demo applications
- Download the ***Development Kit User Guide*** to learn more about the development kit
- If you have any questions or need help contact our customer service at http://www.silabs.com/support

SPP Demo (continued)

Step 6 : Use your Android or Windows device to discover and pair a device named ***BT121 HTM+SPP Demo***

Step 7 : Open ***S2 Bluetooth Terminal*** application and use it to open SPP connection to the BT121.

Step 8 : Once the connection has been established BT121 will send you a welcome message over Bluetooth SPP connection which you can observe in the ***S2 Bluetooth Terminal*** application.

Step 9 : Use ***S2 Bluetooth Terminal*** to send data to BT121 and observe the data in the terminal software connected to the DKBT.

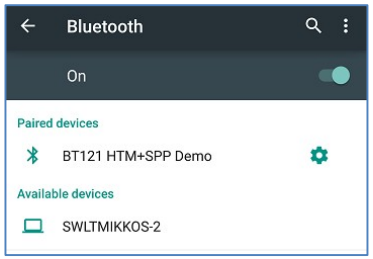
You can also send data from the BT121 to the ***S2 Bluetooth Terminal***.

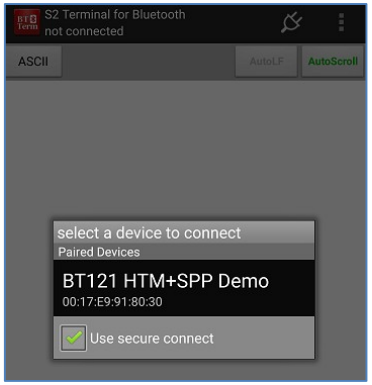
Verify: The terminal application will show "SPP CONNECTED" and "SPP DISCONNECTED" messages indicating Bluetooth SPP connection establishment and disconnection.

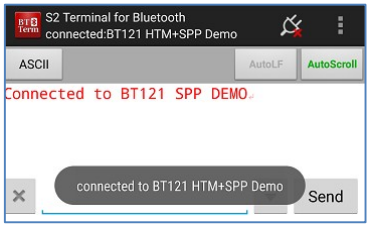
The screenshot from **Tera Term** on the lower right displays the text *"Hello from Android"* sent from the ***S2 Bluetooth Terminal*** to the BT121.

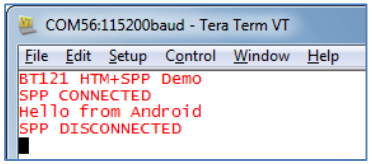
NOTE! If you change the orientation of your Android device from portrait to landscape or vice versa the SPP connection is disconnected by Android.

NOTE! You can perform the same test with a Windows PC using the built-in Bluetooth interface.









The Built-in Demo Applications

The built-in demo application on the DKBT will make the Bluetooth Dual Mode module visible to both Bluetooth BR/EDR and Low Energy devices and can be connected with both.

The demo will expose the temperature readings from the I^2C Altimeter sensor via the *Bluetooth* Low Energy connection using the *Health Thermometer Profile*. The demo enables also serial data exchange over *Bluetooth Serial Port Profile (SPP)*.

Try the *Bluetooth* LE Demo with iOS

Step 1 : Download and install for example

BLExplr or **BLE Utility** application from App Store.

Step 2 : Open ***BLExplr*** and perform a device discovery.

Step 3 : Select and connect with device named

BT121 HTM+SPP Demo.

Verify: Once the connection has been opened, the ***BLExplr*** application will show you the GATT services the device implements.

NOTE! If you do not see the UUID's listed as shown in the screenshot at right go to your App settings and update UUID descriptions.

Step 4 : Select the ***Health Thermometer*** service.

As soon as you select the ***Health Thermometer*** service the ***BLExplr*** application will perform a characteristics discovery and show all the data exposed by the service.

Step 5 : Select the ***Temperature Measurement*** characteristic.

Step 6 : Press **Enable Indicate** button to enable the transmission of temperature readings to the application.

Verify: The temperature measurement value is shown in hex and decimal values and you can observe the value changing both in the application and on the DKBT's LCD-display as the temperature changes.

To see the temperature change press your finger against the sensor indicated by a red circle on the DKBT Main Board image on **Page 1**.

STEP 6

Try the *Bluetooth* LE Demo with Android

With Android an application called ***BLE Tool*** is recommen- ded for testing this demo.

Step 1 : Download and install ***BLE Tool*** application from Google Play Store.

Step 2 : Use your Android device to discover and pair a device named ***BT121 HTM+SPP Demo.***

Step 3 : Open ***BLE Tool*** and it will perform device discovery automatically.

Step 4 : Select and connect with device named ***BT121 HTM+SPP Demo.***

NOTE! If requested for pairing during the connection setup accept pairing with ***BT121 HTM+SPP Demo*** If you did pairing in **Step 2** this is not needed.

Verify: Once the connection has been opened, the ***BLE Tool*** application will show you the GATT services and characteristics the device offers.

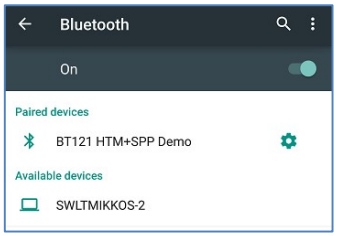
Step 5 : Select the ***Health Thermometer*** service and ***Temperature Measurement*** characteristic.

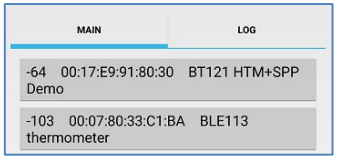
Step 6 : Press **Read values** button to read the temperature.

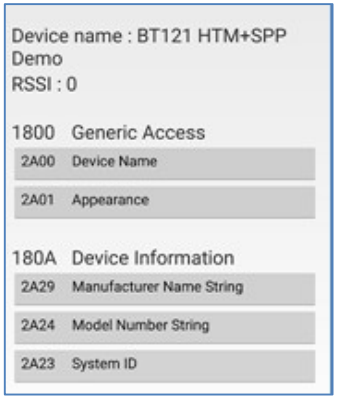
Verify: The temperature value is shown in decimal, hex or as a string depending on your selection in the App.

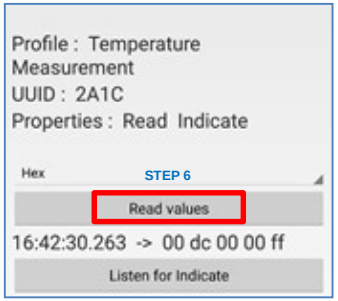
NOTE! Android applications typically do not support the indication of characteristic values. This is an Android issue.

Because of the above issue to update the temperature reading you need to press the **Read values** button every time you want to perform the update.









Bluetooth Serial Port Profile Demo

The *Bluetooth* SPP Demo will enable serial data exchange over *Bluetooth Serial Port Profile (SPP)* and the data can be received with a PC or an Android phone running a terminal application.

NOTE! Apple iOS devices cannot be used to try out this demo since they do not implement the *Bluetooth* SPP profile. Instead Apple uses the *iAP* profile which is only available to Apple MFI licensees.

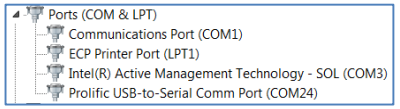
Try the SPP Demo

Step 1 : Connect a micro USB cable between a PC and the DKBT USB connector named **UART.**

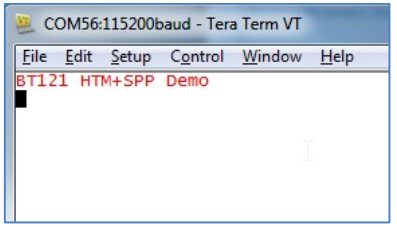
Verify: A Windows PC will detect the USB-to-UART converter on the DKBT and starts to auto-matically install the drivers for it.

NOTE! If the PL2303 driver is not automatically installed you can manually download and install it from the Prolific web site at www.prolific.com.tw.

Step 2 : Check from Windows device manager, which COM port is assigned for the DKBT (named *"Prolific USB-to-Serial Comm Port"*).



Step 3 : Open the COM port with a terminal soft-software such as ***Tera Term.***
Set the following settings:
115200 bps
8 data bits
no parity
1 stop bit
RTS/CTS flow control enabled



Step 4 : Press ***Reset Module*** button on the DKBT kit to reset the module and make sure you see "***BT121 HTM+SPP Demo***" text in the terminal application indicating that the serial connection works.

Step 5 : Download and install ***S2 Bluetooth Terminal*** application from Google Play Store or alter-natively use the built-in *Bluetooth* interface of your Windows PC.