
Application Note:

Telink Zigbee BLE Concurrent Mode Demo User Guide

AN-19071000-E4

Ver 1.3.0

2021/09/06

Brief:

This document presents the guide on how to use Telink Zigbee BLE Concurrent Mode Demo.



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Revision History

Version	Major Changes	Date	Author
1.0.0	Initial release	2019/7	TYT, JF, WJZ
1.1.0	Updated Section 3.5 Establish network and Section 3.6 Configure Zigbee Network.	2019/8	TYT, WJZ, JF
1.2.0	Updated Section 3.4 Burn chip ID, Section 3.5 Establish network, and Section 3.7 Light Control.	2020/1	TYT
1.3.0	An overall update to the guide as establishing network, joining network and the control operations have changed.	2020/3	WJZ, YJL
1.3.1	<ol style="list-style-type: none"> 1. Demo must run on the TLSR8258 USB dongles with 1M Flash (Chapter2.2) 2. without sending permitJoin after GW formation is done (Chapter4.1) 3. rename ble device (Chapter4.1/ 4.3.2) 	2020/11	WJZ
1.3.2	<ol style="list-style-type: none"> 1. Use a new demo tool of "TelinkConnect" (Chapter4.1/ 4.3.2) 	2021/08	

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1. Overview

This document presents the guide on Telink Zigbee BLE Concurrent Mode Demo.

Zigbee/BLE Concurrent Demo is a concurrent demo provided by Telink based on Zigbee 3.0 and BLE standard. This demo shows how to join, connect and simple control operations on nodes GW (Zigbee Coordinator), SmartPhone (as BLE master) and Zigbee/BLE Concurrent Lighting.

2. Software and Hardware List

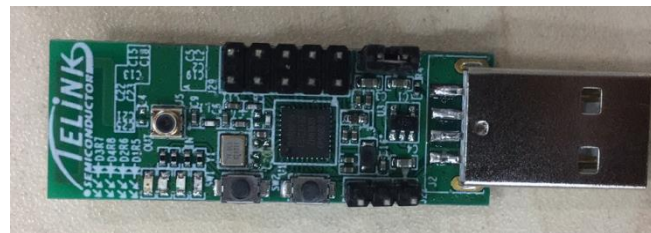
2.1 Software List

1. Pre-requisite software
 - a. Integrated development environment: Telink IDE
http://wiki.telink-semi.cn/tools_and_sdk/Tools/IDE/Telink_IDE.zip
 - b. Download tool: Telink download tool
http://wiki.telink-semi.cn/tools_and_sdk/Tools/BDT/BDT.zip
2. Demo tool
 - a. TelinkConnect (BLE APP on smartPhone)
3. Software tool to capture packets for analysis.
 - a. Ubiqua

2.2 Hardware List

Telink Zigbee BLE Concurrent Mode Demo currently only supports TLSR8258 hardware platform. (This demo needs at least two TLSR8258 USB dongles with 1M Flash.)

Figure 2-1 TLSR8258 USB Dongle



2.3 Firmware List

- ✧ sample_concurrentGw_8258.bin: Zigbee/BLE Concurrent Gateway (GW)
- ✧ sample_concurrentLight_8258.bin: Zigbee/BLE Concurrent Lighting (Lighting)

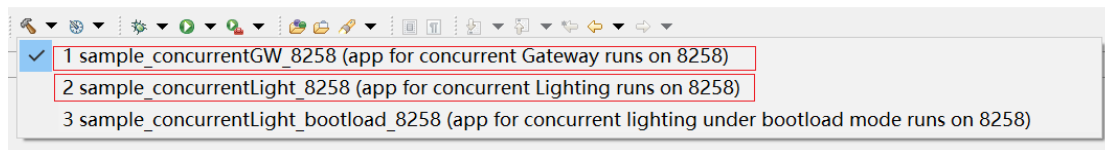
3. Obtain Firmware

Download Zigbee/BLE Concurrent SDK from:

http://wiki.telink-semi.cn/tools_and_sdk/Dual_Mode/Zigbee_BLE_Concurrent_SDK.zip

tl_zigbee_ble_concurrent_sdk: Zigbee/BLE Concurrent SDK to generate Gateway firmware and Lighting firmware.

Figure 3-1 Compile Options



Select `sample_concurrentGW_8258` to generate `sample_concurrentGw_8258.bin`.

Select `sample_concurrentLigth_8258` to generate `sample_concurrentLight_8258.bin`.

See chapter 3 of “AN_18110500-E_Telink Zigbee Demo User Guide” for how to compile and burn firmware.

4. Establish, Join Zigbee Network and Simple Control of the Network

4.1 Establish Network (GW Device)

Step 1. Power on GW, the red LED will be on.

Step 2. Enable “TelinkConnect” on the mobile, search Bluetooth devices, you can find the BLE device named “tl-gw”.

Figure 4-1 GW Device Scan Interface



Step 3. Bind and connect the device via “TelinkConnect”.

Step 4. After entering the interface below, send BLE command to configure and establish Zigbee network.

Figure 4-2 Device Gateway Interface

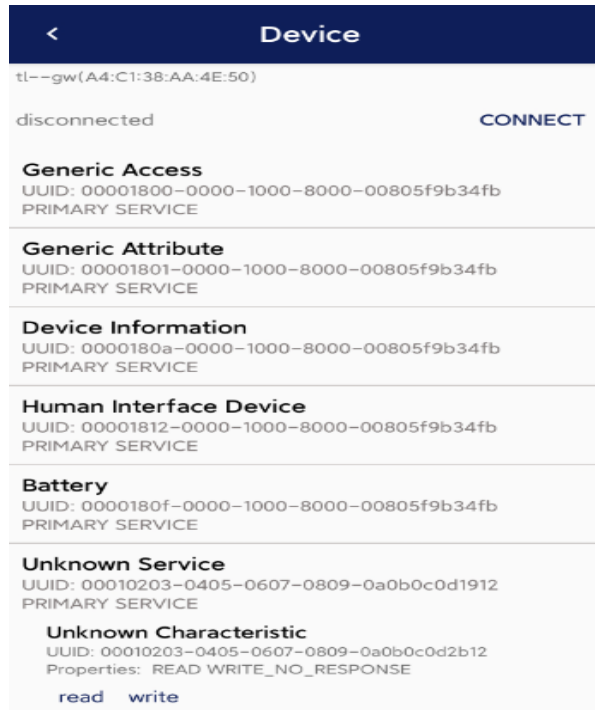
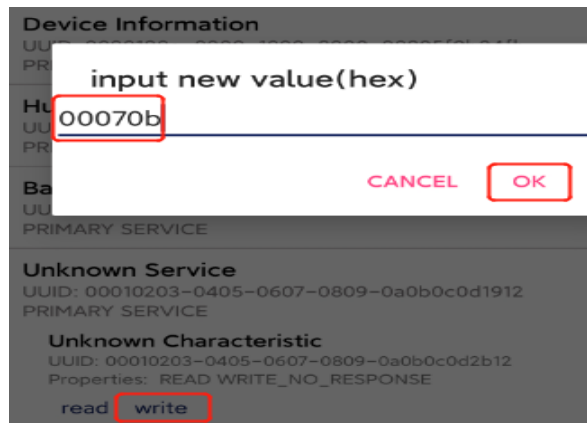


Figure 4-3 Command Interface



- i) Set channel: select the work channel of Zigbee network via the command **0x0007xx** (xx ranges from 0x0b to 0x1a),
- ii) Establish network: use **0x0001** to establish the network after the channel is set.

See chapter 5 of AN_19052900-E_Telink Zigbee SDK Developer Manual for command format.

Step 5. Permit join can be enabled/disabled via BLE commands, the states of permit join can be known by on/off of the green LED (**on**: enable; **off**: disable), commands as follows:

Disable command: 0x0034fffd**00** (permit join duration: 0x00, disable permit join)

Enable command: 0x0034fffd**XX** (permit join duration: XX (value from 0x01 to 0xfe), enable permit join 0xXX seconds)

4.2 Join Network (Lighting Device)

Step 1. Enable permit join to enable GW's permit join, the green LED will be on.

Step 2. On the condition that GW join is permitted, power on the Lighting nodes that have not joined the network, the Lighting nodes will start joining automatically. After joining the network successfully, permit join will be automatically enabled for 180s, the green LED will be on accordingly.

4.3 Lighting Control

The concurrent Lighting can be controlled either through GW or BLE via the mobile.

4.3.1 Control by GW

There are two ways to control by GW:

1. Zigbee direct control:

Press the SW1 button to trigger GW's Zigbee broadcast, GW broadcasts On/Off commands every second, the yellow LED of the Lighting node will flash accordingly. Press the SW1 button again will stop the broadcast.

2. BLE indirect control:

RF connect pairing, connect the GW node, control the behavior of the Lighting node through GW.

LED on command: **014002FFFD0101** (yellow LED on)

LED off command: **014102FFFD0101** (yellow LED off)

4.3.2 Control the Lighting Node Directly by BLE via the Mobile

Step 1. Search via “TelinkConnect”, you can find the Lighting device named “tIBulb”.

Figure 4-4 Lighting Device Scan Interface



Step 2. Pair and connect the Lighting device.

Step 3. After the Lighting is connected, enter the device interface and directly send LED on/ LED off commands.

LED on command: 0x000601

LED off command: 0x000600