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About BPI-G1 IoT development board



BPI-G1 is an integrated IEEE802.11 b / g / n (WIFI wireless network), IEEE802.15.4 (Zigbee), IEEE 802.11-2007 Standard (Bluetooth Low Energy4.0) development board. It is very easy to put these wireless protocol seamlessly together, you can exchange any different transport protocols, and three kinds of wireless protocols are integrated by three single-chip SOC, you can easily create your own Internet of things (IoT). WIFI part of which is the use of TI's CC3200, which is a high-performance ARM® Cortex®-M4 wireless SOC, internally integrated TCP / IP protocol stack, simply use the BSD Socket can connect to the Internet. The Zigbee is used TI CC2530, which integrates wireless capabilities and enhanced 8051 core SOC, TI after years of improvement, it is already quite mature and stable, TI's Z-stack has achieved Zigbee 2007 / Pro, you can use the 16's short address, you can use the 64-bit long address communication, face large local interconnect systems, advanced security encryption and mesh network structure can easily cope. Bluetooth 4.0 (BLE) using TI CC2540 / 1, an integrated BLE stack and enhanced 8051 core, low-power wireless SOC, at present, most mobile phones have support for Bluetooth 4.0, both as a wearable device, or mobile interactive Accessories, CC2540 can be easily completed. Meanwhile BPI G1 also incorporates a high-performance STM32 ARM® Cortex®-M3 microcontroller, which will help you deal with time-consuming data or transit, the three wireless SOC coordinated. Therefore, the use of BPI G1 can help you quickly achieve a variety of things DIY design.

What can I do with BPI-G1?

- 1. Smart Home.
- 2. Intelligent Gateway
- 3. DIY electronic control

BPI-G1 hardware





BPI-G1 hardware interface



STM32F103CB part Peripheral Interface

Uart Interface



SPI Interface



I2C Interface



CAN Interface



USB2.0 Interface



PWM & Timer Capture channel



ADC channel



TI CC3200 part Peripheral Interface

4-wire SDIO Interface



Uart Interface



SPI Interface



I2C Interface



PWM & Timer Capture channel



ADC channel



TI CC2530 part Peripheral Interface

Uart Interface



SPI Interface



PWM & Timer Capture channel



ADC channel



TI CC2540/1 part Peripheral Interface

Uart Interface



SPI Interface



ADC channel



PWM & Timer Capture channel





BPI-G1 Global Power and Ground

BPI-G1 Module interconnection

WIFI (CC3200), BLE (CC2540 / 1) and ZIGBEE (CC2530) are interconnected through STM32F103CB serial port, they can work alone, can also coordinate the work will be given below communication connections between the modules schematic \circ 5.1 CC3200 connection with F103



CC2540 connection with F103



CC2530 connection with F103



TI CC3200 mode selection jumper

Programming mode

Under the programming mode, you need to VI and VO short on power, CC3200 will receive as a writer, it will be the serial data received by the SPI mode file system writes to the external SFLASH, but the programming is completed after not running, you need to disconnect VI and VO, then on again, then it will be read in the file system SFLASH into memory and execute code. As shown in Figure.



Run mode

Run mode, you need to disconnect VI and VO, then power on, CC3200 will SFLASH read from the file system into memory and run. In this mode, plug in the JTAG interface, using the IDE's DEBUG function, and the code will be downloaded from the JTAG interface to the memory to run, you can perform single-step debugging. For fast functional verification, this is the fastest way. However, after a reset circuit, CC3200 will be new to SFLASH read the file system operation. As shown in Figure.





Status LEDs for each module

Button

BPI G1 has a button, which is connected to the PB3 pin F103, in the middle of a pullup resistor in parallel, when the key is pressed, the pin will be low-level information. Figure.



BPI-G1 Hardware Specifications

Items	Hardware Specifications
CPU STM32F103CB ARM Cortex™- M3 32-bit RISC core	
WIFI	CC3200 device is an integrated high-performance ARM Cortex-M4 MCU and with a Wi-Fi network processor subsystem (This subsystem includes 802.11 b / g / n radio, baseband, network protocol stack and a powerful encryption engine MAC, supports 256-bit encryption in order to achieve a fast, secure Internet connection). This device contains a variety of peripherals, I2S, SD / MMC, UART, SPI, I2C and four-channel analog to digital converter (ADC).
Bluetooth	CC2540 device is a low cost, low power, true system-on-chip (SoC) for Bluetooth low energy applications. It enables to build a strong BLE master or slave node with very low total cost BOM. The CC2540 combines the excellent RF transceiver, the industry-standard enhanced 8051 MCU, in-system programmable flash memory, 8 KB RAM and many other powerful auxiliary functions and peripherals.
Zigbee	CC2530 device is a true system-on-chip (SoC) for IEEE802.15.4, Zigbee RF4CE applications and solutions. It enables the establishment of a strong network of nodes and very low total cost BOM. CC2530 combines leading RF transceiver, the industry-standard enhanced 8051 MCU, insystem programmable flash memory, 8 KB RAM outstanding performance and many other powerful features.
Power	5V DC
Buttons	Reset button
LED	WiFi , Bluetooth , Zigbee
Monitor	OLED (128x64)
OS	Free-RTOS \ Ti-OS \ Coustom-OS
Product size	95mm X 56mm
Weight	19g

Some of the features TI CC3200

ARM Cortex-M4 core, 80MHz operating frequency

- Embedded memory RAM (up to 256KB)
- External serial flash boot loader, and the ROM peripheral drivers
- 32-channel direct memory access (DMA)
- For advanced fast security hardware encryption engine, including
 - 1. AES , DES and 3DES
 - 2. HA2 and MD5
 - 3. Cyclic Redundancy Check (CRC) checksum
- 1 SD / MMC interface
- 2 Universal Asynchronous Receiver Transmitter (UART)
- 1 serial peripheral interface (SPI)
- 1 inter-integrated circuit (I2C)
- 4 general-purpose timers, support for 16-bit pulse width modulation (PWM) mode
- 1 watchdog timer
- 4-channel 12-bit ADC (ADC)
- Up to 12 independently programmable, reusable general purpose input output (GPIO) pins
- Built-in TCP / IP stack
 - 1. Industry standard BSD socket application programming interface (API)
 - 2. 8 simultaneous TCP sockets or UCP
 - 3. 2 slots while TLS and SSL
- Strong encryption engine for the 256 for AES TLS and SSL encrypted connections fast, secure Wi-Fi and internet connection
- Base stations, access points (AP) and Wi-Fi Direct Mode
- WPA2 Personal and Enterprise Security
- For independent and fast Wi-Fi connection SimpleLink Connection Manager
- SmartConfig technology, AP mode and WPS2, these techniques used to implement a simple and flexible Wi-Fi hotspot
- Tx power
 - 1. 18.0 dBm @ 1 DSSS
 - 2. 14.5 dBm @ 54 OFDM
- RX Sensitivity
 - 1. -95.7 dBm @ 1 DSSS
 - 2. -74.0 dBm @ 54 OFDM
- Advanced low power mode
 - 1. Support real-time clock (RTC) Sleep: 4µA
 - 2. Low power deep sleep (LPDS): 120 μA
 - 3. RX flow (MCU activation): 59 mA @ 54 orthogonal frequency division multiplexing (OFDM),
 - 4. TX flow (MCU activation): 229 mA @ 54OFDM, maximum power
 - 5. Idle connections (in LPDS in MCU): 695 µA @ DTIM = 1
- Clock Source
 - 1. 40.0MHz crystal with internal oscillator
 - 2. RTC 32.768kHz crystal or external clock

Some of the features TI CC2530

- Excellent performance and low power 8051 microcontroller core with code prefetch feature
- 256K system programmable flash memory
- 8KB RAM, with a power supply in a variety of data retention
- Hardware debugging support
- The powerful 5-channel DMA
- Integrated high-performance operational amplifiers and ultra low-power comparator
- IEEE 802.15.4 MAC timer, general-purpose timers (one 16 bit, two 8 bit)
- IR generating circuit
- 32-kHz sleep timer capture
- CSMA / CA hardware support
- Accurate digital RSSI / LQI support
- 6 channels can be configured 12-bit ADC resolution
- AES security coprocessor
- 2 Powerful USART interface to support multiple serial protocol
- 1 common SPI interface
- 8 general purpose I / O pins (6 × 4 mA, 2 × 20 mA)
- Watchdog Timer
- Wireless Performance
 - 1. Adapt 2.4GHz IEEE802.15.4 RF
 - 2. High receiver sensitivity and robustness
 - 3. Programmable output power up to 4.5dBm
- Low power consumption
 - 1. Active mode RX (CPU idle):
 - 2. TX Active mode in 1dBm (CPU idle): 29mA
 - 3. Power mode 1 (4us wake): 0.2mA
 - 4. Power Mode 2 (Sleep timer runs): 0.2mA
 - 5. Power Mode 3 (external interrupts): 0.4uA
 - 6. Wide supply voltage range (2V-3.6V)

Some of the features TI CC2540/1

- Excellent performance and low power 8051 microcontroller core with code prefetch feature
- 256K system programmable flash memory
- 8KB RAM, with a power supply in a variety of data retention
- Hardware debugging support
- The powerful 5-channel DMA
- Extended baseband automation, including automatic recognition and address
- General-purpose timers (one 16bit, two 8bit)
- IR generating circuit
- 32-kHz sleep timer capture
- Accurate digital RSSI / LQI support
- 2 channels can be configured 12-bit ADC resolution
- AES security coprocessor
- 2 Powerful USART interface to support multiple serial protocol
- 1 common SPI interface
- 8 general purpose I / O pins (6 × 4 mA, 2 × 20 mA)
- Watchdog Timer
- Wireless Performance
 - 1. Suitable excellent receiver sensitivity (at 1 Mbps is -94 dBm), selectable, and barrier properties
 - 2. Programmable output power up to 4dBm (2540) / 0dBm (2541)
- 2541 Low Power
 - 1. RX mode low: 17.9 mA
 - 2. Mode TX (0 dBm): 18.2 mA
 - 3. Power mode 1 (4- μ s wake): 270 μ A
 - 4. Power Mode 2 (Sleep timer open): 1 μ A
 - 5. Power Mode 3 (external interrupts): 0.5 μA
 - 6. Wide supply voltage range (2 V-3.6 V)
- 2540 Low Power
 - 1. RX mode low: 19.6
 - 2. Mode TX (-6 dBm): 24 mA
 - 3. Power mode 1 (3-µs wake): 235 µA
 - 4. Power Mode 2 (Sleep timer Open): 0.9 µA
 - 5. Power Mode 3 (external interrupts): 0.4 µA
 - 6. Wide supply voltage range (2 V-3.6 V)

Some of the features STM32F103CB

- ARM Cortex-M3 core running at 72MHz
- 128K system programmable flash memory
- 20KB RAM
- 2 × 12 bits 1 microsecond A / D
 - 1. converter (up to 16 channels)
 - 2. Conversion range: $0 \sim 3.6 \text{ V}$
 - 3. Dual sample and hold function
- DMA
 - 1. 7-channel DMA controller
 - 2. Supported peripherals: timers, ADC, SPI's, I2C and USART
- 18 general-purpose programmable GPIO
- 7 Timer
 - 1. 3 16-bit timers, each up to 4 IC / OC / PWM or pulse counter quadrature (incremental) encoder into
 - 2. 16-bit motor control PWM timer, dead-time generation and emergency stop
 - 3. 2 watchdog timers (Independent and windows)
 - 4. System Timer: 24 downcounter
- 1 I2C interface (SMBus / PMBus)
- 3 USART (ISO7816 interface, LIN, infrared capabilities, modem control)
- 1 SPI interface (18 Mbit / s)
- 1 CAN interface (2.0B Active)
- 1 full-speed USB 2.0 interface

BPI-G1 Main features

- Multi-module integration, development board does not occupy a small space
- Multi-protocol integration, to meet the Internet of things needs of various wireless connections
- Rich interface, no matter which one you want to achieve functional modules can easily match
- Abundant development resources, open source sharing of data and TI, ST and other major manufacturers improve the development of information
- · IOS and Android devices open software interface helps you quickly connect a handheld control device
- Zigbee wireless integrated power amplifier section, an open area can reach as far as 3 km of intercellular communication

Which IDE development can use

TI CC3200 :

- Code Composer Studio (CCS)
- IAR EWARM
- GCC

TI CC2530/CC2540:

- IAR EW8051
- Instant Contiki

STM32F103CB :

- IAR EWARM
- GCC

Which emulator debugging

TI C3200:

BPI OpenDebugger

TI CC2530/CC2540:

- BPI OpenDebugger
- TI CC Debugger
- TI SmartRF04EB
- TI SmartRF05EB

STM32F103CB :

- BPI OpenDebugger
- JLink V8
- STLink V2

BPI-G1 Schematic



google drive download:

https://drive.google.com/file/d/0B4PAo2nW2Kfnd3pUbnFORI9ZdVE/view?usp=sharing

Explanation

- In the implementation of the development of wireless applications on G1 plug in antenna
- DC power input is 5V, the development board interfaces are 3.3V VCC
- CC3200 The three status lights above the IO IO port and port are the same

BPI-G1 Quick Start

Demonstration IDE, here I will use the IAR EWARM under Windows7 and IAR EW8051, debugging emulator will use BPi open debugger burn board.

BPI opne debugger board:



About open debugger burn board, please see this gitbook:

https://bananapi.gitbooks.io/bpi-open-debugger-burn-board/content/

Quick start of TI CC3200

Download and install the following software :

CC3200 SDK Package: http://www.ti.com/tool/cc3200sdk

Assuming the default installation folder C:\ TI\ CC3200SDK_1.0.0\

- IAR EWARM (Please install the software on their own, we recommend using IAR EWARM 7.2 or later)
- Tera Term (or similar software)

Tera Term link: http://en.sourceforge.jp/projects/ttssh2/releases/

Configuration G1



G1 connection BPI open debugger board



Check whether the connected BPI open debugger board:

BPI open debugger connected to the PC, and check whether the drive is installed, if you can not identify, install TI UNIFLASH, the programming software that comes with the driver. If you can identify that, please give G1 on electricity.



Cover IAR debugger interface file

Copy the file C:\TI\CC3200SDK_1.0.0\CC3200-sdk\tools\iar_patch\armLMIFTDI.dll to folder C:\Program Files (x86)\IAR Systems\Embedded Workbench 7.0\arm\bin (Select be covered).

Recompile SimpleLink library files

1. Start the IAR and select File>Open>Workspace from the menu..


2. Browse C:\TI\CC3200SDK_1.0.0\cc3200-sdk\simplelink\ewarm directory and open simplelink.eww



3. From the menu, select Project>Rebuild All to Recompile simplelink project

😽 simplelink - IAR	Embedded Workbench IDE	
File Edit View	Project Simulator Tools Window	Help
Workspace	Add Files Add Group Import File List Add Project Connection	
	Remove Create New Project Add Existing Project	- 1
- ⊕ C fs.c	Options	Alt+F7
- ⊕ C netcfg.c	Version Control System	•
-⊞ C socket.c	Make Compile	F7 Ctrl+F7
U C Wian.c	Rebuild All	
	Clean Batch build	F8
	Stop Build	Ctrl+Break

Compile, download and debug routines WLAN Station

6

- Open the wlan_station project by selecting File>Open>Workspace from the menu, navigating to C:\TI\CC3200SDK_1.0.0\cc3200-sdk\example\getting_started_with_wlan_station\ewarm, and opening wlan_station.eww °
- 2. Open the common.h file located at the path C:\TI\CC3200SDK_1.0.0\cc3200-sdk\example\common\ °
- Edit common.h to use the SSID, security type and security key of the Access Point being used. Edit the macros SSID_NAME, SECURITY_TYPE and SECURITY_KEY to contain the Access Point's information as shown in Figure. The security types supported for this demo are WPA/WPA2 and Open. For Open security, define SECURITY_TYPE as SL_SEC_TYPE_OPEN_For WPA and WPA2 security, define it as SL_SEC_TYPE_WPA °

L_GEO_TH L_OFEN. FOR WI A and WI A2 security, define it as GE_GEO_TH L_WI A								
// Values for below macr	os shall be modified	as per access-point(A	// Values for below macro	os shall be modified as per access-point(
// SimpleLink device will connect to following AP when application // SimpleLink device will connect to following AP when applicatio								
			11					
#define SSID_NAME	"cc3200demo" /	AP SSID */	#define SSID_NAME	"Your AP Name Here" /* AP SSID */				
#define SECURITY TYPE	SL_SEC_TYPE_OPEN/	* Securi OPEN	#define SECURITY TYPE	SL_SEC_TYPE_WPA/* Security t pe (OPEN				
#define SECURITY_KEY		Password of the sec	#define SECURITY_KEY	"Your AP_Security_Key_Here"				
#define SSID LEN MAX	32		#define SSID LEN MAX	(32)				

4. Save common.h.

#define BSSID_LEN_MAX

- 5. Rebuild the wlan_station project by selecting Project>Rebuild All from the menu.
- The debugger must be configured to download code to the device. Select Project>Options from the menu, and select the Debugger category. In the Setup tab, choose TI Stellaris as the driver, as shown in Figure, and press Ok.

#define BSSID_LEN_MAX

(6)

Category:						F	actory Settings
General Options C/C++ Compiler Assembler	Setup D	lowpload	Images	Extra Options	Multicore	Plugins	
Custom Build		omioda	magos	Envira orphonito	mancore	1 reight to	
Build Actions	Driver			🔽 <u>B</u> un to			
Linker	TI Stella	aris	-	main			
Angel CMSIS DAP GDB Server IAR ROM-monitor I-jet/JTAGjet J-Link/J-Trace TI Stellaris Macraigor PE micro RDI ST-LINK	Angei CMSIS I GDB Se IAR RO I-jet/JT/ J-Link/J T Stall Macraig PE micr RDI ST-LINK Third-Pa XDS100	DAP Inver M-monitor AGjet -Trace ina or or or or or or or or or or or or or					
Third-Party Driver XDS100/200/ICDI					01		Count

- 7. Launch Tera Term, and create a new serial connection to the CC3200 Launchpad COM port as shown in Figure.
- 8. In the menu, select Setup>Serial Port, and change the baud rate to 115200 as shown in Figure.

COM4:9600baud - Terr File Edit Setup Con	etup	X	
Port:	СОМ4 -	ОК	
Baud rate:	115200 -		
Data:	8 bit -	Cancel	
Parity:	none 👻		
Stop:	1 bit 👻	Help	
Flow control:	none 🔫		
Transmit de O ms	lay ec/char 0 ms	sec/line	
			-

9. Click the debug icon as shown in Figure 24 to download code to the device and start debugging.Select Debug>Go from the menu or press F5 to begin execution.



10. If the CC3200 successfully completes all steps, the serial output appears as shown in Figure.

A COM4:115200baud - Tera Term VT	
File Edit Setup Control Window Help	
	^
CC3200 WLAN STATION Application	
Host Driver Version: 0.9.0.0 Build Version 2.1.0.4.31.1.1.0.4.1.0.3.19	
Device is configured in default state	
[WLAN EVENT] STA Connected to the AP: cc3200demo ,BSSID: 0:14:d1:a7:44:94	
LNETAPP EVENTJ IP Acquired: IP=192.168.10.177 , Gateway=192.168.10.1 Connection established w/ AP and IP is aquired	
Pinging! Device pinged both the gateway and the external host	
VLAN STATION example executed successfully	
5. Tel 44 14 5 14 14 14 14 14 14	-

Quick start of TI CC2540/1

The following operations are by CC2540 prevail, if G1 above your hands BLE chip CC2541, so in some way, your own modifications by CC2541.

Download and install the software

Download and install the following software :

- BLE Stack (Recommends using version 1.3.2, can go to google search to) ault installation folder C:\Texas Instruments\BLE-CC254x-1.3.2
- IAR EW8051 (Please install the software on their own, we recommend using IAR EW8051 8.1).

G1 connection BPI open debugger burn board



BPI open debugger check whether the software and hardware are connected.

BPI open debugger connected to the PC, and check whether the drive is installed, if you can not identify, install SmartRF Studio, he software that comes with the driver. If you can identify that, please give G1 on electricity.

\triangleright	🚯 Bluetooth 无线电收发器
-	Cebal controlled devices
	CC Debugger
\triangleright	✓ IDE ATA/ATAPI 控制器
Þ	■ 便携设备

If the drive is normal, then check the G1 and OPENDEBBUG connection is normal. After the G1 to power, press the CC Debugger interface Open debugger next reset button.



If the connection is normal, then the status light next to the CC Debugger interface will turn green, if it is red or other colors, please check whether it is normal or electricity on the G1 G1 is properly connected and Open debugger.

Compile, download and debug routines SimpleBLEPeripheral

1. IAR EW8051 SimpleBLEPeripheral start and open the project, select File> Open from the menu> Workspace.

Edit View Project	Tools Win	idow Help
New	•	CH
Open	•	File Ctrl +
Close		Workspace
Save Workspace		Header/Source File Ctrl+Shift+
Close Workspace		
Save	Ctrl+S	
Save As		AR Information
Save All		
Page Setup		
Page Setup Print	Ctrl+P	ind reference guides, support infor
Page Setup Print Recent Files	Ctrl+P	Ind reference guides, support infor
Page Setup Print Recent Files Recent Workspaces	Ctrl+P	

2. Browse to C:\Texas Instruments\BLE-CC254x-1.3.2\Projects\ble\SimpleBLEPeripheral\ CC2540DB and open SimpleBLEPeripheral.eww.

and a second second					100 -	F82	-
100 * 新建文件央					100 .		
2 収蔵史	名称	停改日期	供型	大小			
🚺 T.St.	L CC2540	2015/2/6 16:46	文件夹				
1 A 2	CC2540DK-MINI Keyfob	2015/1/21 0:50	文件夹				
	LCC2540-OAD-ImgA	2015/1/21 0:50	文件夹				
Autodesk 360	🗼 settings	2015/1/21 0:51	文件奥				
	SimpleBLEPeripheraLeww	2012/11/13 18:08	IAR IDE Worksp	2 KB			
R 108							
2 084							
1 mc							
■, m:0;							
+100							
A BOOTCAMP (C)							
Marintosh HD (
Autodark 160							
PRIVACSK PRV							
*							
				-		-	-

3. Choose from the list of items CC2540.

Kara IAR Embedded Workbench IDE	and all all and
File Edit View Project Texas Instrumen	ts Emulator Tools
Workspace ×	SimpleBLEPeripheral_M
CC2540 -	52 #inclu
CC2540DK-MINI Keyfob	53 #inclu
CC2540	54 #inclu
CC2540F12C1K-MINI Keyrob	55#inclu
CC2540-0AD-Ima	56
CC2540-0AD-ImgB	57 /*****
CC2540-DAD-EncrypteologA	58 * FUN
CL2540-UAD-Encrypted-Image	59 *****
	60
H G OSAL	61 /* Thi
	62 void M
	63
L Output	64 /*****
	65 * @fn
	1 66 V

4. When debugging code must be downloaded to the device. Select Project> Options from the menu and select Debugger category. In this setup tab, select Texas Instruments as a driver, and then click OK. Figure.

alegoly.					Factory Setting
General Options C/C++ Compiler Assembler					
Custom Build	Setup	Inages	Extra Options	Plugins	
Build Actions	Drive	er		Run to	
Debugger	Texe	s Instru	ments -	main	
Third-Party Driver	Thir	d-Party	Driver		
Texas Instruments FS2 System Navigi Infineon Nordic Semiconduc ROM-Monitor Analog Devices	Texa FS2 Infi Nord ROM- Anal Sila Simu	s Instru System B neon ic Semic Monitor og Devic bs lator	ments S lavigator conductor ces	on getche	12"
Silabs Simulator	Devia	e Descr	iption file efault		
	\$T00	LKIT_DIN	\$\config\devic	es\Texas Ins	struments\ioCC:

5. Click on the icon to download the program debug button on the device and enter debug mode. Figure.

AR Embedded Workbench IDE	er met men met 🛢 🛊 S. etc. et
File Edit View Project Texas Instrumer	ts Emulator Tools Window Help
0 🖉 🖬 🖉 👹 🖁 🖬 🛍 🗠 🖓	- イ > > > > = = = = = = = = = = = = = = =
Workspace ×	SimpleBLEPeripheral_Main.c
CC2540 -	52#include "OSAL_Tasks.h"

6. Click Debug Step Out button on the column, enter the full speed.

🔀 IAR Embedded Workbench IDE								
<u>F</u> ile	Edit	View	Project	D	ebug	Te		
D	🖻 🔒		🚭 %		8	K)		
D		52	£В	Ż		×		

7. Then open the phone BLE software, IOS (IPhone4s and above) on the LightBlue, Android (Android4.3 and above) on the Ex039BLE, refresh the list of Bluetooth, you will see a file called SimpleBLEPeripheral of Bluetooth peripherals.



Figure.

Quick start of TI CC2530

Download and install the following software :

- 1. ZStack-CC2530-2.5.1a (Can go to google search to)
 - Assuming the default installation folder C:\Texas Instruments\ZStack-CC2530-2.5.1a
 - After installation is complete, go https://github.com/mark-legend/bpi_g1_zigbee_patch download hal_lcd.c file and overwrite the folder C:\Texas Instruments\ZStack-CC2530-2.5.1a\Components\hal\target\CC2530EB file with the same name
- 2. IAR EW8051 (The software is compiled BLE's IDE is the same, if you have installed, then the direct use, otherwise the installation yourself, we recommend using IAR EW8051 8.1)

G1 connection BPI open debugger burn board



BPI open debugger check whether the software and hardware are connected

BPI open debugger board connected to the PC, and check whether the drive is installed, if you can not identify, install SmartRF Studio , The software that comes with the driver. If you can identify that, please give G1 powered.



State Light

If the drive is normal, then check the G1 and Open debugger connection is normal. After the G1 to power, press the CC Debugger interface open debuger reset button next.

If the connection is normal, then the status light next to the CC Debugger interface will turn green, if it is red or other colors, please check whether it is normal or electricity on the G1 G1 is properly connected and Open Debugger.

Modifications to adapt the code for G1

1. Open the file C:\Texas instruments\ZStack-CC2530-2.5.1a\Components\hal\target\CC2530EB\hal_board_cfg.h, jump to about 61 lines, will be as



2. Open the file C:\Texas Instruments\ZStack-CC2530-

2.5.1a\Components\mac\low_level\srf04\single_chip\mac_radio_defs.c , jump to about 300 lines, will be as



Compile, download and debug routines SampleApp

The operation requires two BPI G1 development board, and you need two OLED screens.

1. Start IAR EW8051 and open SampleApp project, select File> Open from the menu> Workspace



2. Browse to C:\Texas Instruments\ZStack-CC2530-2.5.1a\Projects\zstack\Samples\SampleApp\CC2530DB and open

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and the second se							
Autodesk 360							

SampleApp.eww



4. When debugging code must be downloaded to the device. Select Project> Options from the menu and select Debugger category. In this setup tab, select Texas Instruments as a driver, and then click OK. Figure

Category:					Factory Setting
General Options C/C++ Compiler Assembler Custom Build Build Actions	Setup	Images	Extra Options	Plugins	L'actory setting
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5. Click on the icon to download the program debug button on the device and enter debug mode. Figure

Variable IAR Embedded Workbench IDE	PROPERTY AND INCOME. In the Advance of the Advance
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6. Click Debug Step Out button on the column, enter the full speed

X IA	R Emb	edded	Workber	nch I	IDE 🛛	
<u>F</u> ile	Edit	View	Project	D	ebug	Te
D	🗳 🔒		🞒 X	Ê	C	k⊃.
D		52	舌当	Ż	2	×

7. If there is no problem, a G1 should be is a good writer. Up and running in the following figure



8. Next, another a G1 programming development board. Choose from the list of items RouterEB



- 9. Another is a G1 and BPI OPENDEBUGGER connection. After connecting, click the CC Debugger interface again next reset button, look at the status light is green, if not green, check the power supply G1 or G1 with OPEN DEBUGGER the cable is properly
- 10. Click on the icon to download the program debug button on the device and enter debug mode. Figure



11. Click Debug Step Out button on the column, enter the full speed



12. If everything is normal, then the two G1 already up and running, you can see from the two G1 OLED screen they have



connected to the

Quick Start STM32F103CB

Download and install the following software :

- IAR EWARM (the software with the IDE compiler CC3200 is the same, if already installed, then the direct use, otherwise the installation yourself, we recommend using IAR EWARM 7.2 or later)
- Go https://github.com/mark-legend/bpi_g1_stm32_simpleled download SimpleLed

G1 connection BPI open debugger board



BPI open debugger check whether the software and hardware are connected

BPI Open debugger connected to the PC, and check whether the drive is installed, if you can not identify, install JLinkARM, which comes with software drivers. If you can identify that, please give G1 powered.



Compile, download and debug routines SimpleLed

1. Start IAR EWARM and open SimpleLed project, select File> Open from the menu> Workspace

ne Lait view Project	Tools Win	dow Help	
New	•	CH	- 1 -
Open	•	File	Ctrl+O
Close		Workspace	
Save Workspace		Header/Source File	Ctrl+Shift+H
Close Workspace		P 6 9 9 9	911169119 N911 9
Save	Ctrl + S		
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Save All			
Page Setup			
Print	Ctrl+P		
Recent Files	•		
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Exit			

2. Browse to bpi_g1_stm32_simpleled \ SimpleLed and open SimpleLed.eww

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3. Click on the icon to download the program debug button on the device and enter debug mode. Figure

SimpleLed - IAR Embedded W	forkbench IDE
File Edit View Project Too	ols Window Help
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Workspace ×	main.c
Release	1 🖯 /***********************************
Files \$2 B	2 # Filename: main.c
B SimpleLed V	4 * Date: 2015-02-08 5 * Version: 1.0 6 * Description: Simple LED
	7 - ***********************************

4. Click Debug Step Out button on the column, enter the full speed



5. If there is no problem, STM32 lower left corner of the LED will begin to flash lights



BPI-G1 Simple Code Firmware programming manual

BPI-G1 Simple Code has two sets of firmware. We divided these two sets of firmware from the host firmware and firmware. Host is an ap can use mobile phones and laptops direct link. The slave is a sta, is to link the router to link with mobile phones and laptops.

Firmware programming steps:

Install the burner software.

BPI-OPENDEBUGGER three burning software are:

- 1. JlinkARM Download:http://www.segger.com/jlink-software.html
- 2. unifalsh Download : http://www.ti.com.cn/tool/cn/uniflash
- 3. SmartRF Studio 7 Download : http://www.ti.com/tool/smartrftm-studio
- 4. Writer's programming software package we can extract the compressed firmware firmware get burned software shown:

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BPI open debugger board writer and computer links

links good computer will prompt to install the driver shown :(Note: The picture is not completely installed drive, install a good look at all of the drivers burner BPI-OPENDEBUGGER Writer Manual)



Host programmer firmware (A (HOST))

Programming cc3200 firmware

• Programming development board cc3200 firmware: The JTAG and UART BPI-OPENDEBUGGER and BPI-G1 on the JTAG and UART connection as shown:



• Open uniflash click File -> open configuration -> Borwse select the firmware storage location and then click open as shown in Figure -1 -2 -3 and click ok shown:

ile Operation Window Help				
Type your filter text here		CC31x Flash Setup and Control	i i	
4 CC31x Flash Setup and Control				
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	文 44	S(N): https://www.ucf	▼ 「.ccsml/*ucf 打开(O)	- R2H



• Select Serial Number: Click on the computer Computer -> Properties -> Device Manager -> Ports Figure *



ile Operation Window Help	
Type your filter text here	CC31x Flash Setup and Control
 CC31x Flash Setup and Control /sys/wouing.bin www/main.html 	COM Ports
www/led_demo.html	4
www/images/demo-lightswitch.jpg	Format - Format the serial flash on the target device.
	Program - Program the serial flash on the target device.
	Service Pack Update - Apply a service pack bundle to the device.
	Get Version . Disales the boothader and the chinast sersion of the desire.
	det version - Unspay the operationater and the cripter version of the perice.
	Add File Add a new file to the session file list
Console II	
to consoles to display at this time.	

 Click operation -> program as shown below ' Then press the reset button on the BPI-OPENDEBUGGER ' The programming is done in the below:

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 CCS1x Flash Setup and Control /sys/mcuimg.bin www.flad.demo.html www.flad.demo.html www.fmages/demo-lightswitch.jpg 		COM Ports 8 Format - Format the serial flash on the target device.
	Progress Informatio	ation to the
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Uniflash Debug Console		
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		t ^ resette
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Programming stm32f103 firmware:

• The stm32f103 SWD interface link SWD interface and BPI-G1 above BPI-OPENDEBUGGER on the figure:



• Open J-Flash Figure:



Select Create project form template -> -> ST -> STM32F103CB.jflash -> Open -> start j-flash -> Save (Note: Generally saved on the desktop)

٠	Select Options ->	Project	settings	shown	in	Figure	1	and ·	-2
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确定	取消	

• Select programming firmware: Click File -> open data file -> Open. Figure:

Open da	ita file				-	-	-	-	-				-				
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Check Hish Id Date address Organization Chip mass - Chip mass - Chip mass - Chip mass - Chip mass - Chip mass - Teoremass - Teo	No Ox600000 32 bits 1 chip m + ecured successfully ected sectors bank 0, sector 0, 1 eration completed succ trayst (004 bots, 1 ragramed successfully 0 of offected sectors Effected sectors verific ing CPU core (Twit see alized successfully el, programmed and veri	sobobece soboece soboece soboece sobolic sobol	15 82 32 41 81	87 99 48 68 91	00 01 01 21 22 0xA5	88 68 68 F4 91	19 41 11 FE ar	8 F 4 8 6 4	59 se		Co	mple	eted (after	2.35	9 se	¢						3
Check Hash Id Date address Organization Chip work - Chip work - Chip work - Chip work - Chip work - Chip work - Chip work - Tanging Hash - Tanging - Tanging - Tanging - Tanging - Tanging - Derini tialis - Derini tialis - Derini tialis - Tanget erase	No Ox600000 32 bits 1 chip m + entred successfully extent success bank 0, sector 0, 1 extin coupleted succe target (1064 bytes, 1 regressed successfully 60 of offected sectors freeted sectors verifi- ring CPF core (Sai se alized successfully ed, programmed and veri	sobobes soboere soboer	15 82 32 41 81	87 10 40 68 91 80 = - 0x	00 01 01 21 22 0xAS	86 68 68 F4 91	19 41 11 FE ar	8 F 4 8 c	59 se		Co	mple	sted (after	2.35	i9 se	¢						19
Check Hash Id Base address Organization - Chip tonse - Chip tonse - Chip tonse - Terasing affir - Brase tong - Terasing tonse - Terasing tonse - Terasing tonse - Derive tonse - Terasit - Terasit - Terasit - Derive tonse - Terasit - Ter	No Ox600000 32 bits 1 chip m + ecured successfully ected successfully ected successfully ected successfully carget (1044 byte, 1 ragreend successfully of affected successfully ed, programmed and veri	6000000 6000000 6000000 800010 8000120 sonor20 rage) essfully rage) ed successfull ifted successful	15 82 32 41 81	87 99 40 68 91	00 01 01 21 00 00 00 00 00 00 00 00 00 00 00 00 00	86 68 68 F4 01	19 41 11 FE er	8 F 4 6 c	59 24		Co	mple	eted (after	2.35	69 se	τ 						

• Programming: Target -> Auto programming is completed as shown:

CC2540 programming firmware:

• the cc dubegger interface and BPI-G1 BPI-OPENDEBUGGER cc2540 on top of cc dubegger interface as shown:



• Figure Click SmartRFProg.exe

🔵 🗸 « Texas I	nstruments + SmartRF Tools + SmartR	₹ Studio 7 🕨 bin 🕨		• • • 册表 bin	
眼・ 回打开	新建文件实				<u>}</u> :: •
含 収蔵夫	名称	伊改日期	类型	大小	
1 下载	Qt5Core.dll	2014/12/19 23:18	应用程序扩展	3,952 KB	
三 史面	Qt5Cored.dll	2014/12/19 23:18	应用程序扩展	8,034 KB	
·····································	Qt5Gui.dll	2014/12/19 23:18	应用程序扩展	2,967 KB	
and second second second	Qt5Help.dll	2014/12/19 23:18	应用程序扩展	407 KB	
Æ	Qt5Multimedia.dll	2014/12/19 23:18	应用程序扩展	535 KB	
9 /4 17 - 10 - 17	Qt5MultimediaWidgets.dll	2014/12/19 23:18	应用程序扩展	74 KB	
M 44.52	Qt5Network.dll	2014/12/19 23:18	应用程序扩展	795 KB	
■ 图片	Qt5OpenGLdll	2014/12/19 23:18	应用程序扩展	239 KB	
文档	Qt5Positioning.dll	2014/12/19 23:18	应用程序扩展	141 KB	
	Qt5PrintSupport.dll	2014/12/19 23:18	应用程序扩展	224 KB	
	Qt5Qml.dll	2014/12/19 23:18	应用程序扩展	2,354 KB	
- 计算机	Qt5Quick.dll	2014/12/19 23:18	应用程序扩展	2,067 KB	
🏭 本地磁盘 (C:)	Qt5Sensors.dll	2014/12/19 23:18	应用程序扩展	141 KB	
→本地蔵曲 (D:)	🚳 Qt5Sql.dll	2014/12/19 23:18	应用程序扩展	147 KB	
- 本地理由 (F-)	Qt5Test.dll	2014/12/19 23:18	应用程序扩展	109 KB	
	Qt5Testd.dll	2014/12/19 23:18	应用程序扩展	221 KB	
□ 4-1010至(F:)	Qt5WebKit.dll	2014/12/19 23:18	应用程序扩展	16,522 KB	
📑 新加茲 (G;)	Qt5WebKitWidgets.dll	2014/12/19 23:18	应用程序扩展	188 KB	
	Qt5Widgets.dll	2014/12/19 23:18	应用程序扩展	4,257 KB	
■ 网络	Qt5XmLdl	2014/12/19 23:18	应用程序扩展	159 KB	
	Qt5Xmld.dll	2014/12/19 23:18	应用程序扩展	299 KB	
	S register_view.dll	2015/1/15 22:30	应用程序扩展	238 KB	
	SiUtil.dll	2014/12/19 23:28	应用程序扩展	280 KB	
	SmartRFProg.exe	2014/12/19 23:28	应用程序	2,288 KB	1
	Startup_window.exe	2015/1/15 22:30	应用程序	1,683 KB	1
	4) ti.ico	2014/12/19 23:22	图标	4 KB	

-	What do you want to progra	am?	
IEXAS TRUMENTS	Program CCxxxx SoC or MSP430	•	
Old Firmware on	Evaluation Board		
One of the	connected Evaluation Boards is	running an old version of	the firmware
The firmware can The update can b The "Update EB Fi The board with ok Select the device	be updated automatically with the latest ve e started from the "Program Evaluation Boar imware" button should be visible and enable d firmware should be marked with "old" behin and click on the "Update EB Firmware" butto	rsion installed together with the flar rd" panel. Select the "EB Application ed if old firmware have been detect nd the EB firmware rev. number. in.	sh programmer. n (USB)* tab. ed.
What d	o you want to program?		
Program	Evaluation Board	Update EB Firmware	D
EB Applica	ation (USB) EB application (serial) EB boo EB ID Chip type EB type 0124 CC2530 SmartRF05EB	EB firmware ID 59 firmw 0500 0015 (old	ale rev
Note: Smart CC243	RF04EB: SoC Evaluation Module must be ren 00DB: P5 jumpers must be removed and jum	noved before update is started. per 9-10 on P4 must be mounted.	
Don't show	w this message again.	OK	

Texas	Program CCxxxx SoC or MSP430	
STRUMENTS	System-on-Chip MSP430	
teres has nonen	EB ID Chip type EB	type EB firmware ID EB firmware rev
De l	Fast	
Con the second	Flash image: C:\Users\bd\Desktop\B	PI-G1 simple code\4(HOST)\cc2540\SimpleBLEPeri 💌
	Change 0 bytes at 0x	to
Card and a state of the state o	/ · · · · · · · · · · · · · · · · · · ·	
	Actions	
	C Erase C Erase and program	Flash lock (effective after program/append):
	VY FLASE HULLARITAPIT VEHIO	
11	C Append and verify	Write protect boot block
	C Append and verify C Verify against hex-file C Read flash into hex-file	Write protect boot block Block debug commands (incl. read access) NB: Cannot "Append and verify" when set

• Click the reset button as shown:



he state of the connection is successful, such as BPI-OPENDEBUGGER red will turn green, and then burning software
 Texas Instruments SmartRF? Flash Programmer

Program CCxxxx SuC or MSP430 System-on-Chip MSP430 System-on-Chip MSP430 EB ID Chip type EB timware ID EB timware rev 1234 CC2540 CC Deburger C6CC 0041 tod) Interface: Fast Flash image: C: VU sere/M/Desktop/BPI-G1 simple code/A(HOST)/cc2540/SimpleBLEPerition Read IEEE Write IEEE Cocation C Secondary IEEE 0x Read IEEE Write IEEE Primary C Secondary IEEE 0x View Info Page Actions Erase Flash lock (effective after program/append): View Info Page Actions Erase and program Flash lock (effective after program/append): Write protect
Systemon-Chip MSP430 EB ID Chip type EB type EB timware ID EB timware rev 1234 CC2540 CC Debugger 050C 0041 (ad) Interface: Fast Image: C: Wsers\MNDesktop\BPI-G1 simple code\A(HOST)\cc2540\SimpleBLEPerition Image: Image:
Interface: Fast Fast image: C:\Users\\k\Desktcp\BPIG1 simple code\A(HOST)\cc2540\Simple8LEPeri Read IEEE Wite IEEE Pimary Secondary IEEE 0x Retain IEEE address when reprogramming the chip View Info Page Actions Erase Pisas and program @ Erase Pisas program and verify @ Append and verify @ Append and verify @ Block debug commands (incl. read access)
C Read flash into hex-file NB: Cannot "Append and verify" when set!
Perform actions

• Select the firmware programming shown:

Flash image: C:\Users\Ixl\Desktop Read IEEE Write IEEE Location Image: C Prime Image: View Info Page Actions C Erase C Erase C Erase C Erase, program and verify C Append and verify C Verify against hex-file C Read flash into hex-file	\BPI-G1 simple code\A(HOST)\cc2540\SimpleBLEPeri , ary C Secondary IEEE 0x gramming the chip Flash lock (effective after program/append): Write protect: ■ Block debug commands (incl. read access) NB: Cannot "Append and verify" when set!
	Perform actions
1 [

Programming software configuration as shown :
 Texas Instruments SmartRF? Flash Programmer

TEXAS INSTRUMENTS	What do you want to program? Program CCxxxx SoC or MSP430
	System-on-Chip MSP430 EB ID Chip type EB type EB firmware ID EB firmware rev 1234 CC2540 CC Debugger 05CC 0041 (old) Interface: Fast
	Flash image: C: \Users\W/Desktop\BPI-G1 simple code\A(HOST)\cc2540\SimpleBLEPeri ▼ Read IEEE Write IEEE Image: C: Secondary IEEE Or Primary C: Secondary IEEE Image: Vite IEEE
	Actions C Erase Flash lock (effective after program/append): C Erase and program Write protect: Write protect: C Append and verify Block debug commands (incl. read access) C Verify against hexefile NB: Cannot "Append and verify" when set!
$=$ η	Perform actions

Programming firmware: Click perform actions shown in the programming success:
 Texas Instruments SmartRF? Flash Programmer

V TEXAS	Program CCxxxx SoC or MSP430
	System-on-Chip MSP430
San Instrum	EB ID Chip type EB type EB firmware ID EB firmware rev 1234 CC2540 CC Debugger 05CC 0041 (eld)
en 1	Fast
And a star	Flash image: C:\Users\IxNDesktop\BPI-G1 simple code\A(HDST)\cc2540\SimpleBLEPeri
	Read IEEE Write IEEE @ Primary C Secondary IEEE 0x
1200	Retain IEEE address when reprogramming the chip
- Standard	View Info Page
	Actions C Erase Flash lock (effective after program/append): C Erase, program and verify Write protect: Write protect: C Append and verify Block debug commands (incl. read access) C Verify against hex-file NB: Cannot "Append and verify" when set!
	Perform actions
	CO2E40 ID1224 Error and units OK

programming cc2530 firmware:

• The cc dubegger interface and BPI-G1 BPI-OPENDEBUGGER cc2530 on top of cc dubegger interface as shown:



• Figure Click SmartRFProg.exe

🕥 = 🕌 « Texas I	instruments + SmartRF Tools + SmartR	tF Studio 7 ⊧ bin ⊧		* in 服素 bin	
組织 → □□ 打开	新建文件史				8:: -
☆ 救援夫	名称	伊改日期	美型	大小	
下载	Ot5Core.dll	2014/12/19 23:18	应用程序扩展	3.952 KB	
 美闻 劉 曼近坊间的位置 (2) 库 	Qt5Cored.dll	2014/12/19 23:18	应用程序扩展	8.034 KB	
	Qt5Gui.dll	2014/12/19 23:18	应用程序扩展	2,967 KB	
	Qt5Help.dll	2014/12/19 23:18	应用程序扩展	407 KB	
	Qt5Multimedia.dll	2014/12/19 23:18	应用程序扩展	535 KB	
	Qt5MultimediaWidgets.dll	2014/12/19 23:18	应用程序扩展	74 KB	
🛃 AU:02	Qt5Network.dll	2014/12/19 23:18	应用程序扩展	795 KB	
■ 図片 ③ 文档 ↓ 音乐	Qt5OpenGLdll	2014/12/19 23:18	应用程序扩展	239 KB	
	Qt5Positioning.dll	2014/12/19 23:18	应用程序扩展	141 KB	
	Qt5PrintSupport.dll	2014/12/19 23:18	应用程序扩展	224 KB	
	Qt5Qml.dll	2014/12/19 23:18	应用程序扩展	2,354 KB	
🖳 计算机	Qt5Quick.dll	2014/12/19 23:18	应用程序扩展	2,067 KB	
🏭 本地磁盘 (C:)	Qt5Sensors.dll	2014/12/19 23:18	应用程序扩展	141 KB	
 本地磁盘 (D:) 本地磁盘 (E:) 本地磁盘 (F:) 新加磁 (G:) 	🗟 Qt5Sql.dll	2014/12/19 23:18	应用程序扩展	147 KB	
	Qt5Test.dll	2014/12/19 23:18	应用程序扩展	109 KB	
	Qt5Testd.dll	2014/12/19 23:18	应用程序扩展	221 KB	
	Qt5WebKit.dll	2014/12/19 23:18	应用程序扩展	16,522 KB	
	Qt5WebKitWidgets.dll	2014/12/19 23:18	应用程序扩展	188 KB	
🗣 网络	Qt5Widgets.dll	2014/12/19 23:18	应用程序扩展	4,257 KB	
	Qt5XmLdll	2014/12/19 23:18	应用程序扩展	159 KB	
	Qt5Xmld.dll	2014/12/19 23:18	应用程序扩展	299 KB	
	register_view.dll	2015/1/15 22:30	应用程序扩展	238 KB	
	🚳 siutil.dli	2014/12/19 23:28	应用程序扩展	280 KB	
	SmartRFProg.exe	2014/12/19 23:28	应用程序	2,288 KB	1
	Startup_window.exe	2015/1/15 22:30	应用程序	1,683 KB	1
	🕀 ti.ico	2014/12/19 23:22	图标	4 KB	

71	What do you want to program?
TEXAS	Program CCxxxx SoC or MSP430
Old Firmware on E	Evaluation Board
One of the c	onnected Evaluation Boards is running an old version of the firmware!
The firmware can be The update can be The "update EB Firm The board with old 1	e updated automatically with the latest version installed together with the flash programmer. started from the "Program Evaluation Board" panel. Select the "EB Application (USB)" tab. mware" button should be visible and enabled if old firmware have been detected. firmware should be marked with "old" behind the EB firmware rev. number. not dick on the "Indiate EB Firmware" nuttoo.
Select the device of	
Program E	you want to program ?
EB Applicatio	on (USB) EB application (serial) EB bootloader
	EB ID Chip type EB type EB firmware ID EB firmware rev 0124 CC2530 SmartRF05EB 0500 0015 [old]
	1
Note: SmartRF CC2430	O4EB: SoC Evaluation Module must be removed before update is started. DB: P5 jumpers must be removed and jumper 9-10 on P4 must be mounted.
	diama and a second s
1 Don't show	this message again.
	1
Texas Instruments Smarth	RF? Flash Programmer
-	What do you want to program?
TEXAS	Program COvver SoC or MSP430
Y IEXAS	
INSTRUMENTS	
INSTRUMENTS	System-on-Chip MSP430
INSTRUMENTS	System-on-Chip MSP430 Interface: Fast Flash image: C:\Users\W\Desktop\BPI-G1 simple code\A(HOST)\cc2540\SimpleBLEPeri
INSTRUMENTS	System on Chip MSP430 EB ID Chip type EB ID Chip type
INSTRUMENTS	System on Chip MSP430 EB ID Chip type EB ID Chip type
INSTRUMENTS	System-on-Chip MSP430 EB ID Chip type EB type EB firmware ID EB firmware rev Interface: Fast • Flash image: C:\Users\bd\Desktop\BPI-G1 simple code\A(HOST)\cc2540\SimpleBLEPeri • Change 0 bytes at 0x to
INSTRUMENTS	System on Chip MSP430 EB ID Chip type EB type EB firmware ID EB firmware rev Interface: Fast • Flash image: C:\Users\W\Desktop\BPI-G1 simple code\A(HOST)\cc2540\SimpleBLEPeri • Change 0 bytes at 0x to Actions
INSTRUMENTS	System on Chip MSP430 EB ID Chip type EB type EB firmware ID EB firmware rev Interface: Fast Flash image: C:\Users\M\Desktop\BPI-G1 simple code\A(HOST)\cc2540\SimpleBLEPeri Flash image: D bytes at 0x to Change D bytes at 0x to Actions C Erase C Erase Flash lock (effective after program/append):
INSTRUMENTS	System-on-Chip MSP430 EB ID Chip type EB ID Chip type

Perform actions

• Click the reset button, the connection is successful, such as BPI-OPENDEBUGGER red will turn green, and then burning software state is shown:



What do you want to program? TEXAS Program CCxxxx SoC or MSP430 • TRUMENTS System-on-Chip MSP430 EDID Chip type ED type ED firmware ID ED firmware rev Interface: Fast 💌 Flash image: C:\Users\W\Desktop\BPI-G1 simple code\A(HDST)\cc2530\Coord-Sample/ -Location Read IEEE Write IEEE IEEE Ox ✓ Retain IEEE address when reprogramming the chip View Info Page Actions C Erase Flash lock (effective after program/append): Erase and program Write protect Erase, program and verify \sim Append and verify Block debug commands (incl. read access) Verify against hex-file NB: Cannot "Append and verify" when set C Read flash into hex-file Perform actions

•

Select the firmware progra	amming shown: ? Flash Programmer		
TEXAS INSTRUMENTS	What do you want to progr Program CCoox SoC or MSP430 System-on-Chip MSP430 EB ID Chip type 1 0050 CC25:0	EB type EB firmware ID EB firmware rev SmartRF04EB 0400 0045 (old)	
	Fast ■ Flash image: C:\Users\W\Desktop Read IEEE Write IEEE Image: C:\Users\W\Desktop Read IEEE Write IEEE Image: C:\Users\W Image: C:\Users\W	av&PI-G1 simple code\A(HOST)\cc2530\Coord-Sample/	
	Actions C Erase C Erase and program C Erase, program and verify Append and verify C Verify against hex-file C Read flash into hex-file	Flash lock (effective after program/append): Write protect: Block debug commands (incl. read access) NB: Cannot "Append and verify" when set!	
	Perform actions		

• Programming software configuration as shown:

tin	What do you want to program?
TEXAS	Program CExxxx SoC or MSP430
INSTRUMENTS	System-on-Chip MSP430
the internet Rt	EB ID Chip type EB type EB firmware ID EB firmware rev 0050 CC2530 SmartRF04E8 0400 0045 (old)
and the	Fast
Section 18	Flash image: C:\Users\M\Desktop\BPI-G1 simple code\A(HOST)\cc2530\Coord-Sample{ 👻
	Read IEEE Write IEEE Primary C Secondary IEEE 0x
	Retain IEEE address when reprogramming the chip
and the second s	View Info Page
	Actions C Erase Flash lock (effective after program/append): Flash lock (effective after program/append): Write protect:
	Append and venity Venity against hex-file Read flash into hex-file NB: Cannot "Append and venity" when set
7 N	Perform actions
• Programming firmware: Click perform actions shown in the programming success:

Texas Instruments SmartRF	? Flash Programmer	
TEXAS INSTRUMENTS	What do you want to progr Program CCxxxx SoC or MSP430 System-on-Chip MSP430	am?
	EB ID Chip type E 0050 CC2530 S Interface: Fast V Flash image: C:\Users\W\Desktop	B type [EB firmware ID EB firmware rev imartRF04EB 0400 0045 (old) ABPI-G1 simple code\A(H0ST)\cc2530\Coord-Sample'
	Retain IEEE address when reprog View Info Page Actions Erase Erase and program Erase, program and verify Append and verify Verify against hex-file Read flash into hex-file	Flash lock (effective after program/append): Write protect: Block debug commands (incl. read access) NB: Cannot "Append and verity" when set
	CC2530	Perform actions

Similarly B (SLAVE) firmware and A (HOST) firmware is the same programming.

BPI-G1 smart home gateway project



we try to use BPI-G1 as a smart home gateway ,let you to control all zigbee slave unit.

now ,all project source code have public ,you can free download.

file name: G1_OpenSource english.rar

all projcet source code Download link:

https://drive.google.com/file/d/0B4PAo2nW2KfnWWJNd3pLWFVubFU/view?usp=sharing

code catalog:



readme:

- MasterController : STM32F103 sorce code, please uee IAR ARM 7.3 open project
- MasterControllerBLE: CC2540 source code, please use IAR 8051 8.10 open project
- MasterControllerRF: CC2530 source code, please use IAR 8051 8.10 open project (include Zigbee slave unit code : light , socket , electronic switch , BRAHMA, WR-RFIR product control code)
- MasterControllerWIFI : CC3200 source code please uee IAR ARM 7.3 open project

BPI-G1 run as below:



all above is base on BPI-G1, it can working fine . make BPI-G1 as a smarthome geteway ,support WIFI ' BT ' zigbee all function. and work together .

smartHome_IPHONE IOS ios source code , please use xCode open it. this app is for IOS , use it ,you can easy to control all zigbee slave unit .



BPI home IOS app

something you want with zigbee slave unit.

zigbee module:

so you can use APP to control



all code demo function as :banana pi BPI G1 use app demo all function

https://www.youtube.com/watch?v=wQWgF0733FY

how to debugger BPI-G1 with BPI-debugger tooling :

https://www.youtube.com/watch?v=mqyq-oLIxCY

discuss this project on forum:

http://forum.banana-pi.org/t/bpi-g1-as-a-smart-home-gateway-all-code-open-source/1889

BPI-G1 Accessories

BPI Open debugger burn board

Open Debugger is a set of programming tools in the development of STM series of microcontrollers, TI CC1x, 2x, TI CC3x series SOC, when STC Series MCU can be programmed quickly and easily debug, debugging programmer does not have to do something different series of chips switching plug tedious work. In addition, it also integrates a USB to serial port, which is a common interface for embedded development. It is also one of USB2.0 HUB, making it easy to extend to other USB tools. With it, no longer need to face a bunch of different writer, complicated mess of wiring, USB port deficiencies.





More please read BPI Open debugger burn board gitbook.

BPI-G1 Other Accessories

if you want easy work on BPI-G1, we also have many Accessories for it.

more acessories, please see this gitbook:

 $https://bananapi.gitbooks.io/bpi-accessories/content/bpi-g1_accessories.html$

all BPI-G1 accessories , we will update to BPI Accessories gitbook.

thank you for you support.

All banana pi product

• banana pi BPI-M1 allwinner A20 dual core single board computer

gitbook online datasheet:https://bananapi.gitbooks.io/bpi-m1/content/en/

- banana pi BPI-M1+(BPI-M1+ plus) allwinner A20 dual core single board computer gitbook online datasheet:https://bananapi.gitbooks.io/bpi-m1-bpi-m1-plus-/content/en/
- banana pi BPI-M2 allwinner A31s quad core single board computer gitbook online datasheet:https://bananapi.gitbooks.io/bpi-m2/content/en/
- banana pi BPI-M2+ (BPI-M2 Plus) allwinner H3 quad cord single board computer gitbook online datasheet:https://bananapi.gitbooks.io/bpi-m2-/content/en/
- banana pi BPI-M2 Ultra allwinner R40 quad core single board computer gitbook online datasheet:https://bananapi.gitbooks.io/bpi-m2-ultra/content/
- Banana pi BPI-M3 allwinner A83T (R58 H8) octa-core single board computer

gitbook online datasheet:https://bananapi.gitbooks.io/bpi-m3/content/en/

• banana pi BPI-M64 allwinner A64 64 bit single board computer

gitbook online datasheet:https://bananapi.gitbooks.io/bpi-m64/content/en/

• banana pi BPI-R1 allwinner A20 dual core smart router board

gitbook online datasheet:https://bananapi.gitbooks.io/bpi-r1/content/en/

• banana pi BPI-D1 open source IP camera board

gitbook online datasheet:https://bananapi.gitbooks.io/bpi-d1/content/en/

• banana pi BPI-G1 open source IoT development board

gitbook online datasheet:https://bananapi.gitbooks.io/bpi-g1/content/en/

• banana pi BPI Accessories

gitbook online datasheet:https://bananapi.gitbooks.io/bpi-accessories/content/en/

BPI Open debugger burn development tool board

gitbook online datasheet:https://bananapi.gitbooks.io/bpi-open-debugger-burn-board/content/en/

BPI 4.0 customized Server

Having been doing R&D in embedde systems for more than 12 years. Our experienced teams are able to help you to carry out your dream. Whether you want to customize banana pi or want to design a computer from scratch, we got you covered. Also, our modern ISO factory spans over 10,000 square meters can help you mass manufacture products to hit the market

Our factory:Sinovoip In order to meet the companys development needs, and further production capacity and product quality. Sources Communication shareholders decided to invest in new plant to build their own, the new factory site is located in manholes and covers an area of more than 10000 square meters, equipped with full range of production equipment and high quality technical management personnel. We have complete SMT production lines, plug-ins production line, assembly line, production line testing.

- your Idea, we will help you optimize and design.
- your Design, we will help you bring it to live.
- your Product, we will help you mass produce it.

Customize Pi

If you want to tailor your Banana pi to your specific use or to minimize the cost for mass production purpose, you are coming the right place. We provide the customization service of banana pi such as remove/add headers or connectors, change component layout, add/remove components, change interfaces etc.



Start from scratch (ODM)

An idea flashes through your mind in your dreams or a solution bearing in your mind for a long time, which you think would turn out to be great gadget to hit the market, but you are worrying about how to start and realize it without R&D and manufacturing, now that's no longer a trouble to you. Taking advantage of our expertise, we provide full ODM service for you. We let you have your sample products from scratch within 45 days. Don't wait, come to realize your dreams.



Have a prototype (OEM)

You are an expert, you designed a wonderful device that most people would want to have it, you knew it quite well that your success is just around the corner. The only last step is to produce it,but without manufactruing capability..., no problem, let us carry you through. Our 13 years of SCM experience and mass manufacturing facilities enable you free from quality issue,delivery...

