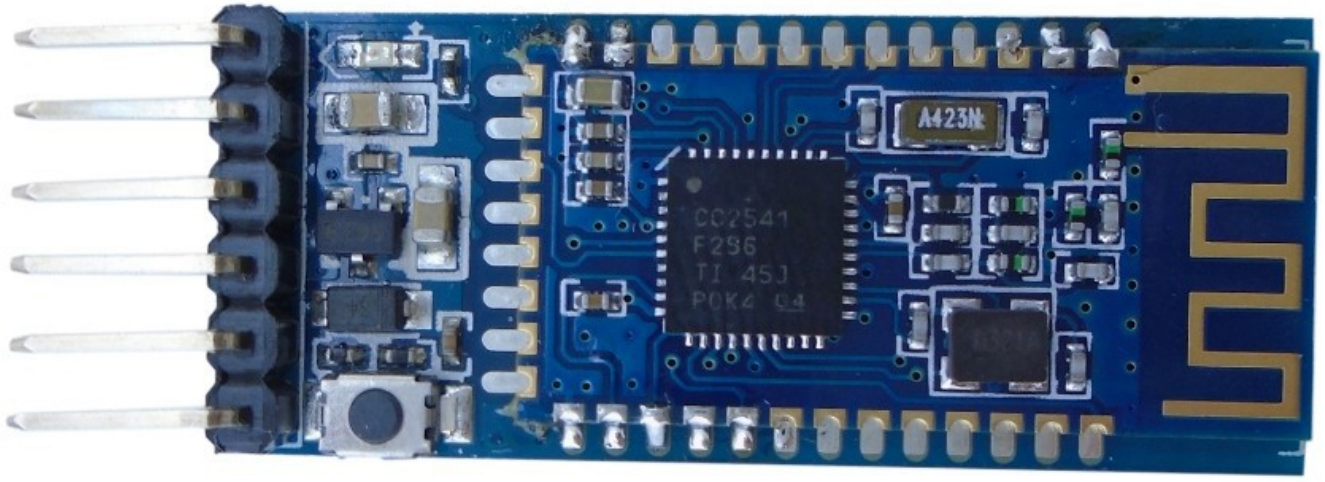
Comparison of different Bluetooth module				
MODEL	HC-06	HC-05	SH-HC-08	SH-H4
bluetooth version	2.0	2.0	4.0	4.0 dual mode
protocol	SPP	SPP	BLE only	BLE and SPP
Main Chip	csr bc417143	csr bc417143	TI CC2541	TI 2564
support phone	only android	only android	iphone4s or later Android4.3 or later	android and iphone
Feature	Easy to use, very mature	Powerful, there are more than 30 AT command	consumption bluetooth 4.0 ble single mode support iphone4s or later	Fully qualified Bluetooth 4.0/3.0/2.1/2.0/1.2/1.1
These modules are provided in our store				



please note.
Many users asked how to set the module to the master mode.
in master mode,SH-HC-08 can to find other slave modules, Step is here:
###begin ###
AT+IMME1
AT+ROLE1
AT+SCAN
end
if you want to recovery Slave mode
please send:
AT+RENEW
to recovery default setting.

if you want to Write your own programs base on cc2541 chip . you should buy a CC Debugger to program. click here to buy a cc debugger.

- 1,Core module uses SH-HC-08, leads from the module interface includes VCC, GND, TXD, RXD, LED status output pin.
- 2, led indicate Bluetooth connection status, flashing Bluetooth connectivity, lit the Bluetooth connection and open a port Backplane
- 3, 3.3V LDO input voltage 3.6 ~6V, the input voltage to prohibit more than 7V!
- 4, the interface level 3.3V, can be directly connected the various SCM (51, AVR, PIC, ARM, MSP430, etc.), the 5V MCU also can be connected directly, without MAX232 can not go through the MAX232!
- 5, open to the effective distance of 10 meters, over 10 meters is also possible,

but not of this the quality of the connection of the distance do to ensure
- 6, after the pair when full-duplex serial port to use, do not need to know anything about the Bluetooth protocol, but only supports 8 data bits, 1 stop bit, no parity communication format, which is the most commonly used communication format does not support other formats .
- 7, support for Bluetooth connection is not established by the AT command set the baud rate, name, passkey, set parameters are saved after. Bluetooth connection is automatically switched to the pass-through mode
- 8, compact (3.57cm * 1.52cm), the factory chip production to ensure the placement quality. And sets of transparent heat shrink tubing, dust and beautiful, and anti-static

about SH-HC-08 ,Refer to the following:

1,Overview

SH-HC-08 is a next-generation, class 2, Bluetooth 4.0 ble module. It uses TI CC2541bluetooth 4.0 ble chip .Support the AT command, the user can according to need to change the baud rate of serial port, name of equipment, matching parameters such as password, use agile. SH-HC-08 is ahighly integrated and sophisticated Bluetooth module, containing all the necessaryelements .Therefore SH-HC-08 provides an ideal solution for developers who want to integrate Bluetooth wireless technology into their designs with limited knowledge of Bluetooth and RF technologies.

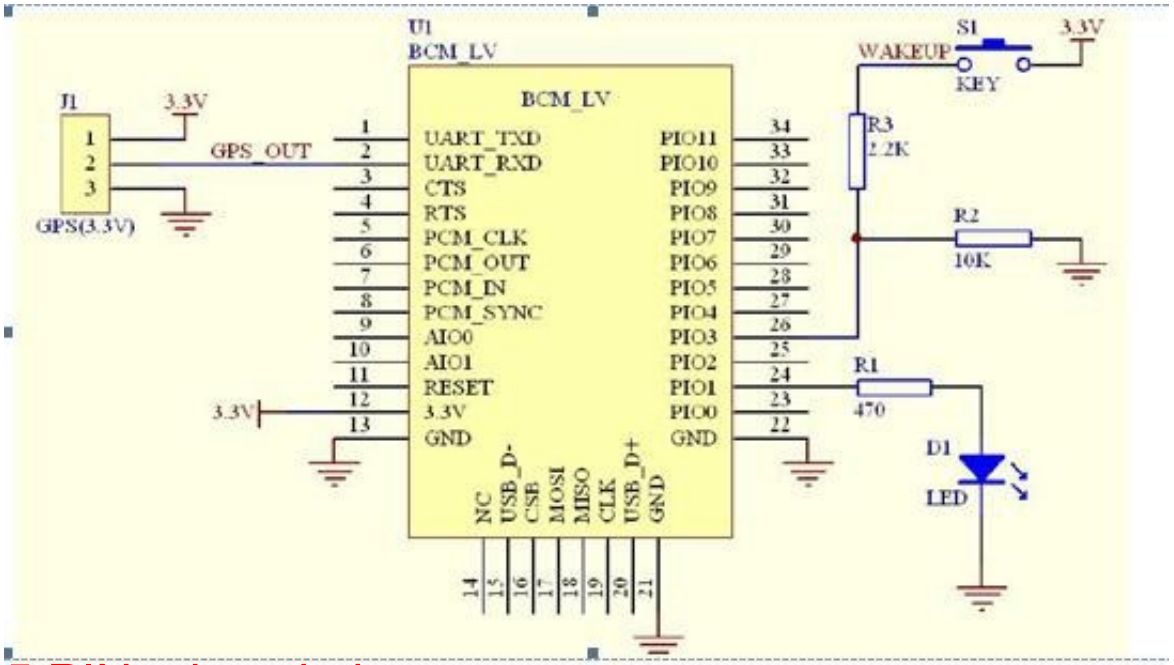
2,Feature

- Bluetooth protocol: Bluetooth Specification V4.0 BLE,
- open environment and iphone 4 s can achieve 110 meters extreme distance communication.
- Based on TI CC2541 chipset
- Bluetooth class 2
- Industrial level SPP Bluetooth module
- Integrated chip antenna
- Size: 26.7 x 13 x 2 mm
- Industrial temperature range from -40 to +85
- Support for on-board applications
- Operating frequency: 2.4 GHz ISM band
- Modulation method: GFSK (Gaussian Frequency Shift Keying)
- Acuity: -84 DBM or less BER at 0.1%
- Transfer rate: Asynchronous: 6 KBPS Synchronous: KBPS
- Security features: Authentication and encryption
- Support services: Central and Peripheral UUID FFE0, FFE1
- Power consumption: automatic sleep mode, the standby current 400 ~ 1.5 mA, transfer 8.5 mA.
- Power supply: + 3.3 VDC 50 MA

3,Application Fields

- Cable replacement
- Point-of-sales systems
- Barcode readers and pay terminals
- Telemetry and machine-to-machine devices
- Logistics and transportation systems
- Automotive inspection and measurement systems
- Medical systems
- Fitness and sports telemetry devices
- PDAand otherportable terminals
- PCs and laptop
- OBD

4,Application Circuit Diagram



5.PINs description

PIN NO.	NAME	FUNCTION
1	UART_TX	UART Data Output (P0_3)
2	UART_RX	UART Data Input (P0_2)
3	UART_CTS	UART Clear To Send Active Low (P0_4)
4	UART_RTS	UART Request To Send Active Low (P0_5)
5	NC	NC
6	DC	Debug the clock P2_2
7	DD	Debug the data P2_1
8	NC	
9	NC	
10	NC	
11	RESETB	Reset if low Input debounced so must below for>5ms to cause a reset
12	VCC	+3.3V Supply
13	GND	Ground
14	NC	
15	NC	
16	P1_4	
17	P1_6	
18	P1_7	
19	P1_5	
20	NC	
21	NC	
22	GND	
23	P1_1	LED
24	P1_0	
25	NC	
26	P0_6	wakeup
27	NC	
28	NC	
29	NC	
30	NC	
31	NC	
32	NC	

6,Other configuration

State Instructions LED: P1_2(PIN24)

Model	LED Display	Status
Slave	Even slow flash (800ms-on,800ms-off)	Waiting for matching
	Long bright	connection
Master	Even slow flash (800ms-on,800ms-off)	Waiting for matching
	Long bright	connection

Module dormancy set
Is only meaningful in from dormancy mode module, from the mode via a serial port to send "AT + SLEEP", if no accident, the module will return "OK+SLEEP" and enter a dormant state.
Wake up the module Settings
Method 1: short press the system button SW1(PIN26).
WAKE up, a serial port will output "+ WAKE OK" string.

7,AT Command

The way to the AT command mode: supply power to the module, it will enter to the AT mode if it needn't pair.

The interval of command is about 1 second.Default parameter: Baud rate:9600N81, Password:000000

Command 1 , Testing Connection Commands

Command	Answer	Parameter
AT	OK	None

Command 2 , Query/Set —— Baud Rate

Command	Answer	Parameter
Query: AT+BAUD?	OK+Get:[para1]	Para1: 4～8 4=9600;5=19200; 6=38400;7=57600; 8=115200 Default: 4（9600）
Set: AT+BAUD[para1]	OK+Set:[para1]	

Example: Send:AT+BAUD6
Return:OK+Set:6

The baud rate to 38400

Send AT+BAUD?
Return: OK+Get:6

Command 3 , Query/Set —— Bluetooth Name

Command	Answer	Parameter
Query: AT+NAME?	OK+NAME:[para1]	Para1: the name of device Default: SH-HC-08
Set: AT+NAME[para1]	OK+Set[para1]	

Example: Send: AT+NAME?

Return: OK+Name:SH-HC-08

Send: AT+NAMEyourname

Return : OK+Set:yourname

Command 4 , Query/Set ——PIN Code

Command	Answer	Parameter
Query: AT+PASS?	OK+PASS:[para1]	Para1 is PIN Code: 000000~999999 Default: 000000
Set: AT+PASS[para1]	OK+Set:[para1]	

e.g.

Query Pin Code

Send: AT+PASS?

Return: OK+PASS:000000

Setup Pin Code 123456

Send: AT+PASS123456

Return : OK+Set:123456

Command 5, Query/Set ——Module Bond Mode

Command	Answer	Parameter
Query: AT+TYPE?	OK+ Get:[para]	Para: 0 ~ 2 0: Not need PIN Code 1: Auth not need PIN 2: Auth with PIN Default: 0
Set: AT+TYPE[para]	OK+Set:[para]	

Command 6, Restore all setup value to factory setup

Command	Answer	Parameter
AT+RENEW	OK+RENEW	None

Command 7, Restart module

Command	Answer	Parameter
AT+RESET	OK+RESET	None

Command 8, Query module bluetooth address

Command	Answer	Parameter
AT+ADDR?	OK+ADDR:[MAC]	MAC: Bluetooth address

Command 9, Query/Set ——Module Power

Command	Answer	Parameter
Query: AT+TXPW?	OK+ TXPW:[para]	Para: 0 ~ 3 0: -23dbm、 1: -6dbm 2: 0dbm、 3: 4dbm Default: 2
Set: AT+TXPW[para]	OK+Set:[para]	

Command 10, Disconnect Bluetooth connection

Command	Answer	Parameter
Query: AT+DISCON	None	None

Command 11, set module into sleep mode

Command	Answer	Parameter
AT+SLEEP	OK+SLEEP	None

Only support Peripheral role.

When pin26 is high level and the module will go to normal mode.

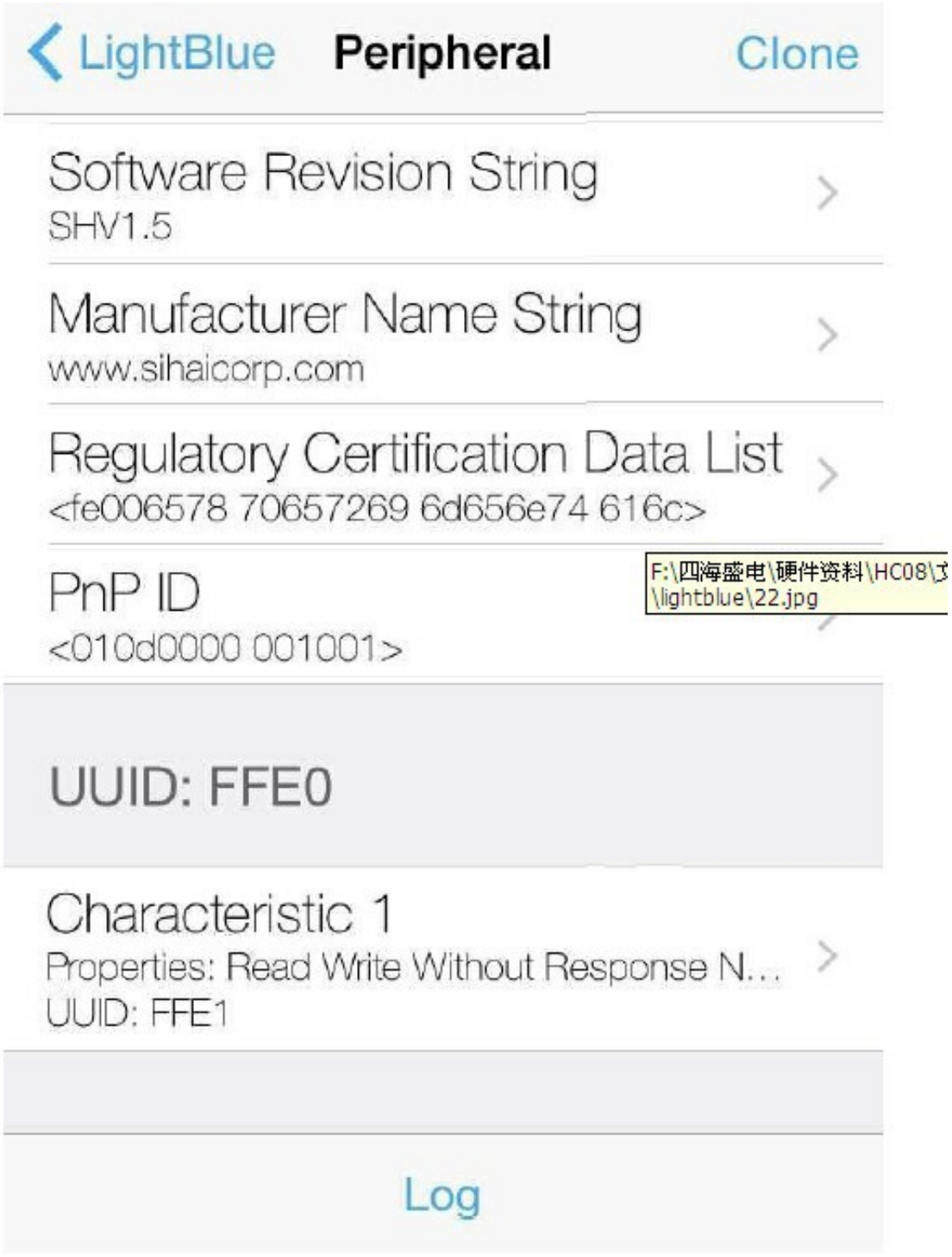
Command 12, query verison

Command	Answer	Parameter
AT+VERSION	Version info	

8,use lightblue to test

1. Down “LightBlue” from AppStore
2. After Install LightBlue , IF Moudle works, the following screen will appear.

3. Click “SH-HC-08” will enter the next screen,when this screen appears, indicating that the connection has been established. President of bright led lights

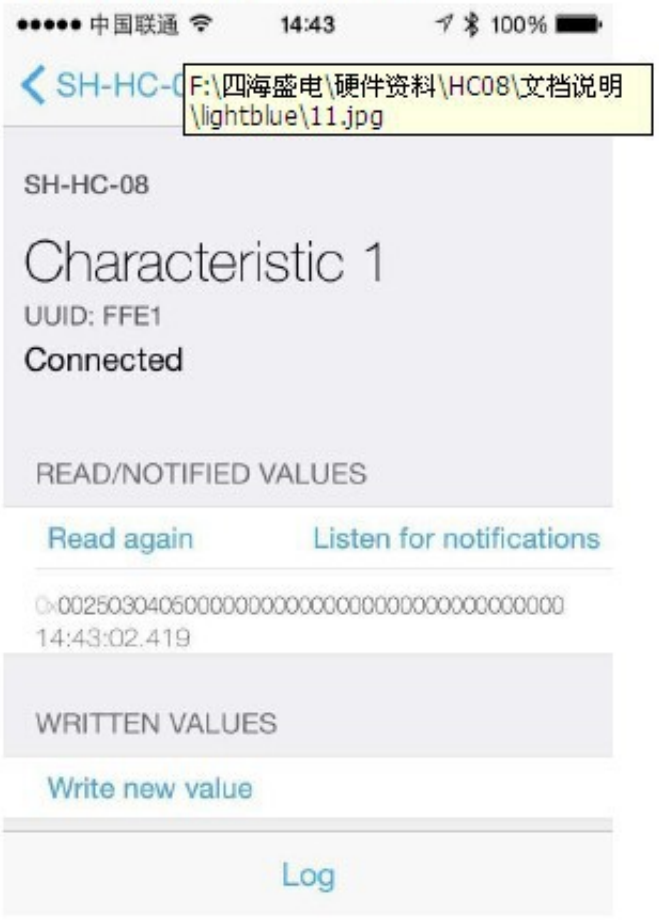


The services uuid is FFE0.

4. Send data from the phone to the Bluetooth module

Click UUID:FFE1

And the follow screen appears.



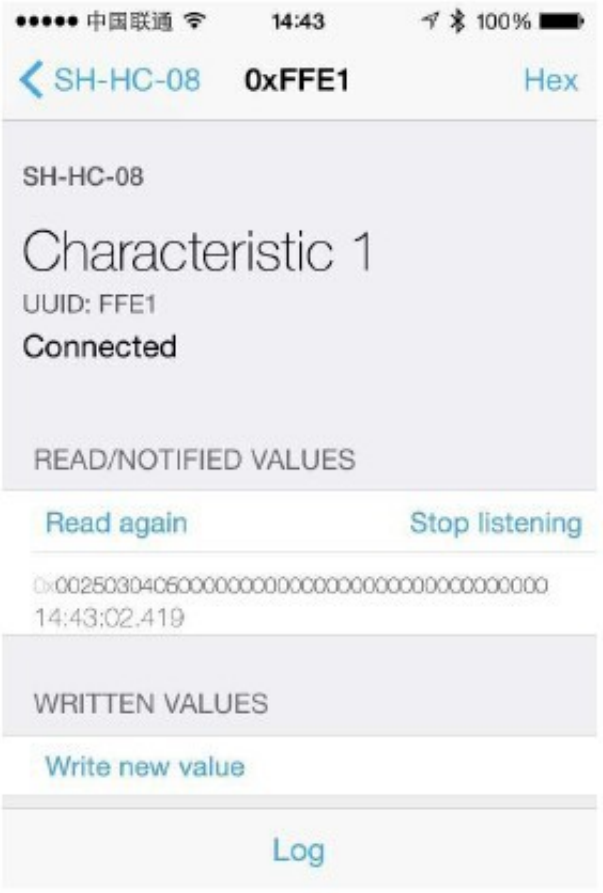
Click “Write new value”

Then send Hexadecimal data.

Will receive the data on the serial module.

5. Receive the data sent to the mobile phone from a Bluetooth module

Click “Listen for notification” then the screen becomes as followed:



When you send data from a serial port module, the data will be displayed in this interface.