

Guangzhou HC Information Technology Co., Ltd.

Product Data Sheet

Module Data Sheet

Rev 1

| | | | | | | | |
|-------------|------------|------------|------------|--|--|--|--|
| 1. 0 | 2.0 | 2.1 | 2.2 | | | | |
| 2006/6/18 | 2006/9/6 | 2010/4/22 | 2011/4/6 | | | | |

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
| | | | | | | | | | |

| | | | | |
|-----------------------------|--|--|--|--------|
| DRAWN BY : | Ling Xin | | MODEL : HC-06 | |
| CHECKED BY : | Eric Huang | | Description:: BC04 has external 8M Flash and EDR module HC-06 is industrial, and compatible with civil HC-04 | |
| APPD. BY: | Simon Mok | | REV: 2.0 | Page : |
| Former version introduction | HC-06 is the higher version of LV_BC_2.0. Linvor is the former of wavesen. | | | |

Contents

1. Product's picture
2. Feature
3. Pins description
4. The parameters and mode of product
5. Block diagram
6. Debugging device
7. Characteristic of test
8. Test diagram
9. AT command set

1. Product's picture

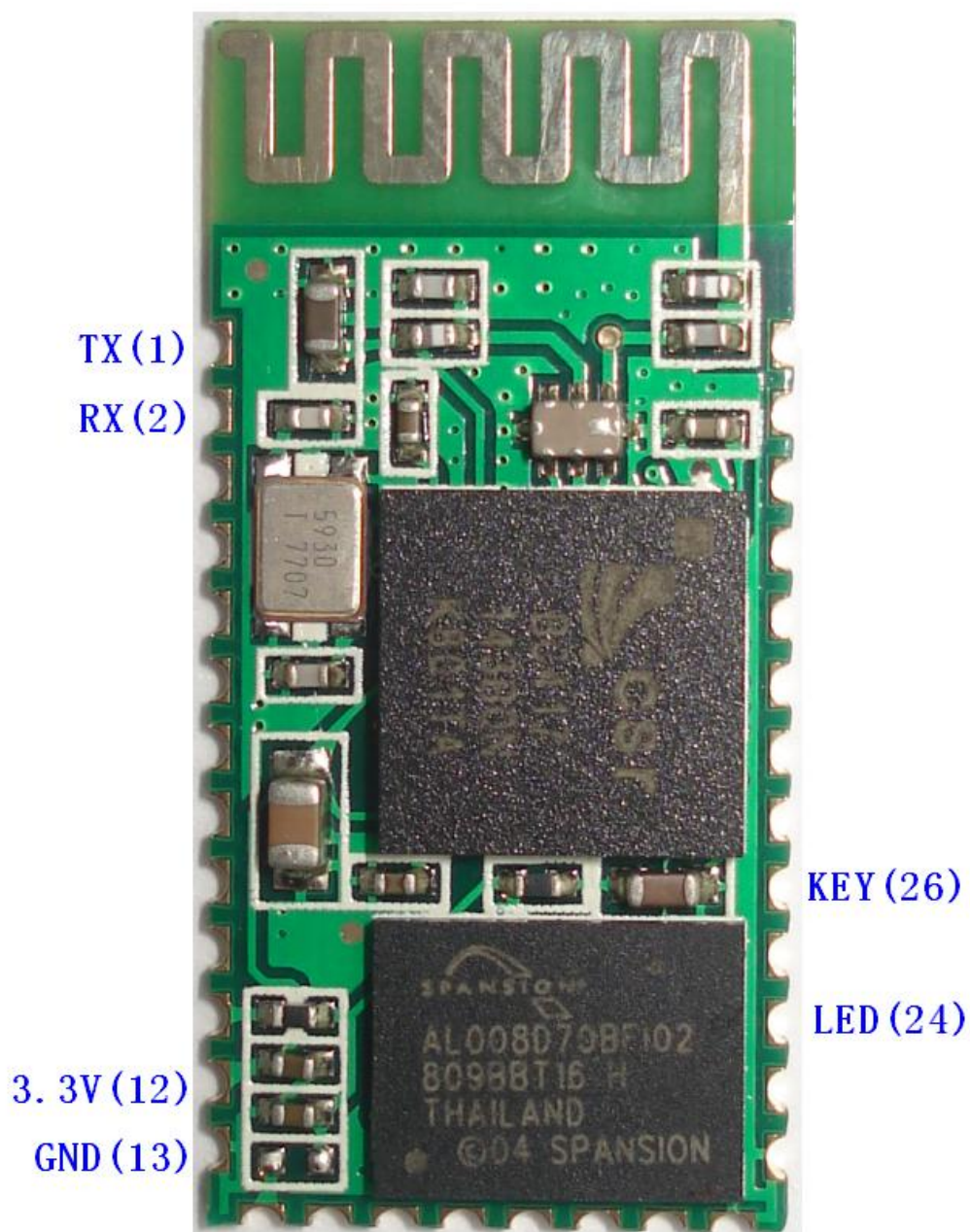


Figure 1 A Bluetooth module

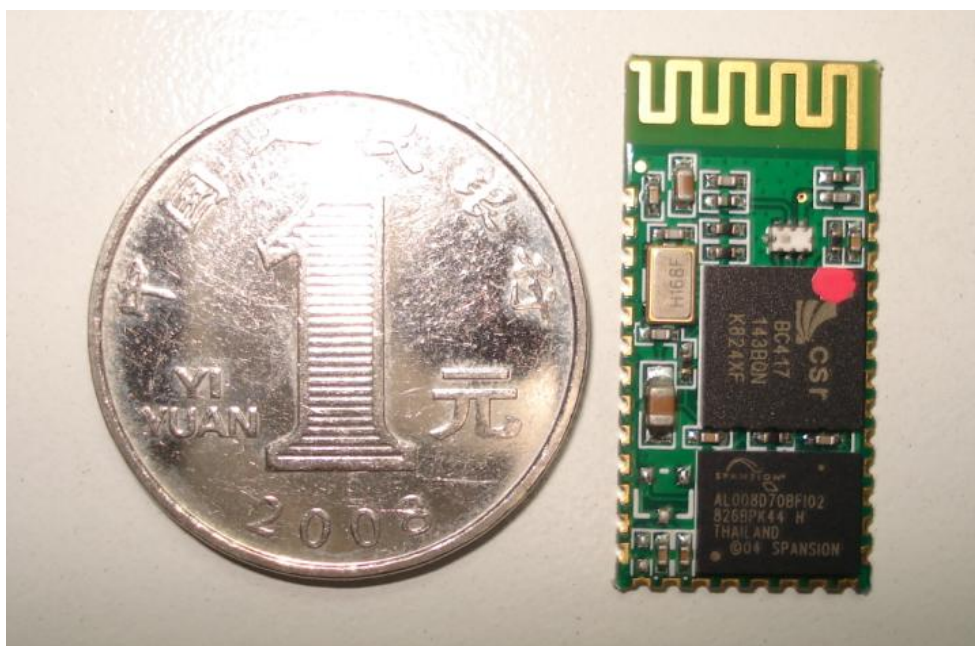


Figure 2. A Bluetooth module size



Figure 3 50 pieces chips in an anti-static blister package.

2. Feature

- Wireless transceiver
 - Sensitivity (Bit error rate) can reach -80dBm.
 - The change range of output's power: -4 - +6dBm.
- Function description (perfect Bluetooth solution)
 - Has an EDR module; and the change range of modulation depth: 2Mbps - 3Mbps.
 - Has a build-in 2.4GHz antenna; user needn't test antenna.
 - Has the external 8Mbit FLASH
 - Can work at the low voltage (3.1V~4.2V). The current in pairing is in the range of 30~40mA. The current in communication is 8mA.
 - Standard HCI Port (UART or USB)
 - USB Protocol: Full Speed USB1.1, Compliant With 2.0
 - This module can be used in the SMD.
 - It's made through RoHS process.
 - The board PIN is half hole size.
 - Has a 2.4GHz digital wireless transceiver.
 - Bases at CSR BC04 Bluetooth technology.
 - Has the function of adaptive frequency hopping.
 - Small (27mm×13mm×2mm)
 - Peripherals circuit is simple.
 - It's at the Bluetooth class 2 power level.
 - Storage temperature range: -40 °C - 85°C, work temperature range: -25 °C - +75°C
 - Any wave inter Interference: 2.4MHz, the power of emitting: 3 dBm.
 - Bit error rate: 0. Only the signal decays at the transmission link, bit error may be produced. For example, when RS232 or TTL is being processed, some signals may decay.
- Low power consumption
- Has high-performance wireless transceiver system
- Low Cost

- Application fields:
 - Bluetooth Car Handsfree Device
 - Bluetooth GPS
 - Bluetooth PCMCIA , USB Dongle
 - Bluetooth Data Transfer
- Software
 - CSR

3. PINs description

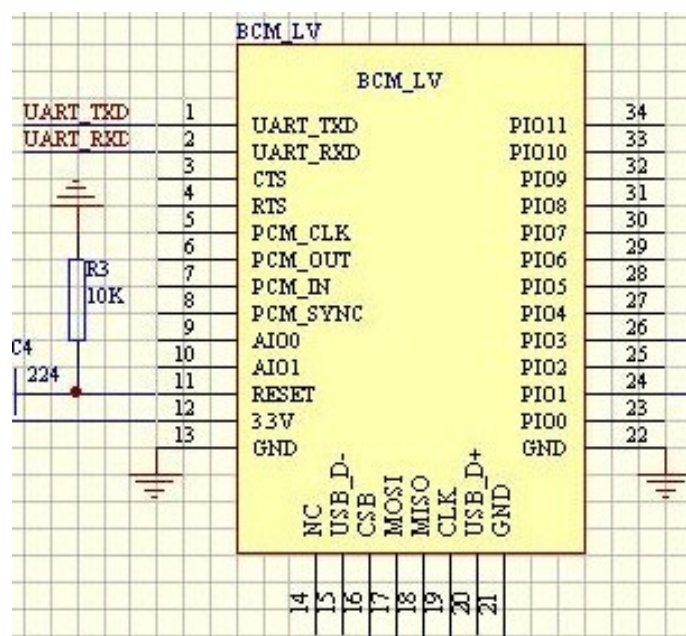


Figure 3 PIN configuration

The PINs at this block diagram is as same as the physical one.

| PIN Name | PIN # | Pad type | Description | Note |
|----------|----------|----------------|---|------|
| GND | 13 21 22 | VSS | Ground pot | |
| 1V8 | 14 | VDD | Integrated 1.8V (+) supply with On-chip linear regulator output within 1.7-1.9V | |
| VCC | 12 | 3.3V | | |
| AIO0 | 9 | Bi-Directional | Programmable input/output line | |
| AIO1 | 10 | Bi-Directional | Programmable input/output line | |

www.wavesen.com Phone: 020-84083341 Fax: 020-84332079 QQ:1043073574

Address: Room 527, No.13, Jiangong Road, Tianhe software park, Tianhe district, Guangzhou Post: 510660

Technology consultant: support@wavesen.com

Business consultant: sales@wavesen.com

Complaint and suggestion: sunbirdit@hotmail.com

| | | | | |
|----------|----|---|--|---------|
| PIO0 | 23 | Bi-Directional RX EN | Programmable input/output line, control output for LNA(if fitted) | |
| PIO1 | 24 | Bi-Directional TX EN | Programmable input/output line, control output for PA(if fitted) | |
| PIO2 | 25 | Bi-Directional | Programmable input/output line | |
| PIO3 | 26 | Bi-Directional | Programmable input/output line | |
| PIO4 | 27 | Bi-Directional | Programmable input/output line | |
| PIO5 | 28 | Bi-Directional | Programmable input/output line | |
| PIO6 | 29 | Bi-Directional | Programmable input/output line | CLK_REQ |
| PIO7 | 30 | Bi-Directional | Programmable input/output line | CLK_OUT |
| PIO8 | 31 | Bi-Directional | Programmable input/output line | |
| PIO9 | 32 | Bi-Directional | Programmable input/output line | |
| PIO10 | 33 | Bi-Directional | Programmable input/output line | |
| PIO11 | 34 | Bi-Directional | Programmable input/output line | |
| RESETB | 11 | CMOS Input with weak internal pull-down | | |
| UART_RTS | 4 | CMOS output, tri-stable with weak internal pull-up | UART request to send, active low | |
| UART_CTS | 3 | CMOS input with weak internal pull-down | UART clear to send, active low | |
| UART_RX | 2 | CMOS input with weak internal pull-down | UART Data input | |
| UART_TX | 1 | CMOS output, Tri-stable with weak internal pull-up | UART Data output | |
| SPI_MOSI | 17 | CMOS input with weak internal pull-down | Serial peripheral interface data input | |
| SPI_CSB | 16 | CMOS input with weak internal | Chip select for serial peripheral interface, active low | |

| | | | | |
|----------|----|---|---|---|
| | | pull-up | | |
| SPI_CLK | 19 | CMOS input with weak internal pull-down | Serial peripheral interface clock | |
| SPI_MISO | 18 | CMOS input with weak internal pull-down | Serial peripheral interface data Output | |
| USB_- | 15 | Bi-Directional | | |
| USB_+ | 20 | Bi-Directional | | |
| 1.8V | 14 | | 1.8V external power supply input | Default : 1.8V internal power supply. |
| PCM_CLK | 5 | Bi-Directional | | |
| PCM_OUT | 6 | CMOS output | | |
| PCM_IN | 7 | CMOS Input | | |
| PCM_SYNC | 8 | Bi-Directional | | |

4. The parameters and mode of product

LINVOR BLUE T

www.linvor.com

Bluetooth Module
 Bluetooth

CSR,BC417143B

V 2.0

2006/09/6

蓝牙 RF 模块

1. 采用 CSR BC4 +8M FLASH 方案
2. 具有 PIO0-PIO11、AIO0、AIO1、
USB、PCM、UART 及 SPI 接口，
模块内置 8MFLASH，功能强大，
用户可定制软件,适用于各种蓝牙
设备，内置 RF 天线,便于调试。

| | |
|--------------|---------------------------------------|
| 蓝牙协议版本 | Bluetooth Specification V2.0 With EDR |
| USB 协议 | Full Speed USB V1.1 |
| USB Protocol | Compliant With USB V2.0 |
| 频率 | 2.4Ghz ISM band |
| 调制方式 | GFSK(Gaussian Frequency Shift Keying) |
| 发射功率 | -4 ->4 dBm, Class 2 |
| 灵敏度 | ≤-80dBm at 0.1% BER |
| 通讯速率 | Asynchronous:2Mbps(Max) |
| 供电电源 | 3.3V |
| 工作温度 | -20~+55 Centigrade |
| 封装尺寸 | 27mmX13mmX2mm |

Page 1 of 2

If you want more information, please visit www.wavesen.com.

www.wavesen.com Phone: 020-84083341 Fax: 020-84332079 QQ:1043073574

Address: Room 527, No.13, Jiangong Road, Tianhe software park, Tianhe district, Guangzhou Post: 510660

Technology consultant: support@wavesen.com

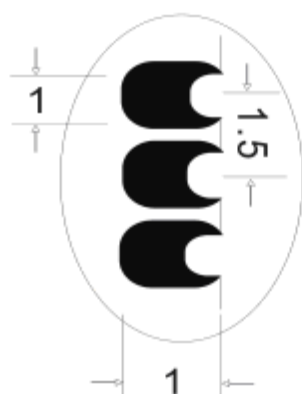
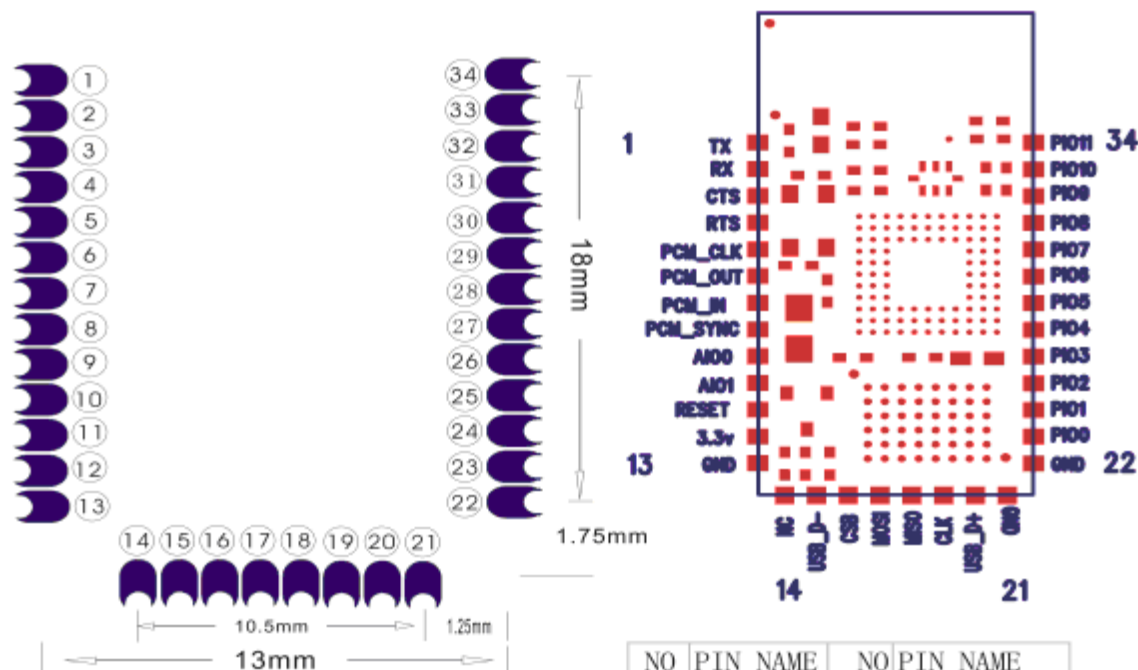
Business consultant: sales@wavesen.com

Complaint and suggestion: sunbirdit@hotmail.com

LINVOR BLUE T
www.linvor.com

LV-BC-2.0

单位: mm



PCB Layout 请参考实物

| NO | PIN NAME | NO | PIN NAME |
|----|----------|----|----------|
| 1 | TX | 20 | USB D+ |
| 2 | RX | 21 | GND |
| 3 | CTS | 22 | GND |
| 4 | RTS | 23 | PI00 |
| 5 | PCM CLK | 24 | PI01 |
| 6 | PCM OUT | 25 | PI02 |
| 7 | PCM IN | 26 | PI03 |
| 8 | PCM SYNC | 27 | PI04 |
| 9 | AI00 | 28 | PI05 |
| 10 | AI01 | 29 | PI06 |
| 11 | RESET | 30 | PI07 |
| 12 | 3.3V | 31 | PI08 |
| 13 | GND | 32 | PI09 |
| 14 | NC | 33 | PI010 |
| 15 | USB D- | 34 | PI011 |
| 16 | CSB | | |
| 17 | MOSI | | |
| 18 | MISO | | |
| 19 | CLK | | |

5. Block diagram

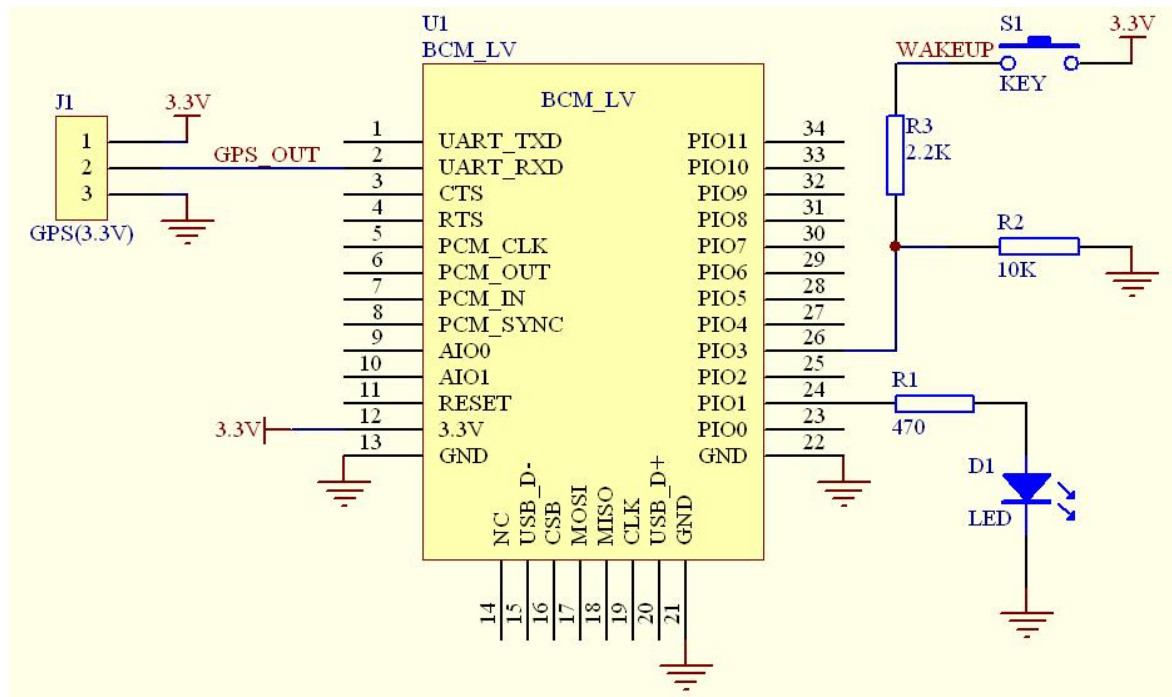


Figure 5 Block diagram 1

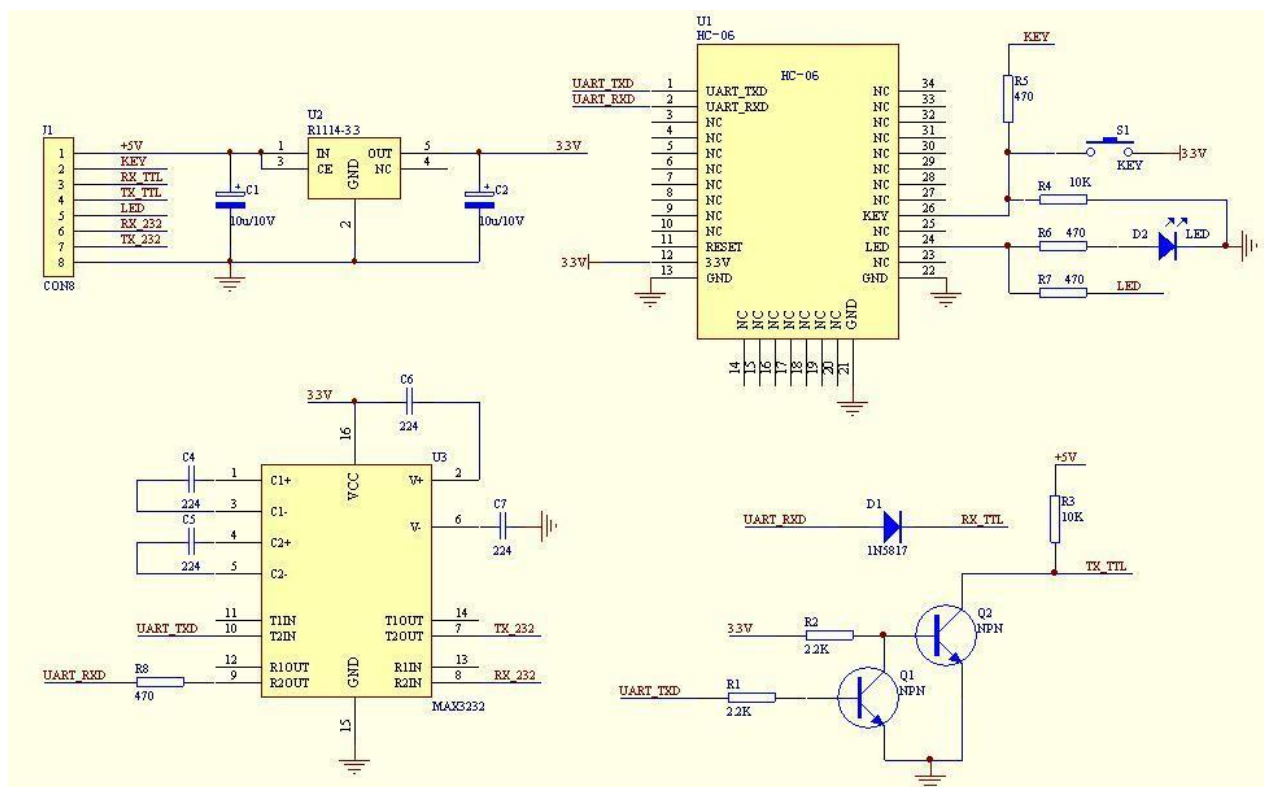


Figure 5 Block diagram 2

www.wavesen.com Phone: 020-84083341 Fax: 020-84332079 QQ:1043073574

Address: Room 527, No.13, Jiangong Road, Tianhe software park, Tianhe district, Guangzhou Post: 510660

Technology consultant: support@wavesen.com

Business consultant: sales@wavesen.com

Complaint and suggestion: sunbirdit@hotmail.com

HC-04/06 master device has a function of remembering the last paired slave device. As a master device, it will search the last paired slave device until the connection is built. But if the WAKEUP button is pressed, HC-04/06 will lose the memory and research the new slave device.

6. Debugging device

6.1 Device

PC, hardware, 3G, 3G Frequency Counter (SP3386), 3.15V DC power supply, Shielding, Bluetooth Test box.

6.2 Software

7. Characteristic of test

| Test Condition 25°C RH 65% | | | | |
|--|-----|-----|--------|------|
| | Min | Typ | Max | Unit |
| 1. Carrier Freq. (<i>ISM Band</i>) | 2.4 | | 2.4835 | MHz |
| 2. RF O/P Power | -6 | 2 | 4 | dBm |
| 3. Step size of Power control | 2 | | 8 | dB |
| 4. Freq. Offset (<i>Typical Carrier freq.</i>) | -75 | | 75 | KHz |
| 5. Carrier Freq. drift (<i>Hopping on, drift rate/50uS</i>) | -20 | | 20 | KHz |
| 1 slot packet | -25 | | 25 | KHz |
| 3 slot packet | -40 | | -40 | KHz |
| 6. Average Freq. Deviations (<i>Hopping off, modulation</i>) | 140 | | 175 | KHz |
| Freq. Deviation | 115 | | | KHz |
| Ratio of Freq. Deviation | 0.8 | | | |
| 7. Receive Sensitivity @< 0.1% BER(<i>Bit error rate</i>) | -83 | | | dBm |

8. Test diagram

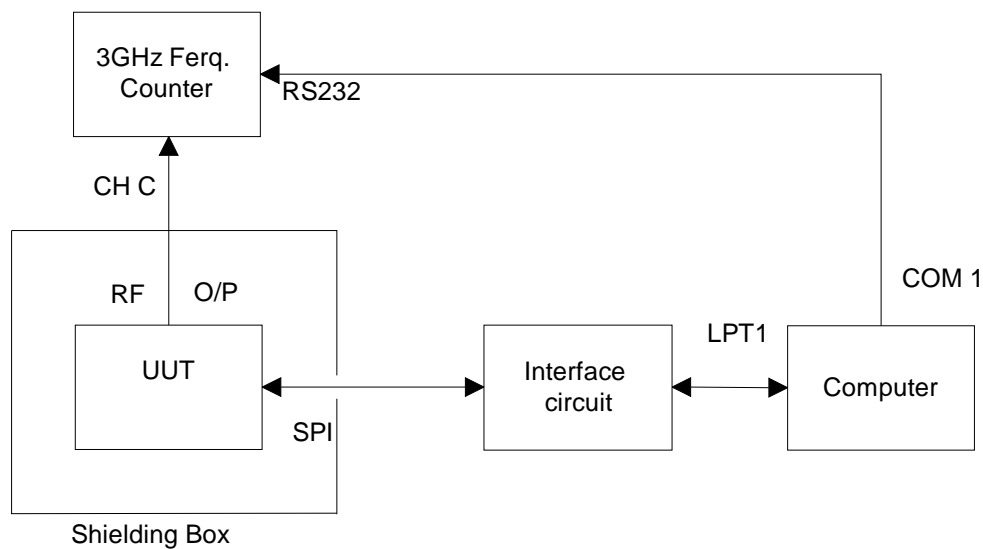


Fig 1. Programming and Freq. Alignment

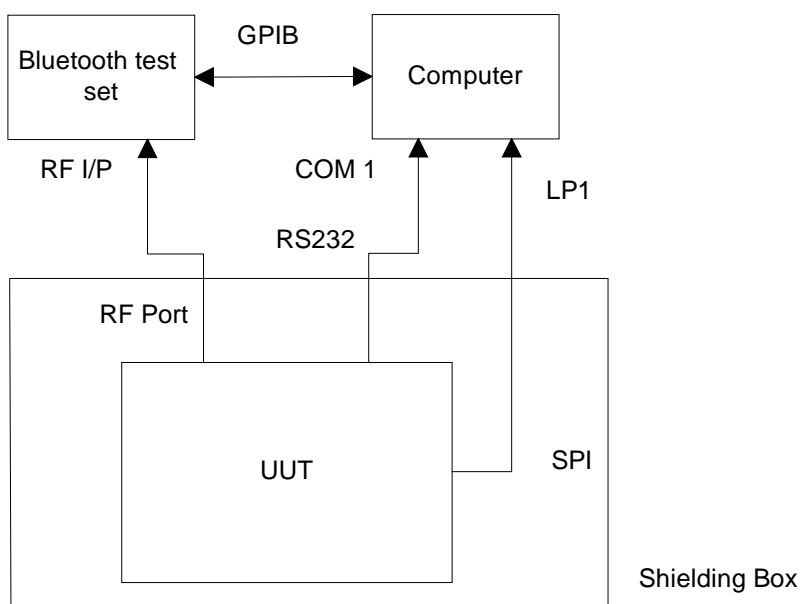


Fig 2 RF parameter Test Procedure

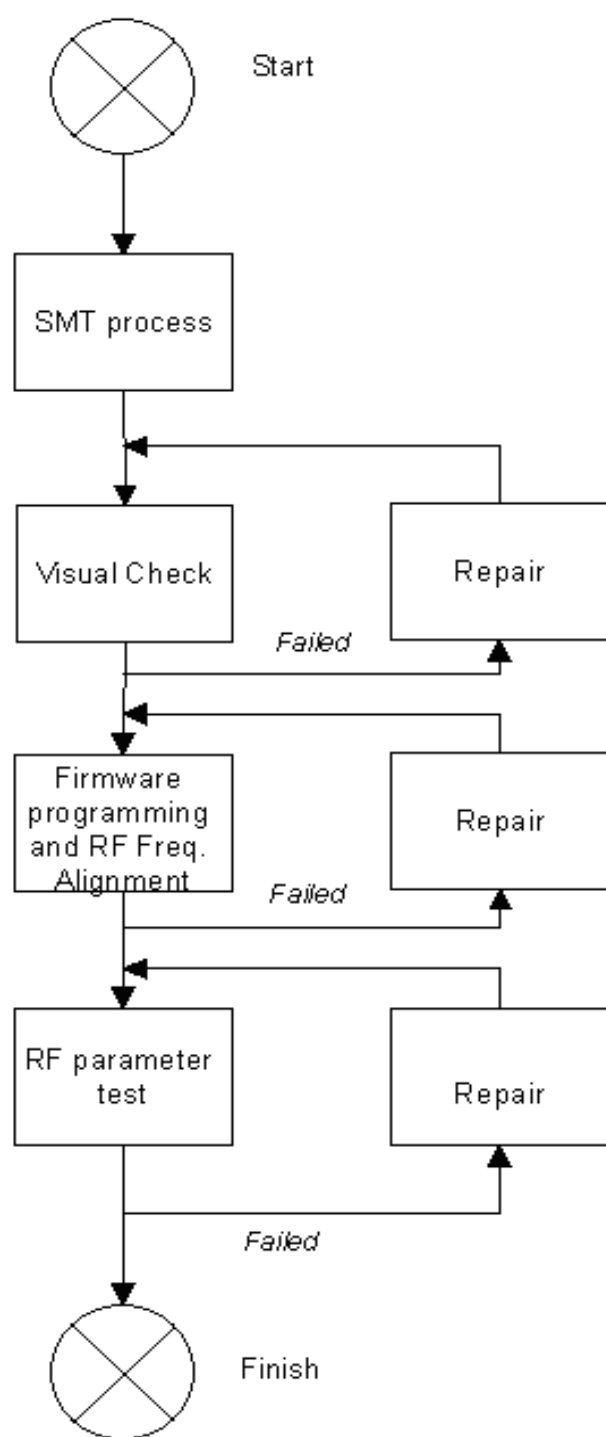


Fig 3 Assemble/Alignment/Testing Flow Chart

9. AT command set

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, ID: linvor, Password:1234

1. Test communication

Send: AT (please send it every second)

Back: OK

2. Reset the Bluetooth serial baud rate

Send: AT+BAUD1

Back: OK1200

Send: AT+BAUD2

Back: OK2400

.....

1-----1200

2-----2400

3-----4800

4-----9600 (Default)

5-----19200

6-----38400

7-----57600

8-----115200

9-----230400

A-----460800

B-----921600

C-----1382400

PC can't support the baud rate lager than 115200. The solution is: make the MCU have higher baud rate (lager than 115200) through programming, and reset the baud rate to low level through the AT command.

The baud rate reset by the AT command can be kept for the next time even though the power is cut off.

3. Reset the Bluetooth name

Send: AT+NAMEname

Back: OKname

www.wavesen.com Phone: 020-84083341 Fax: 020-84332079 QQ:1043073574

Address: Room 527, No.13, Jiangong Road, Tianhe software park, Tianhe district, Guangzhou Post: 510660

Technology consultant: support@wavesen.com

Business consultant: sales@wavesen.com

Complaint and suggestion: sunbirdit@hotmail.com

Parameter name: Name needed to be set (20 characters limited)

Example:

Send: AT+NAMEbill_gates

Back: OKname

Now, the Bluetooth name is reset to be "bill_gates"

The parameter can be kept even though the power is cut off. User can see the new Bluetooth name in PDA refresh service. (Note: The name is limited in 20 characters.)

4. change the Bluetooth pair password

Send: AT+PINxxxx

Back:OKsetpin

Parameter xxxx: The pair password needed to be set, is a 4-bits number. This command can be used in the master and slave module. At some occasions, the master module may be asked to enter the password when the master module tries to connect the slave module (adapter or cell-phone). Only if the password is entered, the successful connection can be built. At the other occasions, the pair can be finish automatically if the master module can search the proper slave module and the password is correct.

Besides the paired slave module, the master can connect the other devices who have slave module, such as Bluetooth digital camera, Bluetooth GPS, Bluetooth serial printer etc.

Example:

Send: AT+PIN8888

Back: OKsetpin

Then the password is changed to be 8888, while the default is 1234.

This parameter can be kept even though the power is cut off.

5. No parity check (The version, higher than V1.5, can use this command)

Send: AT+PN (This is the default value)

Back: OK NONE

6. Set odd parity check (The version, higher than V1.5, can use this command)

Send: AT+PO

Back: OK ODD

7. Set even parity check(The version, higher than V1.5, can use this command)

Send: AT+PE

Back: OK EVEN

8. Get the AT version

Send: AT+VERSION

Back: LinvorV1.n



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.