

# Manual

Version 1.1

<b>Product:</b>	<b>BC4 Module</b>
<b>Model No. :</b>	<b>H4000</b>
<b>Date:</b>	<b>June 12, 2009</b>

# H4000 Bluetooth Module

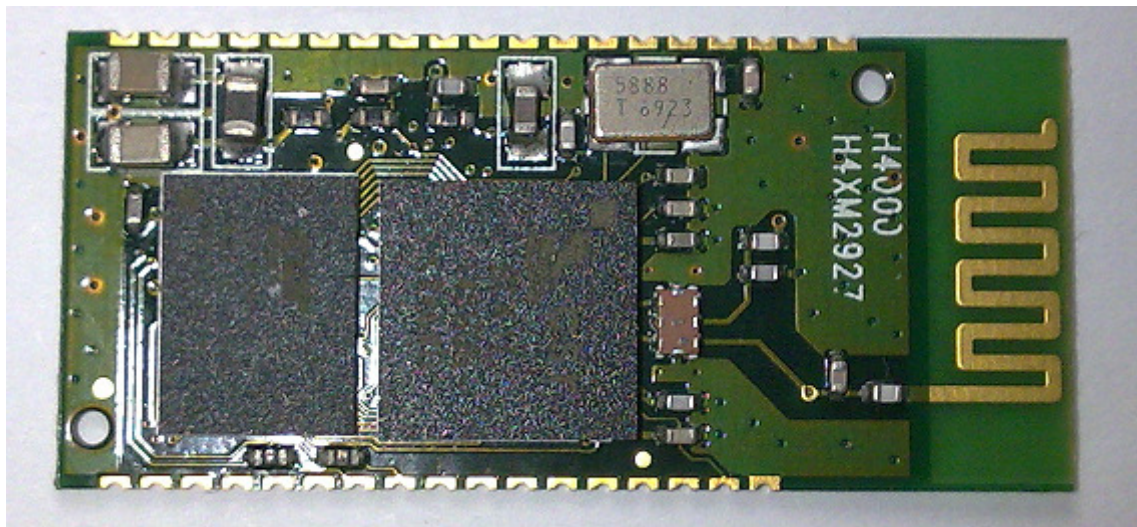
## KEY FEATURES

Support SPP, HID, HSP, A2DP, AVRCP, BIP Profile..  
Bluetooth 2.0+EDR  
Power Level Class 2 (<4dBm)  
High sensitivity -85dBm  
Printing Antenna

## APPLICATIONS

PDA and smart phone.  
Digital frame with Bluetooth file transfer supporting.  
GPS receiver.  
Botebook PC and UMPC.

## Picture



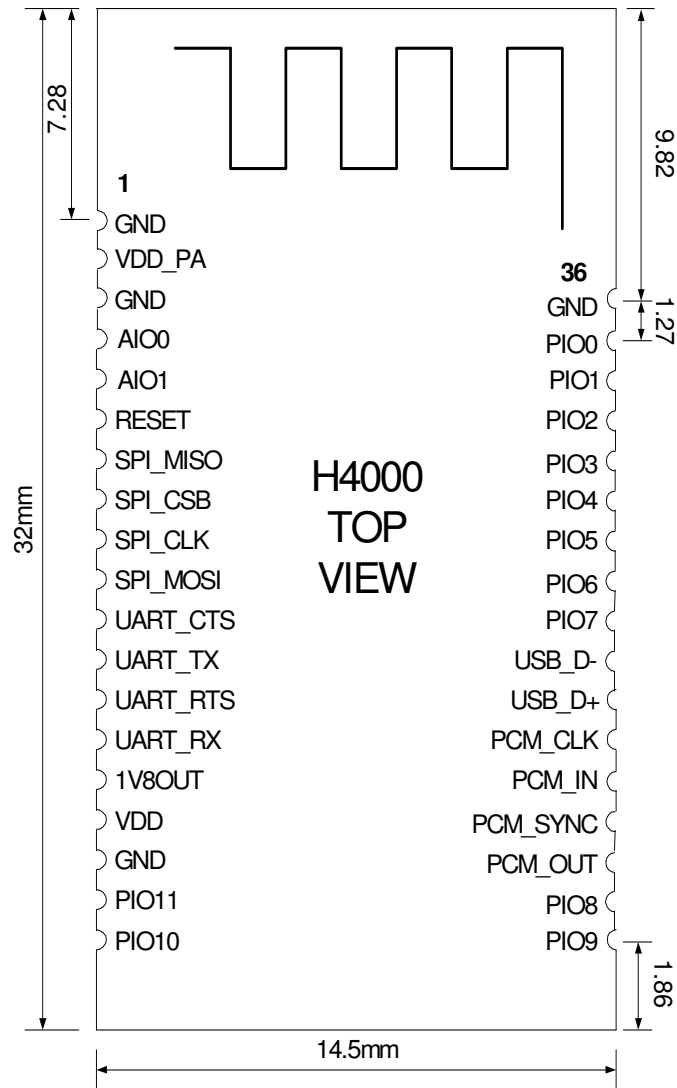
TOP VIEW  
PHYSICAL SIZE 32mm X 14.5mm X 1.92mm

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# Hardware Pad Functions

## Dimension



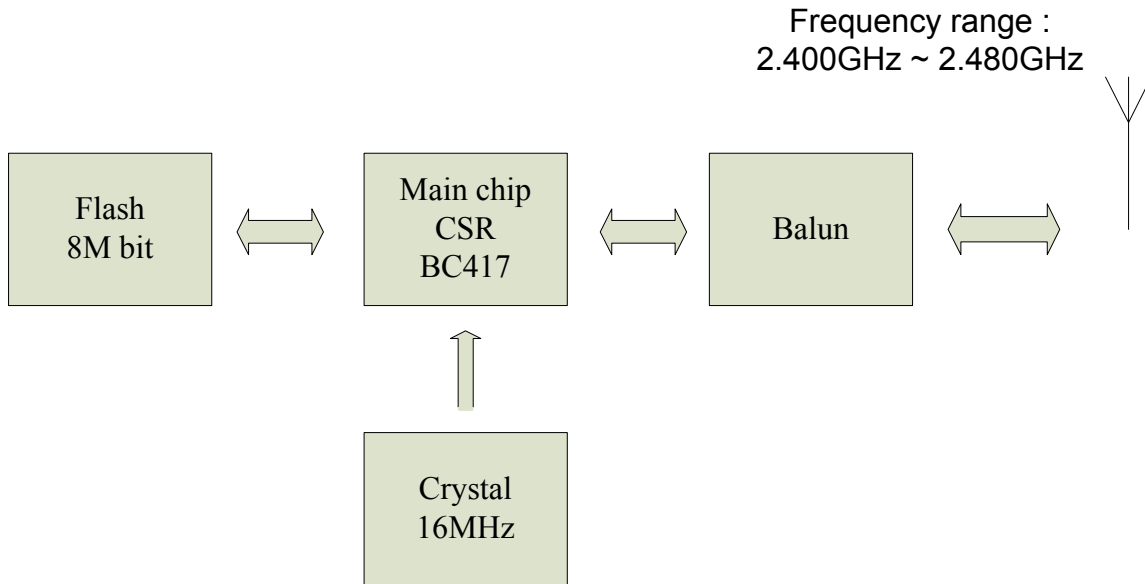
# PCB Footprint

## 1.0

No.	Symbol	I/O	Description
1	GND	-	Ground
2	VDD_PA	I	No connection
3	GND	-	Ground
4	AIO(0)	I/O	Programmable I/O line
5	AIO(1)	I/O	Programmable I/O line
6	RESET	I	Reset if low
7	SPI_MISO	O	Synchronous serial interface data output
8	SPI_CSB	I	Chip select for Synchronous Serial Interface active low
9	SPI_CLK	I	Synchronous serial interface clock
10	SPI_MOSI	I	Synchronous serial interface data input
11	UART_CTS	I	UART clear to send active low
12	UART_TX	O	UART data output
13	UART_RTS	O	UART request to send active low
14	UART_RX	I	UART data input
15	1V8OUT	O	1.8V output voltage
16	VDD	I	3.3V input voltage
17	GND	-	Ground
18	PIO(11)	I/O	Programmable I/O line
19	PIO(10)	I/O	Programmable I/O line
20	PIO(9)	I/O	Programmable I/O line
21	PIO(8)	I/O	Programmable I/O line
22	PCM_OUT	O	Synchronous data out
23	PCM_SYNC	I/O	Synchronous data sync
24	PCM_IN	I	Synchronous data input
25	PCM_CLK	I/O	Synchronous data clock
26	USB_DP	I/O	USB data plus with selectable internal 1.5k $\Omega$ pull-up resistor
27	USB_DN	I/O	USB data minus
28	PIO(7)	I/O	Programmable I/O line
29	PIO(6)/WLAN_Active/Ch_Data	I/O	Programmable I/O line or Optionally WLAN_Active/Ch_Data input for co-existence signaling
30	PIO(5)/BT_Active	I/O	Programmable I/O line or Optionally BT_Active output for co-existence signaling
31	PIO(4)/BT_Priority/Ch_Clk	I/O	Programmable I/O line or Optionally BT_Priority/Ch_Clk output for co-existence signaling
32	PIO(3)	I/O	Programmable I/O line
33	PIO(2)	I/O	Programmable I/O line
34	PIO(1)/TXEN	I/O	Programmable I/O line or Control output for

			external PA (if fitted)
35	PIO(0)/RXEN	I/O	Programmable I/O line or Control output for external LNA (if fitted)
36	GND	-	Ground

## Hardware Block Diagram



## Bundled Software

Bluepacket FW 43.TDR11.403, support SPP-B profile .

## Electrical Characteristics

<b>Absolute Maximum Ratings</b>		
Rating	Min	Max
Storage temperature	-40 °C	+90 °C
Supply Voltage	-0.4V	3.7V

<b>Recommended Operating Conditions</b>		
Operating Condition	Min	Max
Operating temperature range	-0°C	+70 °C
Guaranteed RF performance range	-40 °C	+105 °C
Supply voltage	3.0V	3.6V



## RF Transmitter

Radio Characteristics	VDD = 1.8V			Temperature = +20°C	
	Min	Typ	Max	Bluetooth Specification	Unit
Maximum RF transmit power <sup>(a) (b)</sup>	-	5	-	-6 to +4 <sup>(c)</sup>	dBm
RF power variation over temperature range with compensation enabled <sup>(±)(d)</sup>	-	1.5	-	-	dB
RF power variation over temperature range with compensation disabled <sup>(±)(d)</sup>	-	2	-	-	dB
RF power control range	25	35	-	≥16	dB
RF power range control resolution <sup>(e)</sup>	-	0.5	1.2	-	dB
20dB bandwidth for modulated carrier	-	790	1000	≤1000	kHz

## RF Receiver

Radio Characteristics	VDD = 1.8V			Temperature = +20°C		
	Frequency (GHz)	Min	Typ	Max	Bluetooth Specification	Unit
Sensitivity at 0.1% BER for all packet types	2.402	-	-85.0	-	≤-70	dBm
	2.441	-	-85.0	-		
	2.480	-	-87.0	-		
Maximum received signal at 0.1% BER		-20	10	-	≥-20	dBm
	Frequency (MHz)	Min	Typ	Max	Bluetooth Specification	Unit
Continuous power required to block Bluetooth reception (for input power of -67dBm with 0.1% BER) measured at the unbalanced port of the balun.	30-2000	-10	0	-	≥-10	dBm
	2000-2400	-27	0	-	≥-27	
	2500-3000	-27	0	-	≥-27	
C/I co-channel		-	6	11	≤11	dB

## **Contact Information**

Bluepacket Communications Co., Ltd.

5F.-2, No. 12, Lane 270, Sec. 3, Beishen Rd., Shenkeng  
Township, Taipei County 222, Taiwan (R.O.C )

TEL 886-2-26649168

FAX 886-2-26649166

## Document History

Date	Revision	Reason of change
November 22, 2005	V1.0	Original publication
June 12, 2009	V1.1	Modify

## **Federal Communications Commission (FCC) Statement**

### **15.21**

**You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.**

### **15.105(b)**

**This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:**

- Reorient or relocate the receiving antenna.**
- Increase the separation between the equipment and receiver.**
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.**
- Consult the dealer or an experienced radio/TV technician for help.**

**This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:**

- 1) this device may not cause harmful interference, and**
- 2) this device must accept any interference received, including interference that may cause undesired operation of the device.**

## **FCC RF Radiation Exposure Statement:**

**This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.**

**Note: The end product shall has the words**

**“Contains Transmitter Module FCC ID: TM7H4000BEM2”**