Canmax Technology Ltd.

7F, No.183, Section 1, Tatung Road, His-Chih

22145,Taipei Hsien, Taiwan , R.O.C.

TEL：886-2-26477797 FAX： 886-2-26477798

P110 Bluetooth Module

User Manual & Datasheet

(Version 1.0)

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FCC Regulations:

●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.

●This device 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 radiated 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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user‘s authority to operate the equipment.

This device is intended only for OEM integrators under the following conditions: 1) The transmitter module may not be co-located with any other transmitter or antenna. As long as the condition above is met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.). The final end product must be labeled in a visible area with the following: "Contains TX **FCC ID: YG2-P110**".

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the

OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

Description of Operation :

This device is a class 1 Wirless Bluetooth Module provided 2.40GHz~2.48GHz ISM Band frequency hopping spread spectrum (FHSS) with 79 channels and connect up to 7 devices in a pacolet. The maximum transmitting enhanced data rate up to 3Mbps with Bluetooth 2.0+ . The antenna is external PCB type antenna, and use coxial cable to connect the antenna with this module. This Wirless Bluetooth Module compliance with Bluetooth 2.0+ standard. And it can communicate with any Bluetooth 2.0+ network or lower Bluetooth standard. It allows your microcontroller connect to a bluetooth network by using RS232 interface and share data without being bound to the network wires. This Wirless Bluetooth Module firmware support master mode and slave mode and AT command set for operation. And refer to the application circuit for detail hardware connection with microcontroller. In addition. The more details related operations, please refer to the datasheet and firmware command set list.

P110 Bluetooth Class I Module :

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OVERVIEW

- Highly integration BT 2.0 + EDR Class I module, CSR BC04-EXT + Flash Memory + LNA + PA + Balun + Filter + X'Tal.
- Wireless communications module conforming to Bluetooth Version 2.1 + EDR , Class I.
- USB, UART, PCM interfaces available to various applications.
- 8 GPIO ports available for user's application.
- Up to 7 actives devices and up to 3 SCO and eSCO links and up to 7 ACL links
- Support for Co-existence with WLAN
- Application, Cellular Phone, PDA, GPS SPP, HS, HF and Other Peripheral Devices

- BT Chipset : CSR BC04 External Flash
- Standards : Bluetooth
- Frequency : 2402 ~ 2480 MHz
- TX Output Power @ DH5 : Non-EDR, 18.5dBm (max)
- RX Sensitivity : Non-EDR, -90dBm (min)
- Range : > 100m (open space, line of site)
- Flash Size : 8MBits
- Operation Voltage : 3.3V
- Dimension : 25.5mm x 14mm x 2 mm
- Environmental Range : Operation Temperature : 0~+45^{o}C, Relative humidity : 0~95%

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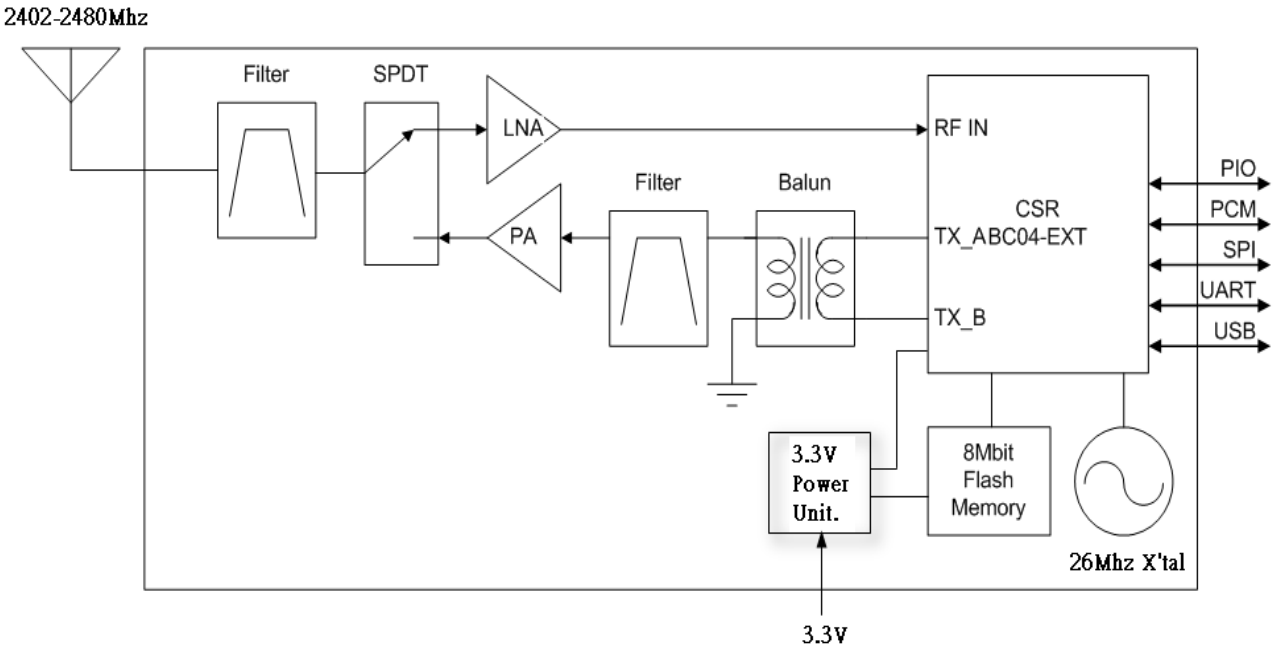
System Block Diagram



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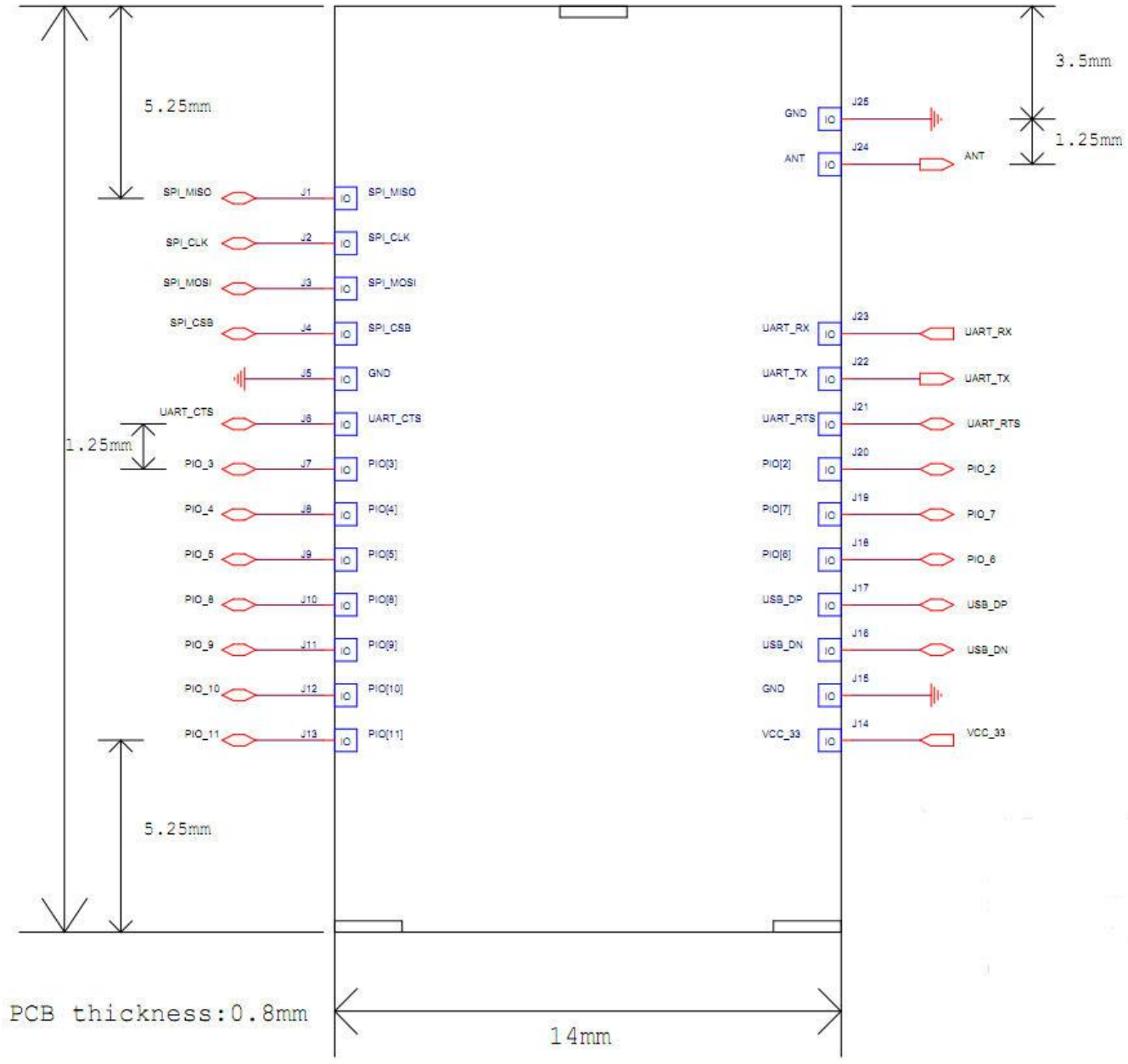
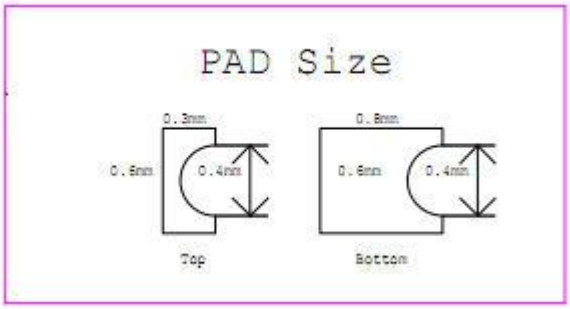
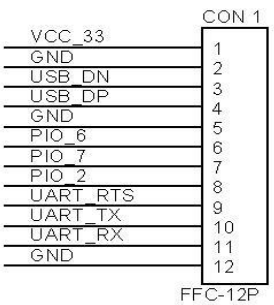
Pinout Diagram

Note: Please contact Canmax Tech. to get the detail footprint of the module to do the PCB design.







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I/O PIN LISTING

Pin No.	Pin Name	Type	Description
1	SPI_MISO	CMOS output, tri-state, with weak internal pull-down	Serial Peripheral Interface data output
2	SPI_CLK	CMOS input with weak internal pull-down	Serial Peripheral Interface clock
3	SPI_MOSI	CMOS input with weak internal pull-down	Serial Peripheral Interface data input
4	SPI_CSB	CMOS input with weak internal pull-up	Chip select for Synchronous Serial Interface active low
5	GND	Power	Ground
6	UART_CTS	CMOS input with weak internal pull-down	UART clear to send active low
7	PIO[3]	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
8	PIO[4]	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
9	PIO[5]	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
10	PIO[8]	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
11	PIO[9]	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
12	PIO[10]	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
13	PIO[11]	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
14	VCC_33	Power	3.3V input
15	GND	Power	Ground
16	USB_DN	Bi-directional	USB data minus
17	USB_DP	Bi-directional	USB data plus with selectable internal 1.5kΩ pull-up resistor
18	PIO[6]	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
19	PIO[7]	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
20	PIO[2]	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line

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21	UART_RTS	CMOS output, tri-state, with weak internal pull-up	UART request to send active low
22	UART_TX	CMOS output, tri-state, with weak internal pull-up	UART data output
23	UART_RX	CMOS input with weak internal pull-down	UART data input
24	ANT		Antenna
25	GND	Power	Ground

Electrical Characteristics

Absolute Maximum Ratings :

	Min.	Typ.	Max.	Unit
Supply Voltage	-	-	3.6	V
Storage Temperature	-40	-	85	^{o}C

Recommend Operation Conditions :

	Min.	Typ.	Max.	Unit
Supply Voltage	2.7	3.3	3.6	V
Operation Temperature	0	-	45	^{o}C

Input/Output Terminal Characteristics :

	Min.	Typ.	Max.	Unit
Digital (UART, PIO)				
V_{IL} Input Voltage Low	-0.4	-	+0.8	V
V_{IH} Input Voltage High	2.3	-	3.7	V
V_{OL} Output Voltage Low, (I_O is 4mA)	-	-	0.2	V
V_{OH} Output Voltage High, (I_O is -4mA)	3.1	-	-	V
USB				
V_{IL} Input Voltage Low	-	-	0.9	V
V_{IH} Input Voltage High	2.3	-	-	V
V_{OL} Output Voltage Low	-	-	0.2	V
V_{OH} Output Voltage High	2.8	-	3.3	V

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Radio Characteristics

Supply voltage = 3.3V and test under Non-EDR environment

		Min	Typ	Max	Bluetooth Spec.	Unit
Maximum RF transmit power		-5	10	18.5	20 ≥ ≥ -6	dBm
Sensitivity, 0.1% BER	2.402 GHz		≤ -90		≦-70	dBm
	2.411 GHz		≤ -90			dBm
	2.480 GHz		≤ -90			dBm
RF Power control range		20	22	23	≧16	dB
RF Power control resolution		4.2	4.5	5.1	2≤ ≤8	dB
20dB bandwidth for modulated carrier			700	800	≦1000	kHz
Δ f1avg modulation		150	160	170	40 < Δ f1avg < 175	
Δ f2max modulation		150	168	180	115	
Δ f1avg /Δ f2avg		0.95	1.04	1.2	≧0.80	
Initial Center Frequency		-25		25	±75	KHz
Frequency Drift Rate		-15		+15	±20	KHz/50us
Frequency Drift (single slot packet)		-10		-20	±25	KHz
Frequency Drift (five slot packet)		-10		-25	±40	KHz

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Power Consumption

Average Current Consumption

HW version	P110 V1.0		
FW version	HID-SPP-AT-V100-T027d		
	SPP B		
	Sniff disable		
	Deep Sleep enable		
	Role: Slave		
	Baud Rate:115200		
BT Host	General perpose dongle with Bluesoleil 5.0.5.178		
SPP device			
	Min.	**Avg.** **(1 Min. 1sample/sec)**	**Max**
Power On No connection **Open Inquiry Scan**	8.01mA	8.70mA	23.23mA
Connecting	26.67mA	31.39mA	39.85mA
Connected No Data Transfer	12.28mA	15.11mA	19.17mA
Connected TX 10 digits/sec	12.32mA	15.88mA	22.33mA
Connected TX 1 digit/sec	12.23mA	15.85mA	22.65mA

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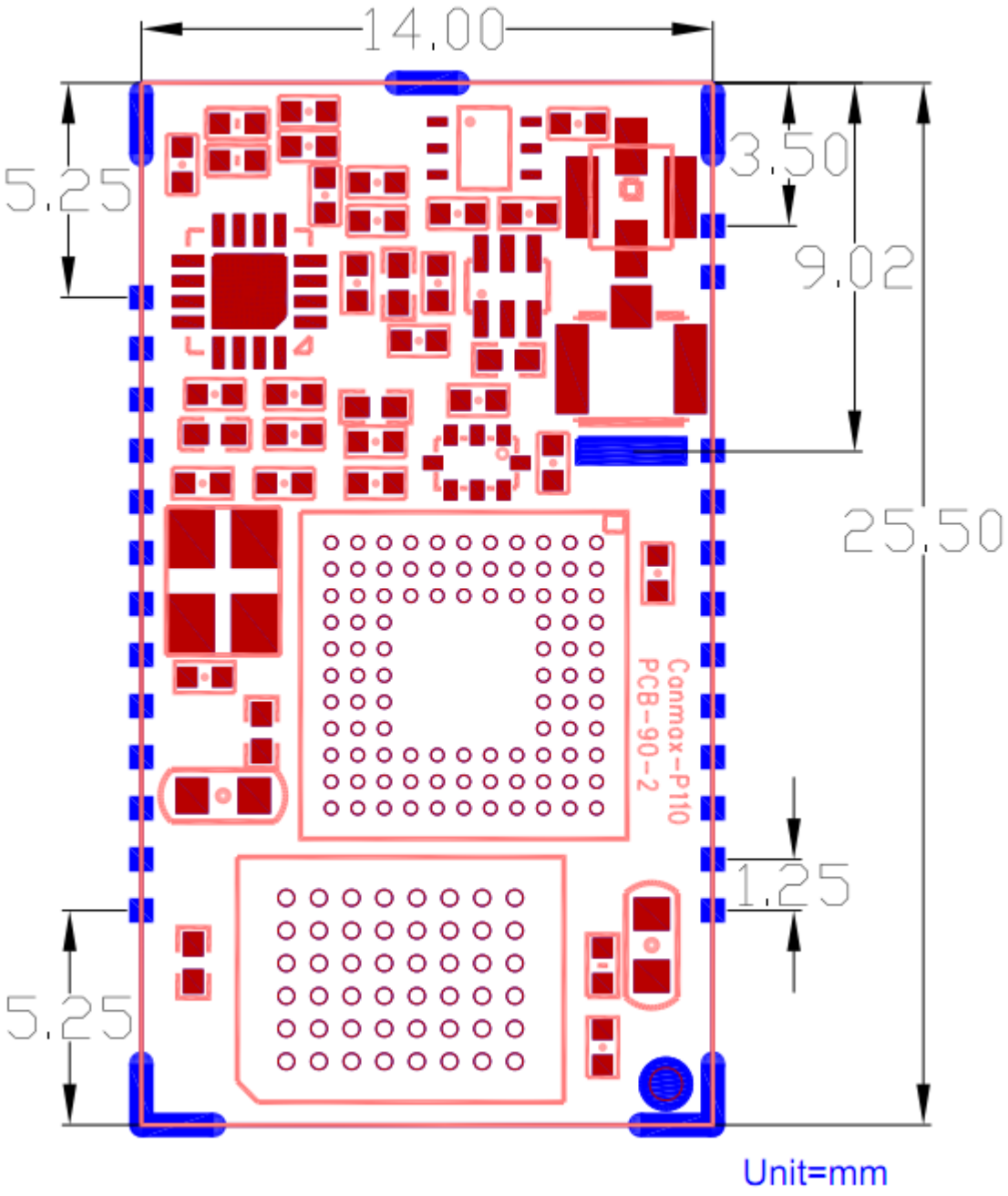
Dimension



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Application Circuit