

# **PS71KM Bluetooth Module Guidance Document**

## **Statement of Agency Compliance**

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.

## **FCC Class B Compliance Statement**

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

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 or television technician for help.

## **FCC RF Radiation Exposure Statement**

This equipment complies with FCC radiation exposure limits pursuant to Part 2.1091 for portable devices Part 2.1093 for mobile devices of the FCC regulations.

1. For the PowerScan Base Station users must maintain a separation distance of at least 20cm to nearby persons, set forth in uncontrolled environments, during normal operation as specified in Part 2.1093 for mobile devices.
2. The PBT7100 handheld scanner maximum transmit output is less than 20mW, as specified in Part 2.1091

## **Canadian Notice**

This equipment does not exceed the Class B limits for radio noise emissions as described in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

## **General Description**

Datalogic is incorporating a radio module in to the current designs. This module is a complete RF design and no modifications, other then external antennas, are used. There are two basic systems that integrate this module:

- 1) A base station used to deliver transmitted data to a host.
- 2) A hand held scanner that transmits barcode data to the base station.

The radio module used in the design is the same for both the base station and the hand held scanner. This module has an antenna port that allows the design to incorporate our own antenna topologies as no antenna is provided with the module. The module is a Class 1 Bluetooth radio design from Roving Networks using a BC4 CSR Bluetooth chip set. Please see the following datasheet for this module:

## OVERVIEW

- Fully Qualified Bluetooth 2.0/1.2/1.1 module, using CSR BC04 ROM
- Class 1 high power amplifier, external antenna.
  - Conforms to FCC, CE and the EMI standard of each country.
  - Environmentally friendly, RoHS compliant.
- UART, USB, PCM interfaces available to various applications.
- HCI interface over UART in H4, H5, or BCSP modes.

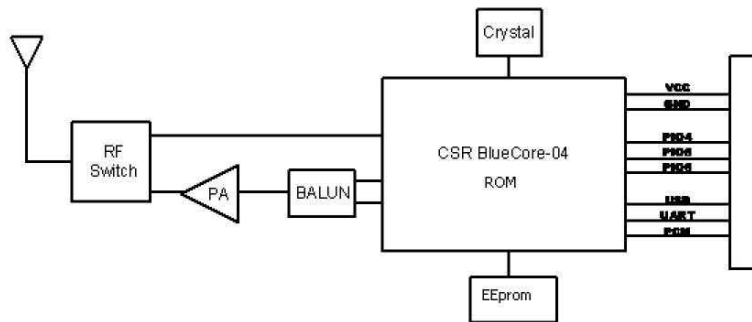


## FEATURES

- Baud rate speeds: 1200bps up to 3Mbps
- Class 1 radio, 330' (100m) distance, 15db output transmitter
  - Low power modes 50mA TX, 40mA RX (connected), 10ma (sniff mode), 2ma (idle ), 250ua(sleep)
- Small-form factor SMT radio modem 13mm x 20mm.
- Operating temperature range: -40~+85°C.
- Secure and robust communication link
  - ✓ FHSS (Frequency Hopping Spread Spectrum)
  - ✓ 128 bit encryption
  - ✓ Error correction schemes for guaranteed packet delivery

## SPECIFICATIONS

Item		Specifications
Frequency		2402 ~ 2480MHz
Modulation		FHSS/GFSK
Channel intervals		1MHz
Number of channels		79CH
Transmission rate (over the air)		721kbps-2.0Mbps
Receive sensitivity		-80dBm typ.
Output level (Class1)		15dBm max.
Dimensions		

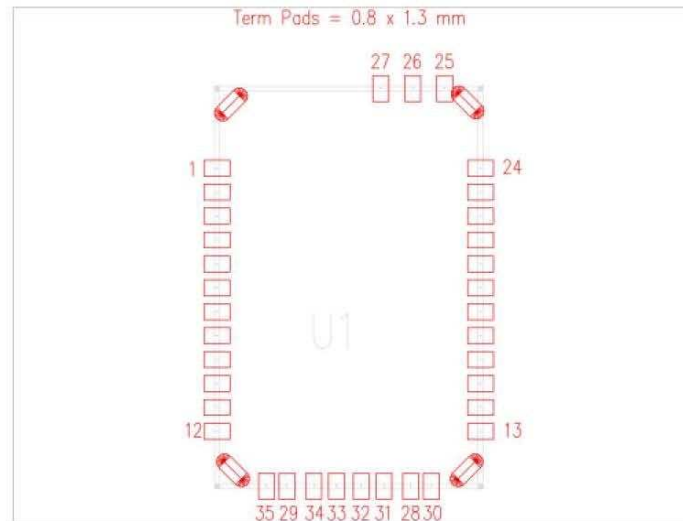


## Electrical Characteristics

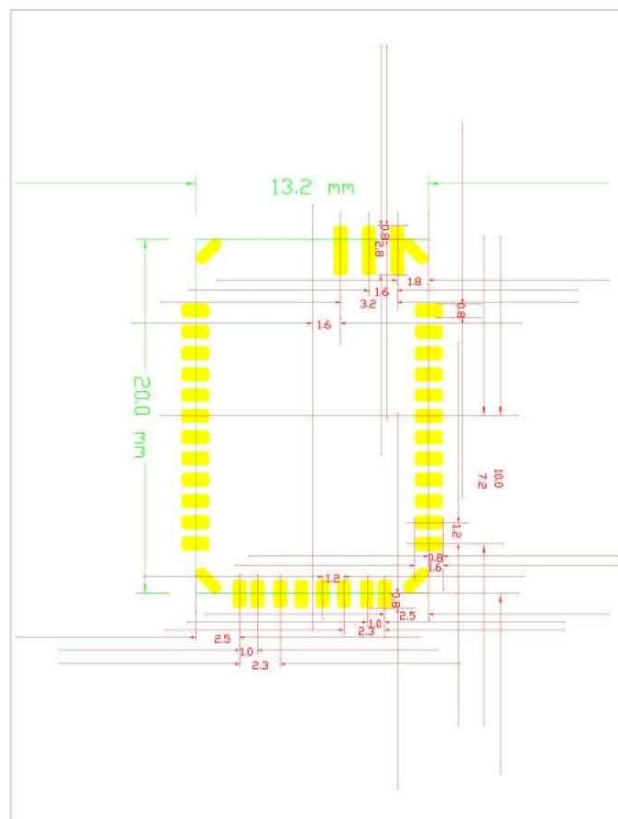
	Min	Typ.	Max.	Unit
Supply Voltage (DC)	3.0	3.3	3.6	V
RX Supply Current	-	35	60	mA
TX Supply Current	-	65	100	mA
<b>Average power consumption</b>				
Standby/Idle (default settings)	-	25	-	mA
Standby/Idle (lowest power)	250uA	2.5	-	mA
Connected(normal mode)		30		mA
Connected( low power Sniff)		8		mA

## Operating and Environmental Conditions

Operating Temperature Range	-40 °C ~ 85 °C
Storage Temperature Range	-40 °C ~ 85 °C
Relative Humidity (Operating)	≤90%
Relative Humidity (Storage)	≤90%



TERMINALS	
1. GND	15. UART RTS
2. SPI MOSI	16. UART CTS
3. PIO[6]	17. USB D+
4. PIO[7]	18. USB D-
5. RESET	19. PIO[2]/USB PULL UP
6. SPI CLK	20. PIO[3]/USB RESUME
7. PCM CLK	21. PIO[5]
8. PCM SYNC	22. PIO[4]
9. PCM IN	23. SPI CSB
10. PCM OUT	24. SPI MISO
11. VDD (3.3Vdc)	25. GND
12. GND	26. RF PORT
13. UART RX	27. GND
14. UART TX	28. GND
	29. GND
30 - AIO2	33 - PIO9
31 - PIO11	34 - PIO8
32 - PIO10	35 - AIO1



The interface to the radio from the on-board processor is identical in both applications using the same base communications format and the exact same pins on the system processor. Both the hand held scanner and base station provide a regulated 3.4VDC to the module as well.

The system uses two different antennas. The base station uses an external whip antenna while the hand held scanner incorporates an internal chip antenna (see picture below):



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## **PowerScan<sup>®</sup> PBT7100 Cordless Imaging Reader**

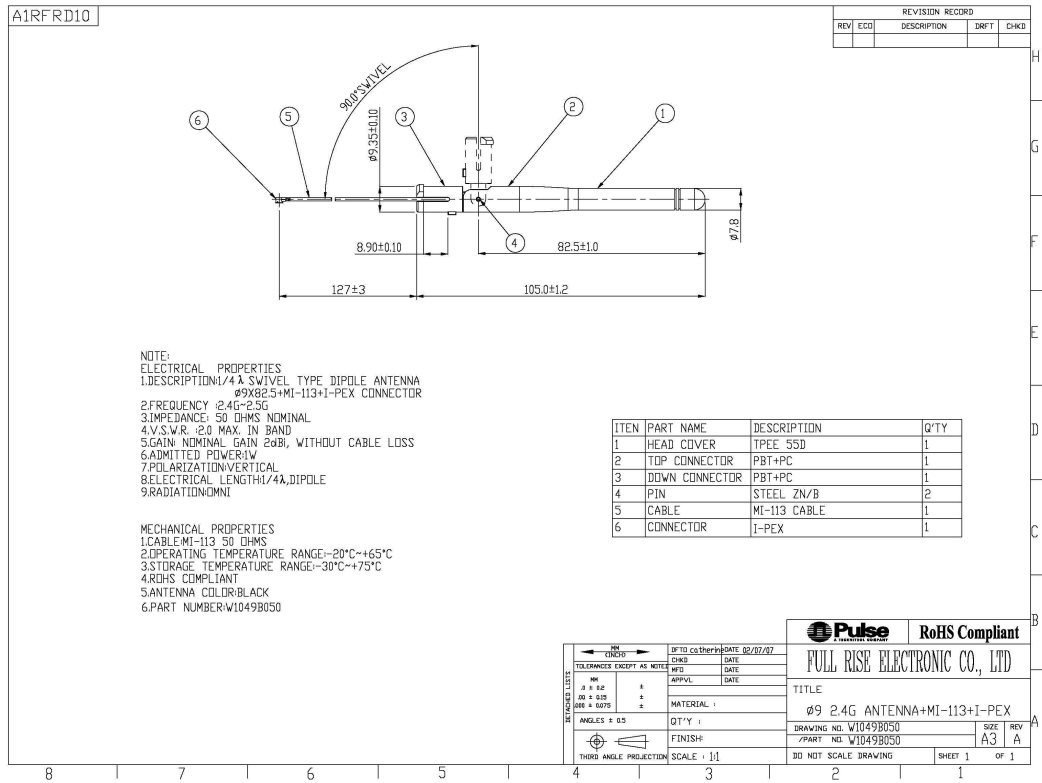


### **Quick Reference Guide**

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## Base Station Antenna



Hand Held Scanner Antenna

"High Frequency Ceramic Solutions"

2.45 GHz Antenna

P/N 2450AT18A100

Detail Specification: 09/03/03

Page 1 of 3

General Specifications

Part Number	2450AT18A100
Frequency Range	2400 - 2500 Mhz
Peak Gain	0.5 dBi typ. (XZ-V)
Average Gain	-0.5 dBi typ. (XZ-V)
Return Loss	9.5 dB min.

Input Power	500mW max.
Impedance	50 Ω
Operating Temperature	-40 to +85°C
Reel Quantity	3,000

No.	Function	Terminal Configuration
1	Feeding Point	
2	NC	

Mechanical Dimensions

	In	mm
L	0.126 ± 0.008	3.20 ± 0.20
W	0.063 ± 0.008	1.60 ± 0.20
T	0.051 ± 0.004/-0.008	1.30 +0.1/-0.2
a	0.020 ± 0.012	0.50 ± 0.30

Mounting Considerations

Mount these devices with brown mark facing up. Units: mm

Line width should be designed to provide 50Ω impedance matching characteristics.

a) Without Matching Circuits

b) With Matching Circuits

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## "High Frequency Ceramic Solutions"

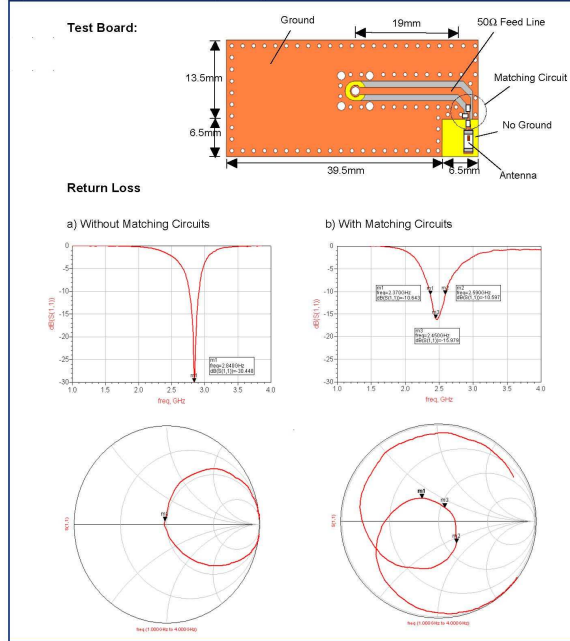
2.45 GHz Antenna

P/N 2450AT18A100

Detail Specification: 09/03/03

Page 2 of 3

### Typical Electrical Characteristics (T=25°C)



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