UM100

Wireless USB Radio Card

Revision 1.00

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Users Guide

SAMSUNG ELECTRONICS

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1 INTRODUCTION

The UM100 PCB Radio module is a complete compact device radio reference design that enables quick design of UWB enabled products. The UM100 combines the Samsung UWB chipset (S3C2680A, S5M8311X) along with on board power supplies, an antenna output and a USB 2.0 system interface.

2 REFERENCE DESIGN FEATURES

- Optimized Performance with S5M8311X (3.1GHz to 8.976GHz) WiMedia BG#1, 3, 6
- Complete Baseband Processor (BBP) and Media Access Controller (MAC)
- High Precision Data Path and Data Converters allowing reliable link at extended ranges
- Fully Integrated MAC Protocol Engine Supports All Industry Standards WiMedia protocols
  - Certified Wireless USB
  - WiMedia Link Layer Protocol
- Industry Standard Interfaces
  - USB 2.0 – Data
- Operates from a single (+3.3 V) supply
- Small Form Factor (Mini-card form factor)
- 5 GPIO lines for additional system control signals

3 USAGE AND DOCUMENTATION

The UM100 is a complete, self-contained UWB radio module requiring only +3.3V regulated power from the host system and providing USB 2.0 interface to the host system for data and the WUSB association function. The UM100 is intended to provide a simple path for a wired USB product design to migrate to a UWB enabled wireless USB product design.

The UM100 is a wireless USB certified platform and will have received FCC approval as a Modular UWB transmitter under subpart F of the FCC rules. The product implementation will be able to apply these approvals to the product which incorporates the UM100.

This document provides an outline of the purpose and functionality provided by the UM100, complete information for the product system designer is contained in the Samsung UWB Chipset H/W Design Guide.

4 USER I/O INTERFACE

4.1 DESIGN RECOMMENDATION AND GUIDE

Function	Pin #		Function
NC	1	2	3.3V
NC	3	4	GND
NC	5	6	NC
NC	7	8	NC
GND	9	10	NC
NC	11	12	PULL-UP(NC) with 3.3V (Only for Samsung Solution)
NC	13	14	NC
GND	15	16	5V for USB VBUS
NC	17	18	GND
NC	19	20	W_Disable# (External Power Control, need pull-up)
GND	21	22	NC
NC	23	24	3.3V
NC	25	26	GND
GND	27	28	NC
GND	29	30	NC
NC (UART_RXD)	31	32	NC
NC (UART_TXD)	33	34	GND
GND	35	36	USB_D-
NC	37	38	USB_D+
NC	39	40	GND
Available GPIO (to communicate with MCU)	41	42	SCL (need PULL-UP with 3.3V)
NC	43	44	NC
PULL-UP(NC) with 3.3V (Admin)	45	46	SDA (need PULL-UP with 3.3V)
NC	47	48	NC
Host Connect (output to VD main board)	49	50	GND
NC	51	52	3.3V

* PULL-UP(NC) in above table : It means "Do not assemble a pull-up resister"

* More Comments

Signal	Usage
1. Host Connect	A module outputs High signal when Device module detect a Host. A module outputs Low signal when don't detect a Host.
2. I2C Signals (SCL, SDA)	I2C singals need a pull-up resisters with 3.3V.
3. 5V for USB VBUS	VBUS pin of USB block should be supplied from VD main board.
4. Admin	Need a jumper or pull-up resister to debug a module temporarily
5. W_Disable# (low active)	Thru this pin, MCU can reset or re-initial a module in a low state. This signal need a pull-up resister with 3.3V on VD main board.
6. Available GPIO	As an extra pin. MCU can communicate with a module.
7. #12 pin (Only for Samsung Solution)	This pin can be used to control USB ID of Samsung Solution.

5 DESIGN CONSIDERATIONS

5.1 POWER

One +3.3 V power supply at max data rate average current of 120mA with peak at 180mA. Connector pins #2, 24 and 52 (+3.3V) are connected in common, all these should connect to the host system power rail. Connector pins #4, 9, 15, 18, 21, 26, 27, 29, 34, 35, 40, and 50 are connected in common, all should connect to the host system ground.

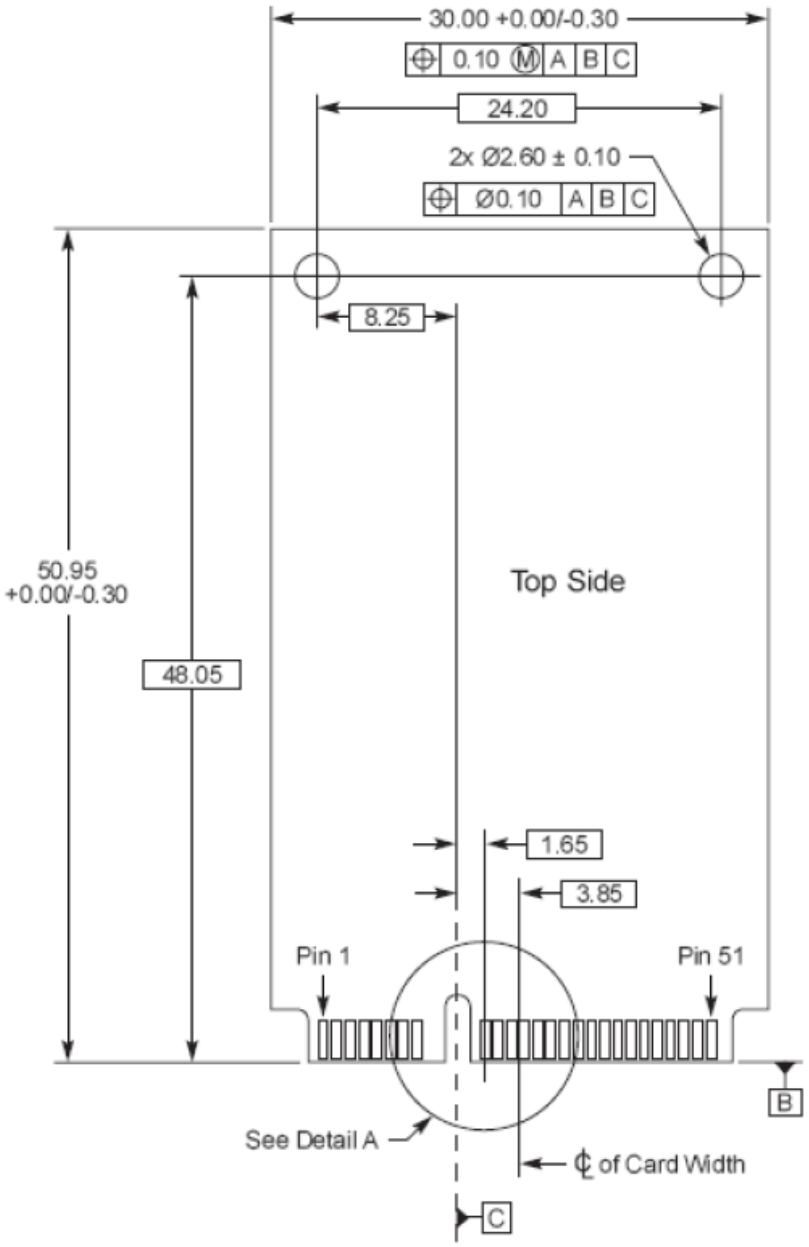
5.2 UWB ANTENNA

The UM100 will have received FCC approval when employed one antenna below.

- INPAQ (Taiwan) model number WA-P-UWB

This is the only antenna to be approved by the FCC for use with the Samsung UM100, any substitution of any other antenna automatically invalidates the FCC approval.

6 MECHANICAL



Recommended connector: Molex 67910-0002 PCI Express Mini Card Connector with

Molex 48099-4000 PCI Express Mini Card Latch.

7 FCC STATEMENT

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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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 and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

A UWB device operating under the provisions of this section shall transmit only when it is sending information to an associated receiver. The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received. An acknowledgement of reception must continue to be received by the UWB intentional radiator at least every 10 seconds or the UWB device must cease transmitting.