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7   User's Manual

Raptor RF Modem User's Manual

Version 1.0

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Revision History

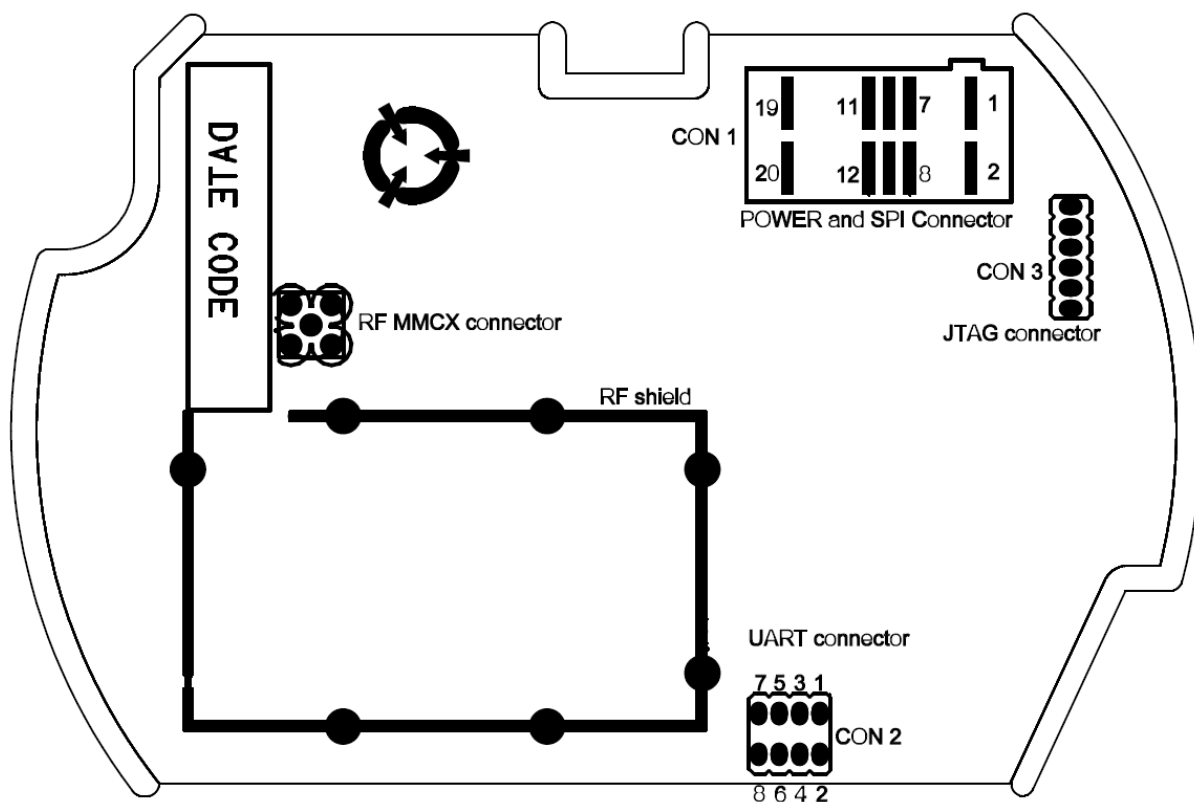| Date	Revision	Description	Author
09/29/2008	1.0	Document Creation	Szabolcs Zigovszki

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1. Purpose of Document

This document was created in order to provide to the user clear guidelines regarding the usage of the Raptor RF

modem.

2. Overview of the Radio Modem Hardware

The Raptor radio modem is an 802.15.4 wireless module that allows communication using a standard
asynchronous serial data stream. The pin-out of the Raptor radio modem is presented in the figure below.

TOP View

CON 1

Pin number	Pin name	Function of pin	Min Voltage	Nominal voltage	Max voltage
1	GND	Ground pin	0 V	0 V	0 V
2	GND	Ground pin	0 V	0 V	0 V
3	NP	NP	N/A	N/A	N/A
4	NP	NP	N/A	N/A	N/A
5	NP	NP	N/A	N/A	N/A
6	NP	NP	N/A	N/A	N/A
7	GPIO1	GPIO	Vcc – 0.3	Vcc	Vcc+0.3
8	GPIO2	GPIO	Vcc – 0.3	Vcc	Vcc+0.3
9	RF-SCLK	SPI-CLK	Vcc – 0.3	Vcc	Vcc+0.3
10	RF-MISO	SPI-MISO	Vcc – 0.3	Vcc	Vcc+0.3
11	RF-MOSI	SPI-MOSI	Vcc – 0.3	Vcc	Vcc+0.3

Pins 1 and 2 must be supplied with 3.0 Volts and powers the digital and RF functional entities of the modem. The modem has internal filtering circuitry to smooth out the supply voltage but it has no onboard regulators. All of the remaining pins of the modem are I/O lines of the processor.
The voltage on any of the I/O lines should never exceed VCC+0.3 V.

Pins 1 and 3 are the TX and RX pins of UART 1. Pins 4 and 6 are the TX and RX of UART2. If connecting to the serial port of a PC, a level-shifting transceiver must be employed in order to provide the appropriate voltage levels on the RX and TX lines.

3. Operation of the Nivis Radio Modem

Communication with the NIVIS radio modem happens through serial port 1. The baud rate is set to be 9600, 8N1.

3.1. Getting started

Open a terminal software on a serial port with the above settings and connect to the RF modem. Any command is single line followed by enter command. Format of command is: command param1 param2 … <enter>
Typing "help" will bring up a list of commands with a detailed description of each command.

4. RF Exposure Limit Warning

To comply with FCC's RF exposure limits for general population / uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

5. Compliance Statement (Part 15.19)

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.

6. Warning (Part 15.21)

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