Texas Instruments Incorporated (TI) introduces wireless made easy. For fast time-to-market and ease of use, the ‘Dolphin’ frequency hopping wireless UART chipset meets the needs of customers implementing an RF link. The chipset is a true Data-In/RF-Out and RF-In/Data-Out solution with all aspects of data management and frequency hopping implemented in firmware. The ‘Dolphin’ chipset provides a simple serial interface that connects to any simple and inexpensive host microprocessor.

Two modules, a low-power and a high-power version, are based on the ‘Dolphin’ wireless UART chipset. The chipset solution consists of the TRF6903 transceiver and the DBB03A baseband ASIC, which contains the firmware in its ROM-based program memory. The low-power module can operate as a FHSS transceiver (FCC Part 15.247) or under FCC 15.249 at a lower power level. The high-power module operates as a FHSS transceiver only. The firmware supports point-to-point and broadcast networks. The UART host interface is simple to use and has programmable common baud rates. The over the air data rate is 38.4 kbps. The output power for the low-power (LP) module is 5.0 mW (+7 dBm) and the high-power (HP) module with an on-board additional power amplifier is 200 mW (+23 dBm).

Software Features
- Acknowledgement / Retry for reliable data transfer
- Maximum RF Data Rate: 38.4 kbps
- CMOS Level Serial Interface
- Host Interface independent of RF Link
- 16-bit CRC
- System, Network, Device and Packet ID
- Network Capability with Broadcast Support

Hardware Features
- Frequency Hopping Spread Spectrum
- 902 MHz to 928 MHz
- –101 dBm Sensitivity at 38.4 kbps
- +7 dBm (LP) and +23 dBm (HP) Output Power
- 2.2 to 3.6 V Operation (LP)
- 2.7 to 3.6 V Operation (HP)
- Ultra-fast lock-time

Easy to Use
- Program with two sets of registers, one for transmit and one for receive.
- Implement a frequency hopper with fast settling time, minimal register programming required to change channels.
- No calibration required for different channels.
- Integrates with an inexpensive application/system microcontroller.

Low-Power Consumption
- 22 mA in Receive mode
- 1 µA in Standby mode

50 Hopping Channels
Multiple Hop Tables
FCC Pre-Certified
Small Size (Low-Power Module): 2.525” x 1.300” x 0.333”
Small Size (High-Power Module): 3.020” x 1.300” x 0.333”
Alignment Free
Low-Power Module: Range = 0.2 mile
High-Power Module: Range = 1 mile

‘Dolphin’ 902-928 MHz FHSS Transceiver Chipset Low Power Module.
**General Specifications**

Radio Frequency: 902 MHz - 928 MHz, unlicensed ISM Band  
Type: Frequency Hopping Spread Spectrum (FHSS)  
Modulation: FSK  
Communications Protocol: Point-to-Point, Broadcast  
Network Capacity: 65,535 Network IDs  
Host Interface: Asynchronous serial CMOS signals, 3V  
Serial Port Baud Rate: Software selectable: 9600, 19200, 38400, 57600 kbps

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min.</th>
<th>Typical</th>
<th>Max.</th>
<th>Unit</th>
<th>Conditions / Note</th>
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<tbody>
<tr>
<td>Frequency</td>
<td>902</td>
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<td>928</td>
<td>MHz</td>
<td></td>
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<td>Hopping Channels</td>
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<td></td>
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<td>RF Data Rate</td>
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<td>57.6</td>
<td>kbps</td>
<td>Non-Return To Zero (NRZ)</td>
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<td>Host Data Rate</td>
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<td></td>
<td>57.6</td>
<td>kbps</td>
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<td>Tx Pout (Low-Power)</td>
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<td>+7.0</td>
<td></td>
<td>dBm</td>
<td>(5 mW)</td>
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<tr>
<td>(High-Power)</td>
<td></td>
<td>+23</td>
<td></td>
<td>dBm</td>
<td>(200 mW)</td>
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<tr>
<td>Rx Sensitivity</td>
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<td>dBm</td>
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<td>Antenna Impedance</td>
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<td>Ohms</td>
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<td>Recommended Supply Voltage (Low-Power)</td>
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<td>3.0</td>
<td>VDC</td>
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<td>(High-Power)</td>
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<td>3.6</td>
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<td>mA</td>
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<td>at +7 dBm Pout</td>
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<td>(High-Power)</td>
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<td>Receive Mode</td>
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<td>Standby</td>
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<td>1</td>
<td>µA</td>
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<tr>
<td>Operating Temperature</td>
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<td>+85</td>
<td>°C</td>
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<td>Board Size (Low-Power)</td>
<td>2.525” x 1.300” x 0.333”</td>
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<td>(6.4 cm x 3.3 cm x 0.8 cm)</td>
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<tr>
<td>Board Size (High-Power)</td>
<td>3.020 ” x 1.300” x 0.333”</td>
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<td>(7.7 cm x 3.3 cm x 0.8 cm)</td>
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<td>RF Connector</td>
<td>Reverse-polarity SMA</td>
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<tr>
<td>Approved Antenna</td>
<td>Low-Cost Wire or Commercial Antenna</td>
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</table>
Contact Information
Call 214-480-1469 or
Send email to:
dkwilson@ti.com

TI Worldwide Technical Support

Internet
TI Semiconductor Product Information Center Home Page
support.ti.com

TI Semiconductor KnowledgeBase Home Page
support.ti.com/sc/knowledgebase

Product Information Centers

Americas
Phone +1(972) 644-5580
Fax +1(972) 927-8377
Internet/Email support.ti.com/sc/pic/americas.htm

Europe, Middle East, and Africa
Phone
Belgium (English) +32 (0) 27 45 55 32
Finland (English) +358 (0) 9 25173948
France +33 (0) 1 30 70 11 64
Germany +49 (0) 8161 80 33 11
Israel (English) 1800 949 0107
Italy 800 79 11 37
Netherlands (English) +31 (0) 546 87 95 45
Russia +7 (0) 95 7850415
Spain +34 902 35 40 28
Sweden (English) +46 (0) 8587 555 22
United Kingdom +44 (0) 1604 66 33 99
Fax +49 (0) 8161 80 2045
Internet support.ti.com/sc/pic/euro.htm

Japan
Fax International +81-3-3344-5317
Domestic 0120-81-0036
Internet/Email International support.ti.com/sc/pic/japan.htm
Domestic www.tij.co.jp/pic

Asia
Phone
International +886-2-23786800
Domestic Toll-Free Number
Australia 1-800-999-094
China 800-820-8682
Hong Kong 800-96-5941
Indonesia 001-803-8861-1006
Korea 080-551-2804
Malaysia 1-800-80-3973
New Zealand 0800-446-934
Philippines 1-800-765-7404
Singapore 800-886-1028
Taiwan 0800-006800
Thailand 001-800-886-0010
Fax 886-2-2378-6808
Email tiaasia@ti.com
ti-china@ti.com
Internet support.ti.com/sc/pic/asia.htm

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