Product Bulletin

'Dolphin' 902-928 MHz FHSS Transceiver Chipset

Wireless Made Easy

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

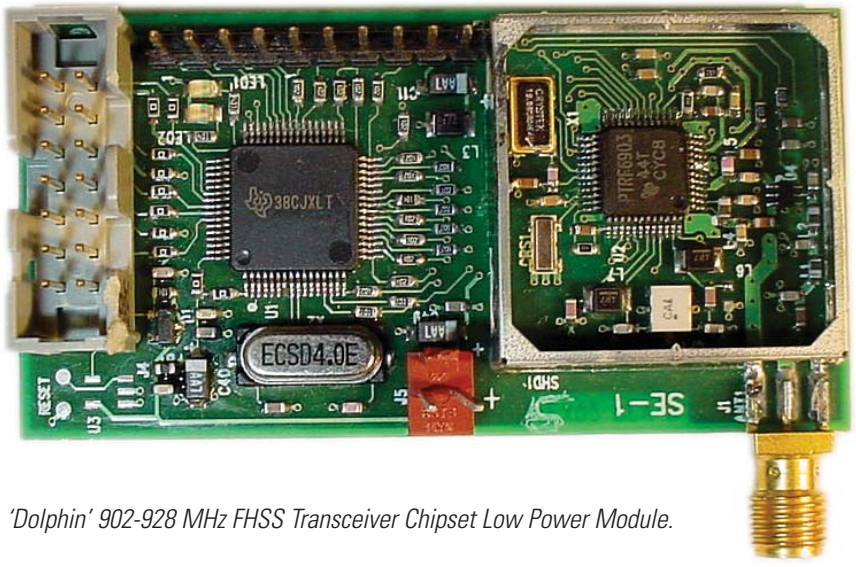
Hardware Features

- 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

Parameter	Min.	Typical	Max.	Unit	Conditions / Note
Frequency	902		928	MHz	
Hopping Channels	50			—	
RF Data Rate			38.4	kbps	Non-Return To Zero (NRZ)
Host Data Rate	9.6		57.6	kbps	
Tx Pout (Low-Power)		+7.0		dBm	(5 mW)
(High-Power)		+23		dBm	(200 mW)
Rx Sensitivity		–101		dBm	38.4 kbps, BER 10-3
Antenna Impedance		50		Ohms	
Recommended Supply Voltage (Low-Power)	2.2	3.0	3.6	VDC	
(High-Power)	2.7	3.0	3.6		
Power Consumption					
Transmit Mode (Low-Power)		35		mA	at +7 dBm Pout
(High-Power)		180		mA	at +23 dBm Pout
Receive Mode		22		mA	
Standby		0.1	1	µA	
Operating Temperature	–40		+85	°C	
Board Size (Low-Power)		2.525" x 1.300" x 0.333" (6.4 cm x 3.3 cm x 0.8 cm)			
Board Size (High-Power)		3.020 " x 1.300" x 0.333" (7.7 cm x 3.3 cm x 0.8 cm)			
RF Connector		Reverse-polarity SMA			
Approved Antenna		Low-Cost Wire or Commercial Antenna			

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