



Communication skills for ultra low powered objects



A COST-OPTIMIZED WAVENIS™ RF FRONT-END FOR OEM INTEGRATION

Concentrate on your applications with this easy Wavenis RF add-on

The Coronis Systems Wavefront card™ is specifically designed for integrators who wish to enhance their products and applications with new wireless features without having to deal with the difficulties of developing radio-frequency solutions. With Wavefront you will benefit from smart new radio equipment, low per-unit costs, and fast time-to-market with innovative new products while still being able to concentrate essentially on your core business and value-added applications.

Use the target device's existing micro-controller to keep costs down

Wavefront is the first ultra low-power wireless solution on the market to provide a ready-to-use RF front-end card whose communication protocol stack is embedded on the target device's CPU. Connections between the two are made via simple serial-type connections. This solution offers cost savings often associated with single-chip RF solutions, plus the convenience of using the target device's existing micro-controller for your own applications *and* the Wavenis protocol stack.

A convenient development environment and API give you full control over all the high-performance wireless features Wavenis has to offer.

- Fully configurable ultra low-power wireless solution for custom devices
- Wavenis RF front-end with SPI connection to your CPU
- Wavenis protocol stack compatible with leading micro-controllers
- Ideal for product volumes up to around 50,000 units
- Includes programming tools to merge your apps over Wavenis stack

Wavefront is the ideal RF add-on for consumer products, automatic metering, industrial sensors, alarms & security, access control, home automation, smart objects and more.



*Seeing is believing!
Try our evaluation kit to
experience Wavenis
performance for yourself.*



Wavefront Specifications

GENERAL FEATURES

- Industrial Wavenis RF board with transceiver
- Wavenis protocol stack implemented in separate application CPU
- Up to 25mW output power
- 50 ohm RF port for antenna connection
- Extreme power efficiency: 10µA average operating current with 1s access time
- SPI link for connection to MCU platform
- Embedded EEPROM:
 - 2 kB standard (8 kB optional)
 - 128 Bytes used for Wavenis parameters
 - R/W access through SPI
- Power supply
 - 2.3V embedded linear voltage regulator
 - V_in: 2.4V min < 3V typical < 6V max
 - I_peak_RX: 15mA typical (full run)
 - I_peak_TX: 45mA typical (50mA max)
 - I_sby = 1µA typical
- Temperature range:
 - Operating -20° / +70°C (-4° / - 158°F)
 - Storage -40° +85°C (-40° / - 185° F)
- Size: 26 x 20 x 7 mm (1 x 0.8 x 0.28 in)

WAVENIS PROTOCOL STACK

- Point-to-Point, Point-to-Multipoint (broadcast, polling), and repeater modes
- Tree, star, and mesh network topologies
- Self-configuration and dynamic routing algorithm optimized for ULP networks
- Programmable access time: standby-receive duty cycle in operating mode
10ms < 1s (typical value) < 10s
- Relaxed synchronization schemes
- Complete Wavenis API - Host Controller Interface (HCI)
- Stack uses 8-24 kB flash code depending on feature set
- Active X drivers: Win32, and WinCE.net Windows; Wavenis DLL for Win32
- Compatible with Microchip PIC16, PIC17, PIC18 type); Texas Instruments MSP430 type; check with us for others

Choose the options that best match your technical requirements

RF PROPERTIES

- Operates in license-free ISM 433 868, and 915 MHz frequency bands
- ETS300-220 / FCC15.247 certified & compliant
- 4.8 – 100 kbps throughput (typical usage around 10 kbps)
- Designed for reliability, power savings, network coexistence
- Frequency Hopping Spread Spectrum (FHSS)
- Single channel operation for narrowband applications (alarms)
- GFSK modulation
- Data interleaving, Forward Error Correction BCH (31,21)
- Quality of Service management (RSSI) and output power control
- Automatic Frequency Control (AFC) for optimal performance over operating lifetime
- Automatic sensitivity threshold management for increased power savings
- Accesses hard-to-reach devices with link budget of 125 dB (25mW) or more
 - Line-of-sight range up to 1 km (25mW)
 - Line-of-sight range up to 4 km (500mW)
 - Up to +15 dBm & +27dBm output power
- Sensitivity: -110 dBm @ 9.6 kbps Frame Error rate: 0.1% with Wavenis protocol

OTHER WAVENIS TECHNOLOGY LICENSING OPTIONS

- Wavenis SDK
- Wavebench test bench
- Wavenis technology licensing
- Wavecard ready-to-use OEM boards
- Evaluation kit

Training, support, and design assistance are available from Coronis Systems. Please check with us directly for more details. Write to info@coronis-systems.com.

Channel Bandwidth	25 kHz	50 kHz	50-300 kHz
Data Rate	4.8 kbps	9.6 or 19.2 kbps	19.2 – 100 kbps
FHSS or mono-channel	Mono (x1 channel)	FHSS (x16 channels)	Mono (ETS) FHSS (FCC)