



## Wavecard™

ALL THE ADVANTAGES OF WIRELESS ULP NETWORKING IN A READY-TO-USE SOLUTION

Fast and easy integration with a complete Wavenis™ kit

Now you can add Wavenis wireless functionality to your products with a minimum of integration effort. The full-featured Coronis Wavecard™ comes complete with the Wavenis RF transceiver and protocol stack so you can plug it into your own assembly or motherboard and get started right away. You won't have to do any RF or communication protocol development in order to take advantage of the ultra low-power, long-range, and flexible networking features Wavenis offers.

Wavecard can be used as easily as a modem from within your software applications via the hardware controller interface (HCI). You can also use the Wavenis Software Development Kit to port your own embedded applications to the Wavecard's processor, which offers on-board storage space. You can customize all stack and radio parameters to meet your requirements with either approach.

- Wireless communications for battery-operated products with extremely tight power consumption constraints
- *Ad hoc* mesh networking for sensor network applications, smart objects, home automation, alarms and security, metering, and more
- Active X, DLL interface for Windows and Windows Mobile platforms
- Serial bus connection to your existing platform
- Perfect for prototyping, pre-series design, and OEM product volumes up to around 5,000 units

Wavecard is the ideal RF add-on for many of today's industrial and consumer oriented products.

### Try Wavenis and see

Try our fully functional product evaluation kit to see how Wavenis can give you the wireless functionality you've been looking for ultra low power consumption, long-range, and reliable. You'll get everything you need to build a simple test network in a single package.



*Easy Wavenis RF solution  
for your innovative products*



## Wavecard™ specifications

### General features

- Wavenis transceiver with protocol stack in onboard microcontroller (works like a modem)
- 25mW class for ultra-low power
- 500mW class for very long-range
- 50 ohm RF port for antenna connection
- Extreme power efficiency: 15µA average operating current with 1s access time
- Modem operation: RS-232 or I<sup>2</sup>C to connect with your micro-controller platform
- Embedded operation
  - Up to 32 kB available to merge application code with Wavenis stack in FLASH
  - Up to 512 bytes RAM for parameters
  - Use RS-232 for external connections
- Power Supply
  - Integrated linear regulator
  - I<sub>peak\_RX</sub>: 18mA typical (full run)
  - I<sub>peak\_TX\_25mW</sub>: 45mA
  - I<sub>peak\_TX\_500mW</sub>: 450mA
  - I<sub>sby</sub> = 3µA typical
- Temperature range:
  - Operating -20° / +70°C (-4° / - 158°F)
  - Storage -40° / +85°C (-40° - 185° F)
- Dimensions
  - 25mW : 30 x 28 x 7 mm
  - 500mW: 37 x 30 x 7 mm

Channel bandwidth	25 kHz	50 kHz	50-300 kHz
Radio 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)
Ligne of Site Range	1km	1km	300m (25mW) 4km (500mW)

### 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)
- Active X drivers: Win32, and WinCE.net Windows; Wavenis DLL for Win32

### 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