

# @ANY900 Modules

A ruggedized IEEE 802.15.4 wireless networking module for Sub-1 GHz ISM band that combines exceptional transmission characteristics and ultra-low power consumption in a tiny form factor ideally suited for battery powered applications.

@ANY900 modules are fully integrated solutions that contain all of the digital and analog circuitry required for easily establishing wireless connectivity. Utilizing the robust and popular Microchip/Atmel platform, the modules achieve optimal RF characteristics with either an on-chip ceramic antenna (@ANY900-1) or a U.FL connector (@ANY900-2), providing ultimate flexibility of external antenna adaptations.

The module eliminates the need for costly and time-consuming RF development and shortens time to market for a wide range of standards-based wireless products.

Ensure the quick setup by ordering the product preprogrammed with either our AT-command-based Smart MAC Suite firmware, your own firmware, or common stacks such as 6LoWPAN, Zigbee PRO or Lightweight Mesh.

Thanks to @ANY modules' impressive feature set, creating ambitious wireless IoT designs becomes a breeze.



Mechanical module size 40 x 13.5 x 3 mm

## Key Features

- Full compliance to IEEE 802.15.4-2006, Zigbee PRO and more
- Outdoor range (line of sight): ≤ 500 m (@ANY900-1) and ≤ 2.5 km (@ANY900-2)
- Excellent receiver sensitivity (-110 dBm) and transmitter output power (≤ +10 dBm)
- Software adjustable support of European, US, Japanese and Chinese Sub-1 GHz ISM bands
- Network topology:
  - P2P, P2MP, Star, Tree, Mesh (IEEE802.15.4 and Zigbee PRO)
- Extra 256 kB on-board DataFlash for storing firmware images, application data and OTA support
- Fully matched on-board ceramic chip antenna (@ANY900-1, 868 MHz optimized) or U.FL connector for external antennas (@ANY900-2, 50Ω)
- Data rate: ≤ 1 Mbps, e.g. Zigbee: 250 kbps gross

## Benefits

- ✓ Stamp-shaped soldering pattern, visually controllable, high mechanical strengths
- ✓ Full EN300220, FCC CFR Part 15, RoHS and REACH compliance
- ✓ Easy development with ready-to-use AT-command-based Smart MAC Suite firmware, app examples, Development Kits and full technical support
- ✓ Fast prototyping with preprogrammed firmware (SMS or other common stacks especially preconfigured for modules, e.g. Zigbee)
- ✓ Accelerated project bring-up and testing using @ANY900 out-of-the-box devices (see @ANY900 BRICKs, USB Dongle or DESIGN Development Kit)
- ✓ Best-in-class range and excellent wall penetration for indoor usage
- ✓ Self-contained structure perfected for extremely low energy consumption, ideal for battery operated devices
- ✓ Easy firmware management using off-the-shelf tools and JTAG interface, including ISP, OTA or serial flashing via bootloader

## Applications



Smart Buildings



Smart Energy & Metering



Industrial Automation



Healthcare & Fitness



Retail



Agriculture



Automotive & Transport



Smart Cities & Environment



Event Management

# Specifications

## RF Characteristics

<b>Max. Transceiver Output Power</b>	≤ 2.0 dBm EIRP for @ ANY900-1 (with ceramic chip antenna) ≤ 10 dBm for @ANY900-2 (U.FL antenna connector)
<b>Receiver Sensitivity (per 1%)</b>	≤ -110 dBm
<b>Data Rate</b>	≤ 1 Mbps (proprietary), e.g. 250 kbps @ Zigbee
<b>Frequency</b>	European SRD band (868 MHz), North American ISM band (915 MHz), Japanese band (928 MHz), Chinese WPAN band (780 MHz)
<b>Data Encryption</b>	AES 128 supported
<b>Modulation</b>	O-QPSK (IEEE 802.15.4 compliant)
<b>Applicable Network Topologies</b>	P2P, P2MP, Tree, Star, Mesh and other IEEE 802.15.4 based topologies

## Hardware Characteristics

<b>Operating Temperature Range</b>	-40°C to +85°C
<b>Platform</b>	ATmega1281V AT86RF212B
<b>On-Chip Flash</b>	128 kB
<b>On-Board DataFlash</b>	256 kB
<b>On-Chip RAM</b>	8 kB
<b>On-Chip EEPROM</b>	4 kB

## Interfaces

<b>ADC</b>	4 ADC lines
<b>GPIOs</b>	up to 30 configurable GPIOs
<b>IRQs</b>	2 IRQ lines
<b>Interfaces</b>	JTAG, SPI, TWI/I2C, UART, 1-Wire

## Electrical Characteristics

<b>Voltage</b>	1.8 V up to 3.6 V
<b>Current Consumption at 25°C</b>	TX: < 33 mA @ EIRPmax RX: < 17 mA Idle: 9.5 mA Sleep: < 6 µA

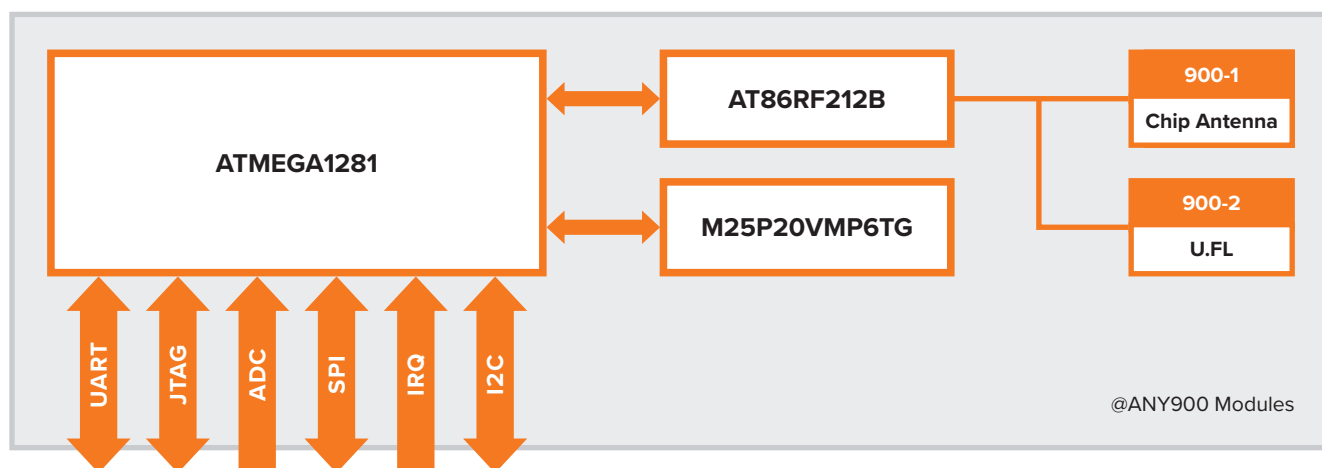
## Certification

<b>Radio Compliance</b>	EN300220, FCC CFR Part 15
<b>Manufacturing</b>	RoHS & REACH

## Ordering Information

<b>Packing</b>	Tray and Tape & Reel 13" (Dry pack)
<b>MOQ</b>	300 pcs. @Trays/ 500 pcs. @ T&R 13"

## Block Diagram



## Further Information

For additional information or support, see [www.an-solutions.de](http://www.an-solutions.de) or contact us at [support@an-solutions.de](mailto:support@an-solutions.de).  
For more product details and ordering information, see the product data sheet.

