



@ANY2400 RF Module

2.4 GHz Modules for IEEE 802.15.4/ZigBee® Wireless Mesh Networking Applications



@ANY2400 is an amplified IEEE802.15.4/ZigBee RF module for worldwide 2.4 GHz ISM band. Its unique RF design with integrated power amplifier and chip antenna, achieves a rare combination of the industry-leading range performance and low power consumption. @ANY2400 module's small footprint of less than a square inch of space makes the integration a breeze, while the built-in chip antenna enables rapid design-in with RF knowledge required. @ANY2400 is interchangeable with @ANY900-1 and @ANY900-2 Sub-1 GHz RF modules, allowing for the ultimate design flexibility.



Key Features	Benefits
Outdoor range: up to 2,500 m*	Best-in-class range
Battery lifetime: up to 6 years**	HW & SW architecture optimized for low power
Software-controlled RF output power	Optimum balance between range and current consumption
Scalable network topology: Point-to-Point, Star, Tree, Mesh	Flexible network options for every application
Serial AT-commands for easy prototyping and quick setup	No embedded programming skills required
Fully matched built-in ceramic chip antenna	Rapid design-in using minimal PCB real estate
256 kByte data storage capacity with built-in flash memory	Hardware features Over-The-Air functionality and supports mobile data storage/capturing

* Line of sight (LOS), based on simulation and range measurements

** TX/RX every 5 minutes with 2500 mAh battery

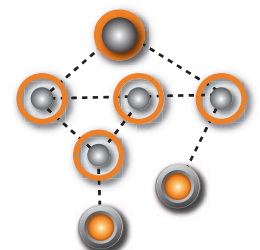
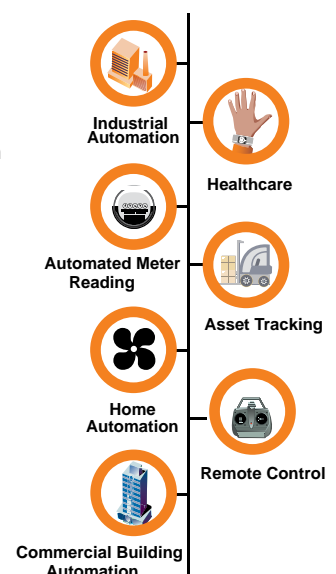
Development Tools

@ANY DESIGN Development Kit is a comprehensive toolset enabling easy design, prototyping and deployment of wireless IEEE802.15.4/ZigBee solutions, using Adaptive Network Solutions' @ANY product platform. The development kit provides the developers with everything they need to create market-ready wireless systems and applications, while mastering the intricacies of WSN technology. The kit contains three @ANY2400-based BRICK development boards, a USB dongle, a JTAG programming adaptor, as well as software and documentation CD-ROM.

Embedded Software

A.N. Solutions applies the same modular approach in software, as it does in hardware. The various embedded software components are designed to interoperate seamlessly and can be easily mixed-and-matched depending on the exact needs of a client. The following @ANY software components are available:

- @ANY Smart MAC Suite ("SMS") offers easy control of @ANY platform's functionality via AT commands supporting all IEEE 802.15.4-based functions, as well as facilitates the addition of numerous custom features. The software suite is provided in two different versions, **SMS Base** and **SMS Pro**:
 - @ANY SMS Base version provides some basic functionality designed for simple network topologies and evaluation purposes. It can be used to set up Coordinator - End device (star, peer-to-peer) topologies.
 - @ANY SMS Pro version facilitates development of complex applications and supports additional Tree topologies with static routing, based on IEEE 802.15.4 MAC layer. This allows a large number of versatile example applications. **SMS Pro** also provides additional features like data broadcasting and full function device functionality. The data redirect feature enables users to set up tree network topologies. Finally, **SMS Pro** is designated to be a code base for customer requested extensions.
 - Both version will be complemented by @ANY SMS Monitor, a simple, user-friendly GUI for network monitoring and application- driven extensions.
- Mesh networking topologies supporting dynamic routing schemes, based on IEEE 802.15.4 that are compliant to ZigBee® PRO , 6LoWPAN , as well as Wireless HART, can be implemented and customized on request.





Module Operating Conditions	
Supply Voltage (Vcc)	3.0 V to 3.6 V
Current Consumption, RX/TX Mode	23 mA / 50 mA
Current Consumption	< 15 µA
RF Characteristics	
Max Output Power	up to +18 dBm (Equivalent Isotropic Radiated Power)
Receiver Sensitivity (PER 1%)	up to - 101 dBm
Data Rate / Frequency	up to 2 Mbit/s
Data Encryption	AES 128
Microcontroller Characteristics (AVR ATmega)	
On-Chip Flash Memory Size	128 kBytes
On-Chip RAM Size	8 kBytes
On-Chip EEPROM Size	4 kBytes
On-Module Data Memory	256 kBytes
Physical/Environmental Characteristics	
Size	40.5 x 13.5 x 2.0 mm
Weight	2 g
Operating Temperature Range	-40°C to +85°C
Block Diagram	<p>The block diagram shows the ATMEGA 1281 microcontroller connected to the AT86 RF231 radio module. The radio module is connected to a PA (Power Amplifier) and a ceramic antenna. The AT25 F2048 EEPROM is also connected to the microcontroller. The module is labeled @ ANY2400-1.</p>
Mechanical Drawing	<p>The mechanical drawing shows the dimensions of the module. The overall size is 40.5 ±0.2 mm by 13.5 ±0.2 mm. The drawing also indicates a 'Shield Zone' and a 'No-shield Zone'.</p>
Part Number	AT-ANY2400-1
Availability	In production

IMPORTANT NOTE: All data contained herewith are preliminary data only.

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