Wireless AMI Solution

Efficient Energy Management...

Meter Reading & Processing

- ≈ RS232 To ZigBee Packet Transmission (ZigBee node To Router)
- ≈ ZigBee to Ethernet packet Conversion (Using Gateway)
- ≈ Gateway to Database Server for Billing & Processing.

ZigBee Device Specifications:

1. RFD (Reduced Function Device)
   - ≈ Stack: IEEE 802.15.4
   - ≈ Low Memory & Software Overhead
   - ≈ Prominently a Sleepy Device
   - ≈ Low Duty cycle Operations

2. Full Function Device (Coordinator/Router)
   - ≈ Stack: IEEE 802.15.4 & ZigBee Mesh Stack
   - ≈ More Memory & Software Overhead
   - ≈ Prominently an Active Device (Always On)
   - ≈ Long Range Capability (High Power Module with transmitting range up to 1km)

3. Gateway (For Data Back haul purpose)
   - ≈ Convert ZigBee Data to Ethernet and Vice-Versa

4. Data Base Collection and Processing
   - ≈ Depends on Utility Company Requirement.

RF ARRAYS Systems Pvt. Ltd.

www.rfarrays.com

RF Arrays Inc.
PO Box 14948. Fremont California 94539, USA
Email: info@rfarrays.com, sales@rfarrays.com

RF Arrays Systems Pvt. Ltd.
106, InfoTech Towers, South Ambazari Road,
Nagpur - 440 022 Maharashtra. INDIA
Tel. +91-712-2242459, 6573722, Fax: +91-712– 2249429,
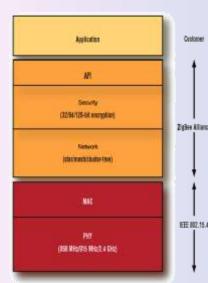Email: info@rfarrays.com, sales@rfarrays.com

ADVANCED METERING INFRASTRUCTURE

RF Arrays & ZigBee: Energy Solutions that Ensures Reliability & Efficiency

The growing magnitude of our energy and environmental challenges requires us to raise the bar on what AMI technology must deliver to utilities and consumers. At a minimum, AMI must meet the utility's needs for accurate measurement and more frequent data collection. The right AMI solution can deliver cost-effective, proven results, and provide the flexibility to deploy and migrate to a wide range of capabilities depending on business requirements.

RF Arrays Systems has developed an AMI system using wireless ZigBee Technology, which can remotely monitor and collect data from the utility energy meters of the consumer without any human intervention. We utilize robust yet affordable solutions to provide our customers with the services they need

This wireless network application will benefit the utilities wherein they can actually quantify the real time consumption of the consumers; thereby ascertaining any discouraging activities and disparity between the supply & consumption of electricity. This system can be used to manage the energy resources more efficiently and help in pinpointing the irregularities in the electricity distribution and consumption.

- Band – 2.4GHz
- Topology – Star, Point to Point, Mesh & Tree
- Data Rate –250Kb/s
- Power Consumption –Low
- Range – 1 Km (LOS)
- Security – very high; AES-128 level encryption
- Size – A large no. of nodes in a single logical network

Highlights

- Standards-based solution without the drawbacks of proprietary systems
- Worldwide interoperability in 2.4 GHz band
- Reliable and easy-to-deploy network supporting large number of nodes.
- Secure communication between nodes.
- Nodes may be added or removed without network interruptions
- Real time updates register on the end devices through commands from the gateway
- Optimization of available bandwidth and minimization of network activity
- Re-establishment of the entire network in case of poor network health
- Usage of backup gateway for a more robust and fault-tolerant network
- The above features impart a unique combination of flexibility and robustness to the solution.

Features

- Full ZigBee device type support: ZigBee Coordinator (ZC), ZigBee Router/Gateway (ZR), and ZigBee End Device (ZED)
- Fully integrated MAC and NWK layers provide the smallest FLASH and RAM footprints in the industry.
- Support for portable end devices, where a device may be used in different parts of a network, for example a remote control that may be moved from one part of the network to another
- Full ZigBee APS support, to allow easy support of ZigBee specified public application profiles.

Capabilities

- Supported Network Size: The number of devices on a network that the stack can support is only limited by the application requirements.
- Battery powered ZigBee End Devices (ZEDs): Support for nodes that move within a network, such as a remote control.

As electricity serves as a nation's engine for prosperity and growth, RF Arrays use of ZigBee is particularly critical and beneficial for utility customers. By using ZigBee, RF Arrays developed RAMR01 (RF Arrays Advanced Metering Infrastructure) to meet a broad set of advanced metering, communication and control technology requirements that utilities will face in the years to come. This advanced technology provides:

- Open-standards architecture
- Full two-way communication to each meter
- Robust interval data collection
- Extensive feature/functionality to support "smart grid" requirements
- View and react to energy consumption every day
- Track and adjust energy consumption
- Plan, budget and pay their utilities bills monthly, based on actual usage
- Realize energy optimization through automated meter reading, analyzing, presentation and counseling
- The software is independent of operating system
- Reports like Tariff energy report, TOD report, tampering report can be generated
- Distribution loss report of a particular region can be generated separately
- Software is capable of generating reports on both texture and graphical form
- Software can have three different levels of uses   - Administrative
          - Supportive
          - Normal use