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Telematics

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Subject: Operational description for MMR-R Scanning reciever, FCC ID: NTAMMR2

EUT Introduction

The following document describes the technical specification of
the Meter & Monitoring Reader board (called MMR-R, receive
only) for the USA market.
The MMR-R is a compact RF receiver unit operates at 900MHz
ISM band (multi frequency)
- The MMR-R is used for wireless data collection(transmitted from watermeters)

MMR-R Description
Operational Modes

Mode	DSP	Digital Logic	RF Receiver
Receive	On (fast clock)	On	On
Power Down	On (slow clock)	Partial On	Off

Board Layout and Size

Board Size: 125x100x28

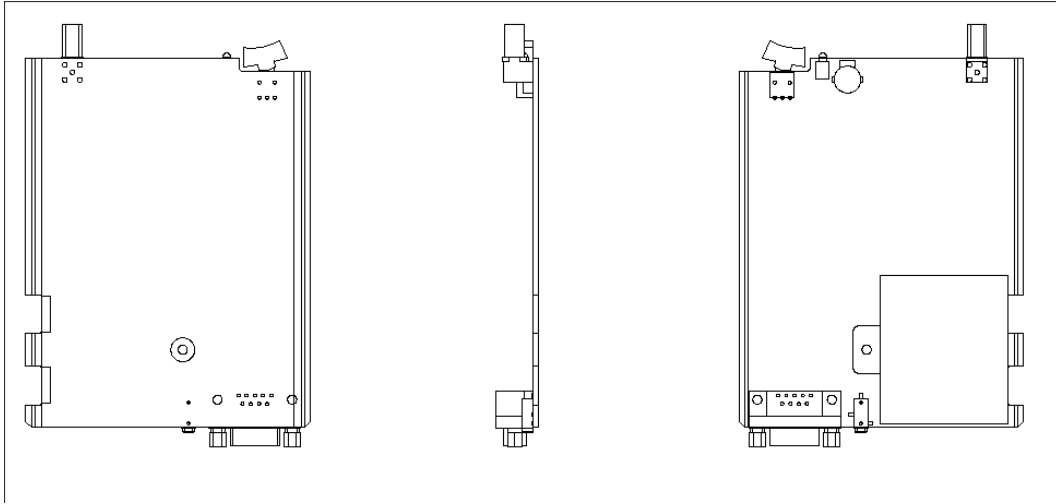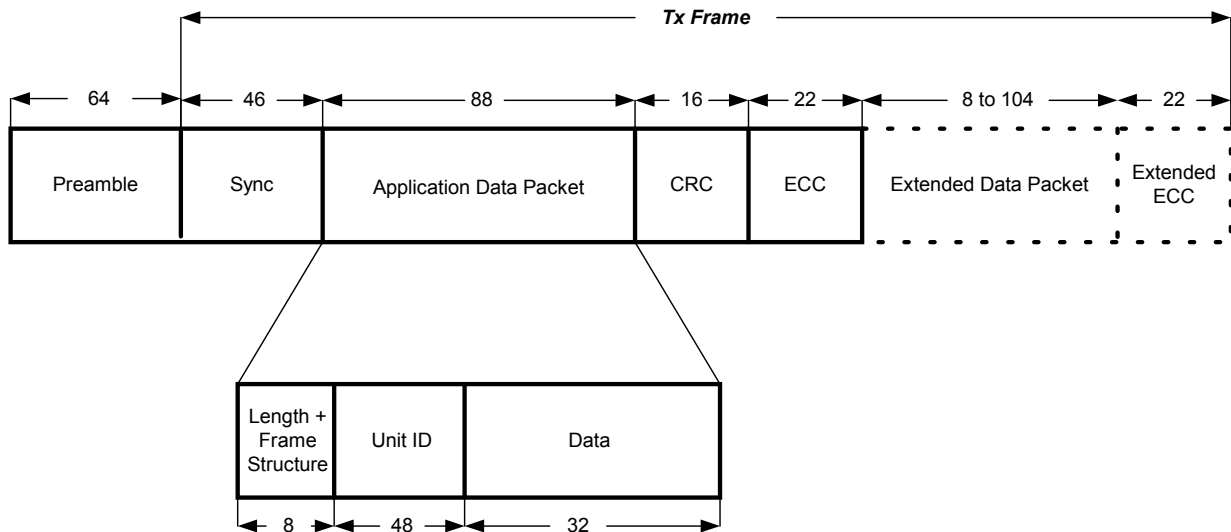**Figure 1: Board Layout**

Electrical Performance
Receive Unit
Receive Parameters

– Receive Parameters1Table

Parameter	Value
Receive frequency	Programmable in the rang 905-924MHz
Sensitivity (BER 1E-3)	-102dBm
Modulation	FSK
Frequency deviation	100 kHz
Bit rate	60 Kbps
Coding	Manchester

Receive Protocol

Notes:
- All numbers indicate number of bits
- The preamble is alternating ones and zeros. The Preamble length is ~64 bits (at 120kbps).
- CRC is used as an error detection code. It is calculated on the entire data packet.
- ECC is used as an error correction code. The BCH is calculated on the Packet data + CRC.

Figure 2: Receive (Uplink) Frame

External Interfaces

The MMR-R includes 2 external interfaces:
- Asynchronous Serial Communication port:
  - Battery Charger/External power supply
  - Antenna Port (50 ohm input)

Communication Port

The MMR-R is a connected to external controller (e.g Hand Held Compute). The unit communicate via asynchronous serial communication
- The MMR-R transfer to the external controller the collected data(received via RF from remote meter)
- The MMR-R receives from the external controller operational parameters and commands.

Power Source

The MMR-R can be operated via internal rechargeable battery:
(NiMH 4.8V 700mA) or external 5V

Environmental Conditions

Operating Temperature: -10° C to + 70° C
Storage Temperature: : -40° C to +85° C
Humidity: Up to 95%