Technical Description of Purpletooth™ ZcoRE3(20)-2400 OEM Modem

This document is to describe the technical aspects of Purpletooth™ ZcoRE3(20)-2400 OEM modem.

The key components of Purpletooth™ ZcoRE3(20)-2400 OEM modem can be categorized into following groups:

- MCU & Digital parts
  - MCU (ATMEGA128L-8MU)
  - Crystal 8M
  - Voltage comparator (TLC3702ID)
- Transceiver
  - Transceiver (EM2420)
- RF parts
  - RF switch (AS179-92)
  - LNA (Max2641)
  - PA (SKY65131)
  - Filters
  - LDO (REG104-3.3)

The detail operations of each part are described as follows:

MCU & Digital part:
The core part is Atmel MCU which embeds the SRAM and Flash memory. Its serial port provides the serial communication with other device. The SPI port provides the capacity to configure the RF transceiver.

Transceiver:
The Transceiver is responsible for the data modulation and demodulation.

The transceiver is set or programmed by MCU via SPI serial port. The transceiver's RF output provides the 2400M RF signal to antenna port, and receives the 2400M RF signal from antenna port. The transceiver also takes the control of TX/RX switch via the PA En and LNA En with the voltage comparator.

RF parts:
The RF parts include the power supply, upper link, down link and RF common path.

The power supply provide the power to all RF parts, and can be shutdown by MCU when the modem sleep and be enable when modem wake up.

The upper link path includes a PA. The TX packets send by MCU will be modulated by transceiver, and this RF output of transceiver will be amplified and transmitted through the RF antenna port.

The down link path includes a filter and a LNA. The RF input through the antenna port will be amplified and filtered and then demodulated by transceiver. The transceiver will send the RX packets to MCU after demodulation.

The RF common path includes the RF matching circuits, RF switch and antenna port. The two RF switches are controlled to serve the TDD function by transceiver and voltage comparator.