OFDM Powerline Carrier Communication IC

Overview
OFDM, as one of the most advanced schemes for communication codes and modulation, has become mainstream technology for use in the latest generation of narrowband powerline communications (<500kHz). The OFDM Narrowband Powerline Communication Transceiver is a system-on-chip (SoC) that boasts a 1280-subcarrier OFDM transceiver. Whilst able to greatly increase carrier data throughput, it also features self-adjusting, error and interference-correction capabilities. There is a built-in MCU, allowing the execution of various user-defined MAC layer communication protocols and application software for narrowband communication. Additionally, the inclusion of an Analog Front End and Automatic-gain amplifier further simplifies usage, rendering it a highly cutting-edge integrated circuit solution for data-gathering systems for power grids and networks.

Features
- Operation frequency and bandwidth: Within 500kHz, supports user-defined start and stop frequencies. China PLC frequency band (3–500kHz) Europe CENELEC A/B/C, ARIB and FCC bands are all fully supported.
- Modulation technology: 1280-subcarrier OFDM
- Data rate: Corresponds to operating bandwidth and subcarrier count. Maximum 1280 subcarriers. Maximum user data throughput 306kbps.
- Subcarrier modulation format: BPSK, QPSK, 16QAM
- FEC coding: RS and Convolutional dual encoding
- Trellis format: Time-domain and frequency-domain dual trellis
- Normal, Enhanced and Robust modes of operation
- Supports 50 and 60Hz powerline networks
- Onboard MCU with 48KB of program memory and 4KB of RAM
- User-defined MAC protocols and applications may be run
- Onboard high dynamic range automatic-gain receiver amplifier
- Onboard RTC and Watchdog
- Serial I/O connection
- 3.3V DC operation, low-power design
- 64-pin LQFP package

Applications
- Smart grid, AMI/AMR and smart metering using PLC
- Home networking and smart controls
- Home and building energy management
- Medium-voltage distribution automation using distribution lines
- Other powerline-based data transmission applications

Block Diagram: