

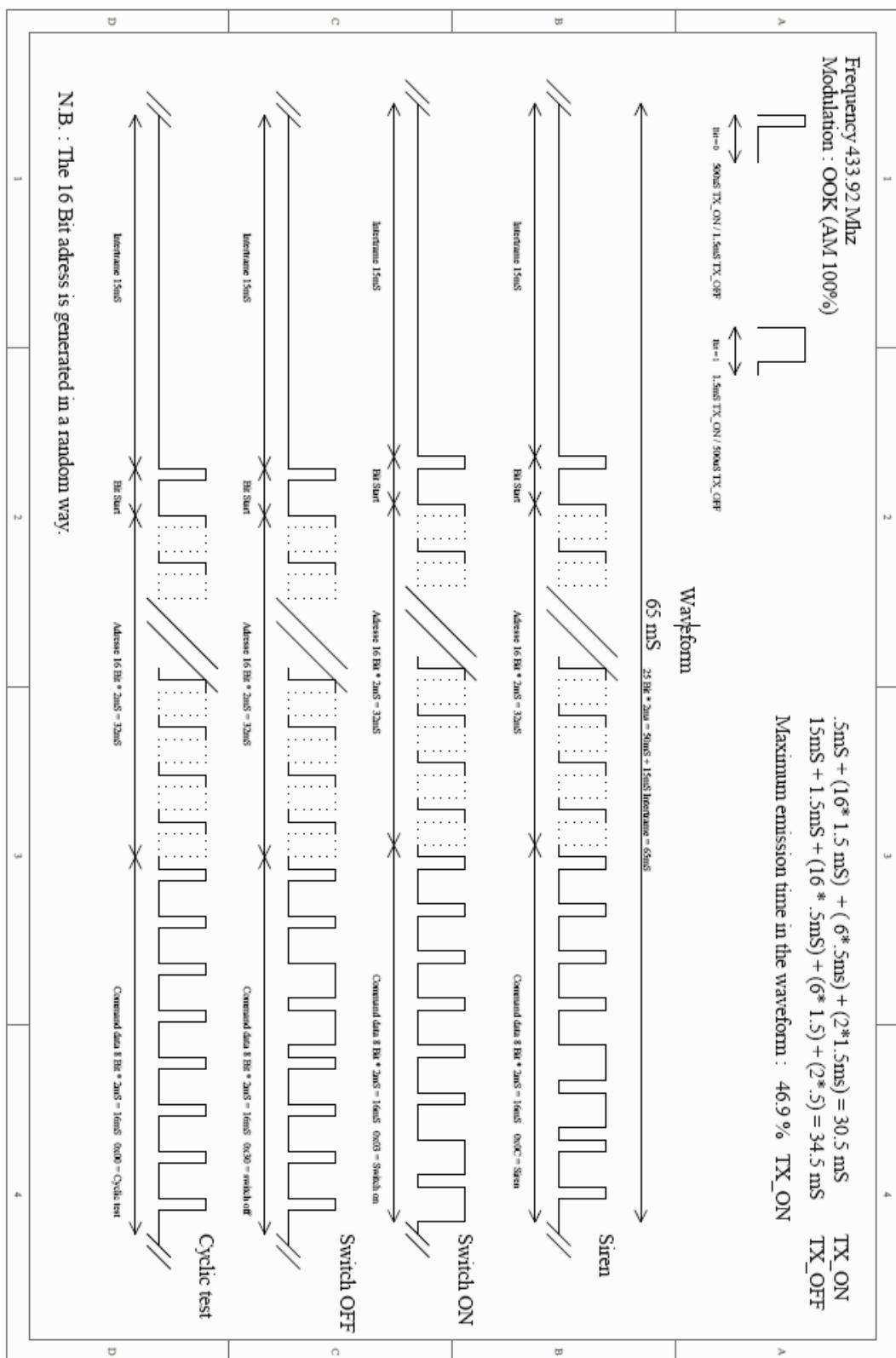
OPERATIONAL DESCRIPTION SWIMALERT-US
SWIM007-US

Transmitter:

- Remote RF at 433.92Mhz
- Using a Chipcon/Texas CC1100
- OOK 100% Modulation.
- Burst duration : 52mS
- Burst length : 375 mS
- Crystal Oscilator @26MHz +- 30ppm
- Frequency synthesizer with 400Hz frequency resolution.
- Transmitter antenna is an wire of 1/4 Lambda
- Security decoding with a 16 Bit word and 8 Bit command word.
- Battery operated 4 - LR20 Alkaline cells regulated to 3.0 VDC.
- PCB with two signal layers with top and bottom ground plane.

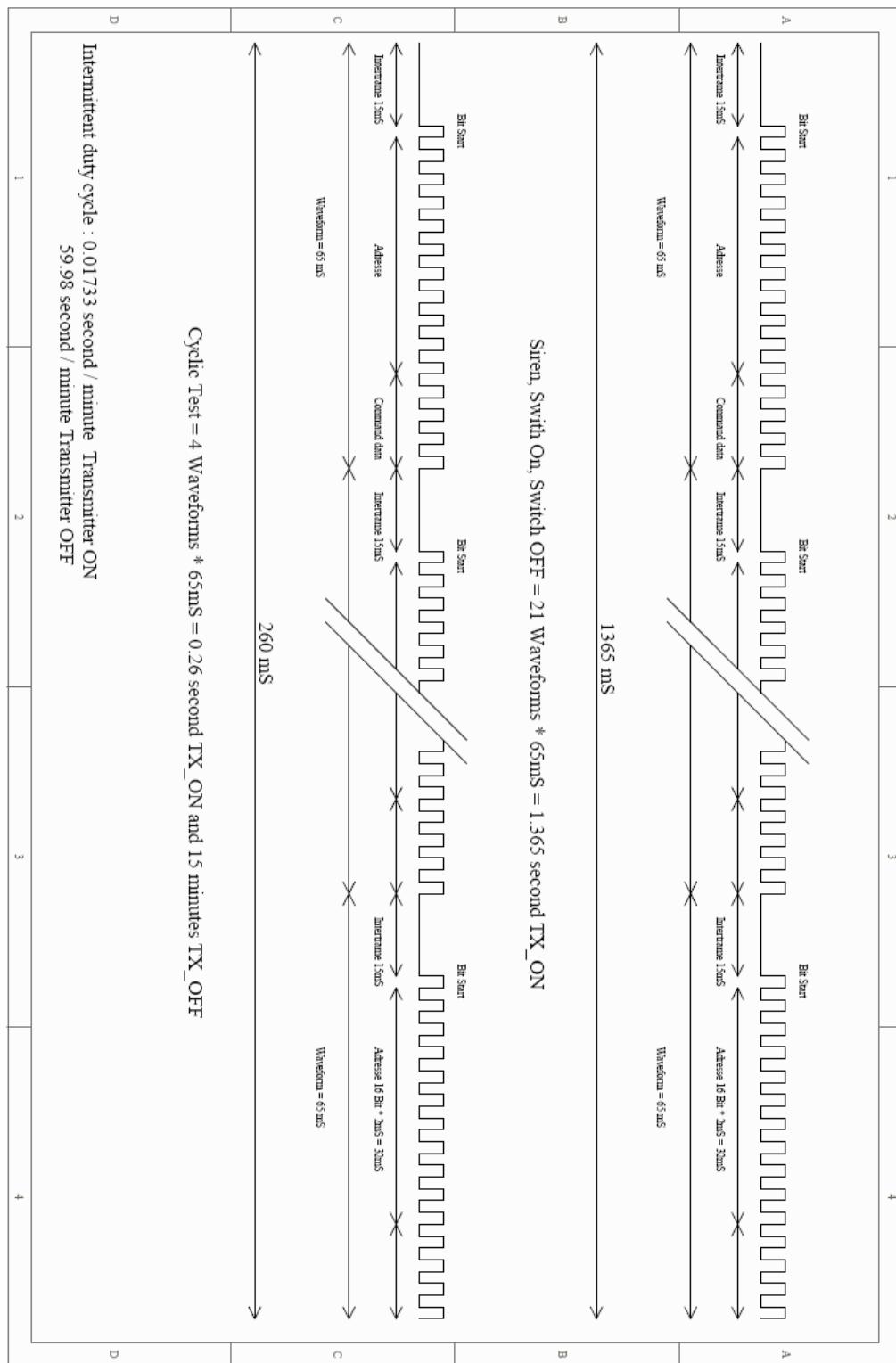
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N.B.: The 16 Bit address is generated in a random way.

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 Chipcon Products
from Texas Instruments

CC1100

CC1100

Single Chip Low Cost Low Power RF Transceiver

Applications

- Ultra low power UHF wireless transceivers
- 315/433/868 and 915 MHz ISM/SDR band systems
- AMR – Automatic Meter Reading
- Consumer Electronics
- Two-way RKE –Remote Keyless Entry

- Low power telemetry
- Home and building automation
- Wireless alarm and security systems
- Industrial monitoring and control
- Wireless sensor networks

Product Description

The **CC1100** is a low cost true single chip UHF transceiver designed for very low power wireless applications. The circuit is mainly intended for the ISM (Industrial, Scientific and Medical) and SRD (Short Range Device) frequency bands at 315, 433, 868 and 915 MHz, but can easily be programmed for operation at other frequencies in the 300-348 MHz, 400-464 MHz and 800-928 MHz bands.

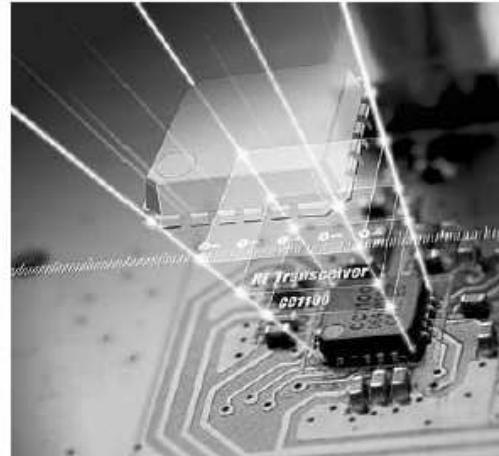
The RF transceiver is integrated with a highly configurable baseband modem. The modem supports various modulation formats and has a configurable data rate up to 500 kbps. The communication range can be increased by enabling a Forward Error Correction option, which is integrated in the modem.

CC1100 provides extensive hardware support for packet handling, data buffering, burst transmissions, clear channel assessment, link quality indication and wake-on-radio.

The main operating parameters and the 64-byte transmit/receive FIFOs of **CC1100** can be controlled via an SPI interface. In a typical system, the **CC1100** will be used together with a

microcontroller and a few additional passive components.

CC1100 is part of Chipcon's 4th generation technology platform based on 0.18 μ m CMOS technology.



Key Features

- Small size (QLP 4x4 mm package, 20 pins)
- True single chip UHF RF transceiver
- Frequency bands: 300-348 MHz, 400-464 MHz and 800-928 MHz
- High sensitivity (-110 dBm at 1.2 kbps, 1% packet error rate)
- Programmable data rate up to 500 kbps
- Low current consumption (15.4 mA in RX, 1.2 kbps, 433 MHz)
- Programmable output power up to +10 dBm for all supported frequencies
- Excellent receiver selectivity and blocking performance
- Very few external components: Totally on-chip frequency synthesizer, no external filters or RF switch needed
- Programmable baseband modem
- Ideal for multi-channel operation
- Configurable packet handling hardware
- Suitable for frequency hopping systems due to a fast settling frequency synthesizer
- Optional Forward Error Correction with interleaving
- Separate 64-byte RX and TX data FIFOs
- Efficient SPI interface: All registers can be programmed with one "burst" transfer

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CC1100

Features (continued from front page)

- Digital RSSI output
- Suited for systems compliant with EN 300 220 (Europe) and FCC CFR Part 15 (US)
- Wake-on-radio functionality for automatic low-power RX polling
- Many powerful digital features allow a high-performance RF system to be made using an inexpensive microcontroller
- Integrated analog temperature sensor
- Lead-free "green" package
- Flexible support for packet oriented systems: On chip support for sync word detection, address check, flexible packet length and automatic CRC handling
- Programmable channel filter bandwidth
- OOK and flexible ASK shaping supported
- FSK, GFSK and MSK supported.
- Automatic Frequency Compensation (AFC) can be used to align the frequency

- synthesizer to the received centre frequency
- Optional automatic whitening and de-whitening of data.
- Support for asynchronous transparent receive/transmit mode for backwards compatibility with existing radio communication protocols
- Programmable Carrier Sense (CS) indicator
- Programmable Preamble Quality Indicator (PQI) for detecting preambles and improved protection against sync word detection in random noise
- Support for automatic Clear Channel Assessment (CCA) before transmitting (for listen-before-talk systems)
- Support for per-package Link Quality Indication