LG Electronics UWB001 MODULE UWB Module User Manual

Contents

LG Electronics

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Product Overview

The UWB001 module is based on Decawave's DW1000 Ultra-Wideband (UWB) transceiver IC. It has an integrated chip antenna, all RF circuitry, power management and clock circuitry in one module. It can be used in 2-way ranging or TDOA location systems to locate assets to a precision of 10 cm and supports data rates of up to 6.8 Mbps.

Key Features

- IEEE 802.15.4-2011 UWB compliant
- Supports 4 RF bands from 3.5 GHz to 6.5 GHz (Note: only the 4.4 GHz band has been approved for use. Contact manufacturer for use of other bands.
- Programmable transmitter output power which is set by the manufacturer.
- Fully coherent receiver for maximum range and accuracy
- Supply voltage 2.8 V to 3.6 V
- Low power consumption
- Data rates of 110 kbps, 850 kbps, 6.8 Mbps
- A maximum packet length of 1023 bytes for high data throughput applications
- Supports 2-way ranging and TDOA
- SPI interface to host processor

Key Benefits

- Simplifies integration, no RF design is required
- The very precise location of tagged objects delivers enterprise efficiency gains and cost reductions
- The extended communications range minimizes the required infrastructure in RTLS
- High multipath fading immunity
- Supports very high tag densities in RTLS

- Low cost allows cost-effective implementation of solutions
- Low power consumption reduces the need to replace batteries and lowers system lifetime costs

Applications

- Precision real-time location systems (RTLS) using two-way ranging or TDOA schemes in a variety of markets.
- Location-aware wireless sensor networks (WSNs),

Block Diagram

UWB001 module block diagram is as follows.

Figure 1

Pinout
UWB001 module pin assignments are as follows (viewed from the top):

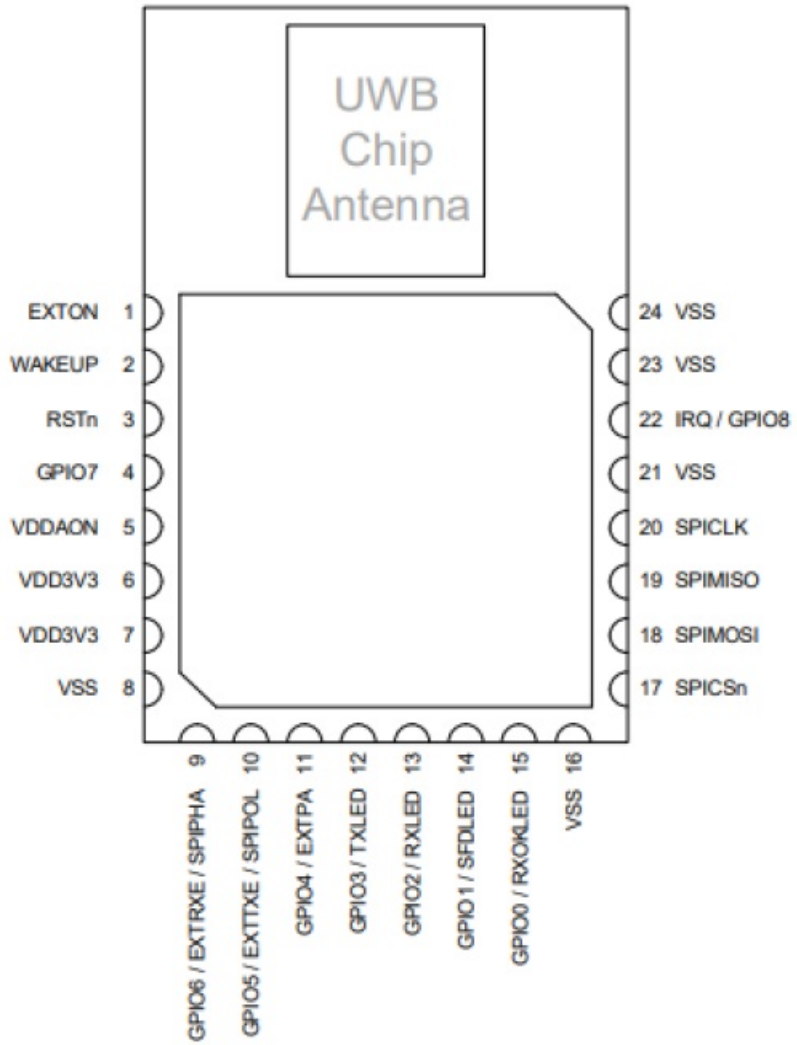

Figure 2

How to comply with the 10-second rule for handheld devices

When the tag is “awake” it sends out a signal from UWB. We call this “Hello” signal. If there are anchors (readers) in the area, they send an acknowledgment signal back. When the tag receives this acknowledgment, it sends the “location” signal (actual data) to the anchor and goes into “sleeping” mode. The tag awakens in a determined period and sends out a signal from UWB again. This cycle is repeated continuously depending on the signaling frequency (in most projects the signaling frequency is 1 signal per second it could go up to 1 signal per 15 seconds) The whole signaling process takes 5 milliseconds If there is no acknowledgment response from the anchors, the tag goes into a deep sleeping mode for at least 1 minute (is parametric, can be set to be longer). During deep sleeping mode, tags out a signal every 10 seconds to check if there are any anchors in its range. This signal was sent on UWB.

Limited Modular Instructions

The UWB001 Module is not intended for OEM integrators and/or end-users. The module must be integrated by grantee-authorized professional installers. Installers shall be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance. Please contract Okyanus for Integration details The host product shall be properly labeled to identify the modules within the host product. The host product must be labeled to display the FCC ID number for the module, preceded by the word “Contains” or similar wording expressing the same meaning, as follows: Contains FCC ID: 2AUFI-UWB001.

OTHER REGULATORY INFORMATION

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS.
(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

Warning:
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Note:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits for mobile devices. To ensure compliance, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter (must not transmit simultaneously with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures).

Documents / Resources

	LG Electronics UWB001 MODULE UWB Module [pdf] User Manual UWB001, 2AUFI-UWB001, 2AUFIUWB001, MODULE UWB Module, UWB Module, Module

References

- Endüstriyel IoT ve RTLS Çözümleri - WIPELOT

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