Mobile Knowledge

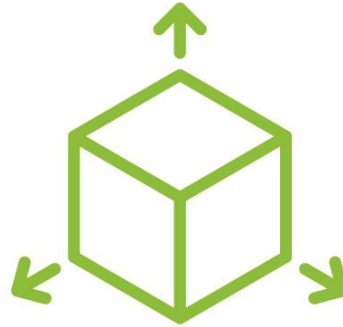# MK UWB

SR150 Anchor 3D

Featuring **NXP Trimension™ SR150**

Ready-to-use UWB Anchor for accurate 3D positioning data

muRata
INNOVATOR IN ELECTRONICS

The **MK UWB SR150 Anchor 3D** is a highly accurate and precise **3D positioning** device. It is **FiRa certified** and leverages on NXP Trimension™ SR150 technology. This makes it ideally suited for deployment in larger infrastructures, such as indoor positioning systems, as well as in consumer products and general IoT devices. The device is particularly beneficial for battery-operated applications due to integrated **Murata Type 2BP module.**

Key features

- **Integration with Murata Type 2BP UWB Module,** world's smallest UWB module, leveraging on FiRa certified NXP **Trimension SR150™** technology

- **Highly accurate and precise 3D positioning data.** Performs exceptionally well in indoor and challenging environments:
  - Avg ranging distance error: ±7cm
  - Avg AoA error: ± 4⁰

- **Full compatible with all SR150 software,** including MK UWB Kit software and NXP UWB IoT middleware.
  Supporting a wide range of use cases (device to device, device to mobile, indoor positioning).

- **Customizable Peripheral:** includes a secure element for enhanced security and is equipped with LED indicators and three buttons for various customizations.

- **Battery-powered operation:** designed for efficient battery use, making it suitable for portable and remote applications.

- **Reference hardware design files** available to speed up your design and development processes.

- Easy **connection to other host platforms**, such as Nordic nRF52840 DK (through Arduino header) and Raspberry Pi (via Shield to Pi connector board)

- Offers **customized casing** on demand to fit specific application needs.

MK UWB SR150 Anchor 3D
Featuring NXP Trimension™ SR150

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Applications

- **Indoor Positioning Systems:** Ideal for deployment in large infrastructures needing precise indoor location tracking.

- **Consumer Electronics:** It can be integrated into consumer devices requiring accurate positioning data.

- **IoT Devices:** suitable for a variety of IoT applications, particularly those dependent on battery power and precise location services.

The MK UWB SR150 Anchor 3D thus provides a **comprehensive solution for advanced positioning needs, offering a blend of cutting-edge technology, customizable features, and versatile connectivity** options to support a wide range of applications.

Mobile Knowledge

MK UWB SR150 Anchor 3D
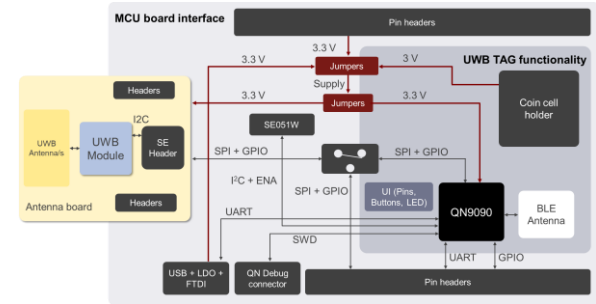
Content: MK UWB Shield 2

MK UWB Shield 2

A flexible and versatile development platform designed to create customized UWB systems. It serves as the central interface, bridging the **UWB module with external devices**.

MK UWB Shield 2 architecture

The MK UWB Shield 2 supports NXP Trimension ™ SR150 UWB module, utilizing the **MK UWB 3D Antenna board** for enhanced functionality.

Key features:

- **Embedded wireless microcontroller**: QN9090, Arm® Cortex® M4, supporting Bluetooth Low Energy 5.0, and open for customer applications (>100KB of memory available).

- **Secure ranging**: It includes SE051W to ensure secure ranging use case compliant with FiRa specifications.

- **Arduino compatible interface**: a simple switch allows control of the UWB module with and external MCU
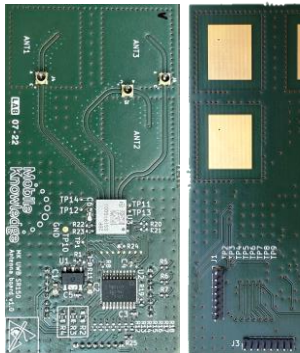
Additional benefits

- Easy connection to UWB Module through MK UWB 3D antenna board
- **Versatile host platform compatibility:** connects to other **host platforms, such as Nordic nRF52840 DK** (via Arduino header) **and Raspberry Pi** (through Shield to Pi connector board)
- Functions independently as a development platform its integrated MCU.
- Can be controlled by other MCUs through Arduino-compatible expansion headers.
- Incorporates SE051W for secure ranging use cases, compliant with FiRa specifications.
- Provides support for multiple interfaces (BLE, USB, UART).
- Power supply available through USB, external board or standard 3V coin cell.

Mobile Knowledge

4

MK UWB SR150 Anchor 3D

Content: MK UWB 3D Antenna board

MK UWB 3D Antenna board

The MK UWB 3D Antenna board is a UWB Module-compatible PCB that can be easily connected to the MK UWB Shield 2, supporting **3D Angle of Arrival** measurements.

MK UWB SR150 Anchor 3D

Key features:

- **Compatibility and connectivity:** easily connects to the MK UWB Shield 2 using board pin headers, and supports 3D Angle of Arrival measurements

- **Ready-to-Use solution:** it includes UWB SR150 Module with 3 PCB antennas, enabling ranging, 2D, and 3D Angle of Arrival measurements as well as Time Difference of Arrival (TDoA).

- **Integrating Murata Type 2BP** UWB Module

The MK UWB 3D Antenna board offers a **robust and user-friendly solution** for implementing precise UWB-based positioning and ranging applications
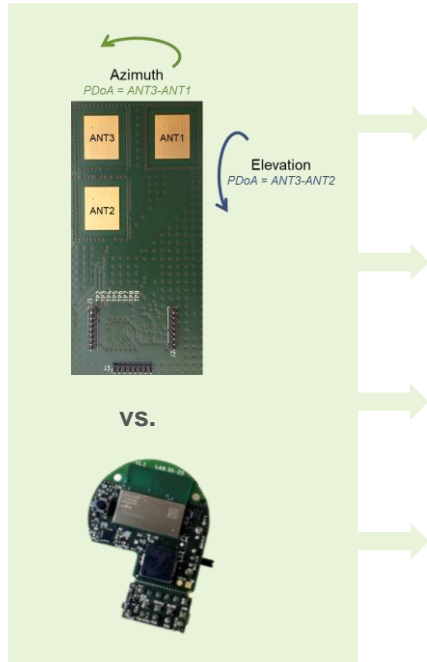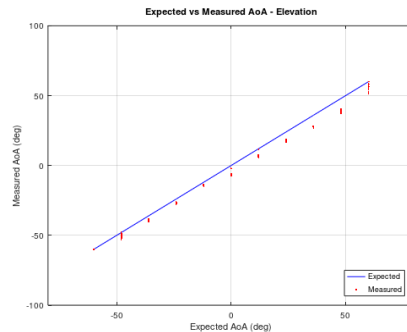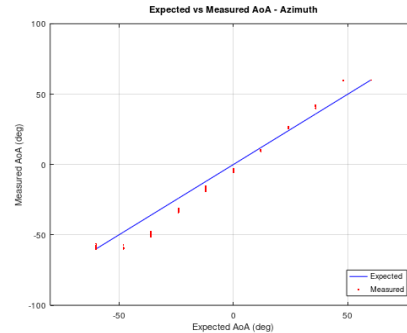
Additional benefits

- Dimensions: 70x34,5mm
- Supports 3.3V and 1.8V power supply and signal interface
- Accessible RF connectors for calibration and testing purposes
- Comes with specific software and documentation for ease of use
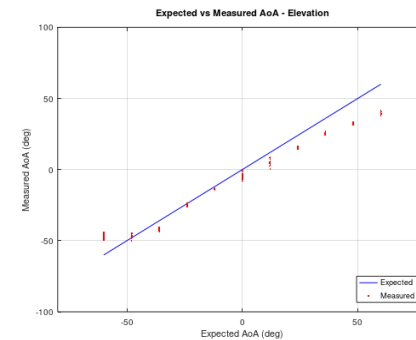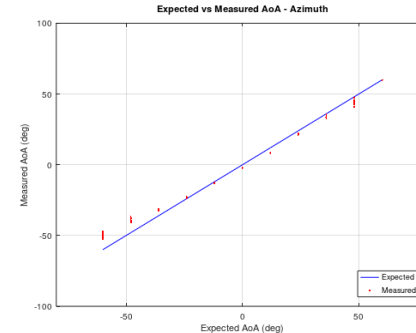
MK UWB SR150 Anchor 3D
Reference AoA data

Azimuth
PDoA = ANT3-ANT1

ANT3 | ANT1

ANT2

Elevation
PDoA = ANT3-ANT2

vs.

CHANNEL 5 - RESULTS

Expected vs Measured AoA - Azimuth

Expected vs Measured AoA - Elevation

CHANNEL 9 - RESULTS

Expected vs Measured AoA - Azimuth

Expected vs Measured AoA - Elevation

With the MK UWB SR150 Anchor 3D, you can achieve the following results for Angle of Arrival (AoA) data:

- Improved **measurement accuracy and stability**
- **Angle of Arrival calibration** applied
- Effective both in **Channel 5 and 9**

The MK UWB SR150 Anchor 3D offers robust capabilities for precise AoA data, ensuring high accuracy and stability in various environments and channels.

MK UWB SR150 Anchor 3D
User experience

Flash the software in the anchor and evaluate your preferred UWB use cases. **Anchor is compatible with all MK UWB Kits and NXP UWB middleware.**

Mobile
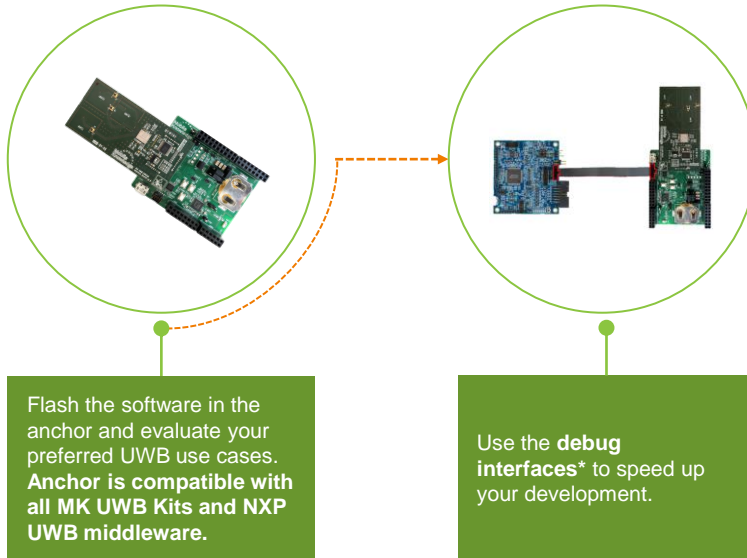Knowledge

MK UWB SR150 Anchor 3D
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Use the **debug interfaces*** to speed up your development.
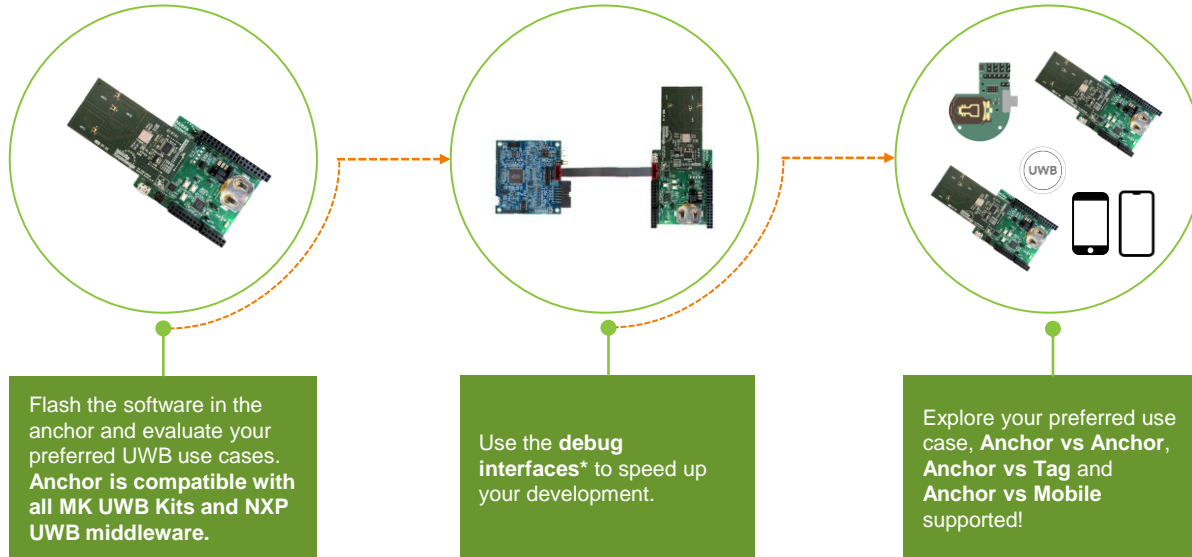
* MCU Link debugger is required and not included as part of the MK UWB SR150 Anchor 3D

MK UWB SR150 Anchor 3D
User experience

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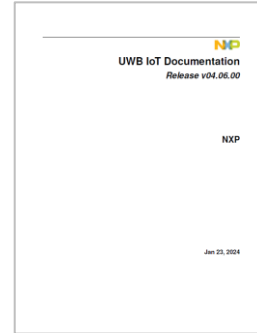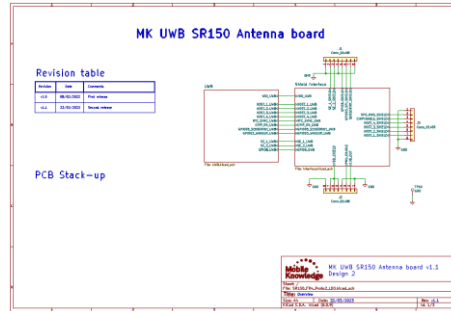Explore your preferred use case, **Anchor vs Anchor**, **Anchor vs Tag** and **Anchor vs Mobile** supported!

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MK UWB SR150 Anchor 3D
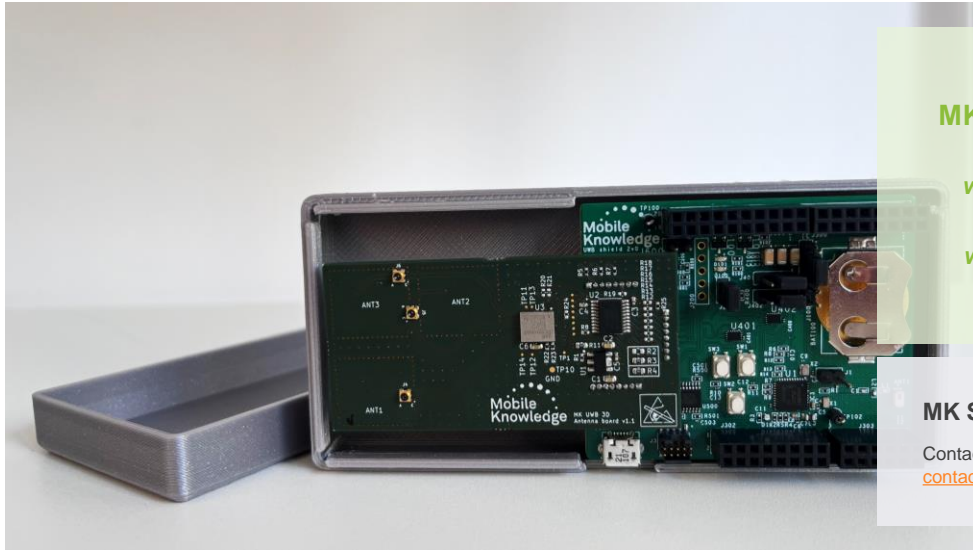## Support Material

Production ready software, reference hardware design files, and up-to-date documentation to enable you to focus on your own application and use case leveraging on UWB technology.

Material included:

- MK UWB 3D Antenna board, Gerber, and eBOM files
- NXP UWB SR150 production-ready SW
- MK UWB SR150 Anchor 3D Quick Start Guide
- Shield 2 User Guide
- A0A evaluation with 3D Antenna board
- Murata Type 2BP datasheet
- Murata Type 2BP Hardware Design Guide
- Murata Type 2BP footprint
- Murata Type 2BP 3D CAD file
- Murata Type 2BP FCC, CE certificates

MK UWB SR150 Anchor 3D
Ordering details

MK UWB SR150 Anchor 3D

with casing ....   *390 €*

without casing ....   *350 €*

Shipping costs not included

MK Services

Contact us for further information
contact@themobileknowledge.com

Visit **https://www.themobileknowledge.com/product/mk-uwb-sr150-anchor-3d/**

MK UWB SR150 Anchor 3D

FAQ

1

What does production-ready NXP UWB IoT software mean?

- The software package released with this product (UWBIOT_SR150_v04.06.00_MCUx) has been qualified by NXP as production ready, supporting various devices and platforms. Full details can be found in the supporting documentation.

2

What UWB module does it use?

- The MK UWB SR150 Anchor 3D is based on Type 2BP Module from Murata, which contains UWB SR150 chipset.

3

Is the MK UWB SR150 Anchor 3D certified?

- Only the integrated SR150 module (Type 2BP) is certified under FiRa & FCC/IC/MIC.
- MobileKnowledge may consider the certification of the MK UWB SR150 Anchor 3D depending on the market interest.

4

Which UWB channels are supported?

- Murata Type 2BP module supports CH5, CH6, CH8 and CH9 (optimized for CH5 and CH9).

5

How can I purchase the MK UWB SR150 Anchor 3D? Is support included with the purchase?

- The MK UWB SR150 Anchor 3D can be purchased through the product website or through the order form. Please contact us at contact@themobileknowledge.com and we will share the contact form with you.
- Please be aware that technical support is not included. For additional assistance, our team is ready to provide support services separately to ensure you have the help you need.

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