

Mobile
Knowledge

MK UWB Kit

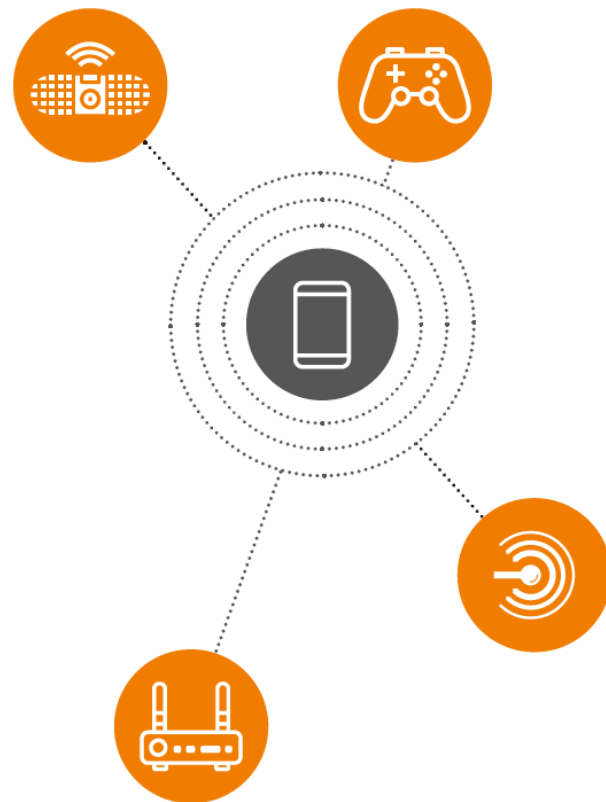
Mobile edition 2.0

Evaluate UWB
interoperability with
Apple® and **Android™**
mobile devices

Featuring NXP Trimention™ SR150 / SR040



muRata
INNOVATOR IN ELECTRONICS





UWB technology is rapidly expanding into the IoT ecosystem.

Smartphones play a significant role in driving the adoption of UWB in the IoT ecosystem as they make the technology intuitive and accessible to a broad user base.



Get ahead of this trend and start evaluating how **NXP's UWB Trimension™ technology interacts with UWB-enabled Apple® and Android devices**

MK UWB Kit

Mobile edition 2.0

MK UWB Kit Mobile edition 2.0

What it offers

The first evaluation kit offering **UWB interoperability against Apple® and Android mobile devices.**

Experience how to establish a **UWB ranging session** between an **Apple® or Android smartphone** and a **UWB anchor or UWB Tag.**

Leverage on the **background operation mode for mobile devices** to build **hands-free interactions** with nearby smart objects.

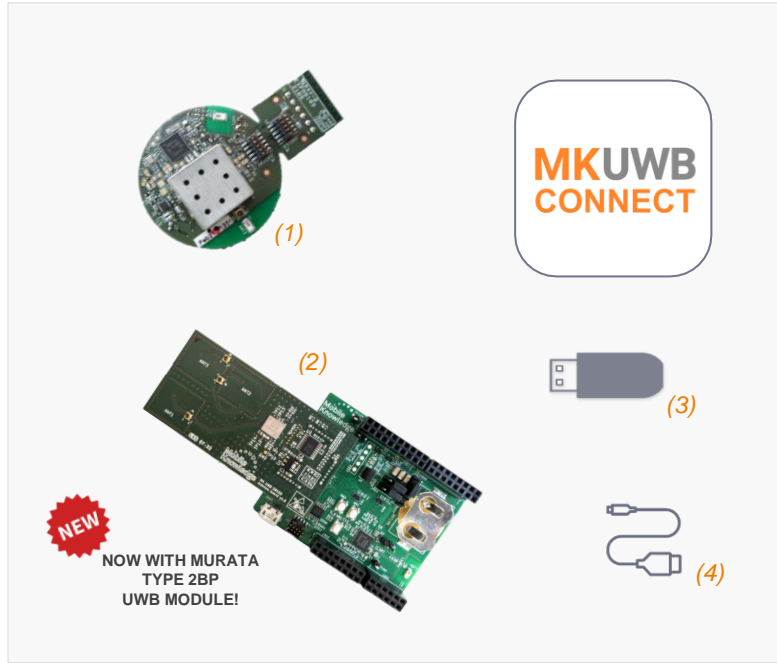
Evaluate the performance of **NXP's Trimention™ UWB IoT ICs** with Apple® and Android UWB-enabled devices.

Kick-start the **design** of your innovative applications by leveraging on the **sample iOS and Android applications developed by MobileKnowledge** and unleash UWB ability to create more precise, **spatially aware application experiences.**



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Box content



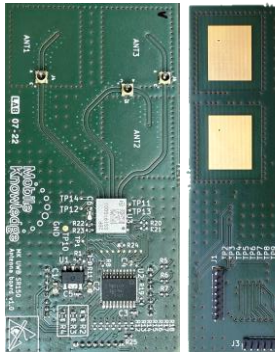
- **1x UWB Tag SR040 (1)** reference hardware featuring **NXP Trimention™ SR040**
- **1x MK UWB SR150 Anchor 3D (2)** reference hardware consisting of:
 - **MK UWB Shield 2 Arduino-compatible** development board
 - **MK UWB 3D Antenna board**, with a soldered **Murata Type 2BP** UWB module featuring **NXP Trimention™ SR150 UWB IC** and supporting **3D position information**
- **MK UWB SR150 Anchor 3D** reference software (source code and binaries) interoperable with Apple Nearby Interaction Accessory Protocol and Android UWB Jetpack libraries.
- **UWB Tag SR040** reference software (source code and binaries) compliant with Apple Nearby Interaction Accessory Protocol and Android UWB Jetpack libraries.
- **USB flash drive (3)** with software and documentation:
 - *MK UWB Connect iOS source code*
 - *MK UWB Connect Android source code*
 - *MK UWB Kit Mobile Edition 2.0 Quick Start Guide*
 - *MK UWB Accessory software User Manual*
 - *MK UWB Connect User Manuals for iOS and Android*
 - *MK UWB Shield 2 User Manual*
 - *UWB Tag SR040 User Manual*
- **Cables and connectors (4)**

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MK UWB 3D Antenna board: In detail

MK UWB 3D Antenna board

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



MK UWB 3D Antenna board + UWB SR150

Module: Ready-to-use solution that features three PCB antennas, enabling ranging, 2D, and 3D Angle of Arrival measurements as well as TDoA.

It can be easily connected to MK UWB Shield 2 using the board pin headers. Specific software and documentation is provided.

Now integrating Murata Type 2BP UWB Module!



MK UWB SR150 Anchor 3D

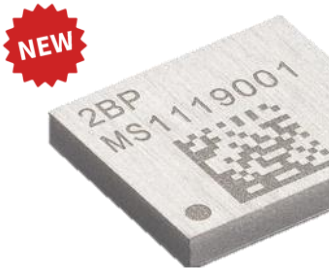
- 70x34,5mm dimensions
- Supporting 3.3 and 1.8v power supply and signal interface
- Accessible RF connectors for calibration/testing purposes

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UWB Module: In detail

UWB Module: Murata Type 2BP

Murata Type2BP is the world's smallest UWB module and includes **NXP's SR150 UWB chipset**. It is **FiRa certified** and is ideally suited for deployment in both larger infrastructures (indoor positioning anchors) and in consumer products and general IoT devices with battery operation.

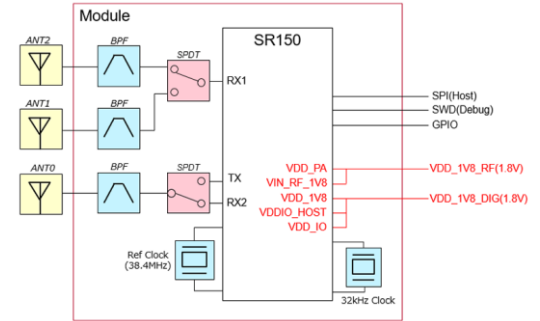


Murata Type 2BP UWB SR150 Module:

This UWB Module regroups the core functionality of the UWB solution (clocks, filters, switches and passive components).

Compatible with secure UWB ranging, 2D & 3D Angle of Arrival, and TDoA. Suitable for Anchor devices.

Powered by **murata**



UWB SR150 Module architecture

- **P/N: LBUA0VG2BP-006**
- UWB functionality in a small form factor (6.6mm x 5.8mm x 1.2mm)
- Worldwide RF bands capability with support of CH5 and CH9
- Interface : SPI
- 3 Antenna support (3D AoA or 2D AoA support)
- Tx Power & XTAL calibration support
- Embedded PHY & MAC FW compatible with FiRa
- **FCC/IC/MIC Certified**

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MK UWB Shield 2: In detail

MK UWB Shield 2

Flexible platform to develop customized UWB systems. As the central part of the MK UWB Kit SR150/SR040, it is used as the **interface between the UWB module and external devices.**

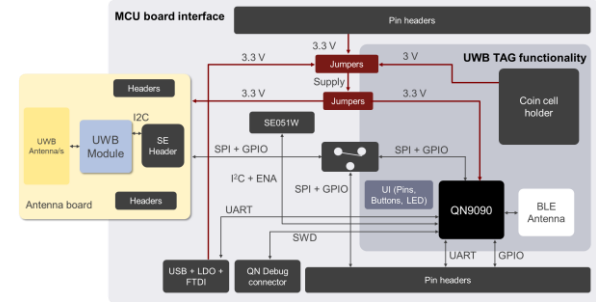


MK UWB Shield 2 supports Trimension SR150 UWB module thanks to **MK UWB 3D Antenna board.**

It is equipped with an embedded wireless microcontroller, QN9090, Arm® Cortex® M4, supporting Bluetooth Low Energy 5.0, open for customer applications (>100KB of memory available). It **includes SE051W for secure ranging use case compliant with FiRa specifications.**

A simple switch allows you to control the UWB module with an external MCU thanks to an **Arduino compatible** interface.

EASY CONNECTION TO ANY EXTERNAL HOST THROUGH ARDUINO HEADER



MK UWB Shield 2 architecture

- Easy connection to UWB Module through MK UWB 3D antenna board
- Easy connection to other host platforms, such as Nordic nRF52840 DK (through Arduino header) and Raspberry Pi (through Shield to Pi board connector board)
- Can be used as a standalone development platform by using its integrated MCU.
- Controllable by other MCUs through Arduino-compatible expansion headers.
- Support for secure ranging through SE051W.
- Support for multiple interfaces (BLE, USB, UART).
- Power supply available through USB, external board and standard 3V coin cell.

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Reference Software

1



MK UWB Connect application

The **MK UWB Connect application** is available in Appstore and Play Store and is delivered as source code as part of the kit. These applications will be continuously maintained and improved by MobileKnowledge.

The **iOS application** implements the **Nearby Interaction Protocol*** supporting **background operation** for hands-free spatial awareness experiences.

The **Android application** implements MobileKnowledge Out-of-Band protocol through Bluetooth LE for discovery and initialization of UWB ranging session **through Android UWB Jetpack libraries**.

2



Anchor-to-Mobile Software

The Anchor-to-Mobile software allows you to interoperate an **NXP Trimension™ SR150 Anchor** against multiple **Apple or Android UWB enabled devices simultaneously**. It is delivered as source code as part of the kit.

3

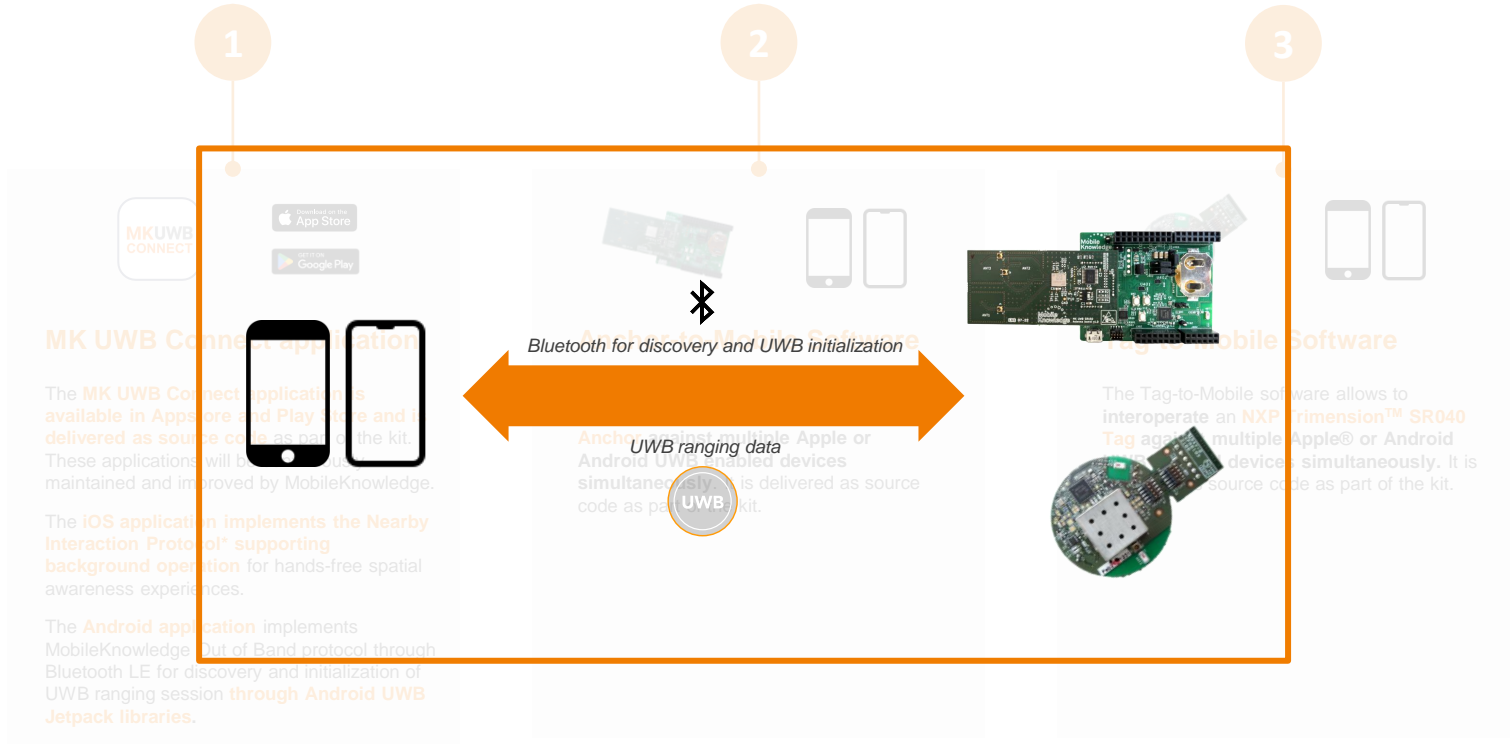


Tag-to-Mobile Software

The Tag-to-Mobile software allows you to interoperate an **NXP Trimension™ SR040 Tag** against multiple **Apple® or Android UWB enabled devices simultaneously**. It is delivered as source code as part of the kit.

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Reference Software



Please visit Apple developer site to obtain additional references on Apple's Nearby Interaction Framework <https://developer.apple.com/nearby-interaction/>
Please visit Android developer site to obtain additional references on UWB Jetpack libraries: <https://developer.android.com/jetpack>

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Use cases

1



UWB Ranging

Use your iOS or Android mobile phone to connect to a nearby device with UWB and start obtaining ranging and AoA data!

2



Distance alert

Use UWB fine-ranging capabilities to obtain real-time distance data from up to 5 nearby UWB-enabled devices, then use this data to trigger actions based on distance. In this use case an alert is shown in the user's phone depending on distance from nearby devices.

3



Tracker

Use UWB and the Augmented Reality (AR) capabilities of your smartphones to track nearby devices. This demo supports ARKit in iOS and ARCore in Android.

4

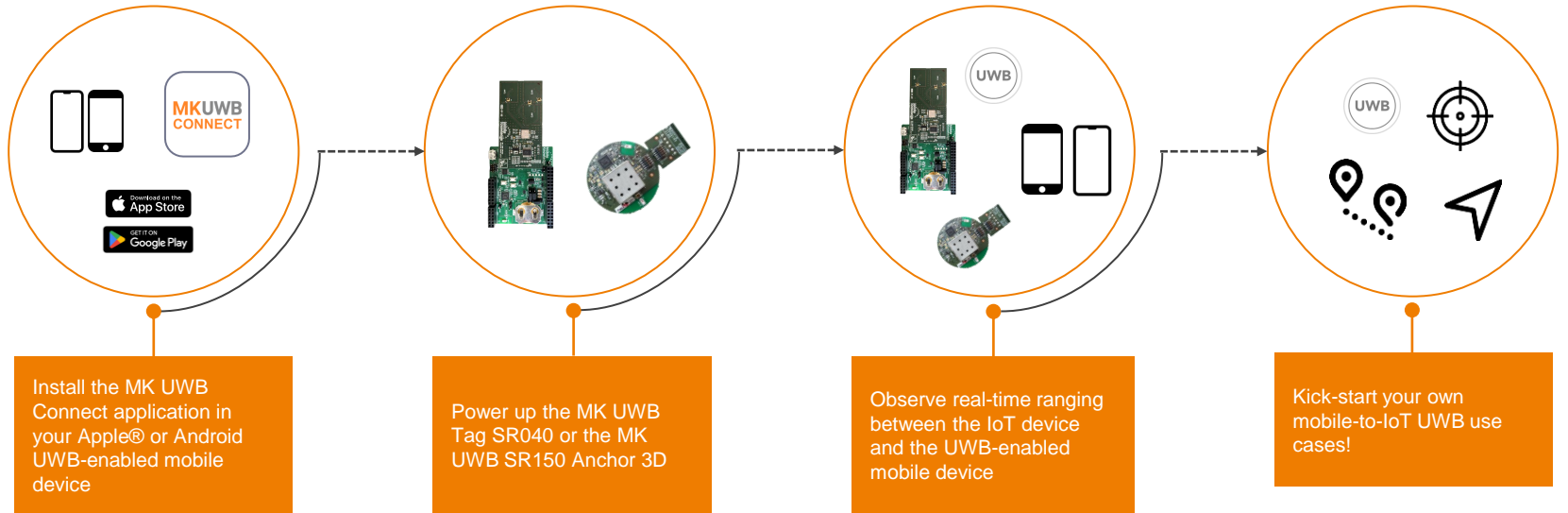


Point & Trigger

Use your phone and its UWB capabilities to control devices around you in an intuitive way. Simply point your phone towards the device you want to control and send the command.

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Out-of-the-box experience



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Ordering details



Evaluate how NXP's
UWB Trimention™
technology interacts
with Apple® and
Android mobile
devices

650 €

Shipping costs not included

Order the MK UWB Kit Mobile edition at
MobileKnowledge's website

<https://www.themobileknowledge.com/product/mk-uwb-kit-mobile-edition-2-0/>

Want to do more?

The **MK UWB Kit SR150/SR040** is the most comprehensive **reference design** and **development platform** for UWB-based IoT solutions.

Leverage on UWB technology advanced functionalities and benefit from **NXP Trimention™ SR150 and Trimention™ SR040 UWB IC** capabilities.

Take your UWB development experience to the next level with the **most complete and powerful UWB development kit** in the market.

With MK UWB Kit SR150/SR040 you will:

- Obtain access to all possible UWB use cases (device-to-device DSTWR, unicast/multicast, data transfer), mobile-to-device use cases, indoor positioning based on TDoA
- Support for multiple host platforms (off-the-shelf reference software for NXP QN9090, Nordic nRF52840 and Linux-based hosts)
- The kit includes MK UWB Kit Mobile Edition 2.0 software and documentation
- Best-in-class distance & AoA accuracy
- Powered by Murata world's smallest UWB module

Visit our website for further information:

<https://www.themobileknowledge.com/product/mk-uwb-kit-sr150-sr040/>



Want to do more?

Long-standing expertise in UWB technology to help you reduce your time to market and focus on your own UWB solution development

- **Development of customized UWB use cases:** Embedded software development, mobile application software development, back-end integration, system integration,...
- **UWB technology consulting and support services:** Guidance on use case definition and system integration, system architecture, software requirements, Q&A resolution, FIRA related process and use cases,...
- **Design and development of customized antenna board** based on customer requirements and constraints in order to optimize ranging and AoA measurements
- **Porting of MK UWB SDK** into a customer platform, enabling MK UWB SDK software tools and functionalities on any customer platform that meets the SDK requirements
- **Licensing of MK UWB Library**, for an easy integration of UWB technology while accelerating the time to market



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