



MK UWB 3D

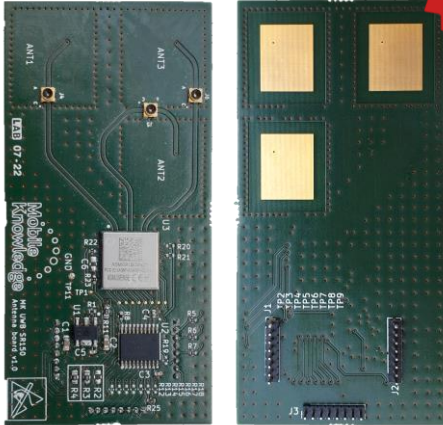


Antenna board

Featuring **NXP Trimention™ SR150**

Obtain 3D positioning of
your UWB enabled devices

MK UWB 3D Antenna board



The new **MK UWB 3D Antenna board** includes a new reference **3 patch antenna design** allowing the user to obtain the **3D position** of UWB enabled devices, in combination with the latest Amotech **ASMOP1BPO0N21** state-of-the-art module integrating **Trimension™ SR150**



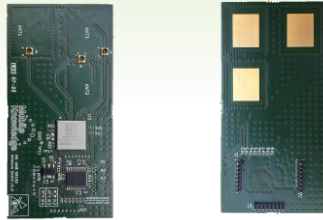
- Fully integrated solution based on **Trimension SR150™** supporting **3D position information**
- Pin-to-pin **compatible with the existing MK UWB Antenna board SMD** (plug and play replacement)
- Based on **pre-certified new module SR150 -ASMOP1BPO0N21-** from Amotech*
- **Reference hardware design files** available for the acceleration of your design and development activities
- Released and validated with production-ready NXP UWB IoT Software together with MK UWB Shield 2
- Optimized for UWB Channel 5 and 9** operation and **calibrated Angle of Arrival data available** off the shelf for you to focus on your own use cases and applications

* FCC, CE and UKCA certifications in place

** According to FiRa UWB channels 5 (6489.6 MHz) and 9 (7987.2 MHz) are recommended to achieve global acceptance

MK UWB 3D Antenna board In detail

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

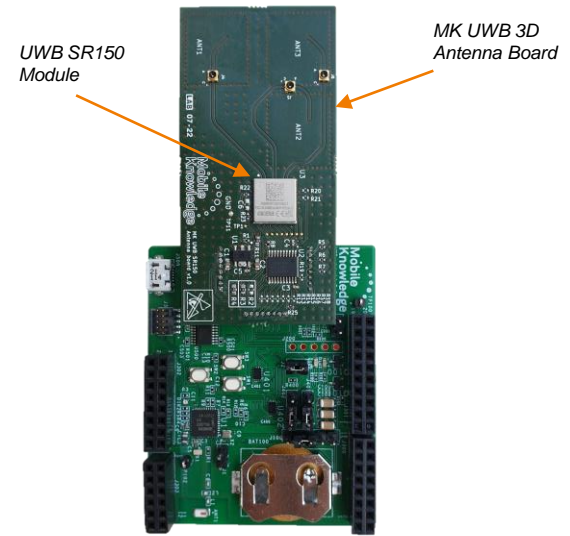


MK UWB 3D Antenna board + UWB SR150 Module: Ready-to-use solution that features three PCB antennas, enabling ranging, 2D, and 3D Angle of Arrival measurements as well as TDoA.

It can be easily connected to MK UWB Shield 2 and 1v3 using the board pin headers. Specific software and documentation is provided.

Now supporting 3D positioning!

NEW



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

SR150 Module In detail

Compact UWB transceiver based on **NXP's UWB chipset Trimension SR150**. It allows a quick integration of UWB capabilities into any design by using it as a component. Fully integrated RF frontend.



UWB SR150 Module

Provided by
AMO
A M O T E C H

A UWB Module is a miniature PCB that regroups the core functionality of the UWB solution.

Adding RF frontend, enables UWB connectivity in the final system.

UWB SR150 Module: Compatible with UWB ranging, 2D & 3D Angle of Arrival, and TDoA. Suitable for Anchor devices. Embedded PHY and MAC FW compatible with FiRa consortium specifications.

NEW

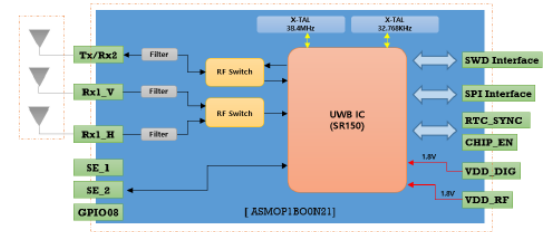
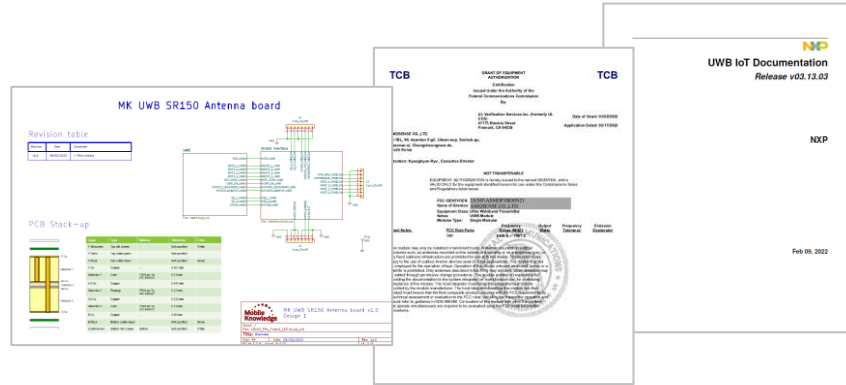


Figure 1. Block Diagram of AMO UWB Module

Fig 1. UWB SR150 Module architecture

- P/N: **ASMOP1BP0N21**
- Core UWB functionality in a small form factor:
 - SR150: 10mm x 10mm x 1.8mm
- Worldwide RF bands capability with support of CH5, 6, 8, 9
- **FCC, CE and UKCA certification**
- 1.2mm pitch for easy placement on a PCB design
- UWB SR150 Module:
 - integrated RF switch and Filter
 - 1.8V power supply

MK UWB 3D Antenna board 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.

Includes detailed guidelines on how to calibrate 3D AoA measurements using the new antenna board and provided software as well as reference results obtained against peer UWB devices.

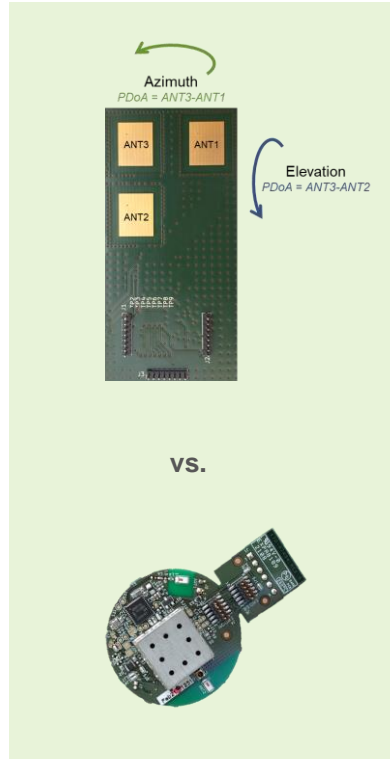
Material included:

- MK UWB 3D Antenna board schematic, Gerber, and eBOM files
- AoA evaluation with MK UWB 3D antenna board
- NXP UWB SR150 production-ready SW
- SR150 Module migration guidelines
- SR150 Module datasheet
- SR150 Module FCC, CE, UKCA certificates

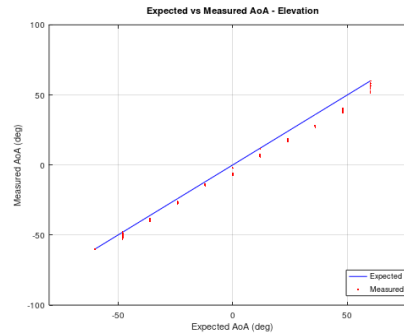
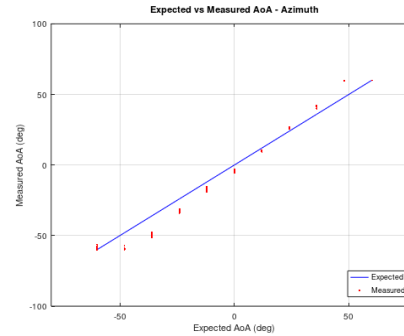
**MK UWB 3D
Antenna board
Reference Angle of
Arrival data**

**Short summary of results
available:**

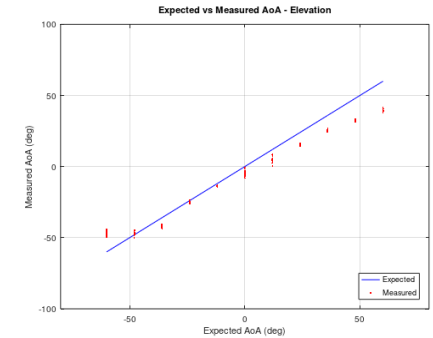
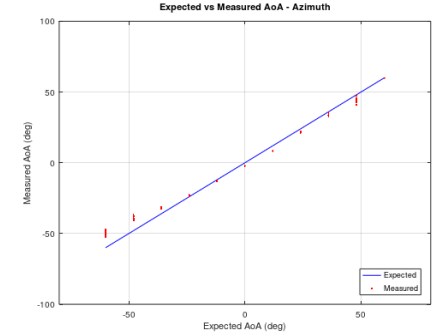
- Improved measurement accuracy and stability versus previous antenna board
- Angle of Arrival calibration applied
- Effective both in Channel 5 and 9



CHANNEL 5 - RESULTS



CHANNEL 9 - RESULTS



**MK UWB 3D
Antenna board**
Ordering details

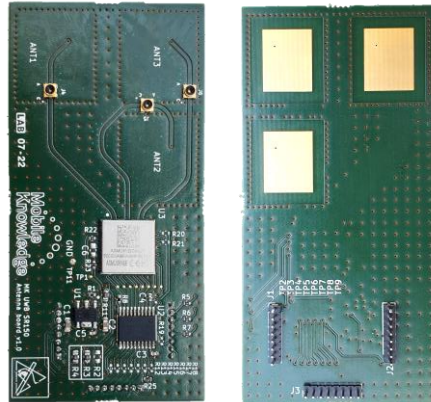
Order the MK UWB 3D Antenna board
at the MobileKnowledge website

[https://www.themobileknowledge.com/p/
contact/mk-uwb-3d-antenna-board/](https://www.themobileknowledge.com/p/contact/mk-uwb-3d-antenna-board/)

NEW
MK UWB 3D
Antenna board

Upgrade your MK UWB Kit
to support 3D angle of
arrival measurements

185 €



**Additional
Components**

Additional MK UWB SR150 Anchor 3D	350€
Additional UWB Module (SR150)	50€
Additional MK UWB 3D Antenna board	185€

MK Services

Contact us for further information
contact@themobileknowledge.com

Shipping costs not included

1

Does the new MK UWB 3D Antenna board work with the existing MK UWB Kit SR150/SR040 and the MK UWB Kit Mobile Edition?

- Yes, just replace the MK UWB Antenna board SMD on the MK UWB Shield with the new MK UWB 3D Antenna board and the same use cases and software code will work out of the box. It is also fully backwards compatible with MK UWB Shield 1v3 for those customers who purchased the old generation MK UWB Kit SR1X0 kits.

2

What are the MK UWB 3D Antenna board dimensions compared to the previous antenna board?

- MK UWB Antenna board SMD dimensions are 41.7 x 25.2mm
- MK UWB 3D Antenna board dimensions are 70 x 34.5mm

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Is there any reference Angle of Arrival data available?

- Yes, please see Slide 6 of this product brief as a reference. Furthermore, when purchasing the product, you will receive the new application note describing the detailed results obtained from the AoA evaluation from MobileKnowledge.

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What does production-ready NXP UWB IoT software mean?

- The software package released with this product (UWB_IOT_SR150_v03.14.04_MCUx) has been qualified by NXP as production ready, supporting various devices and platforms. Full details can be found in the supporting documentation.

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Does it use a different UWB module? What are the dimensions compared to the previous one?

- Yes, the new antenna board is based on the SR150 module from Amotech (ASMOP1BP0N21) with dimensions of 10mm x 10mm x 1.8mm
- SMD antenna board contains SR150 module from Amotech (ASMOP1BO0N1) with dimensions 13mm x 13mm x 2.7mm
- The differences between the two modules can be identified in the SR150 Migration guidelines document that is delivered within the kit

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Is there any difference in the power consumption?

- No difference is expected as the system architecture remains equal.

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Is the MK UWB 3D Antenna board certified?

- Only the integrated SR150 module (ASMOP1BP0N21) is certified under FCC, CE, and UKCA radio directives.
- MobileKnowledge may consider the certification of the MK UWB 3D Antenna board depending on the market interest.

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Which UWB channels are supported?

- NXP Trimension™ SR150 supports UWB CH5, CH6, CH8 and CH9. The MK UWB 3D Antenna board is optimized for CH9 and CH5 operation.

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How is the antenna oriented to obtain the reference Angle of Arrival data?

- The Angel of Arrival document included in the package details AoA data from scenarios with multiple relative orientations between the MK UWB 3D Antenna board and the UWB Tag SR040.
- Reference data available in Slide 6 includes a description of the antenna orientation and rotation to obtain the Angle of Arrival data.

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Do I need to update the software to obtain the 3D Angle of Arrival data?

- Yes, the reference sample software needs to be updated to obtain azimuth and elevation Angel of Arrival data.
- Details and instructions on how to obtain azimuth and elevation Angle of Arrival data are included as part of the documentation and software provided.

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How can I purchase the MK UWB 3D Antenna board?

- The MK UWB 3D Antenna board 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.

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Can I purchase the MK UWB 3D Antenna board and an MK UWB Shield?

- Yes, to do so please contact us at contact@themobileknowledge.com and we will share the order form with you.

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Can we use the MK UWB 3D Antenna board with SR040?

- No, please note that Trimension™ SR040 does not support Angle of Arrival measurements.

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Do I need to apply any calibration to the MK UWB 3D Antenna board?

- The MK UWB 3D Antenna board is calibrated at MK premises before its distribution. Additionally, we have applied a common Angle of Arrival calibration for all MK UWB 3D Antenna boards to provide the best possible AoA experience.
- For optimum performance and Angle of Arrival measurements, it is recommended to drive individual AoA calibration on each device. Please follow the guidelines available in the documentation or reach out to MobileKnowledge to do so.

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Will the MK UWB Kit SR150/SR040 and the MK UWB Kit Mobile Edition include this new antenna board?

- Yes, the MK UWB 3D Antenna board will be included as part of the MK UWB Kits in the coming weeks.



Mobile Knowledge

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