# Product summary

# XPLR-AOA-2

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## Bluetooth 5.1 indoor positioning explorer kit with NINA-B4

### Indoor positioning out of the box

- Evaluation tool for Bluetooth 5.1 indoor positioning
- Includes four antenna boards and four tags
- High resolution positioning engine
- Integration with Traxmate IoT tracking platform
- u-connectLocate software with optimized direction finding algorithm; fully compatible with Bluetooth 5.1
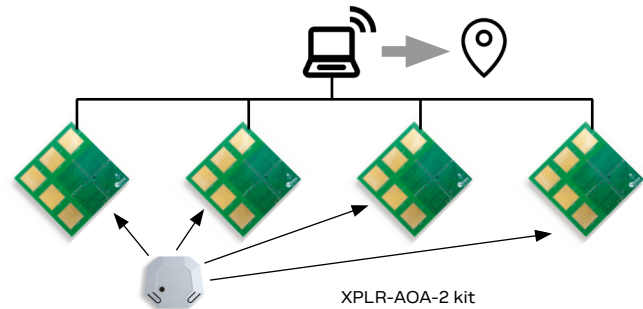


XPLR-AOA-2 kit

### Product description

Use the XPLR-AOA-2 explorer kit to experiment with Bluetooth 5.1 direction finding technology for indoor positioning use cases. The kit comprises 4 antenna boards (C211) and 4 tags (C209) as well as the necessary software for setting up a system to evaluate Angle-of-Arrival (AoA) technology for high accuracy positioning indoors.

With the AoA technology, an anchor point containing an antenna array connected to a Bluetooth receiver can detect the direction, or angle, to a moving tag transmitting a signal with an appended Constant Tone Extension (CTE). Triangulating the directions from three or more anchor points, the position of the tag can be calculated.

The XPLR-AOA-2 kit includes everything you need to start evaluating high accuracy Bluetooth positioning. The C209 tags with NINA-B406 Bluetooth LE modules and example software will send out Bluetooth 5.1 advertisement messages. The C211 antenna boards, equipped with NINA-B411 Bluetooth LE modules, receive the messages and apply an angle calculation algorithm to extract the direction to the tag. The angle is calculated by the u-connectLocate software, running on the embedded MCU in NINA-B411.

u-connectLocate is fully compatible with the Bluetooth 5.1 standard and can track any Bluetooth 5.1-compatible device. Multiple devices can be tracked simultaneously. No additional processing is required, the angle is delivered directly from the USB port of the C211 board.

The positioning engine software provided with the kit runs on an external PC and is accessed through a web browser. When used with the cloud-based Traxmate IoT tracking platform, the user can upload a floor plan, deploy and configure the anchor points, as well as track tag movements in real time. There is also a local graphical user interface in the positioning engine software available for visualizing the positions. If the antenna boards are placed in vertical postions, then the position can be calculated in 3D.

With the direction finding feature, you can take advantage of the robust communication link as well as the low current consumption offered by Bluetooth, to build highly accurate indoor positioning systems that could support various use cases such as asset tracking.

### Performance [1]

| Angle accuracy | 5° mean error |
|---|---|
| Position accuracy | Around 1 meter (depending on anchor point deployment) |
| Simultaneously tracked tags | 50+ (depending on update rate) |

1 = Valid for initial releases; future versions will have increased capacity.

### Features

- Out-of-the-box indoor positioning explorer kit
- Antenna boards with array of 5 dual-polarized antennas
- u-connectLocate with embedded angle calculation; fully compatible with the Bluetooth 5.1 standard
- 2-dimensional angle calculation
- 3-dimensional positioning calculation
- USB interface to connect to a PC or other host system

### Kit includes

- Four C211 antenna boards with NINA-B411 module
- Four C209 tags with NINA-B406 module
- u-connectLocate direction finding software (from u-blox.com)
- C209 tag software example (from Github)
- Positioning engine software example to run on a PC
- Three-month trial license for Traxmate IoT tracking platform

### Supported evaluation software

- u-blox s-center Bluetooth and Wi-Fi evaluation software

### System requirements

- PC with USB interface
- Operating system: Windows 7 onwards

### Product variants

| XPLR-AOA-2 | u-blox Bluetooth 5.1 indoor positioning explorer kit |
|---|---|

### Further information

For contact information, see **www.u-blox.com/contact-u-blox**.

For more product details and ordering information, see the product webpage: **www.u-blox.com/product/xplr-aoa-2-kit**.

**u-blox**