



KUMIHIMO
Tech Camp with Murata

Murata Electronic Components List

2026

High-performance 2-axis (xy) inclinometer

SCL3400

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**2-axis MEMS sensor offering
best-in-class stability over
lifetime and temperature range**



Applications

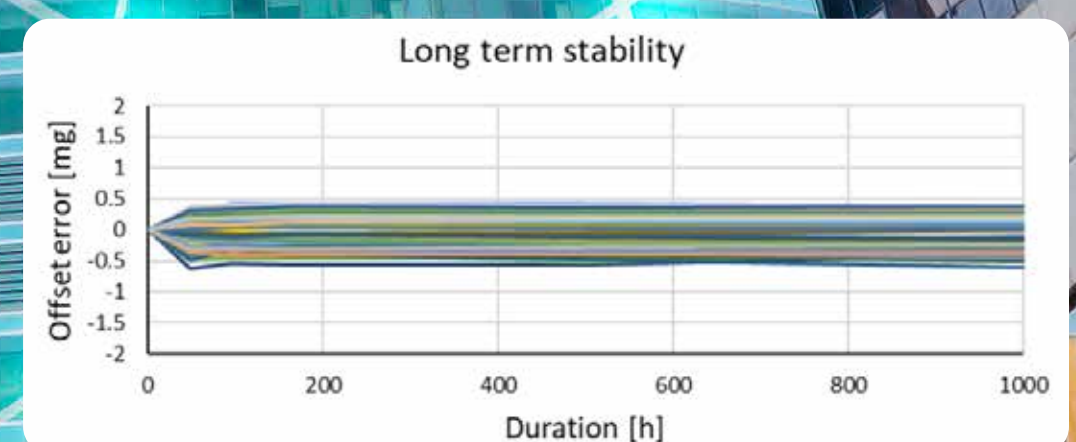
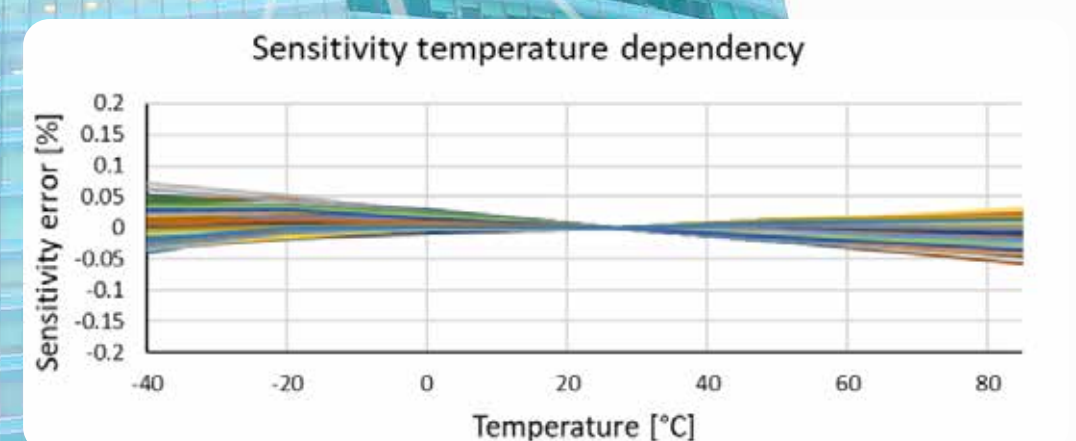
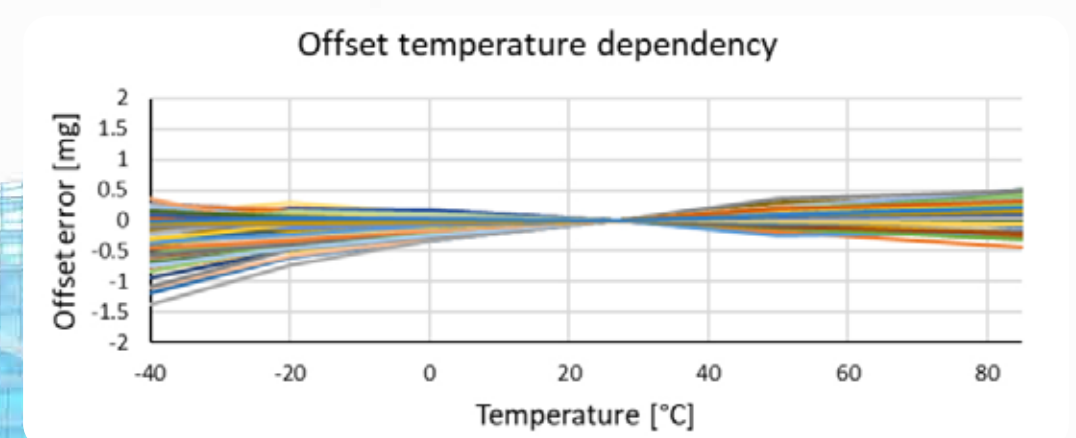
- Structural Health Monitoring (SHM)
- Leveling & Platform Stabilization
- Tilt sensing
- Inertial Measurement Units (IMUs)
- Positioning and guidance systems

Features

- Single package 2-axis High Performance inclinometer sensor
- Based on Murata's proven 3D-MEMS technology
- Extremely stable output over wide range of temperature and vibration
- 3.0V - 3.6V supply voltage
- Two user selectable measurement modes:
±30° (0.5 g) with 10 Hz LPF
±90° (1.1 g) with 40 Hz LPF
- Advanced self-diagnostics features
- 12 pin pre-molded housing, suitable for SMD mounting
- Size 8.6 x 7.6 x 3.3 mm (l x w x h)
- Compatible with RoHS and EV directives

Performance

- Ultra-low noise density 16 $\mu\text{g}/\sqrt{\text{Hz}}$
- Typical offset drift over lifetime $\leq 0.05^\circ$
- Sensitivity error $\pm 0.7\%$
- Temperature range $-40\ldots+85^\circ\text{C}$
- Resolution up to 32768 LSB/g



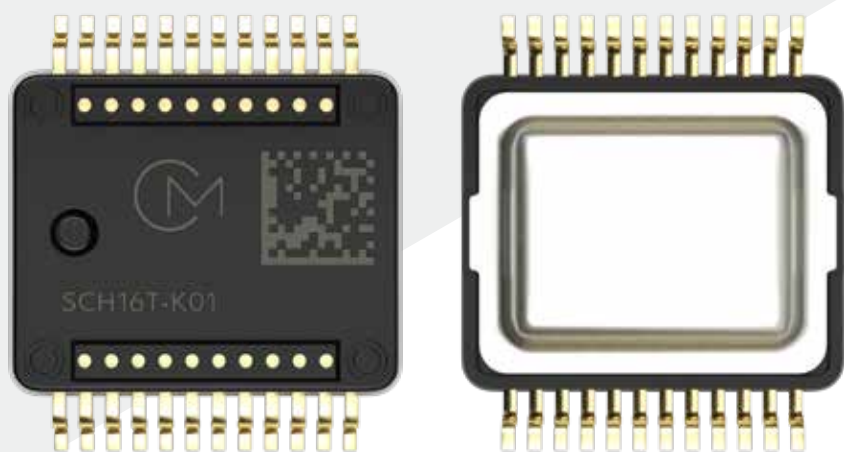
High Performance Gyro Sensor + Accelerometer

SCH16T-K01

Applications

SCH16T is targeted at applications demanding high performance with tough environmental requirements.

- Typical applications include:
- Inertial Measurement Units (IMUs)
- Navigation and positioning
- Machine control and guidance
- Dynamic inclination
- Robotic control, Drones and UAVs



Features

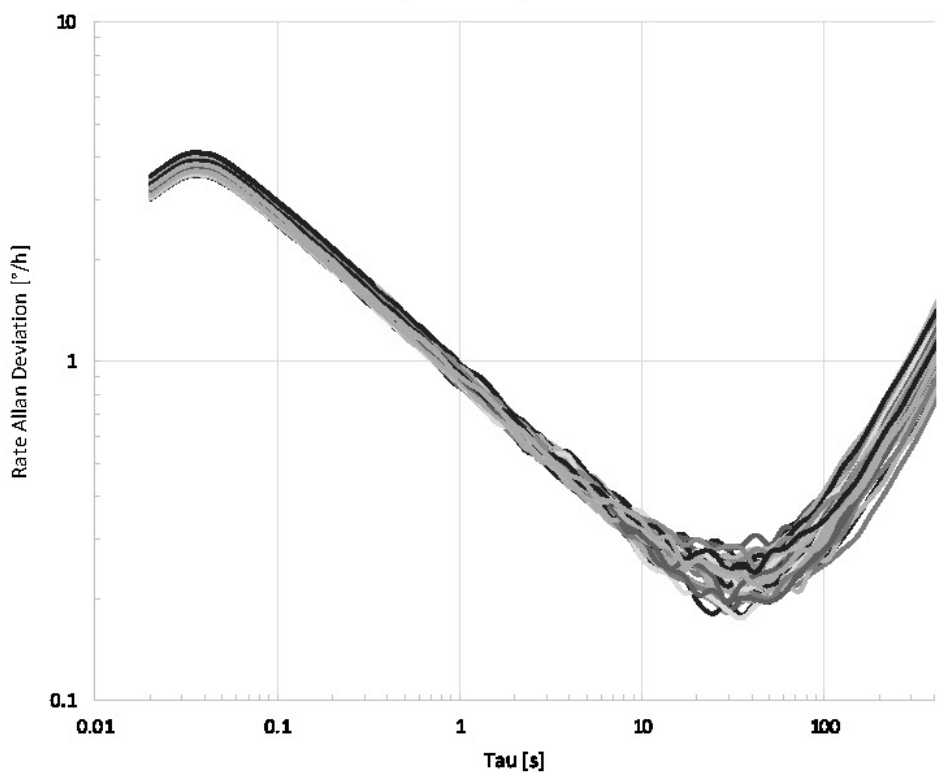
- Single package 6DOF component
- Cross-axis calibration enables better than 0.15 ° orthogonality error
- Gyro bias instability level down to 0.3 °/h
- Gyro noise density level down to 0.0004 (°/s)/√Hz
- Stable offset and sensitivity over full temperature range
- Excellent linearity and vibration performance
- Extensive self-diagnostics features utilizing over 200 monitoring signals
- ±300 °/s angular rate measurement range
- ±8 g acceleration measurement range with default dynamic range of ±26 g
- 40 °C...+110 °C operating temperature range
- 3.0 V...3.6 V supply voltage
- SafeSPI2.0 interface with 20-bit data frame
- Data ready, timestamp index and SYNC functions for clock domain synchronization
- RoHS compliant robust 24-pin SOIC housing
- 11.8 mm x 13.4 mm x 2.9 mm (l x w x h) SOIC-24

Measurement characteristics	Ω xyz	Acc xyz
Measurement range	±300 °/s	MGN1D050603MC MGN1D120603MC
Dynamic range	±328 °/s	MGN1D0508MC MGN1D1208MC
User selectable low pass filter	13, 30, 68, 235, 280, 370 Hz	
Default sensitivity	1600 LSB/(°/s)	3200 LSB/(m/s²)
Offset Temperature Dependency –40°C...+110°C (3σ)	±0.2 °/s	±4 mg
Noise density (typ)	XY: 0.0004 (°/s)/√Hz Z: 0.0006 (°/s)/√Hz	80 µg/√Hz
Bias instability (typ) Allan deviation minimum divided by 0.664	0.3 °/h	15 µg

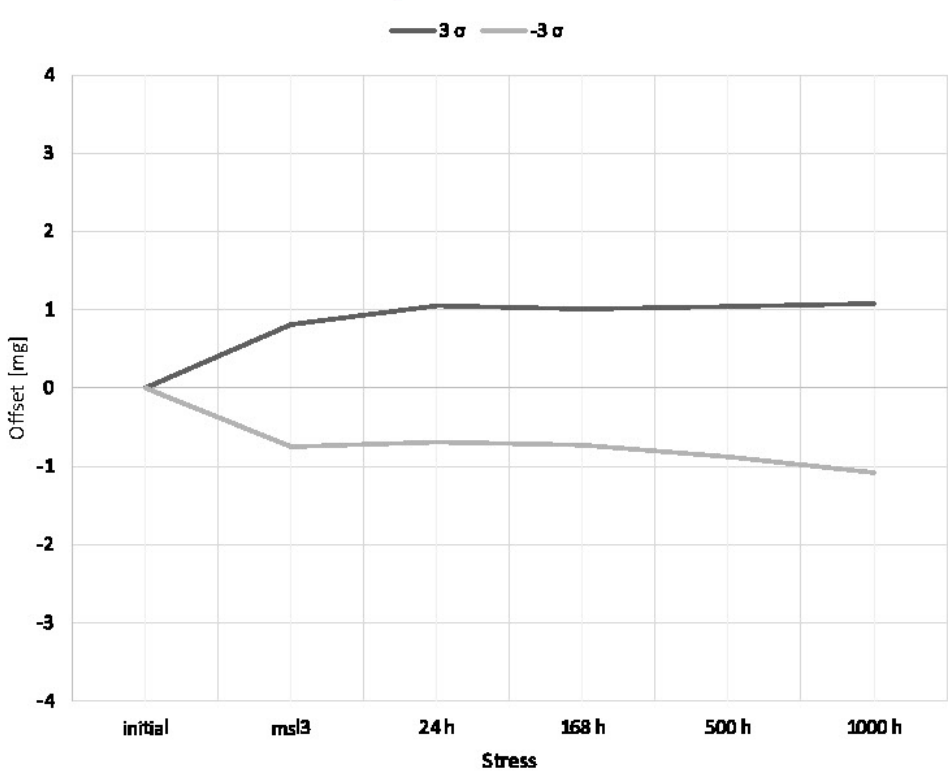
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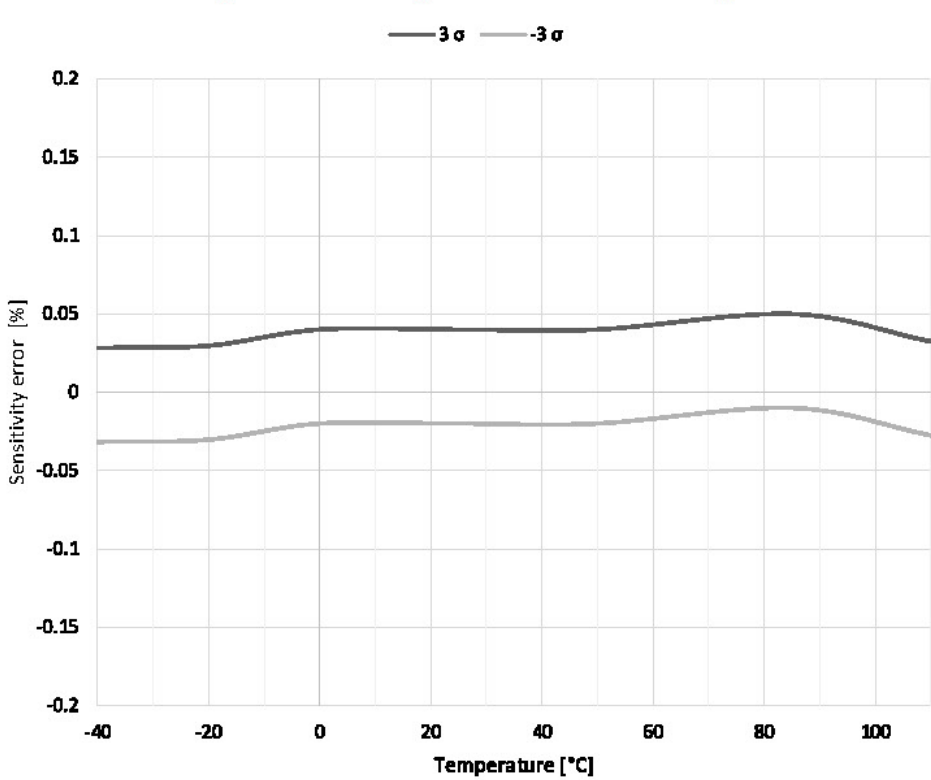
Gyroscope, Allan deviation in °/h



Accelerometer, Offset drift over lifetime in mg



Accelerometer, Sensitivity error over temperature in %

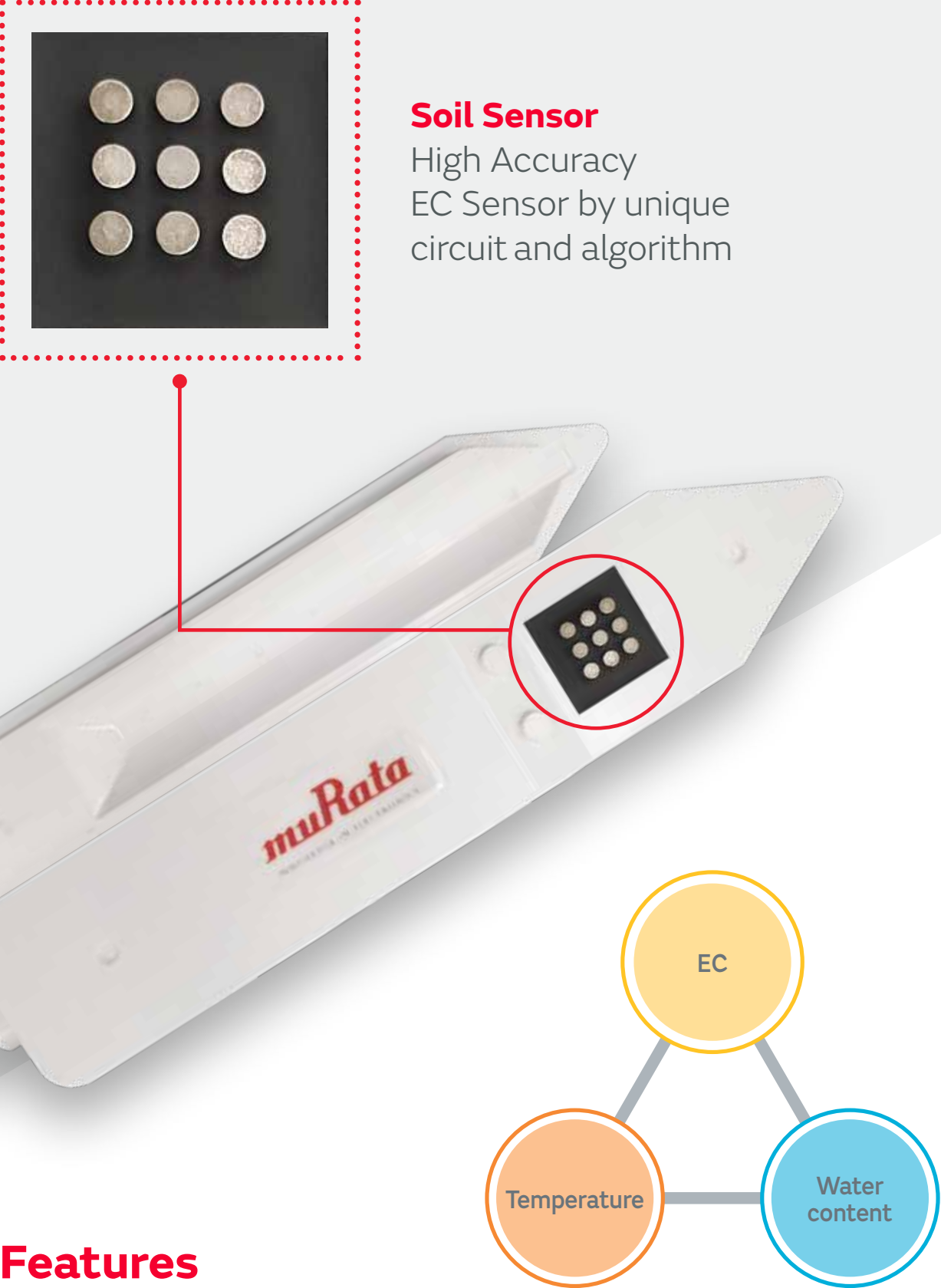


Soil Sensor

Murata will continue to make efforts to realize global SDGs by utilizing its unique sensing and wireless technologies.

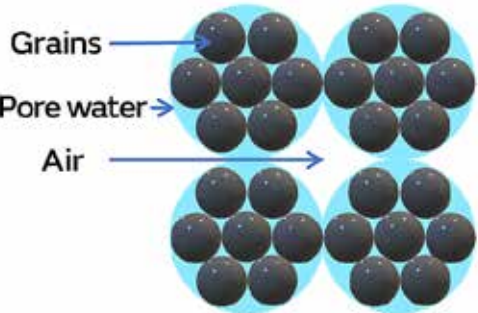
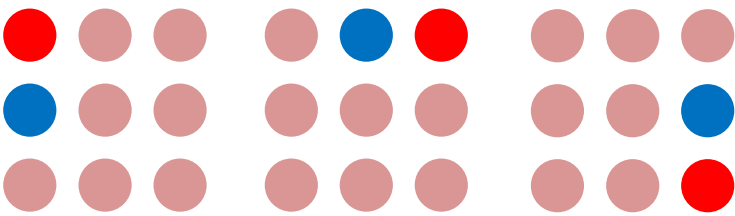


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Features

- 3 Sensors:
EC, Temperature, Moisture in 1Unit 132mm
- Elimination of uncertainty by multi-pattern measurement using nine electrodes
- Measurement of ion concentration in pore water



Specifications

Power Supply Voltage	Consumption Current	EC Measuring Range	Moisture Measuring Range	Temperature Measuring Range	Dust and Waterproof	Interface
3.0~6.0V	50mA(Max)	0~5dS/m	0~60% (in soil)	-20 to+60°C	IP68	UART, RS232, RS485, RS485Modbus
9.6~16V	15mA(Max)					SDI-12



- To improve yield of crops in W/W
- Sustainable Agriculture in W/W

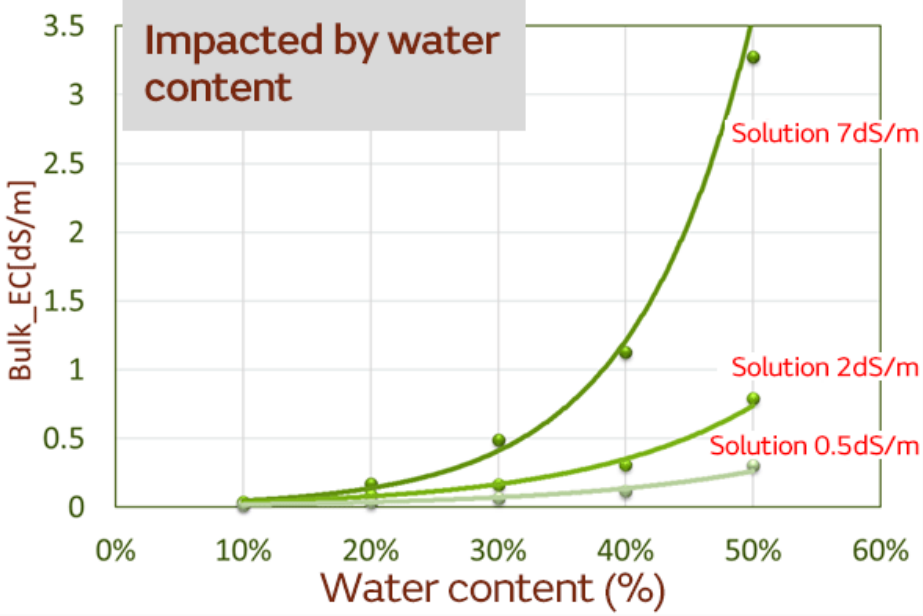


- To prevent ground water pollution
- Efficient use of water in agriculture

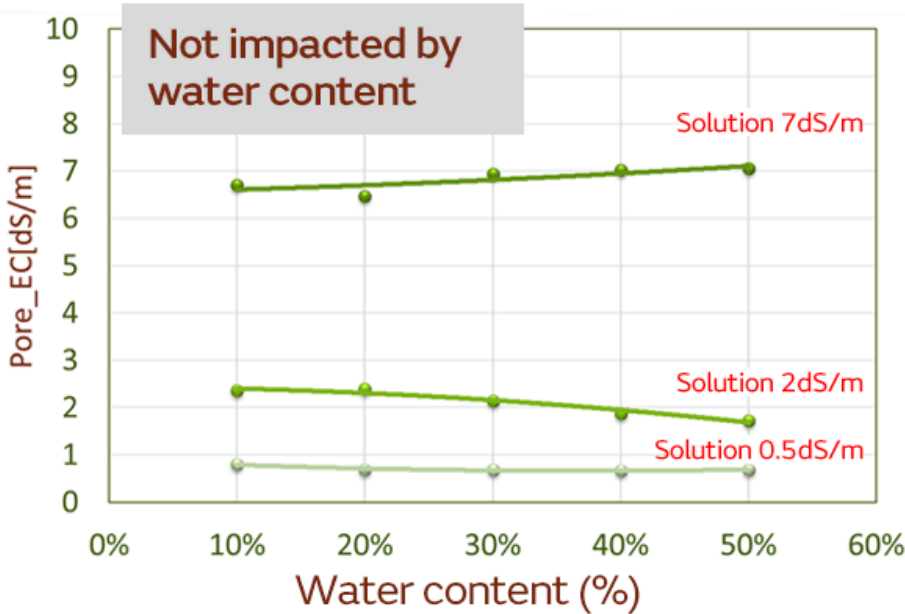


- Soil condition restoration
- Maintenance of forests and ecosystems

COMPETITORS - Behavior image (Un-stable)



MURATA - High accuracy sensor (Stable)



EC Sensor
Measurement
of pore water EC

Vibration Sensor Device

PKGM-200D-R

Available to prediction of production equipment trouble by analyzing vibration. Suitable to install Factory Automation component by small SMD device. High frequency vibration detection (up to 11kHz) to contribute preventive maintenance for early stag failure of Bearing etc.

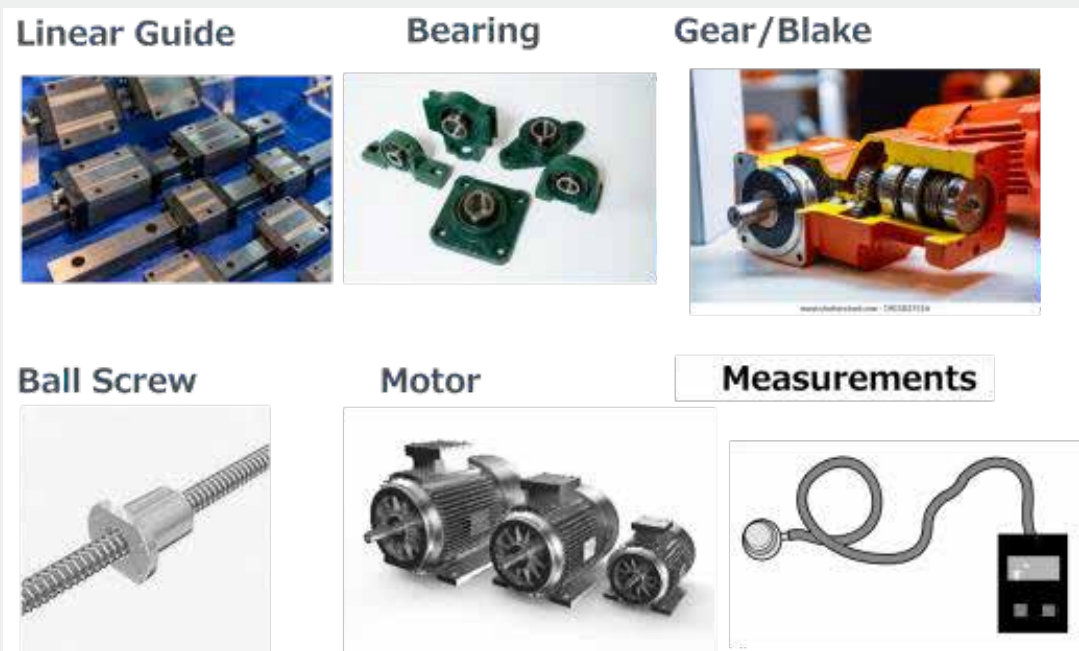
Features

- Available to detect Z axis vibration in wide frequency range
- Including driver circuits
- Differential analogue output for cancelling line noise
- With temperature sensor

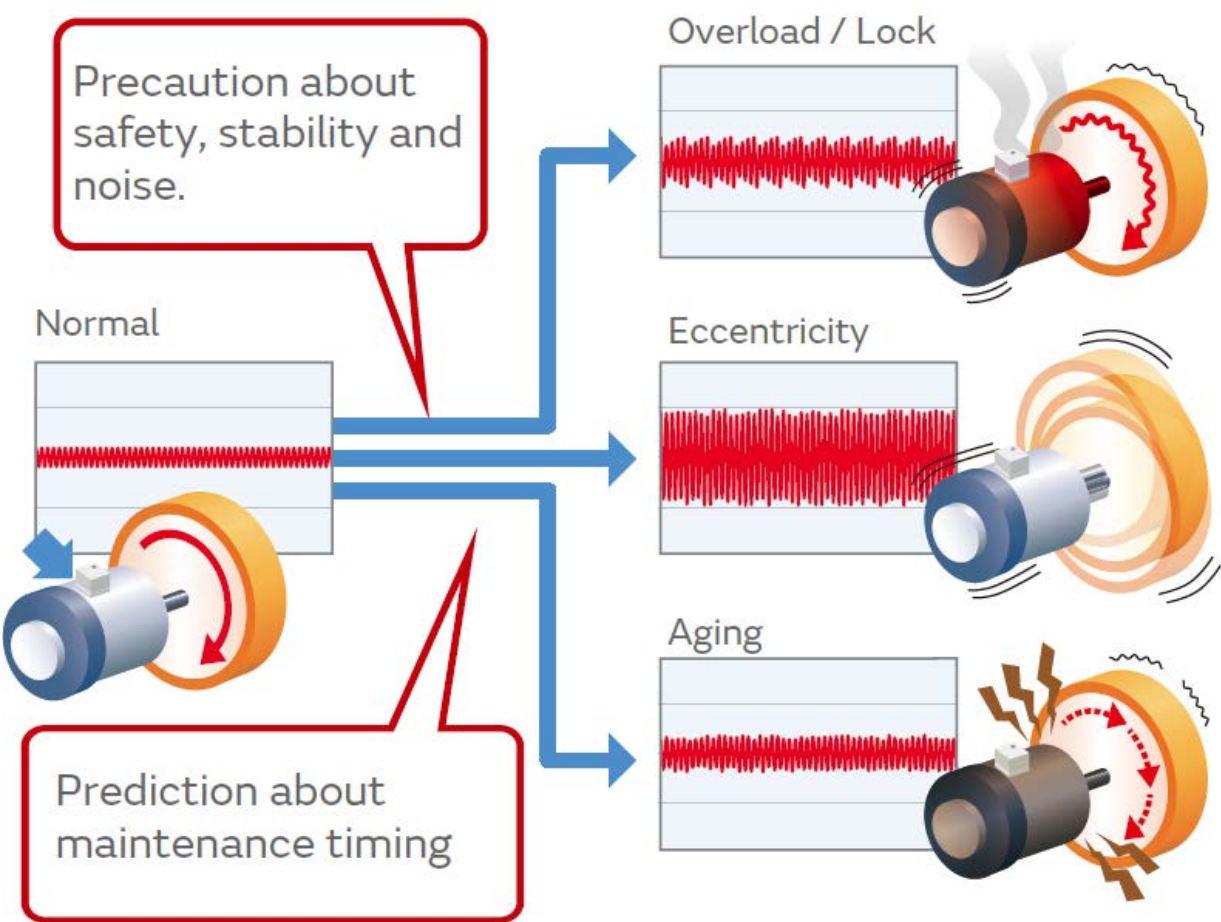
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Applications



Motor Application



Specifications

Dimensions: 5.0 x 5.0 x t3.5mm
Construction: SMD device with 7 terminals with acceleration and temperature sensor

items	unit	Typical value
Output		Differentials analog output
Detection angle		Z axis
Supply voltage	VDC	3.0 to 5.2
Acceleration (1kHz)	mV/G	118
Statistic noise	mG	4.3
Frequency range [±3dB]	Hz	6Hz to 11kHz
Min.Detecting DetectingG range(1kHz)	G	±10.2
Consumption current	mA	3.5
Operating temperature range	Deg. C	-20~+85
Temperature output		On board

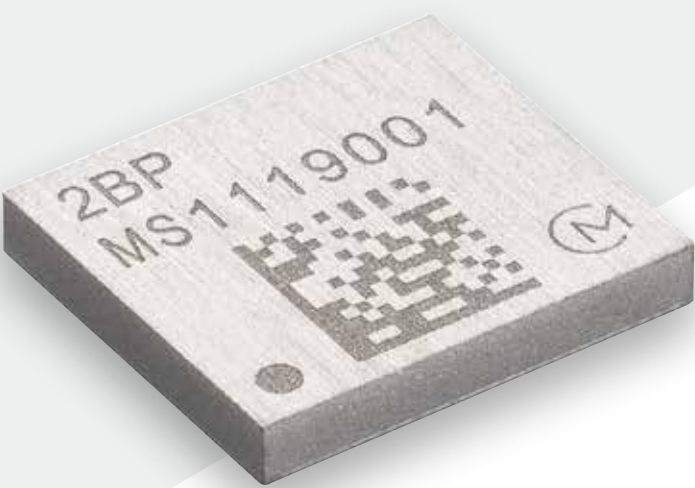
UWB Modules

Wireless communications

Ultra-wideband (UWB) technology provides a highly effective means for providing secure and precise distance measurement

Benefits:

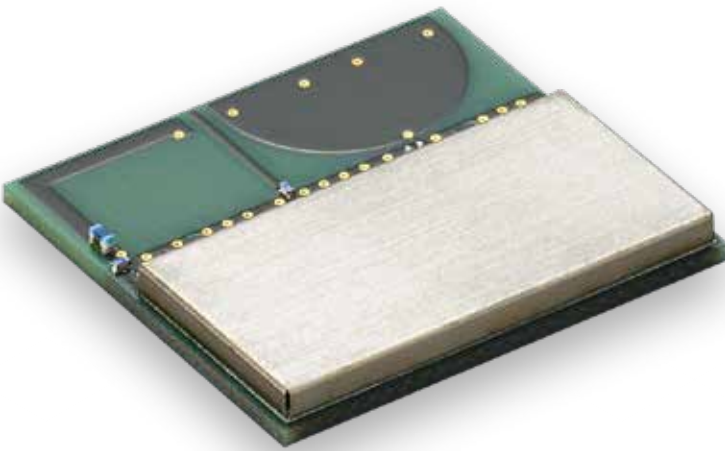
- Smallest/highly integrated UWB module available in the market
- 75% less square area than CoB solution
- Frequency, Tx power and Antenna delay are calibrated for each device
- Support Multi Antenna design and evaluation



Type 2BP



- Ultra small UWB module which includes NXP's SR150 UWB chipset, clock, filters and peripheral components
- 3 Antenna support (3D AoA or 2D AoA support)
- UWB Chip set: NXP Trimension SR150
- Antenna: External



Type 2DK

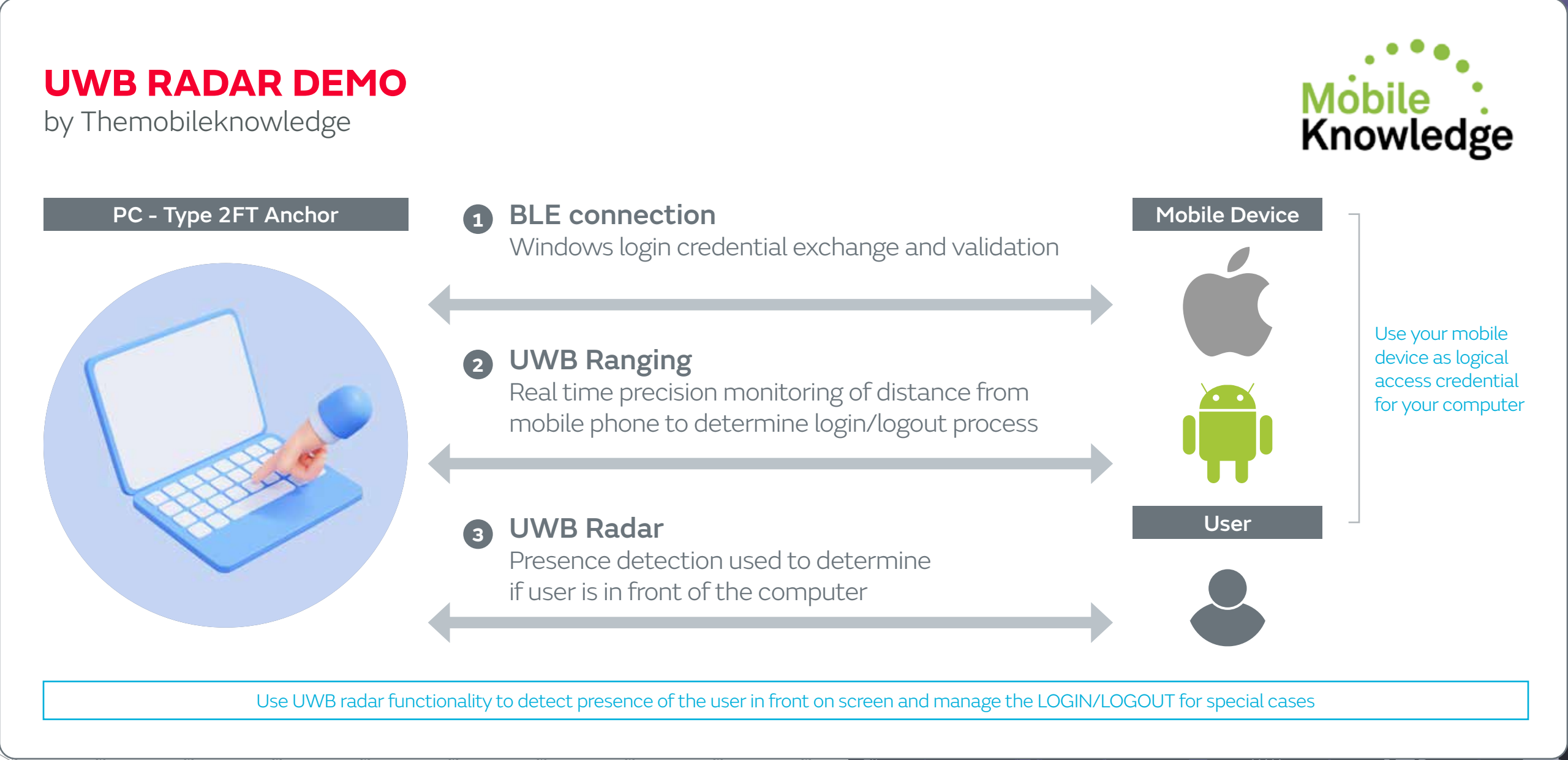


- All-in-one UWB + Bluetooth LE combo module which integrates NXP Trimension™ SR040 UWB Chipset, NXP QN9090 Bluetooth LE + MCU chipset, On board antenna and peripheral components.
- Ideally suited for UWB Tag/Tracker which operates by coin-cell battery, and general IoT devices.
- UWB Chip set: NXP Trimension™ SR040
- Antenna: Integrated

Features:

- Ultra-small dimensions
- Lower power consumption
- High quality

Logical access - High level architecture



UWB+BLE Combo Module

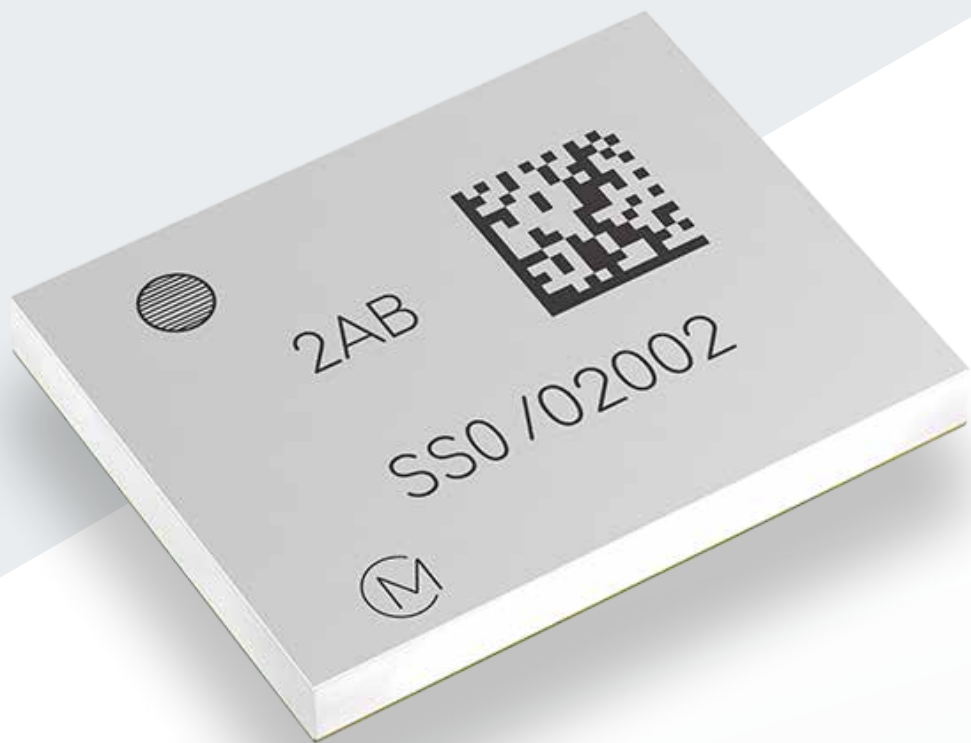
Type2AB module

Ultra small, high quality and lower power

Module features channels 5 & 9, low current consumption, and battery life of 10+ years. Ideally suited for small, battery operated IoT devices and applications.

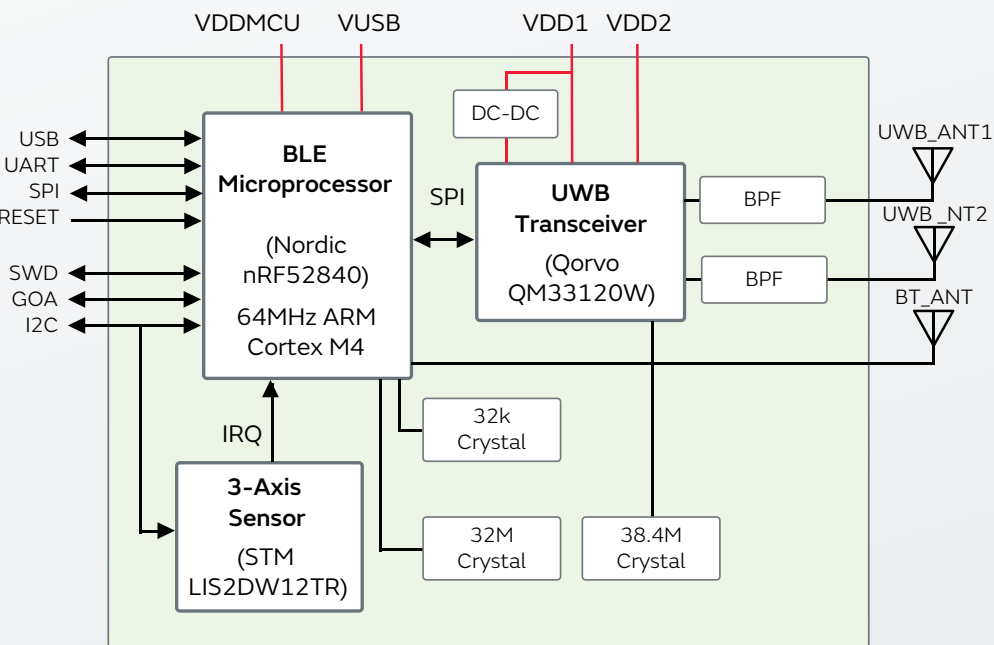
Features:

- Interface : USB,UART,SPI, I2C
- IC P/N: Qorvo QM33120W
- Hostless module Integrated Nordic IC / nRF52840 which also have BLE function for waking up UWB and updating FW
- Integrated 3 Axis sensor for saving battery
- Work with CR2032 battery
- Reference clock embedded
- Package: Resin mold
- RoHS: This component can meet with RoHS compliance



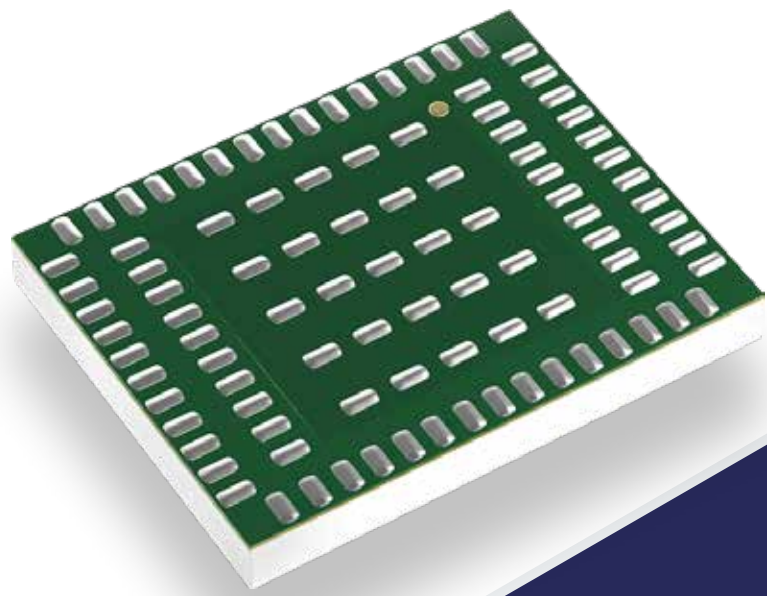
Benefits:

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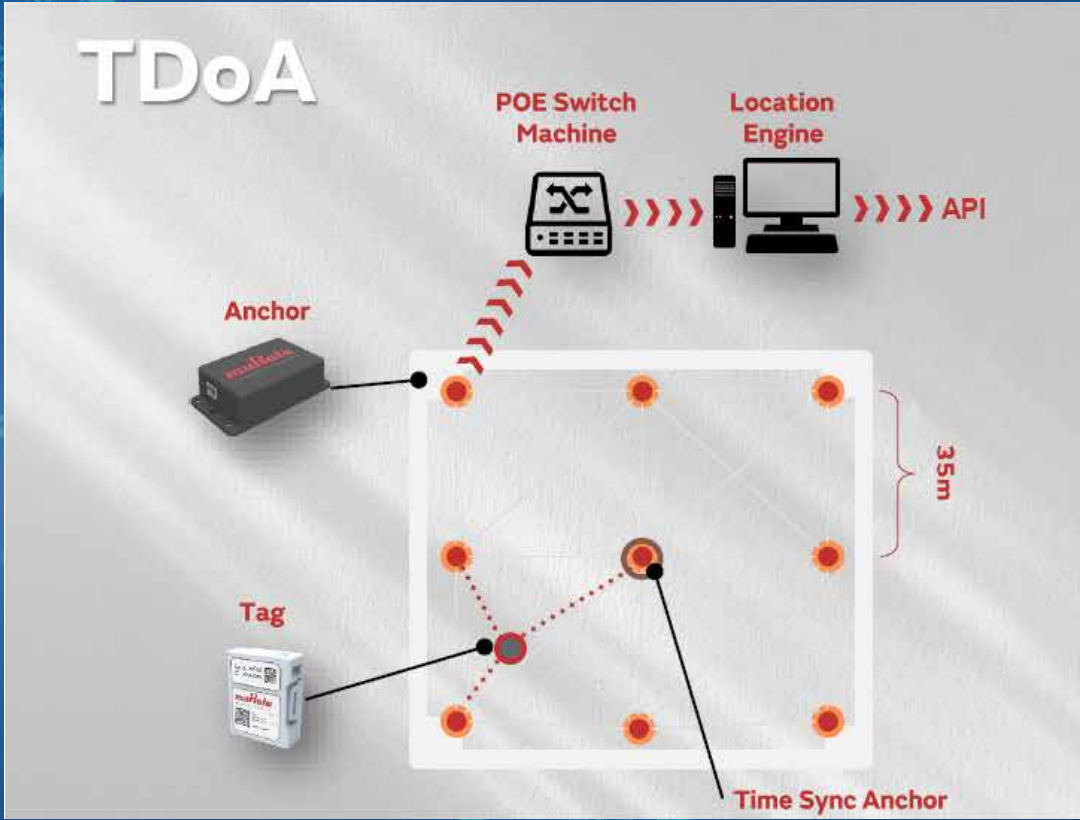


CPU Core	ARM Cortex-M4
Flash/RAM	1MB/256kB
RF Technology	UWB Ch 5 & 9 + BLE 5.2
Dimensions	10.5 x 8.3 x 1.44(max) mm
Supply Voltage (V)	VDD1: 2.5~3.6 / VDD2: 2.5~3.6 VUSB: 4.35~5.5 / VDDMCU:2.5~3.6
Target Accuracy	Ranging accuracy : +/- 9[cm] PDoA accuracy: +/- 5[deg] AoA accuracy: +/- 2.5[deg]
Operating Temperature	-40°C to 85°C

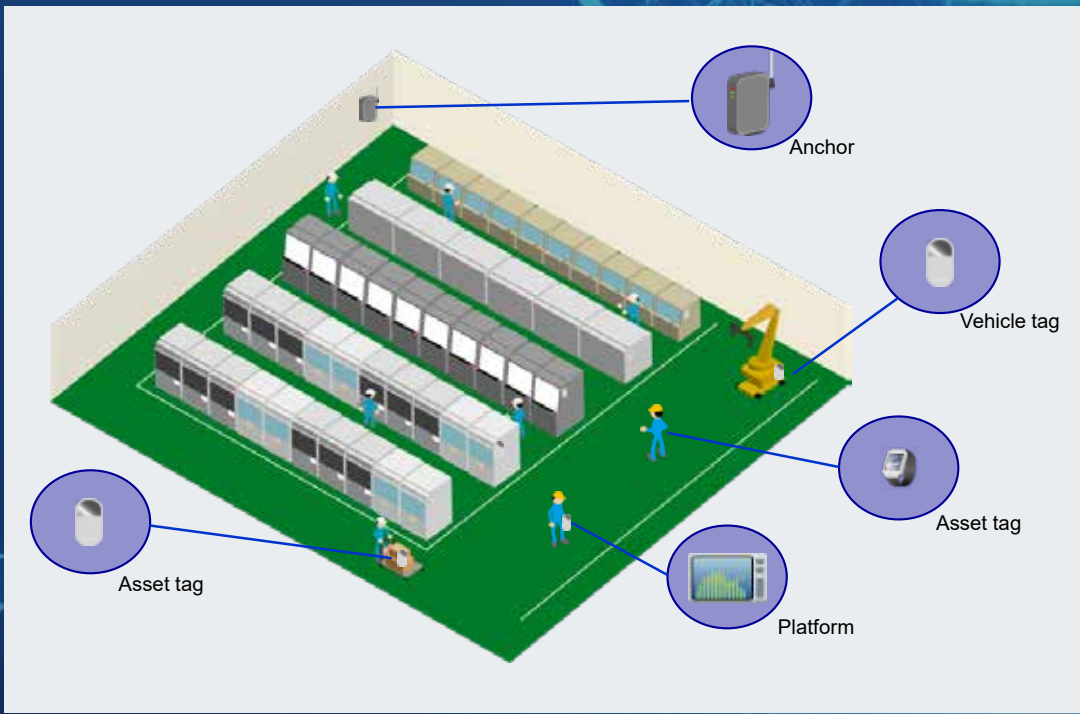
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UWB Typical Application



Industrial RTLS Indoor Navigation



World First Voice Over NB-NTN testbed

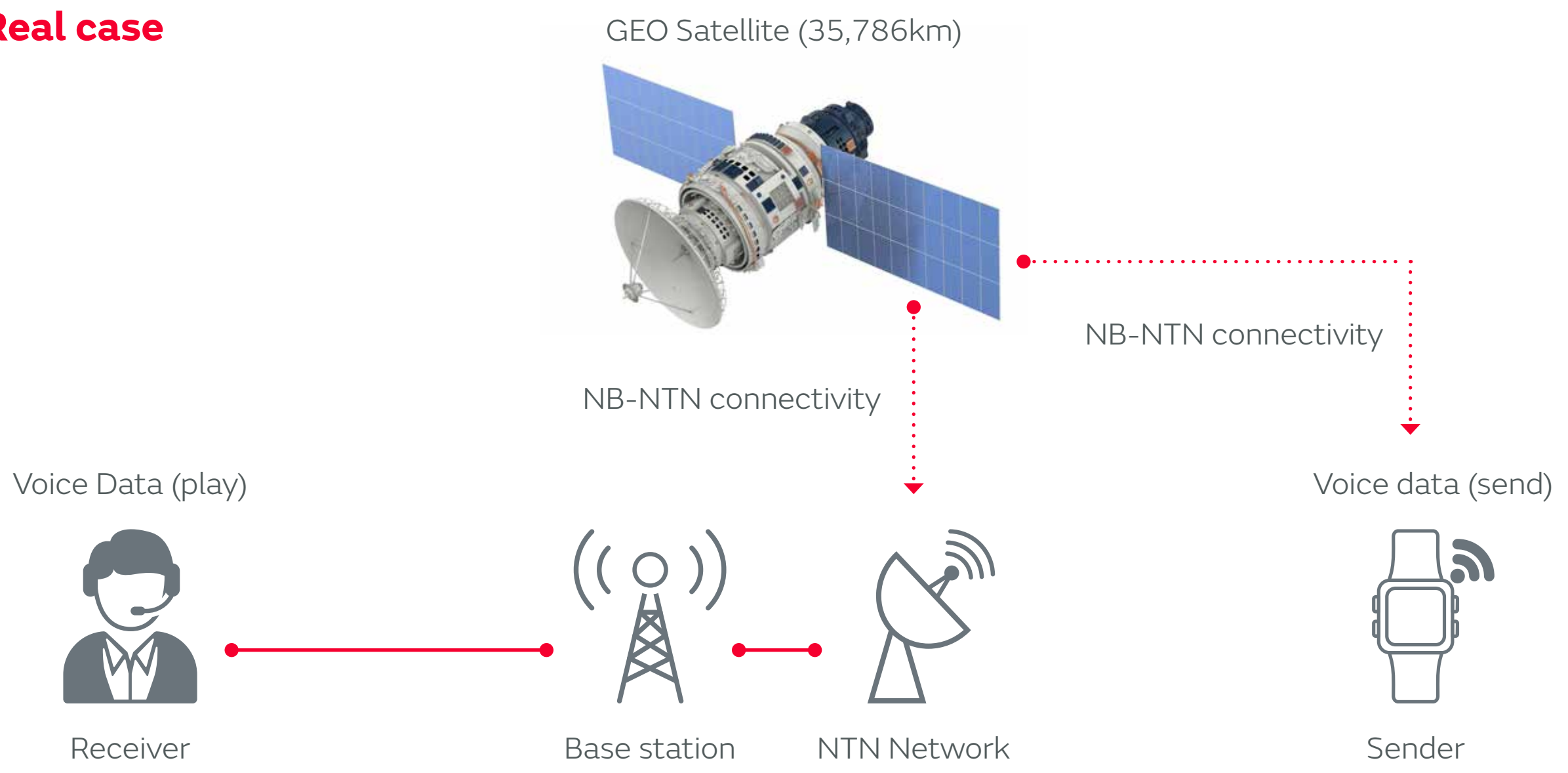
Narrowband
Non-Terrestrial Network

Push-to-talk like application will enhance safety and communication capabilities in areas without terrestrial network access.

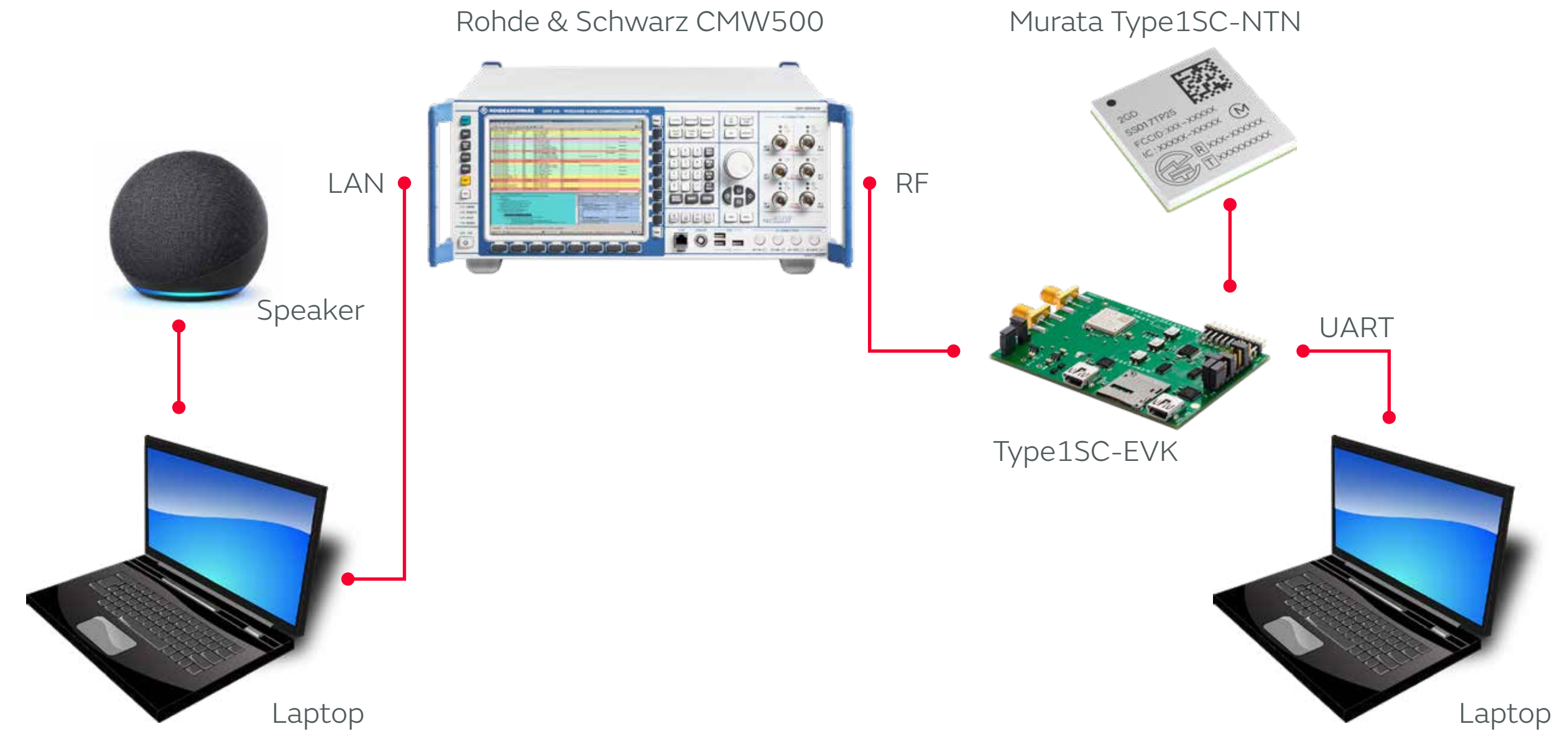


Technology Overview

Real case



Testbedcase



Use case



Emergency SOS Alert



Push-to-talk



Automotive

From Edge to Cloud

Simplify access to IoT

ZENCROSS Alliance is an initiative, enabled by a strong consortium of world leading IoT players dedicated to remove the complexity and technical barriers associated with cellular IoT management, helping to accelerate deployments with a simple single unified solution.



Customer Challenge

- Fragmented IoT ecosystems
- Long integration cycles
- High risk and cost to scale
- Skills and resource constraint

What is ZENCROSS Alliance

- Curated IoT ecosystem
- Murata-led hardware foundation
- Integrated connectivity, devices, and platforms
- Built to accelerate deployment

What Members Deliver

- Complimentary IoT Technologies
- Best in Class Services
- Global connectivity
- Localization
- Production-ready devices
- Secure data delivery
- Device management
- Compliance readiness



CatM1/NB - Starter Kit



Alliance Members

IoT Design Services



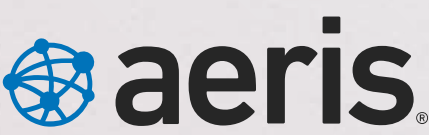
Hyperscale Cloud



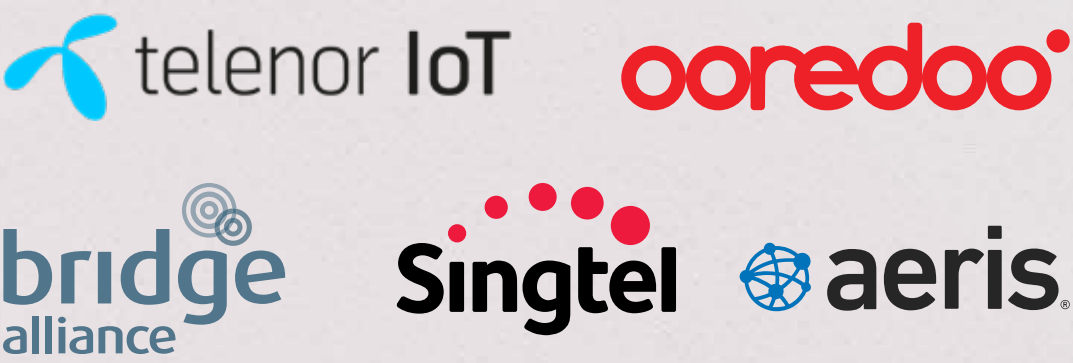
Data and Device Management



Security & Compliance



Global Networks



IoT Components

