

Precise Parking at a Glance

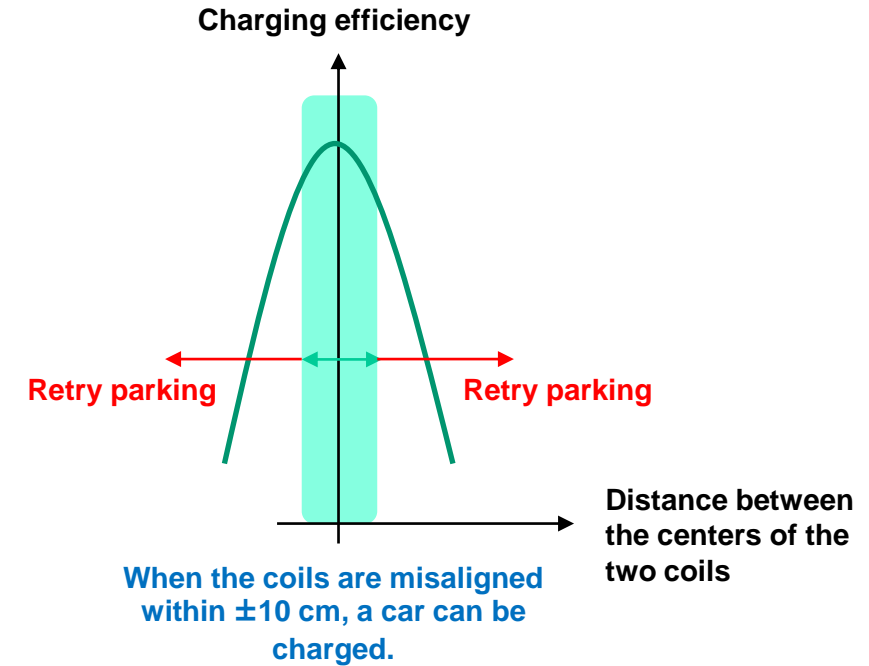
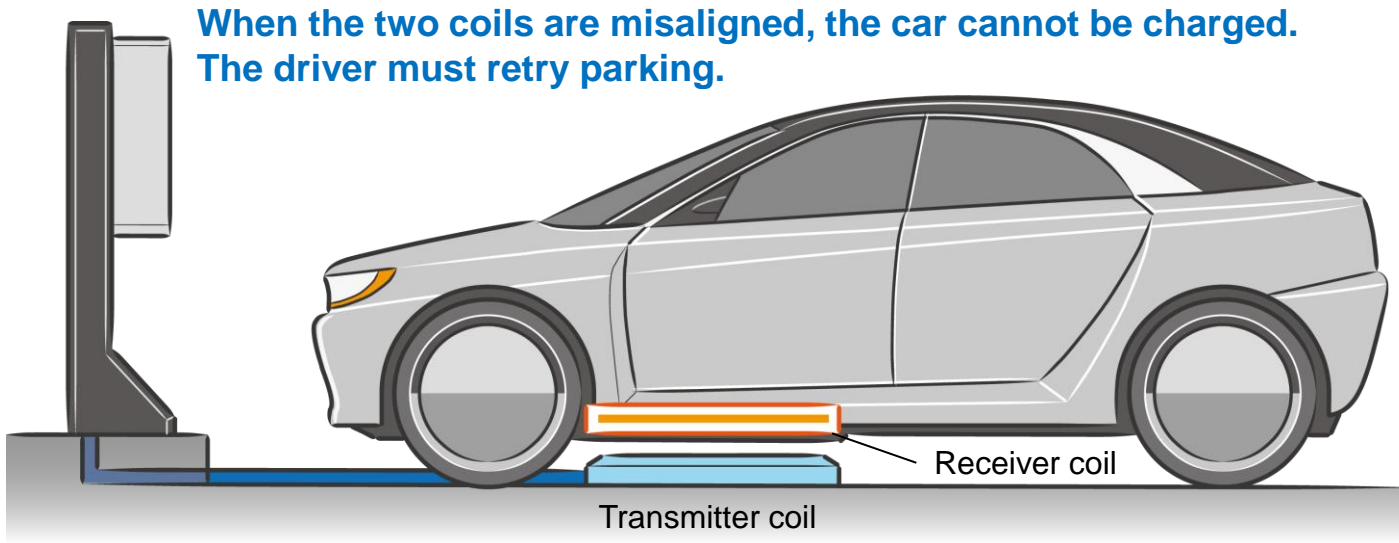
～ Wireless Charging Support for EVs ～

一目で駐車位置がわかる
～ EV向けワイヤレス充電サポート～



Background

In wireless EV charging, a driver must align the receiver coil with the transmitter coil by instinct because the receiver coil is inside the car and the transmitter one becomes invisible as the driver parks the car. Misaligned coils can cause problems such as retry parking and power loss.



Benefits

Benefit of end users

- Just follow the instruction
- No need to retry parking



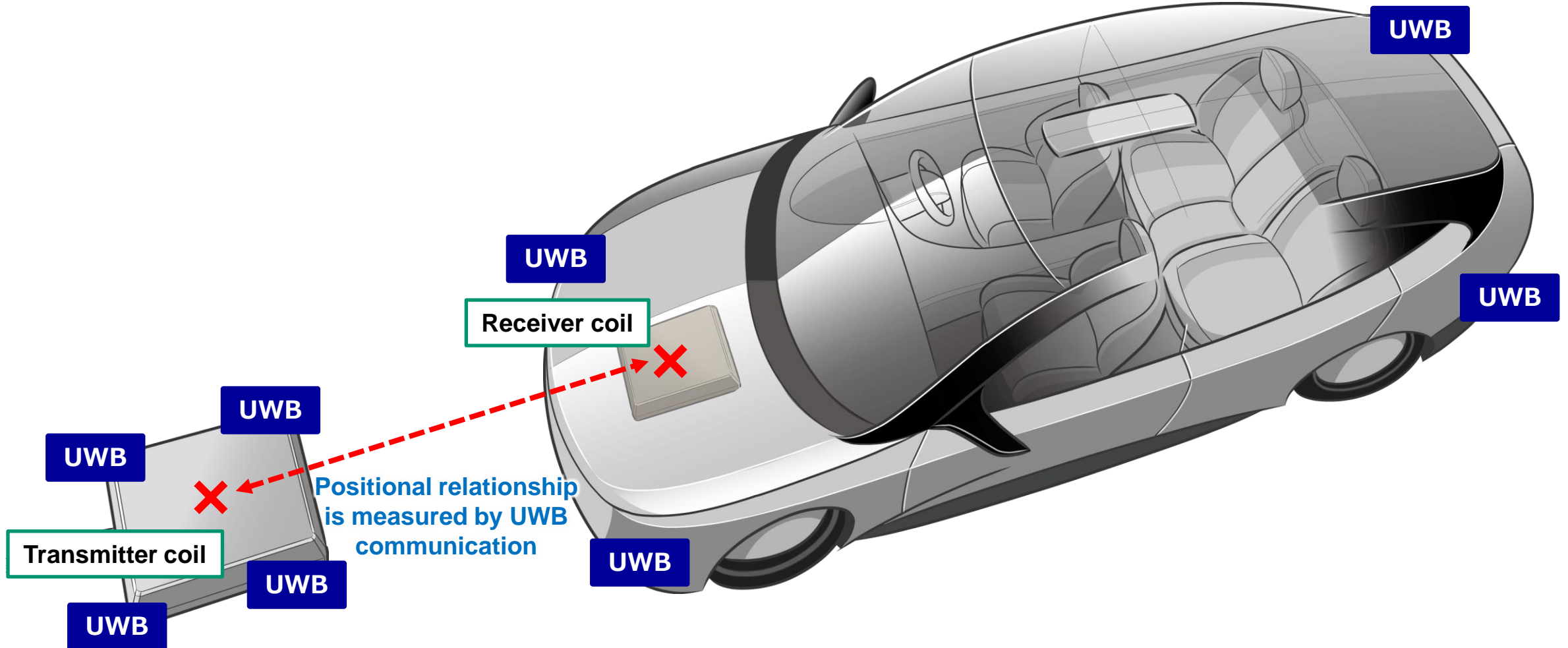
Benefit of service providers

- Less transmitting power loss
- Less cost for equipment maintenance (Prevention of minor collisions)



Content and Overview

- The UWB high-precision ranging function measures the distance and direction between the transmitter coil and the receiver coil to give parking instructions to the driver.
- On-board UWB devices for digital key can serve as a low-cost charging support system.



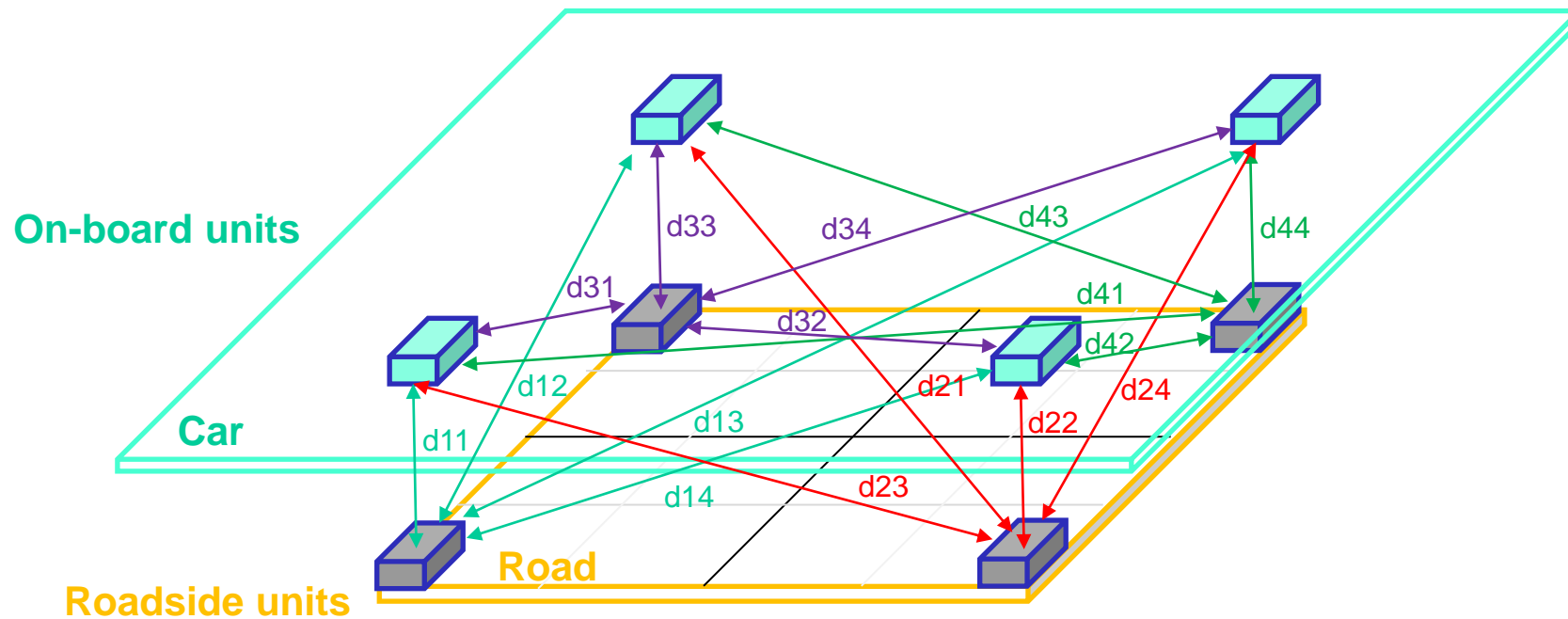
Technology

Multiple UWB units work together to measure distances accurately.

Misalignment detection logic

General UWB ranging has a margin of error about ± 15 cm.

⇒ 16 values measured by 8 (4 + 4) UWB units are used to detect misalignment to centimeter-level accuracy.



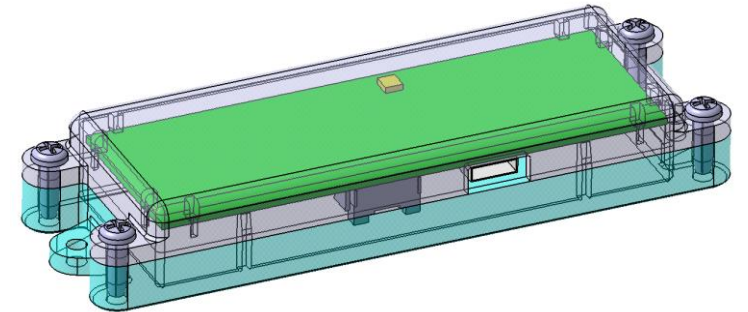
Specification

System

Positioning accuracy	±1 cm
Number of UWB units	Four units on car, four units on road

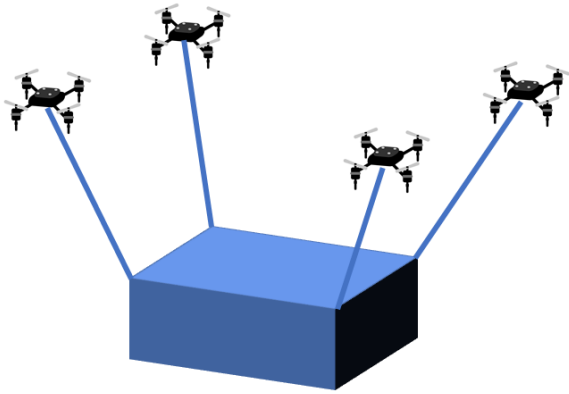
UWB unit

External dimensions	45 x 70 x 30 mm
Incorporated functions	UWB transmitter and receiver circuit, antenna, clocking device
Conforming standard	IEEE802.15.4z
CPU core	32 bit ARM Cortex M4 CPU
Memory area	512 kB Flash and 64 kB SRAM
Interface	CAN FD
Power supply voltage	12 V
Operating temperature range	-40 to +105°C



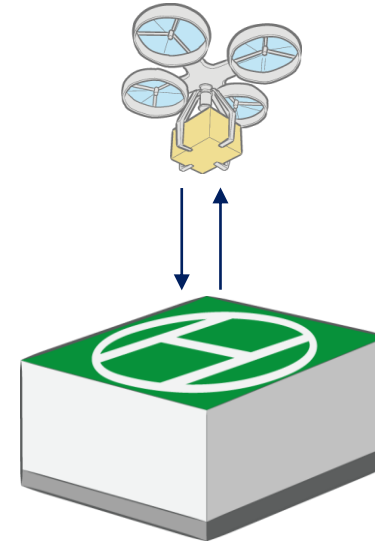
Suggestion of possible applications

■ Systems requiring positioning



Flight of multiple drones

(Example: Ranging of drones flying close to each other)



Drone port

(Example: Ranging to a port while a drone is taking off or landing)