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Development of new positioning technology using reflected UWB radio waves Positioning of people & objects without a terminal

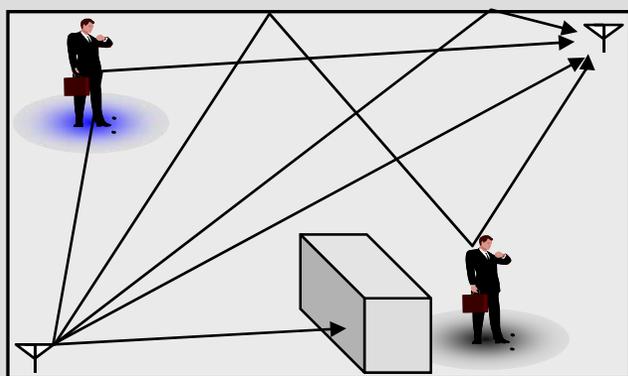


Fig 1. Receiving reflected waves

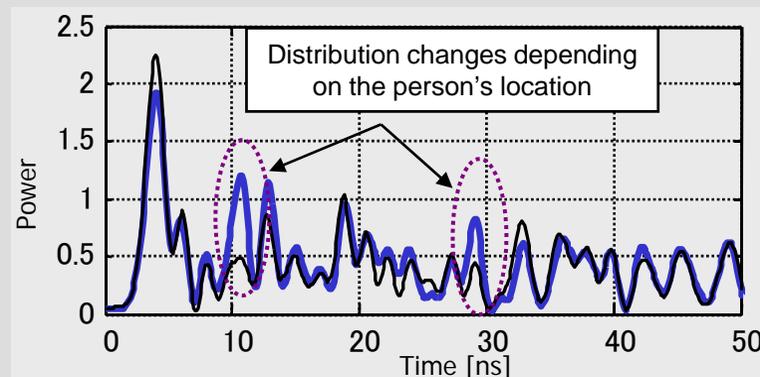


Fig 2. Time distribution of reflected waves

Hitachi, Ltd. has developed and successfully conducted verification tests on the principle of a new positioning technique which uses changes in reflected UWB radio waves to locate the position of a person or object indoors without attaching a tag or terminal to the object being located. The technology makes use of the characteristics of waves reflected in multiple directions when a UWB radio wave hits an object, and the appearance of the impulse waveform which appears as regular short pulse waves of a few nanoseconds(ns; 10^{-9}). By analyzing the reflected waves, which after initially bouncing off an object or walls, may be reflected several times over before reaching the receiver, it is possible to estimate the position of a person or object without attaching a terminal. As radio waves can move around a shield or object, measurement of an object in any location reachable by radio waves can be achieved. In the future, this technology is expected to contribute to a broad range of areas including energy conservation, stock control and security.