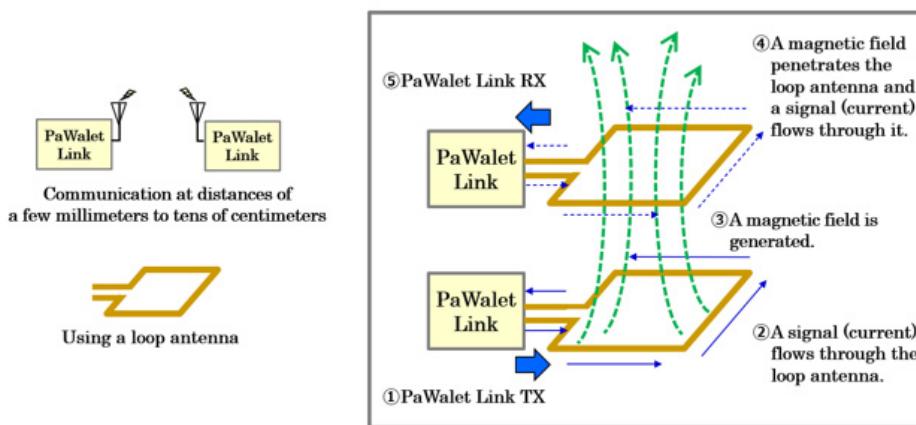


Nov 10, 2021

Flexible Near Field Communication Solutions for the IoT/DX/GX

## Panasonic Develops World's First\*1 Near Field Communication Technology Using Wavelet OFDM

**Osaka, Japan** – Panasonic Corporation today announced that it has developed a secure near field communication technology (hereinafter, "PaWalet Link") using a loop antenna by applying Wavelet OFDM\*2 to a communication method using a magnetic field. As a result, it is possible to limit the communication range from a few millimeters to tens of centimeters. This technology can easily control the communication range by controlling the size of the loop antenna and the transmission power of the communication device. In addition, you can limit the frequency used by selecting the mode/channel.



Overview diagram of the PaWalet Link

In the communication environment of the IoT/ DX / GX era, wireless technology will be used more and more in the future, and the number of connected terminals is expected to increase. As a result, interference among devices is regarded as a problem, and communication methods that can reduce interference are desired.

With the newly developed technology, the range of communication can be easily controlled by applying a loop antenna to wavelet OFDM that so far and communicating with a magnetic field. The wavelet OFDM has functions necessary for robust communication such as error correction, diversity mode, transmission line estimation technology and encryption, and also includes interference avoidance function by carrier sense using CSMA / CA\*3. PaWalet Link also has multiple modes and channels, allowing multiple channels to be formed to avoid interference, such as a wireless LAN. It is ideal for use, for example, in environments where the distance from neighboring devices is extremely close and you do not want to interfere with each other.

In addition, the Wavelet OFDM was originally developed as any wire communication method. Therefore, for example, by constructing any wire communication network on the trunk line and installing an access point for wireless connection as a Pawallet Link at the end, it is possible to easily construct a hybrid communication link between any wire communication and wireless communication.

A specific image of utilization is charging to a mobile using wireless power transmission. During the charging process, PaWalet Link is used to automatically connect the mobile to the network when the mobile stops in the parking space. Next, authentication and registration are performed, charging is started to the mobile after successful completion, and convenience is expanded by being able to communicate data at high speed.

## Main features

- Since it becomes a contactless communication connection using near field wireless communication technology, maintenance performance is improved by replacing from the conventional connector connection.
- In addition to being able to identify the communication range and target, it is also equipped with an encryption function. Therefore, high security and contactless connection can be realized.
- Since interference can be avoided by multiple modes and channel settings, it is ideal for use in environments where you do not want to interfere with each other.

PaWalet Link can also be used as a communication method underwater, so new developments that take advantage of the above features are expected for Beyond5G and others. Panasonic, together with Kyushu Institute of Technology, was selected on October 4 for the "Research and Development of Wireless Communication Technology in water IoT" as a general subject of the "Newly Commissioned Research 2021 in Beyond 5G Research and Development Promotion Project" by the National Institute of Information and Communications Technology (NICT).

## <Main specifications of PaWalet Link>

Communication method	Wavelet OFDM
Maximum communication bandwidth	~110 MHz
Maximum speed (PHY)	1 Gbps
Maximum communication distance	Tens of 'cm'
Maximum number of modes and channels	9 modes / 15 channels

While various devices in society will support IoT/DX/GX and the development of wireless communication technologies such as 5G and high-speed optical access will be accelerated, PaWalet Link will play an important role in the future.

By applying The Pawlet Link, which has these characteristics, Panasonic provides solutions that can respond immediately to the needs of the IoT/ DX / GX era, such as IP networking, high speed and security.

In addition, by utilizing any wire/wireless hybrid communication network using PaWalet Link, Panasonic will contribute to the construction of an optimal network environment from living space to social infrastructure.

\*1 As of November 10, 2021, as a research of a secure wireless communication technology with selectable mode / channel using Wavelet.

\*2 Wavelet OFDM:

Wavelet is a function of a localized wave (a wave that rapidly decays with a finite length) and is used for frequency analysis by applying Wavelet transformation to the data. A kind of discrete Wavelet conversion is utilized for OFDM.

\*3 CSMA/CS:

Abbreviation for Carrier Sense Multiple Access with Collision Avoidance. A method to avoid conflicts when multiple users access the same channel.

## [Inquiries regarding this press release]

Panasonic Corporation Brand Strategy Division Corporate PR Department

<https://news.panasonic.com/global/contacts/>

## [Related Information]

- Results of general issues in the First call for newly commissioned research related to 'Beyond 5 G R&D Promotion Project'.  
<https://www.nict.go.jp/info/topics/2021/10/04-3.html>

\*The case study of Kyushu Institute of Technology and our company is described in (17). (Japanese site only)

## About Panasonic

Panasonic Corporation is a global leader developing innovative technologies and solutions for wide-ranging applications in the consumer electronics, housing, automotive, and B2B sectors. The company, which celebrated its 100th anniversary in 2018, operates 522 subsidiaries and 69 associated companies worldwide and reported consolidated net sales of 6,698.8 billion yen for the year ended March 31, 2021. Committed to pursuing new value through collaborative innovation, the company uses its technologies to create a better life and a better world for customers. Learn more about Panasonic: <https://www.panasonic.com/global>.

*\*The content in the following news releases is accurate at the time of publication but may be subject to change without notice. Please note therefore that these documents may not always contain the most up-to-date information.*