# LPWA－The Best Choice for IoT Equipment Connection

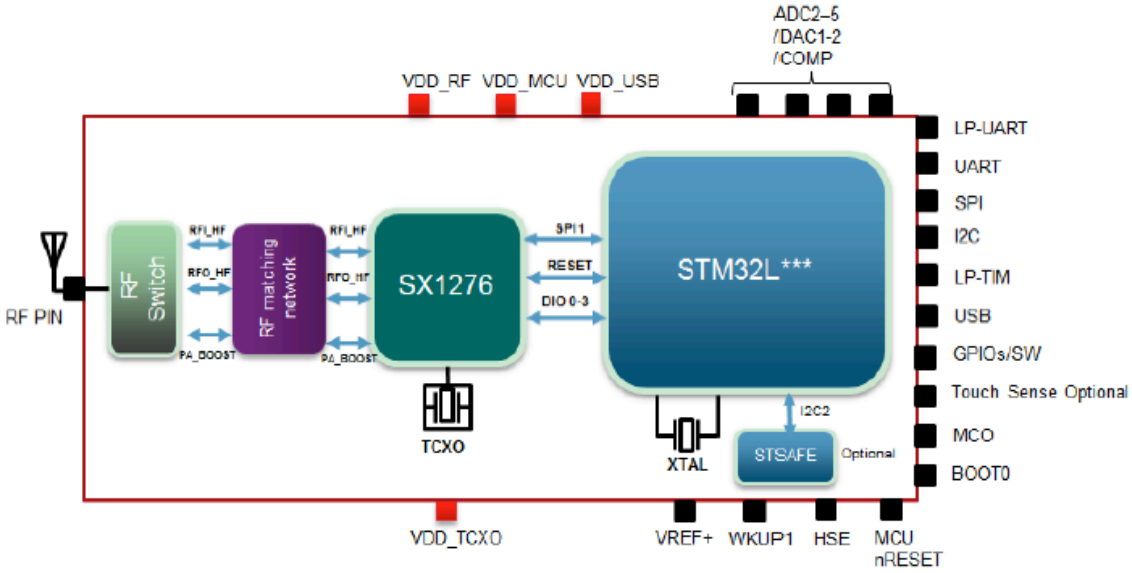
It is about time for the full-fledge launch of IoT. Yet, “The connection of things” remains a critical problem. There are several solutions for online connection for the time being and each has its advantages and disadvantages. The following is a solution called LPWA (Low-Power Wide Area), which is one of the best choices for IoT online connection.

# LPWA-better business opportunities for IoT

LPWA refers to low-power wide area wireless technology for supporting IoT application. This type of application usually requires low-power consumption and achieves a wider range of coverage. The data transmission speed is relatively lower than other wireless communication technologies commonly used, such as Wi-Fi, Bluetooth, and mobile networks. Yet, the LPWA technology is expected to be extensively applicable to IoT and M2M, as it could reduce the power consumption of

the equipment connected online. For this reason, people started to pay attention to LPWA, which is the synonym for a type of wireless communication technology with low-power wide area transmission features that are not limited to any one particular technology or service.

LPWA could be run at a lower cost with higher performance. It could even perform better two-way transmission and support more equipment. Part of the LPWA technology adopts the Sub-GHz band for operation at a longer distance. The area of application for LPWA is extensive, including social infrastructure, smart home, agriculture, environment, medical and health care, industrial use, logistics, public utilities (water and gas measurement), energy, smart construction, smart city, smart parking, GPS tracking, and consumer products. As forecasted in the market, there will be 700 million IoT equipment connected online by the LPWA network by 2021, and about 11% of the IoT will be connected by LPWA by 2025, like LoRa, Sigfox, and LTE-NBI and the market for the server will amount to USD7,500 million.




There are several forms of LPWA technologies available in the market, such as Sigfox, LoRa, NB-IoT, Wi-SUN, DASH7, ZigBee and Z-Wave, but only Sigfox, LoRa, and NB-IoT could be key players. Sigfox and LoRa do not require a designated frequency band (ISM band) but NB-IoT requires the designated band in cellular network.

In Europe and the USA, a number of smart city validation experiments are in progress, which triggered the needs of LPWA, “The kind of low-power network wireless technology”. This made LPWA attract increasing attention in the world. The substantive use of this technology includes the meter reading of water supplies and

natural gases, as well as cloud-based truck location data sharing management, retail shops and inventory control of automated vending machines, family security, and weather forecast. Under certain circumstances, LPWA has replaced the Wi-Fi and cellular network application in the market. Despite this distinct advantage, the acceptance of the specific features of LPWA, which is a lower capacity of data transmission to achieve low-power consumption and wide area, will be a trade-off.
Murata is a manufacturer of ceramic electronic components like multiple-layer ceramic capacitors, surface acoustic wave filters, and ceramic resonators, and is also a potential producer with focus on LPWA. Murata has joined the LoRa Alliance™ and engaged in joint ventures with STMicro and Semtech with the design of an economic high-performance compact LoRaWAN™ module and could support a variety of sensors and long-distance wireless protocol. The Murata CMWX1ZZABZ module has been approved by the competent authority of wireless communication and could be used in the industry, science and medical (ISM) band in most areas of the world at 868 and 915 MHz. The LoRa platform provides accredited developer module hardware and software.
Murata participated in the LPWA worldwide and started to produce the “LoRa” module compatible with the LPWA standard. In addition, it has announced to engage in a joint venture with SoftBank for promoting the LPWA and IoT service in Japan and is about to launch the solution for the management of LPWA and Bluetooth combination. One of the advantages of Murata is that it could provide full-range support in RF accreditation, software development in conformity to the specific requirements of related countries or to the demand of the customers.
Further to the supply of parts and components, Murata also proactively participates in activities all over the world for speeding up the application of LPWA technology. Murata has already provided products and support service to Sigfox and LoRa, and also developed the cellular network of NB-IoT at the same time. NB-IoT adopts the cellular network already in service, which allows for high reliability of the network. This form of reliability has attracted the attention of the enterprises interested in LPWA. The increasing attraction of the LPWA to Murata drives it to provide more products and service in this new era.