

IQRF technology a new standard for wireless mesh networks



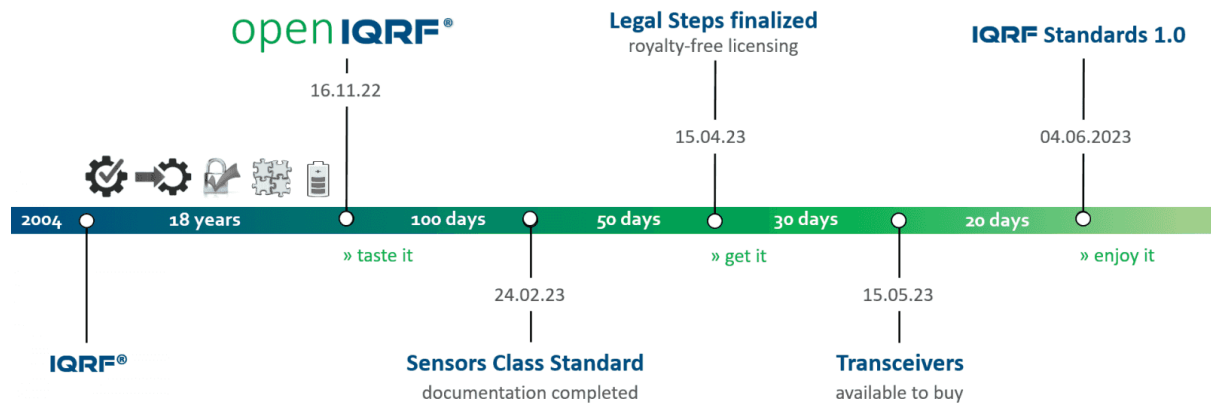
05 DECEMBER 2022

Open IQRF introduced as the first completely open and free IQRF standard for wireless mesh networks.

The Czech IoT IQRF technology for wireless mesh networks has been continuously improved since 2004, an extensive ecosystem has emerged around the technology, and its uniqueness is evidenced not only by dozens of granted patents but by almost a million various IQRF devices around the world.

Dr. Vladimír Šulc, IQRF Alliance CEO, presented the first completely open IQRF standard for wireless mesh networks at the Wireless Congress in Munich, which allows any manufacturer to integrate this low-energy, reliable, and proven wireless technology into their IoT devices without any license fees.

For this purpose, the non-profit organization IQRF Standards Association was founded on November 15, 2022, which will ensure the publication of IQRF standards and access to all relevant patents in the patent pool. Open IQRF standards will thus simply be licensed under a single free license. An ambitious plan to publish IQRF standards and complete legal action in just 200 days was announced at the conference.

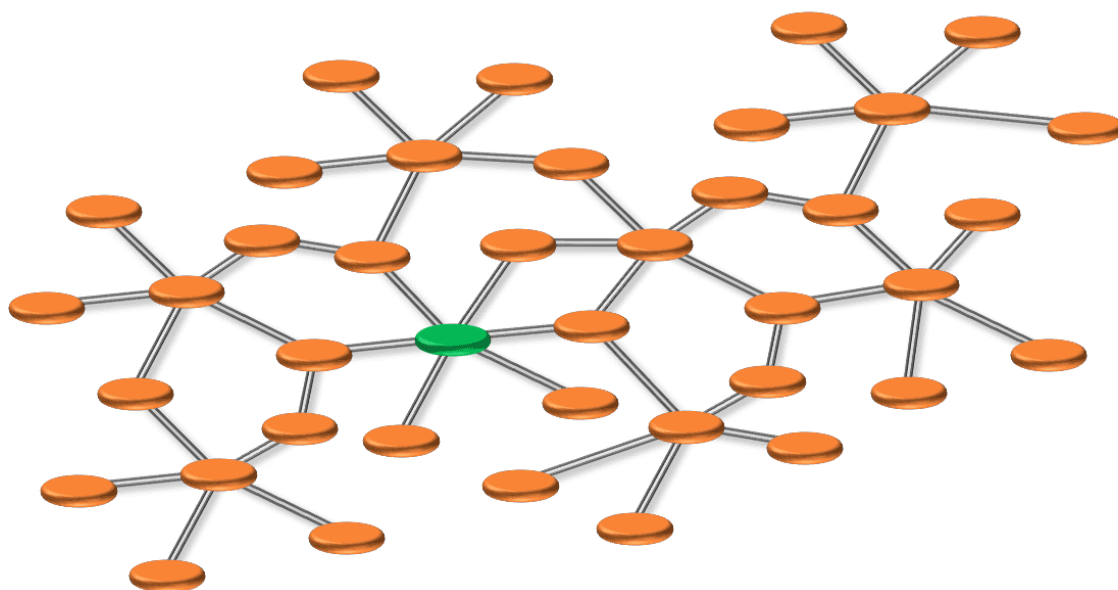


Unique features of IQRF® technology

Industrial reliability

The reliability of each communication system is determined by the robustness of the communication protocols used. IQMESH® is a unique communication protocol for IQRF wireless mesh networks (see www.iqrf.com technology) based on directional flooding using TDMA. This ensures collision-free routing, which is also completely deterministic in time and independent of the topological arrangement. Routing based on the IQMESH protocol can also easily deal with local connection failures, whether they are due to interference or obstruction. In source-routing algorithms, the control device defines the transmission (routing) path. In case of temporary outages, it is necessary to find alternative paths. Thanks to our optimized directional flooding, the message is delivered automatically during the same routing frame. Of course, if there is any connection between the sender and the recipient.

Networks based on the IQMESH protocol are organized and controlled. The coordinator serves as the control device for other network devices. These can work in router mode (repeater, router) or as a periodically transmitting sensor that sleeps most of the time.



The FRC – Fast Response Command® protocol is used for network management and data aggregation from devices (see [www technology](#)). Put simply – in the first phase, a given message (command) is spread throughout the network, in the next phase, each device broadcasts its data, which the routers remember, and in the third phase, all data is gradually sent back from the most distant one to the coordinator. The time of the entire process of mass data collection is deterministic and is an order of magnitude shorter than it would be in the case of gradual reading of data from individual devices.

IQRF True Low Power®

IQRF devices can work in different modes (see [www technology](#)). Thanks to the low average consumption, battery-powered devices can operate for decades without changing the battery. The limit, for example, for sensors in beaming mode is the lifetime of the battery itself, not the consumption of the device. An example is a temperature sensor sending data regularly every 4 minutes. The capacity of the AA LiSClO₂ battery will allow data to be sent for 40+ years, but the manufacturer's guarantee of battery life is only a quarter.

Interoperability

Application interoperability has been defined by freely accessible documents on the IQRF Alliance website for several years, and the IQRF Alliance provides certification of products meeting this application interoperability (see [www IQRF Alliance](#)). The devices are then communicated with in a uniform manner, which simplifies the integration of products from different manufacturers.

Thanks to standardization, it will be possible to maintain interoperability on the communication layer even with devices from different manufacturers without the need to use uniform hardware or transceiver modules. The publication of the standard will thus allow any manufacturer to integrate low-energy, reliable and field-proven IQRF wireless technology into their IoT devices without any license fees.

You can follow the current status of IQRF technology standardization on the [IQRF Standards Association](#) website.