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2017 Colloquium
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The development of 230MHz power wireless communication technology

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In recent years, China is strengthening the investment of the distribution network on a large-scale. The distribution network's scale and intelligent level is constantly improving. Electric vehicles, energy market, marketing model, clean energy access are experiencing a historic change. The entities in the China electric power communication access network are to reach 20 million. there are many issues of communication access network performance, suitability, and security that need to be resolved.

230M Hz is special wireless spectrum resources for electricity power system in China. Traditional 230M Hz wireless communication technology using digital radio technology, suffering low data rate, cannot meet the existing power wireless access network needs.

This article focuses on a wireless communication system for power communication based on 230MHz radio frequency. The system uses spectrum aggregation technology to combine a number of 25k discrete frequency spectrum to achieve wideband communication, applies

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specific digital filter design technology to achieve efficient filtering, utilizes OFDM modulation technology to improve the spectrum utilization, and introduces always-online technology to support 2000 terminal / sector. The 230M Hz system has wide coverage, high reliability, low latency, strong spectrum adaptability and other characteristics, achieving data, voice and video two-way communication.

In November 2016, an outdoor performance test is performed in Meishan, Sichuan Province, China. The test result showed that the system maxim coverage reached 26km, under the condition of 5M radio bandwidth, the upload peak rate was 8.3Mbps, and the system upload spectrum efficiency (1.66bps / Hz) was higher than that of standard LTE system (1.58bps / Hz).

In Haiyan, Zhejiang Province, China has built LTE230 system test network, using seven macro base stations and four micro base stations to achieve coverage area of 500 square kilometers, supporting meter automated reading, distribution automation, distributed power, electric vehicle Charging Piles and other ten types of applications. The test network has connected more than 6,000 terminals. The network has stably operated for more than 2 years.

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