WIGIG/WIRELESS HD

The Wireless Gigabit Alliance known by the technical specification 802.11ad, was formed to provide a single multi-gigabit wireless communications standard among consumer electronics, handheld devices and PCs, and drives industry convergence using unlicensed ISM (industrial, scientific and medical) 60 GHz spectrum. The WiGig specification allows devices to communicate without wires at multi-gigabit speeds. It enables high performance wireless data, display and audio applications that supplement the capabilities of previous wireless LAN devices.

Today, the latest 802.11ac spec connects at up to 1Gbps using the 40GHz radio band. One potential early application is monitoring a building using extremely high-definition video cameras that send their signal over Wi-Fi instead of a wired connection.

802.11ad, this new Wi-Fi protocol will connect at theoretical speeds of more than 8 Gbps using the 60GHz radio band. Utilizing the wider 60GHz unlicensed spectrum, provides flexibility to support the needs of both existing and future applications for mmwave communication devices to provide multi-gigabit data transfer capability up to 8Gbps. WiGig tri-band enabled devices, which operate in the 2.4, 5 and 60 GHz bands, deliver data transfer rates up to 8 Gbit/s, about as fast as an 8-band 802.11ac transmission, and more than 11 times faster than the highest 802.11n rate, while maintaining compatibility with existing Wi-Fi devices. The 60 GHz signal cannot typically penetrate walls but can propagate off reflections from walls, ceilings, floors and objects using beamforming built into the WiGig system. When roaming away from the main room, the protocol can switch to make use of the other lower bands at a much lower rate, both of which can propagate through walls.

One of the features of WiGig microwave Wi-Fi is the aspect of antenna beam management. The very high frequencies used means that the antennas are very small and this makes the development, manufacture and use of the phased arrays required for this a feasible proposition.

Features of WiGig:

- **High performance:** Multiple ultra-wide channels to enable faster data rates of up to 8 Gbps within a 10-meter range.
- **Low latency:** 60 GHz spectrum provides greater bandwidth to enable real time data transfer of uncompressed high speed video.
- **Power efficiency:** Wide range of operating modes that provides flexibility between battery life and performance making it suitable for a wide array of usages including handsets and VR headsets.
- **Increased capacity:** Beamforming removes cluttered bands and channel sharing between neighboring APs.

Extended Range support: Additional features that support the needs of long range mmWave links.

Applications

The features of WiGig technology reach many market segments in both consumer and business applications including:

Wireless docking: WiGig bring the wireless office closer to fruition, allowing a number of peripherals to be connected without wires and without compromising quality.

Multimedia entertainment: WiGig advances the multimedia entertainment experience offering extremely high frame rates and uncompressed HD streams for an unparalleled gaming or movie viewing experience

Augmented and virtual reality: WiGig provides the low latency, high definition rendering of minimally compressed or uncompressed ormats giving a more immersive experience and helping to extend the AR/VR audience.

Public kiosks: WiGig opens new opportunities for public kiosk applications by allowing users to obtain products and services quickly, securely, and wirelessly.

Enterprise connectivity: Multi-band access points that include 60 GHz support will dramatically increase Wi-Fi capacity to provide general connectivity to users, while also creating the ability to process high throughput for bandwidth intensive applications.

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"Success is not the key to happiness. Happiness is the key to success. If you love what you are doing, you will be successful."- Herman Cain