

WAVE Wireless Communications

WAVE (Whisper Android Vehicle Enhancement) is a covert, high-bandwidth 60 GHz (WiGig) RF communications technology with inherent LPI/LPD characteristics for localized communications and data sharing. The technology leverages WiGig, also known as 60 GHz Wi-Fi, as a high-bandwidth, commercially available wireless standard (IEEE 802.11ad AND 802.11ay). Use of this standard avoids proprietary hardware/RF protocols while demonstrating speeds up to 7Gb/s.

High-Bandwidth Communication + LPI/LPD

The WAVE capability leverages our high-bandwidth 60 GHz RF technology called **Whisper**. This technology provides higher bandwidth compared to lower RF frequencies as well as LPI/LPD characteristics due to the WAVE frequency being absorbed by atmospheric oxygen, yielding a known and limited RF range.



Extremely Small Form Factor

High frequencies, like those used by Whisper, require very small antennas/space claims. This is advantageous because not only is the waveform covert, but so is the complementary hardware due to its small form factor – making it easier to transport, conceal, and implement into a vehicle.



Quick Assembly and Rugged Design

Quick assembly with no tools required. Integrated with the S20/S23 Juggernaut OPRTR case. IP 67 rated. Pass-through power/data from battery/radio (i.e., doesn't pull power from phone). TAK integration via our Whisper Wireless Access Point.



CHARACTERISTICS

Waveform

- WiGig 60 GHz Wi-Fi
- IEEE 802.11ad
- IEEE 802.11ay

Speed

Up to 7+ Gb/s

Encryption

Unencrypted, AES 128, or AES 256

Beamforming Capability

- Increased Reliability
- Better LPI/LPD
- Not subject to Humidity
- Not subject to Dust

Vs. Lower RF Frequencies

- Much Higher Bandwidth
- Inherent LPI/LPD

Example Use Cases

- Local TAK bubble w/in Vehicle during low/no-vis missions.
- Intra-vehicle wireless communication network.
- Future Enhancements: V2V and V2X comms, covert wireless data exfil.



BACKGROUND

The Whisper technology, which serves as the backbone of the WAVE capability, was initially developed for the USAF Special Warfare Technologies Office in 2018/2019. It created a Personal Area Network (PAN) with the technology. Since then, the technology has been successfully demonstrated at numerous events, including Trident Spectre '20 and '21 (Red Teamed by JVAB '20/'21), SOCOM TE 19-3, and SOCOM TE 22-3. Current funding for the technology is provided by the US Army (with SOCOM as the end-user), SOCOM S&T, and commercial partners.

PROTOTYPE WAVE KIT

Whisper Wireless Access Point (WAP): Provides a WiGig wireless hot spot within a vehicle. The Whisper Wireless Access Point may also include an integrated TAK Server.

Whisper Android Adapter: The Whisper Android Adapter is designed for the Samsung S20 or S23 Tactical Edition housed in a Juggernaut OPRTRR Phone Case. Wirelessly connects to WAP.

Additional Add-ons: Slot for a TAK Server (COTS), a slot for a FlexPac Battery, and other miscellaneous cables and/or accessories.



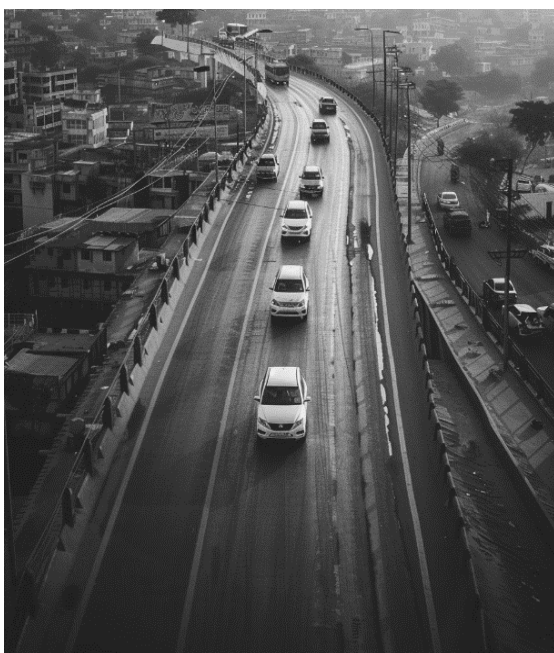
TECHNOLOGY STATUS

Status: Initial prototype design currently in build state – reference photo to the right.

Forward-Looking Design Plans: Reduced size and weight is planned for the advanced prototype.

System Demo & User Assessment: The system demonstration and user assessment for the completed WAVE kit is planned for early 2025.

Ongoing Development: The WAVE capability is continuing to improve through ongoing development focused on vehicle antenna design, manipulating the waveform, and dead drop EXFIL design.



WHISPER



Android Adapter

*Designed for S20/S23 in
Juggernaut OPRTRR Phone Case.
Production version is Black Anodized.*