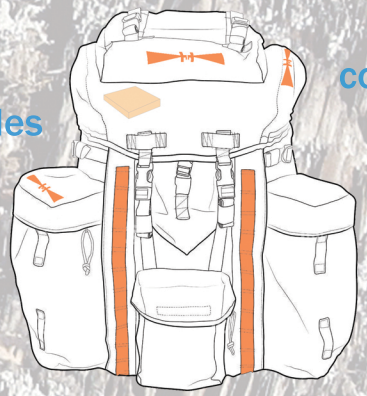
bluewater defense

Vorbeck

Antennas Embedded into Everything

Conformal printed graphene antennas – robust, high-gain, low-cost, discrete – can be embedded directly into clothing and gear. We have the ability to create active and array antenna systems and to customize to specified bandwiths for maximum utility. Vorbeck & Blue Water Defense have the scale to impact the military now.

low cost modules



conformal antennas

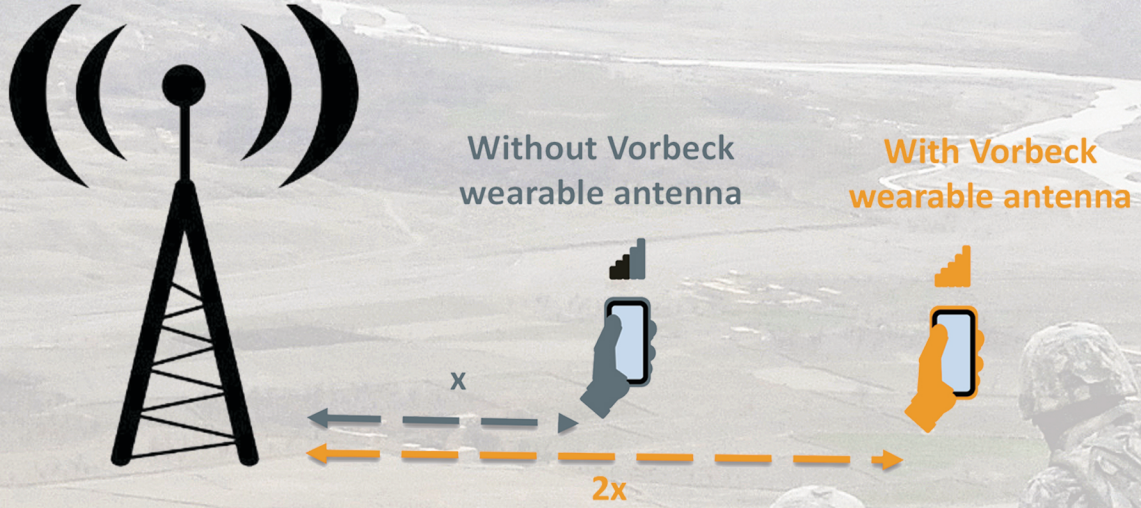
flexible power solutions

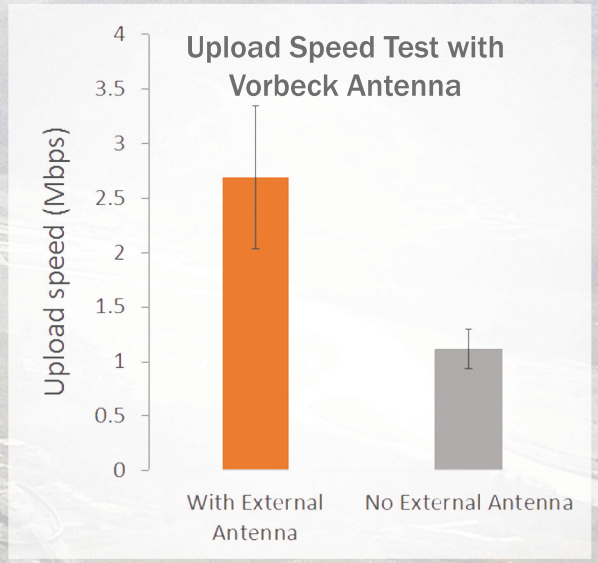
For more information, please visitvorbeck.com

Vorbeck

INCREASED COVERAGE

Vorbeck wearable antenna increases cell phone performance by 200%

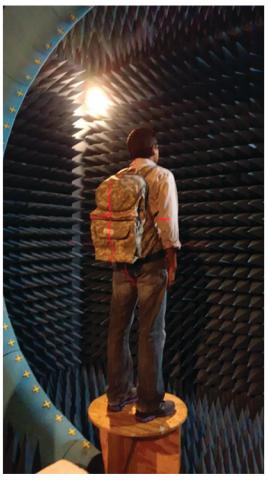


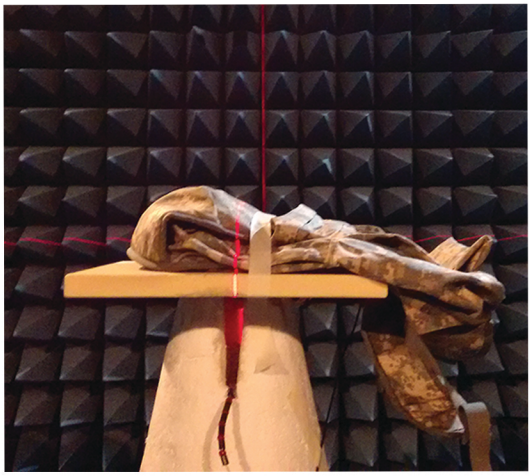


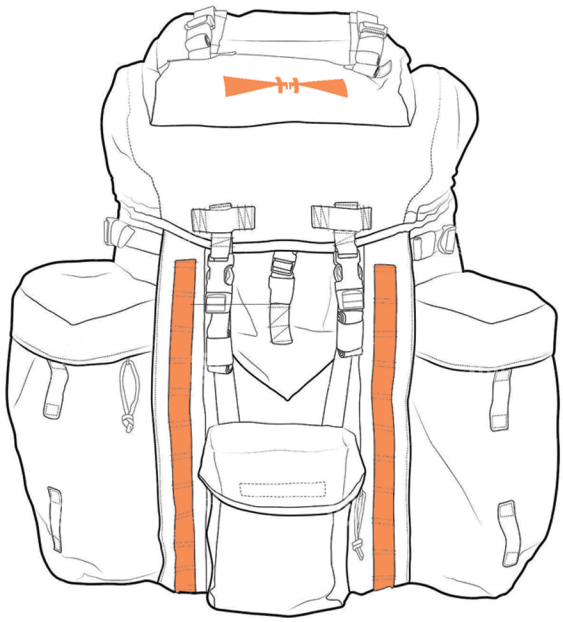
bluewater defense

Vorbeck 4G LTE Antenna

In order to improve cellular phone reception and increase data speeds, we have created a printed external 4G LTE antenna incorporated into a backpack. These antennas can also be incorporated into clothing or the fabrics worn by the user. Multiple antennas can be incorpoated throughout to create omnidirecitonal coverage.

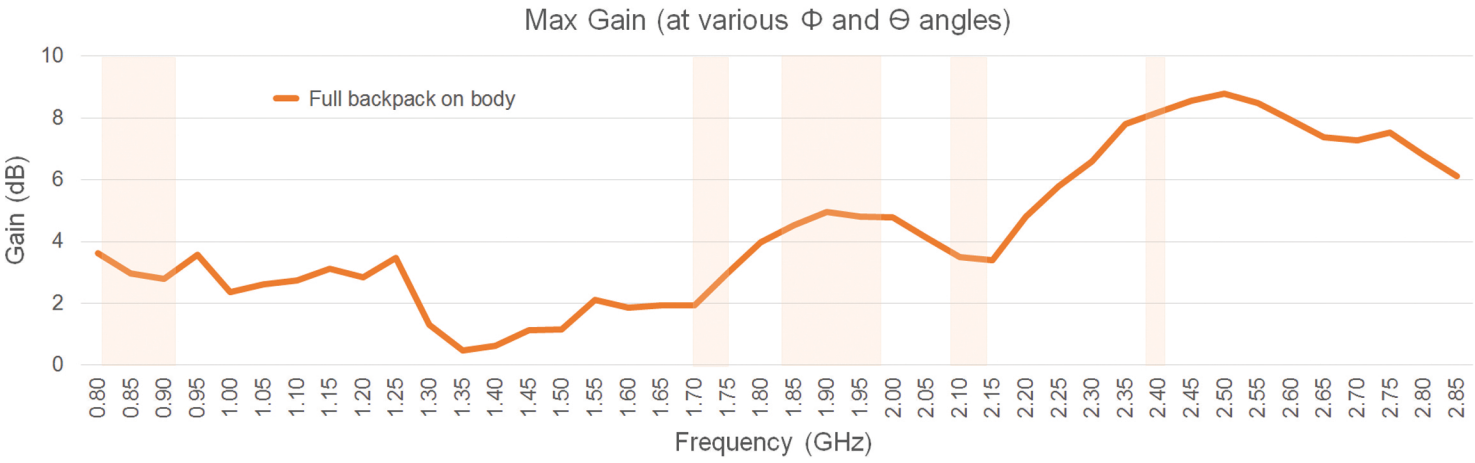






Specifications:

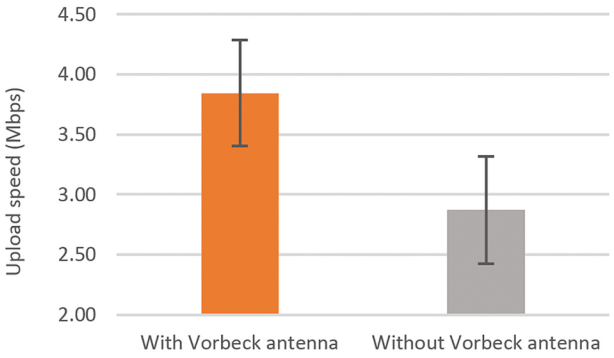
- Frequency range: 824 - 894; 1850-1990; 2400-2500 MHz
- Max Gain: 3.8 dB (850 Band); 5 dB (1900 Band); 8 dB (2.4 GHz)
- VSWR: 2:1
- Free Space 3dB Beamwidth: 60°
- Impedance: 50 Ohms
- Termination: SMA

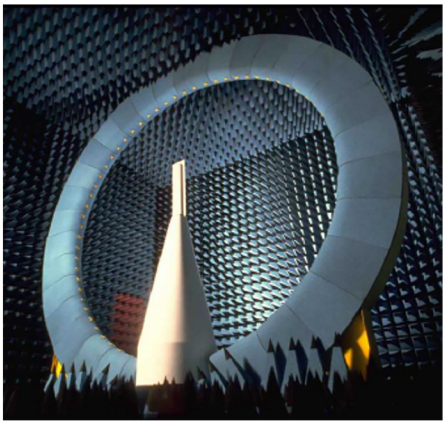


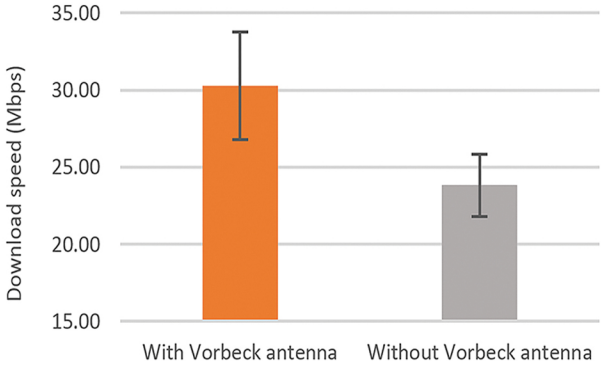
The gain of a single broadband antenna incorporated in a backpack was measured at all theta and phi angles across a wide frequency range with the backpack filled with books and liquid containers in freespace and worn on-body. The maximum gain is displayed above with 4G LTE bands 2/25, 4, 5, and 2.4 GHz WiFi frequencies highlighted on the chart.

Vorbeck 4G LTE antenna

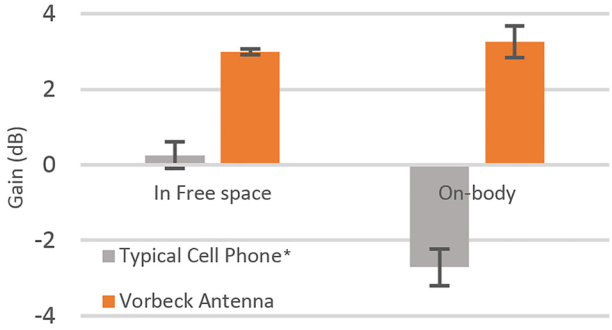
Impact on download and upload speed in low signal environment





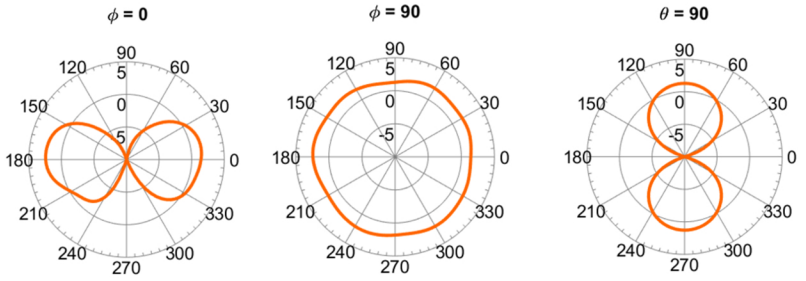


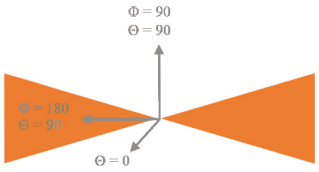
Comparison to cell phone



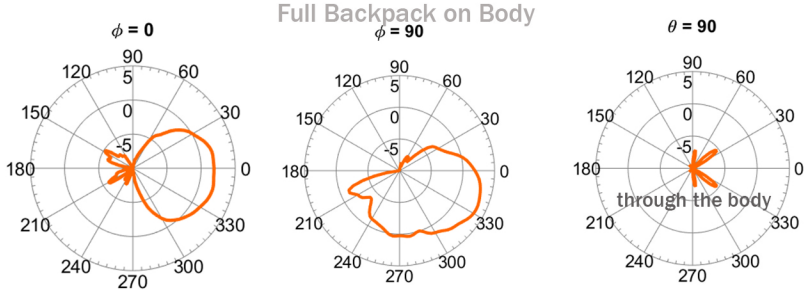
Radiation Pattern (870 MHz)

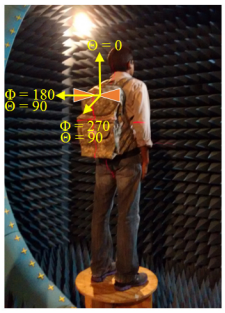
Free Space





Full Backpack on Body





All title, ownership rights and intellectual property rights in and relating to this handout or any copies thereof including but not limited to copyright, logos, names, trademarks, service marks, design, text, images, and data are the sole property of Vorbeck Materials. Any reproduction, transmission, publication, performance, broadcast, alteration, license, creation of derivative works or other use in whole or in part in any manner without the written consent of Vorbeck Materials is strictly prohibited. By reading this material, you will be deemed to have agreed to the obligations and restrictions set out above.

Vorbeck antenna performance was measured in a SATIMO calibrated spherical near field chamber. *Typical cell phone numbers are from Mobile antenna handbook, antenna-theory.com and various other online sources available upon request.