

Miniaturized Wideband Smart Antennas for Smartphones & Tablets

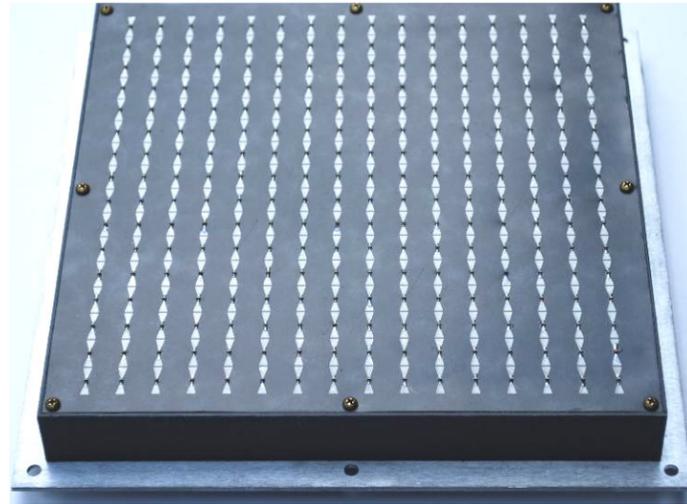
- Switchable impedance and pattern that smartly adapt, in *real time*, to operation and installation environments
- Multiband/broadband based on low-Q high-efficiency radiators (patented)
- Built on Miniaturized Ultrawideband Multifunction Antenna technology (patented)
- Can be integrated and embedded into PCB structure of host platform
- Low-cost



Planar Multioctave Traveling-Wave Array Antenna (TWAA)

Low-cost broadband planar phased array antennas: demonstrated at TRL-7 & MRL-7

- 6:1 bandwidth (2-12 GHz)
- Wide-angle scan $\pm 60^\circ$ off broadside
- Linear polarization (X-pol ~ -20 to -30 dB)
- High efficiency (has conducting ground plane and no dissipative matching)
- Thin and lightweight
- Low costs
- U.S. patent #8,264,410 B1, September 11, 2012 (filing date July 31, 2007)



Note: The 16x16 array panel shown has 256 SMA connectors for connection to Beam-Steering Network.

Other Products (custom design):

- Ultrawideband photonicly controlled array
- Software radio antenna system
- Multifunction automobile antenna
- Basestation array antenna
- Indoor antennas
- Automobile SATCOM antenna



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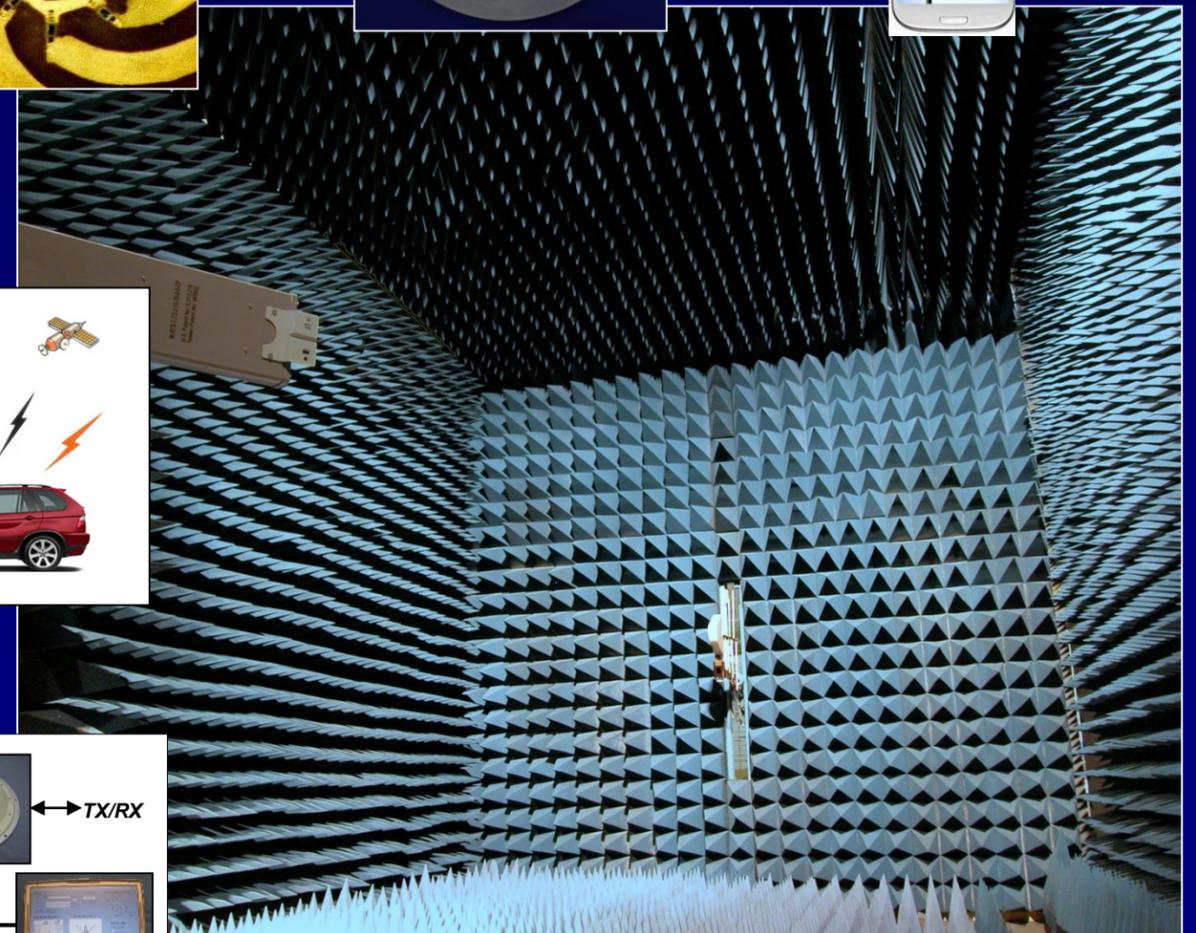
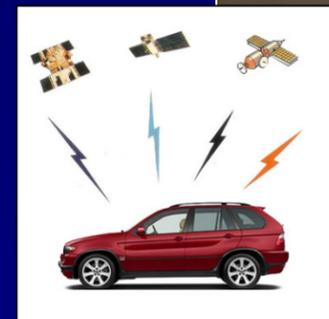
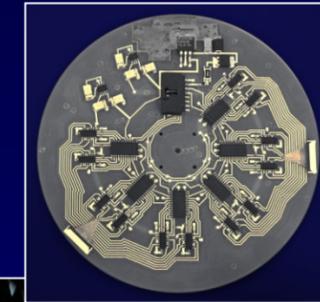
WEO



WANG ELECTRO-OPTO

SINCE 1991

“Antenna Solutions for Broadband Wireless”



Company Highlights

- A Georgia corporation, founded in 1991.
- Antenna technologies –broadband/multiband, smart, low-profile, conformable, low-cost antennas and beam-steering arrays. (Protected by two dozen patents, SBIR data rights, etc.
- Broadband antenna products for existing and future needs in global civilian and military broadband wireless markets.
- Full research, testing, and fabrication facilities for prototype development and small-scale production of antennas and related systems, including 32' x 18' x 16'(H) indoor anechoic antenna test chamber for 0.2–20 GHz.
- Strong software and analysis capabilities in antennas, electromagnetics, microwave, photonic controlled systems and wireless systems.
- State-of-the-art research funded by U.S. Army, Navy, Air Force, SOCOM, DARPA, NASA, NSF, etc.
- Close relationship with several leading U.S. research universities with access to their personnel and facilities.
- In-house and strategic outsourcing for production.

Ultrawideband Miniaturized Omnidirectional Antennas

- Multioctave bandwidth covering many applications (e.g., JTRS)
- Instantaneous bandwidth up to 140:1 or more
- Omnidirectional coverage
- High efficiency
- Thin and conformable for small platforms such as cellphones and UAVs (unmanned aerial vehicle)
- U.S. Patent 8,497,808 B2, 30 July, 2013; U.S. Patent 8,669,907 B2, 1 March 2014

Global Navigation Satellite System (GNSS) Antenna

- Covering Global Navigation Satellite System (GNSS) including GPS, GLONASS, Galileo and BeiDou.
- More stable phase center, thus higher precision than antennas
- Higher elevation cutoff angle and minimal sidelobes backlobes, thus minimizing interferences from terrestrial sources
- Available with and without amplifiers
- Low cost and high performance
- U.S. Patent 9,065,176 B2, 23 June 2015, etc.



other

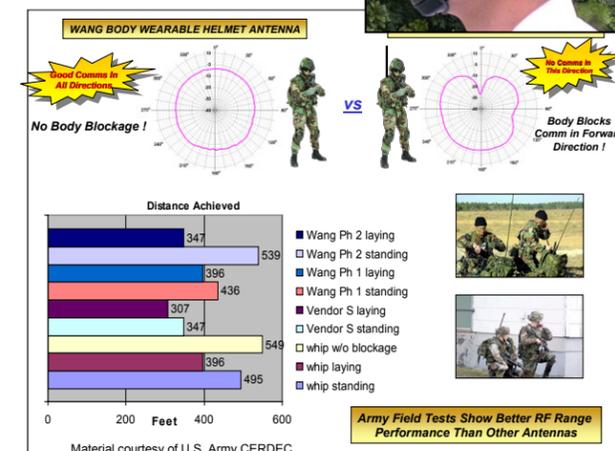
and

Body Wearable Antennas

Helmet or vest mounted antennas, with pattern coverage smart (adaptive) or omnidirectional

Omnidirectional helmet antennas:

- Broadband, covering 1350–2700 MHz (300–3000 MHz feasible)
- Conformally integrated into helmet; invisible
- Rugged and low weight (2 oz.)
- Stable omnidirectional communications regardless of body movement and position (unique helmet advantage)
- Field-retrofit into standard Kevlar helmets
- No physical or RF hazard to the wearer
- Outperforms all other antennas demonstrated in U.S. Army laboratory and field tests



Miniaturized Ultrawideband Multifunction Antennas

- Multifunction (omnidirectional and/or unidirectional)
- Mutiband and multioctave bandwidths
- For omnidirectional, instantaneous bandwidth up to 140:1 or more
- Miniaturized and conformal to platforms and low cost
- U.S. Patent 9,024,831 B2, 5 May 2015



Wideband Smart Antennas for WLAN

Circular beamsteering smart arrays featuring:

- Low-cost beam forming array
- Up to 2:1 instantaneous bandwidth
- Gain between 5 and 15 dBi
- Steerable beams with 360° azimuth coverage
- Disk-shaped and low-profile, suitable for mounting on a platform
- Software for beam steering implemented according to customer application needs

