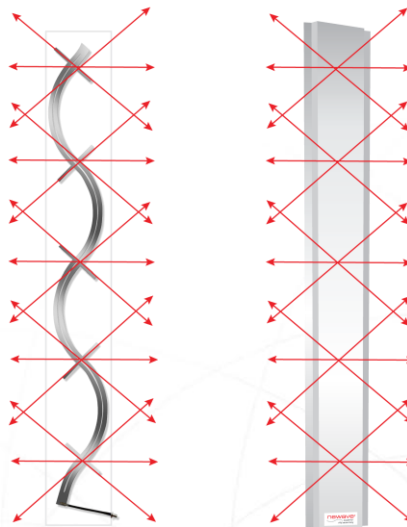




Antenna *Product Overview*



About newave® Sensor Solutions

- Develops optimized solutions for today's most challenging item-level RFID problems
- Offers an open technology platform based on the breakthrough patented wave® antenna
- Technology developed by the world-class Electro Science Laboratory of The Ohio State University. Founded 2007: Dr. Den Burnside CTO, former Director and Emeritus Professor at ESL and The Ohio State University
- Wistron NeWeb Corporation (WNC), the Taiwan-based global leader in antenna manufacturing, is a significant investor and supplier to newave
- newave's wave antenna advances the state of the art of RFID antenna design and delivers a solution that is easier to install, in more places, and for more applications. The wave Antenna is the Platform of our Technology
- newave's management team leverages a strong heritage in the RFID and retail industries for its mission of providing optimized solutions to today's greatest RFID challenges.

newave[®] Partnerships

Ohio State ESL and WNC



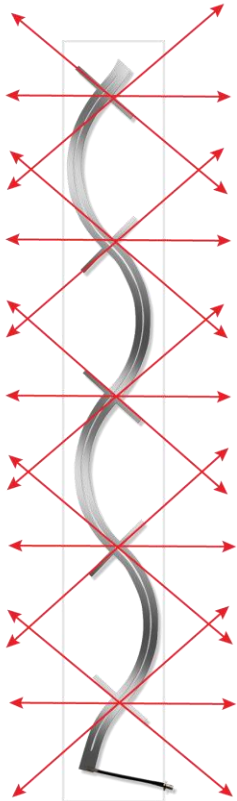
THE OHIO STATE UNIVERSITY
ELECTROSCIENCE LABRATORY

Advanced Research
and Testing

WNC
Wistron NeWeb Corp.

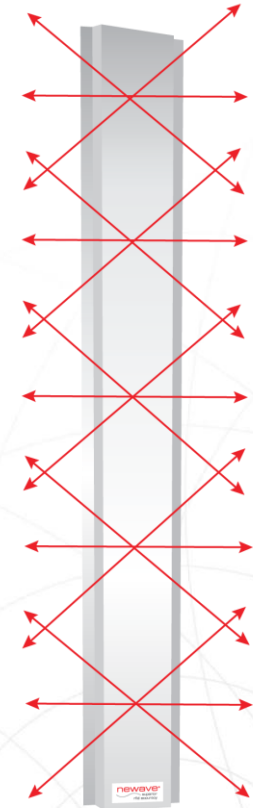
Strategic Investor
and Manufacturer

The wave® antenna



wave antenna
Radiator showing
distributed radiation

- The patented newave antenna embodies a radically new concept in RFID antenna design.
- Instead of radiating a beam in a single direction, the antenna is designed to uniformly illuminate a volume of space.
- When installed in pairs the antennas complement each other and provide spatial, beam and polarization diversity.
- Zone size 3 to 10 cubic feet
- Lightweight, comes in 3', 5', or 7' lengths
- Highly flexible to provide complete coverage in harsh environments such as metal, liquids, etc.

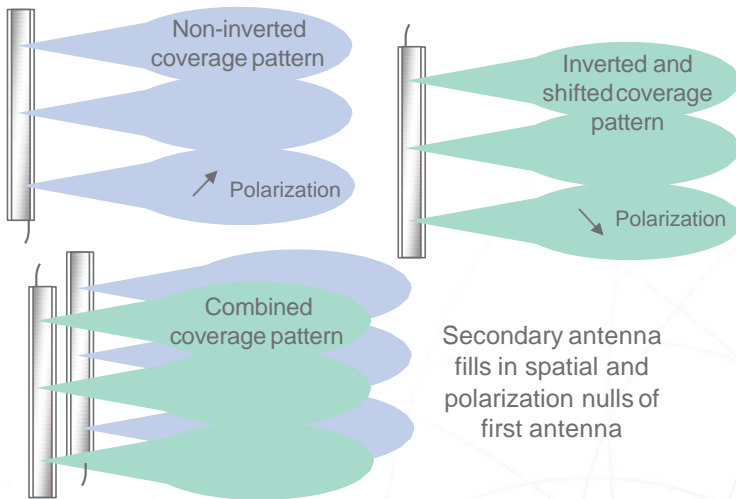


wave antenna
in ABS frame

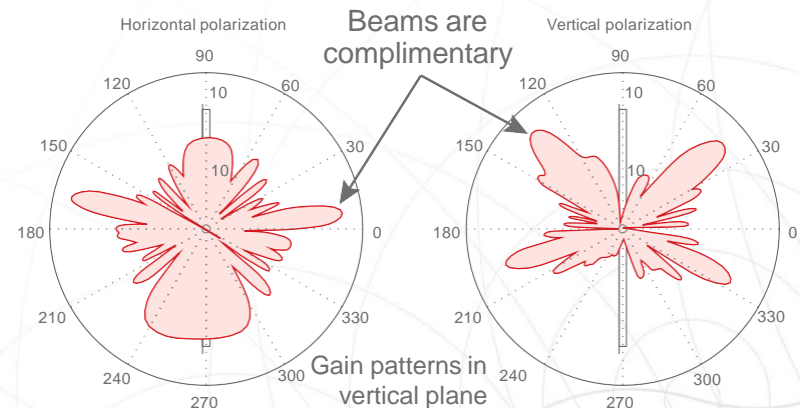
Density coverage of the wave[®] antenna

- Any single antenna covering a given area will have fading nulls caused by multi-path interference.
- The newave antenna is designed to overcome fading by mounting the antennas in pairs.
- The unique design produces a complementary coverage pattern simply by inverting and shifting one of the antennas.
- The inverted antenna is also cross-polarized with respect to its partner.

Complementary Coverage Pattern



Polarization Beam Diversity



A Key Difference: *wave*[®] antenna vs. Traditional Patch Antennas

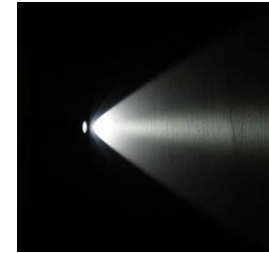
wave antenna analogy



“The wave Antenna, like a fluorescent light, creates a cylindrical pattern that illuminates the entire antenna length and a volume of the surrounding space as defined by the user”

VS.

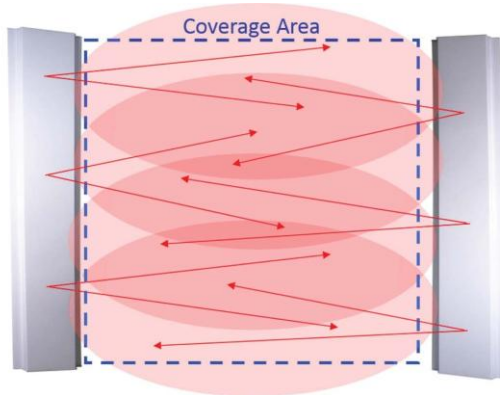
Traditional Patch Antenna analogy



“Patch antennas perform similar to a flashlight. A conical pattern that is far reaching”

wave® vs. Patch Antenna Comparisons

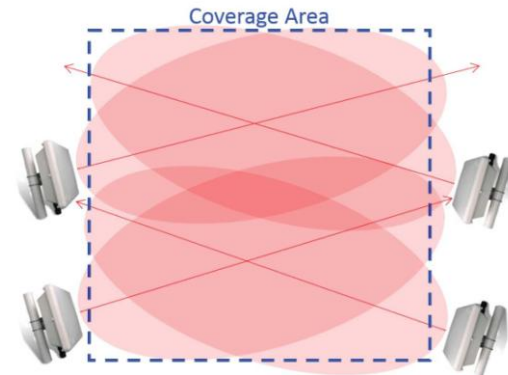
wave antenna



- Spatial, beam, and polarization diversity
- 5 beam illumination
- 2 antennas required to cover a specified area (on opposite sides or placed side-by-side)
- Distributed illumination
- Uniform moderate coverage
- Ideal for item level zone coverage of densely populated regions of RFID tagged products

VS.

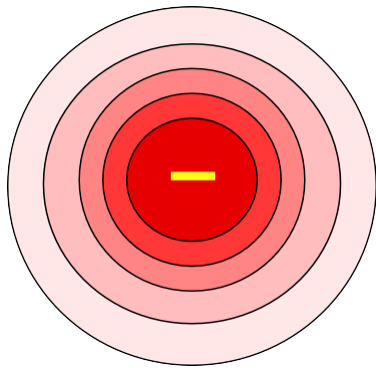
Patch Antennas



- Spatial and polarization diversity
- Single beam illumination
- At least 5 patch antennas required to provide the same number of overlapping beams
- Long range capability

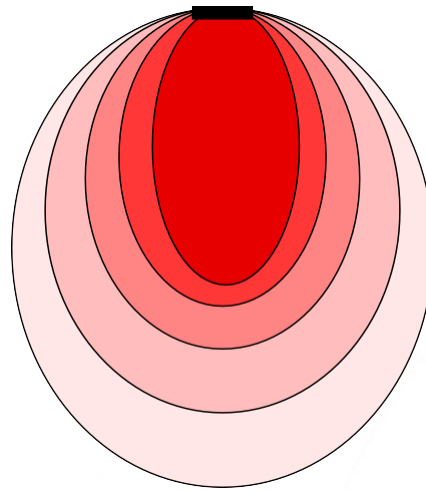
Top View of Coverage from wave[®] antennas and Portals

wave antenna Alone



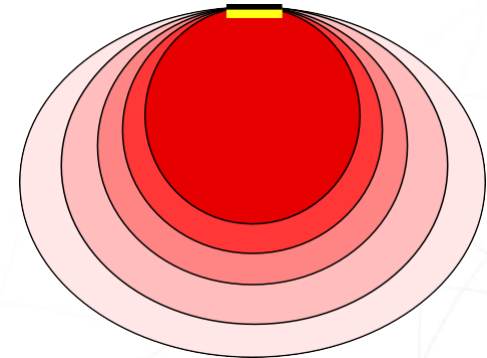
Omni-directional coverage intensities forming circles around the whole length of the antenna. Thus, it covers a full 360 degrees around the antenna.

newave Portal



Coverage is further focused to the front of the portal. Thus, it covers about 100 degrees in front of the portal.

wave antenna Ground Plane

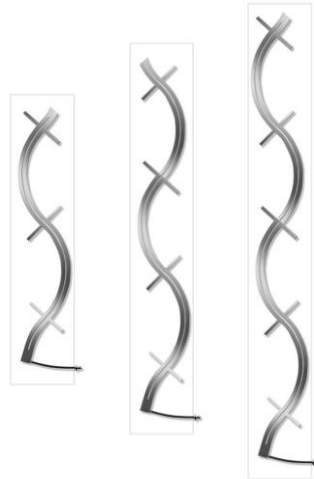


Coverage is limited to the front half of the antenna by the ground plane placed on the backside of the antenna. Thus, it covers about 180 degrees in front of the antenna.

The wave's Unique Design allows Expansion of RFID Applications



Lightweight enclosures



Thin and flexible antenna elements



Used in infrastructure portals



Embedded in composite materials



Tracking items on retail shelves

Applications / Vertical Markets



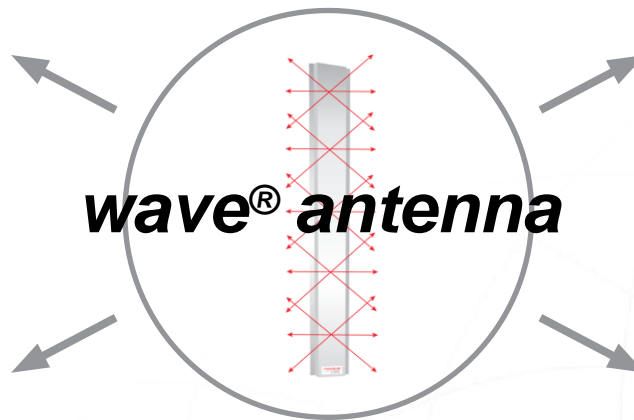
Retail Smart Shelf



Health Care and Asset Tracking



Retail and Loss Prevention



wave[®] antenna



**Transportation/
Logistics**



Manufacturing and Supply Chain



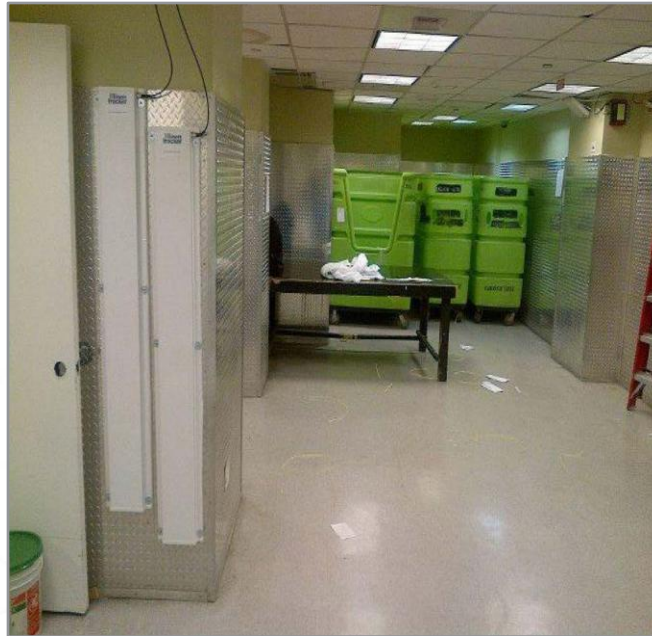
Special Events

newave[®]
superior
rfid accuracy

Basic newave® antenna Portal

Characteristics

- Lightweight
- Lowest Cost
- Available in 3,5 or 7 foot lengths
- Easily installed using plastic lip
- Mounts vertically or horizontally
- User defined zone coverage area: 3'x3'x3' to 10'x10'x10'
- Applications
 - Interior doorways and hallways
 - Wall read points
 - Economy applications



newave® plug&playPortals: Features and Benefits

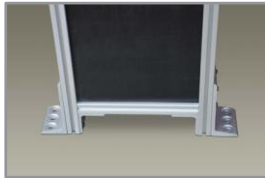
The Unique Benefit of “Plug & Play”:

- Two wave® antennas or the wave’s radiating elements are embedded into the supporting portal structure
- This approach eliminates the need to adjust antennas to ensure tags are read, saving much time and installation cost
- Tag read rates with any newave Portal are in excess of 99%
- Being embedded the wave radiators will not go out of alignment even in very rugged environments thus requiring minimal follow-on maintenance
- Over 6,000 portals installed
- Installation time is five times faster than a traditional “patch” antenna portal

newave® plug&playPortal



Corner brackets are designed to fit in frame grooves and anchor to the floor

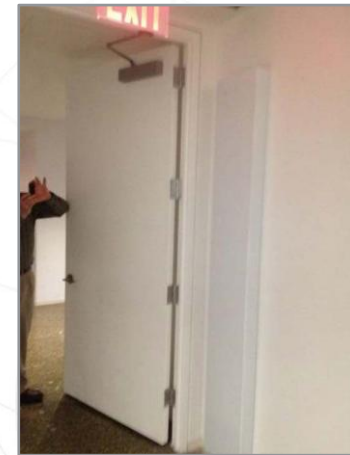


- This new portal was designed by SLS¹ and is constructed with extruded aluminum frames, sturdy coroplast covers, and has two wave® antenna elements embedded in a composite structure
- Rugged enough for distribution centers but sleek enough for any business interior. Available in Gray, Safety Yellow, or White
- Simple installation. Nearly 6,000 portals are already installed
- Superior Accuracy and Performance. These antennas are designed to cover all three tag orientations and they never need to be adjusted.
- Very economical. Comes in 60 or 96 inch heights.
- Like our other NeWave Portals: They are Plug and Play
- <http://www.rfidjournal.com/articles/view?14500>

¹ [SLS is the exclusive North American portal partner with newave. www.slsrfid.com](http://www.slsrfid.com)

newave®
superior
rfid accuracy

Install Examples



Thank You

Any Questions?

www.newaverfid.com

888-677-7343

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rfid accuracy