

# RF-Alert™

## RF Detection using IST Plasma-Shells™

### ALWAYS READY

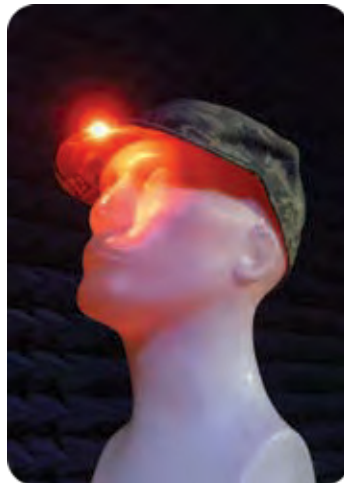
Currently available RF monitors require batteries and periodic calibration and are too expensive for general-issue personal safety equipment. The low cost RF-Alert™ is always on and does not require batteries or calibration.

### ULTRA RUGGED

RF-Alert™ is resistant to shock, vibration, temperature and pressure extremes, harsh chemicals, and weighs less than 5.0 grams.

### ADAPTIVE DESIGN

RF-Alert™ detectors can be integrated into appliques of any pattern or color consistent with uniforms, custom signs, and safety indicators.



The RF-Alert™ detector is a low-cost, passive radio frequency (RF) monitoring device. High-power RF fields are routinely encountered in many military and civilian facilities such as broadcasting and radar stations.

Accidental exposure to these fields due to improper lockout procedures or other causes places personnel at risk without any immediate outward symptoms. Currently available RF monitors require batteries and periodic calibration and are too expensive to be general-issue personal safety equipment.

RF-Alert™ is a passive, very low-cost RF monitoring detector with a thin peel-and-stick appliqué form factor that can be applied to clothing, helmets and work hats, walls, windows, and other surfaces.

RF-Alert™ instantly emits daylight-visible light when potentially unsafe RF levels are present. Detectors work in ranges from 500 MHz to 5 GHz. The peel-and-stick detector appliqué product has been developed and tested and sensitivity is near many internationally defined personnel safety limits and is adequately consistent with temperature, time, priming, and mounting on non-conductive surfaces.

- Easy operation—always on, no batteries required
- Bright warning indicator
- Appliqué bonds to clothing, helmets and work hats, walls, windows, and other surfaces
- Cellular/4G band protection
- Rugged
  - Hydrostatic crush strength > 15 ksi
  - Impact resistant to 750 psi
  - Temperature resistant > 1000°C
  - Resistant to shock, vibration, corrosion, and pressure
- Life > 200,000 hours
- Weight < 5 grams



Actual Product Photo

#### TECHNICAL SUPPORT

IST provides world class customer service to support our cutting edge technology.

#### QUALITY ASSURANCE

IST is an ISO 9001:2008 certified manufacturer and designer. We constantly strive to improve our processes to ensure the highest quality products and services.

#### CUSTOM SOLUTIONS

Our team of electrical and mechanical engineers can design and develop the solution that best fits your needs.

#### CONTACT

For more information on any of our products please visit us on the Web at:

[www.Plasma-spheres.com](http://www.Plasma-spheres.com)

[www.TeamIST.com](http://www.TeamIST.com)

Or contact:

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# Plasma-shell™ Technology



Plasma-shells™ are hollow gas encapsulating devices developed by Imaging Systems Technology (IST). When a voltage is applied across the walls of the shell, the encapsulated gas is energized into plasma. The Plasma-shells™ are electronic components that can be used as light emitters, switches, and sensors. Under a sister company, Deep Springs Technology (DST), hollow shells are being introduced into mechanical and structural applications including armor, buoyancy, and heat shielding.

## Current Plasma-shell™ Applications

IST is introducing the Plasma-shell™ components into a number of electronic markets including: germicidal, photo curing, lighting, displays, nuclear, and RF. Applications and products are listed below.

#### Plasma-Switched Frequency Selective Surface (PS-FSS)

Plasma-shell™ switches activate and deactivate electromagnetic aperture with fast response time for HPM/EMP shielding and low observable applications.

#### RF-Alert™ Sensor

Plasma-shell™ sensors are employed to provide a passive, low cost, RF monitoring system for personal safety. Applied to clothing, gear, or other surfaces, these devices can be used in industrial, military, or scientific settings.

#### IST Plasma-shell™ Display

Plasma-shell™ pixels are formed into low cost, rugged, large area arrays for use in large area digital signage, simulation, and scene generation.

#### IST Plasma-shell™ Light Tiles

Plasma-shell™ lighting elements offer a customizable, low profile, ultra rugged light source for decorative, architectural, and industrial applications.

#### UV Light Source

Plasma-shell™ lighting elements provide large area, homogenous lighting for germicidal, photo-curing, medical treatment, and UV band communication.

## FABRICATION CAPABILITIES

Our Plasma-shell™ manufacturing process has many customizable parameters. Tight control over our process allows IST to produce shells to the specification of a wide variety of applications.

Controllable Parameters	Notes
Sizes	IST fabricates shells from 0.5 mm to 10 mm. Other sizes are possible. Typical applications call for sizes of 1- 4 mm
Wall thickness	Wall thickness is controllable. Typical applications call for wall thickness of 5 to 10 percent of shell diameter
Shapes	Practically any shape is possible. Typical shapes include cylinders, cubes, oblate spheroids, rectangular prisms, and other complex shapes
Materials	Glass, Metal, Ceramic. Typical materials include Y <sub>2</sub> O <sub>3</sub> , ZrO, SiO <sub>2</sub> , Al <sub>2</sub> O <sub>3</sub> , maraging steel, carbon steel, and various glasses
Layers	Shells can be fabricated with layered walls
Gas Fill	Inert gas, including mixtures with hydrogen up to 4%
Gas Pressure	0 – 500 Torr
Post Processing Capabilities	Coating, electroding, and application of shells onto substrates

