



PHOTONICSystems, Inc.

We Light the Way

RF and MICROWAVE WIRELESS SOLUTIONS

STAR Enabling Front-end • Co-Site Interference Cancellor • RF-Over Fiber • RF & Photonic Components

INNOVATIVE SOLUTIONS

Photonic Systems, Inc. (PSI) is an established innovative leader in RF and microwave interference mitigation solutions, RF and microwave signal transport using photonics, and extremely wideband digitizing layer solutions with core competencies in:

Single Aperture Simultaneous Transmit and Receive (STAR)

- » Enables single-channel, single-antenna, full-duplex RF communications
- » Front-end solution compatible with new and legacy antennas and "baseband" functions
- » Low cost electronic and ultra-wideband photonic versions available

RF over Fiber and EMA Resistant Links

- » Smaller, lighter, and lower signal loss than coax cable with no Electro-Magnetic Interference (EMI)
- » Transport multiple RF signals over same fiber
- » EMA resistant – protects sensitive radio electronics

RF Interference Cancellation

- » Eliminates in-band co-located transmission signal interference
- » Enables voice and data communications in presence of high-power interferer
- » Low cost electronic and ultra-wideband photonic versions available

High Speed, Scalable ADC

- » Dramatic increase in A-to-D conversion speed and resolution
- » Breaks through the "Walden Wall"
- » Single RF and digitizing layer enables sensing of entire application band

PRODUCTS

STAR Enabling RF Front-Ends

PSI has created disruptive technology that enables single channel, full-duplex communications via a single antenna on any wireless device. Often referred to as a Simultaneous Transmit and Receive (STAR) on the same frequency, PSI's technology effectively doubles the capacity of any wireless communication network within the existing allocated RF spectrum. The PSI STARbox™ interfaces directly between the antenna and radio to dramatically lower self-site interference. Key features of PSI STARbox™ products are:



- » Single-antenna solution
- » Compatible with MIMO antenna architectures
- » High transmit to receive path isolation
- » RF_{in} to RF_{out} or RF_{in} to Digital_{out} configurations available
- » Wideband operation

Co-site Interference Cancellers

PSI provides high-performance Large Signal CAnceller (LASCAN™) RF front-end equipment for RF and microwave wireless systems. Such systems often need to maintain operation in the face of large interfering signals that can be as much as 100 dB stronger than the signal of interest (SOI) that the system needs to receive. When connected between the antenna and a system's transmit and receive paths, LASCAN™ has demonstrated 80-85 dB of interference signal cancellation. Key features of PSI LASCAN™ products are:



- » Mitigates all forms of co-spectrum interference
 - Co-site: SOI and interfering signal spectra do not overlap
 - Co-channel: SOI and interfering signal spectra do overlap
 - Co-angle: SOI and interfering signals come from the same direction
- » Wideband operation: HF to Ku band demonstrated

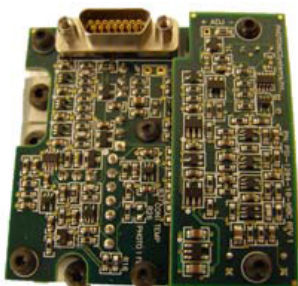
Highest Performance RF over Fiber Links

Engineers at PSI staff are among the principal contributors that established the field of RF and microwave photonics technology. From the first ever demonstrated RF over fiber link without amplifiers that had power gain to record low noise figures and the highest dynamic range link ever reported, PSI has a long history of innovative RF and microwave signal transport solutions. All of this know-how has gone into developing a variety of high performance RF over fiber transmitter (O/E) and receiver (E/O) products. PSI currently provides low noise figure RF over fiber links with bandwidths up to 40 GHz that feature:

- » A smaller, lighter, and no EMI fiber solution vs. coax cable
- » Capable of transporting multiple RF signals over same fiber
- » An Electro-Magnetic Attack (EMA) resistant interconnect solution



Photonic and Electronic Components



From the lowest available Vpi optical modulator to extremely accurate laser diode and modulators bias control circuits, PSI offers a variety of specialized devices and components for RF and photonic based systems. In addition to standard product offerings, PSI designs, develops, and manufactures a number of customer specific photonic and electronic control solutions.

RESEARCH AND DEVELOPMENT

Along with extensive internal research and development (IRAD) efforts, PSI has successfully managed numerous small and large contract research and development (CRAD) programs serving in both prime contractor and subcontractor roles. From initial studies to the development of large system demonstration hardware, PSI has the technical and program management expertise to achieve the agreed upon objectives on time and on budget.

The PSI research and development team consists of world renowned engineers and scientists in the application of RF, microwave and photonic technology, components and systems. PSI staff members have produced more than 200 technical publications on these topics and have received international recognition for their contributions to the analysis, design and implementation in these areas of expertise.

Founded in 1999, PSI is a recognized innovator of RF, microwave and photonic solutions for the most complex systems and applications. Members of PSI's staff are among the principal contributors that established the field of RF and microwave photonics technology. PSI operates from its main facility in Billerica, Massachusetts near Boston along with an engineering office in Escondido, California.



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