

IMPINJ[®]

READER CHIPS

Impinj E510 RAIN RFID Reader Chip

High-performance receive sensitivity for medium read range, improved read rate, and support for next-gen RAIN tags—this chip is designed for a range of IoT devices that identify, locate, and authenticate groups of tagged items quickly.

A New Bar for Performance, Integration, and Ease of Use

The new Impinj E510 reader chip is designed for point-of-sale devices, mobile and wearable readers, smart appliances, and connected consumables.

The Impinj E510 joins a portfolio of new systems-on-chips (SoCs) built on a heritage of Impinj Indy series that set performance standards for over a decade. Compared to the Impinj Indy R500, the E510 delivers:

- High-performance receive sensitivity and up to 2x the read range for reliable performance in new and emerging uses.
- 50% lower chip power consumption, supporting battery-powered, energy-efficient devices.
- Up to 80% smaller RAIN RFID system designs ideal for small, next-generation devices.

With industry-leading system integration and easy-to-use development tools, the Impinj E510 enables the development of quick-to-market IoT devices.

Key Features

- **High Performance, Low-Power Design**
Enables reading and writing tags near and far with high sensitivity and an energy efficient design.
- **Integrated SoC in a 6x6mm Package**
Includes a radio, modem, self-jammer cancellation, RF front-end, microcontroller, and power regulation.
- **Tools for Easy Design and Development**
Brings an uncomplicated design with fewer components to integrate, a developer-friendly SDK, simple development kit, and worldwide region support.

Why Use Impinj E510?

Design a Range of Performance RAIN Readers

Build a portfolio of devices where high-performance sensitivity, mid-range distances, and fast read rates differentiate your products from the competition.

Build Small, Powerful, Energy-Efficient Products

Target new and emerging use cases with small, efficient, wearable devices that support hands-free workflows. Design embedded readers for connected consumer applications and smart appliances.

Accelerate Innovation of Next-Gen IoT Solutions

Reach emerging markets quickly with a powerful, differentiated product portfolio. The ease of use, development tools, and pre-certified partner-built modules reduce the complexity and timeline of new product development.

Primary Uses

- **Mobile Readers for Inventory Management**
Extend fast, accurate inventory counting to all touchpoints in the supply chain with innovative devices like wearable readers.
- **Automate POS for Touch-Free Shopping**
Empower consumers with fast checkout with fixed and mobile point-of-sale (POS) devices.
- **Smart, Connected Home Devices**
Connect tagged items to smart appliances and expand product authentication and management to consumer applications.



Impinj RAIN RFID Reader Chips Embed Connectivity into Devices

Impinj reader chips provide a foundation for designing devices with embedded RAIN RFID read/write capability. Impinj partner-built reader modules enable accelerated product development, time to market, and government certifications worldwide.

The Impinj E710, E510, and E310 are pin- and software-compatible for easy performance upgrades and design reuse.

Impinj Reader Chip Portfolio

						
	E710	E510	E310	R2000	R500	
SPECIFICATIONS	Air interface protocol					
	RAIN RFID / ISO 18000-63 and EPCglobal Gen2v2 compliant					
	Receive sensitivity ¹ (dBm)	-88	-82	-75	-84	-68
	Maximum read rate (tags/second)	950 ²	550	250	900	190
	Typical power consumption (watts)	0.5		1.5		1.1
	Package type	56-pin QFN			64-pin QFN	
Package size (mm)	6 x 6			9 x 9		
FEATURES	Self-jammer cancellation	✓	✓	✓	✓	
	Reader modes	8	7	5	4	4
	Impinj adaptive tag access	✓	✓	✓		
	RAIN RFID integration	Radio, Modem, MAC, Baluns, and Power Detectors			Radio + Modem	
	Pin- and software-compatible	E710, E510, E310			R2000, R500	
	Worldwide region support	✓	✓	✓	✓	✓

¹Sensitivity measured with 10dBm antenna reflection, at chip receive pins, FCC DRM RF Mode, 99% success rate

²950 tag per-second RF Mode in Impinj E710 firmware version 1.1

Impinj product performance is based on Impinj's modeling and test data, actual results may vary.
For a list of supported regions and geographies please go to: www.impinj.com/supported_regions.

Ready to discuss how Impinj can help your business?

CONTACT US

WWW.IMPINJ.COM

Impinj (NASDAQ: PI) helps businesses and people analyze, optimize, and innovate by wirelessly connecting billions of everyday things—such as apparel, automobile parts, luggage, and shipments—to the Internet. The Impinj platform uses RAIN RFID to deliver timely data about these everyday things to business and consumer applications, enabling a boundless Internet of Things.