ThingMagic® M7E-DEKA UHF RAIN® RFID Module

18 mm x 21 mm x 3.0 mm H

Features & Benefits:

- Small Surface Mount Technology (SMT) Form Factor for Highly Integrated, Compact Designs.
- Low Power Consumption for Efficient Battery-Use
- Features the Impinj E310 RAIN RFID Reader Chip
- Support for EPCglobal Gen2V2 (ISO 18000-63) Protocol Meets Industry Tag Standards
- Reads up to 300 tags / second
- Configured for Multiple Regions, such as FCC / ISED (North & South America), ETSI (European Union), and Other Regions Including India, China, Korea, Australia and Japan
- Single SKU for Global Use
- Support for full Open region (860 to 930MHZ)

The Industry's Smallest Embedded UHF RAIN® RFID Module

ThingMagic M7E-DEKA is the smallest form factor for a Mercury Series embedded UHF RAIN RFID module with extended RF power. With low power consumption, it is ideal for battery- operated, small form-factor portable use cases. ThingMagic M7E-DEKA's wide RF output range (0 dBm to +27 dBm) is important for the read/write requirements for RFID enabled Mobile tablets,printers and tag commissioning stations.

ThingMagic M7E-DEKA features a surface mount package designed for the efficiency of SMT manufacturing, driving down the total cost for embedding RFID in volume applications. It is ideal for handheld devices, printers, consumables authentication, device configuration and access control.

ThingMagic M7E-DEKA is supported by ThingMagic Mercury API.

Applications:

- Mobile Devices, including Printers, Handhelds, and Sensor Networks
- Battery-operated devices
- Smartphone Accessories
- Medical Equipment for Healthcare and Pharmaceutical Industries
- Kiosks and Vending Machines
- Tag Commissioning Stations

RAIN RFID

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JADAK A Novanta Company

ES France - Mobilité & Systèmes Embarqués
127 rue de Buzenval BP 26 - 92380 Garches
Tél. 01 47 95 99 80
Fax. 01 47 01 16 22
e-mail : mse@es-france.com
Site Web : www.es-france.com

ThingMagic® M7E-DEKA UHF RAIN® RFID Module

Ordering Information	
Module	M7E-DEKA
Module on Carrier Board	M7E-DEKA-CB
Development Kit	M7E-DEKA-DEVKIT
Physical	
Dimensions	18 mm x 21 mm x 3.0 mm H (0.71 in x 0.83 in x 0.12 in H)
Tag / Transponder Protocols	
RFID Protocol Support	EPCglobal Gen 2V2 (ISO 18000-63)
RF Interface	
RF Transceiver	Impinj E310
Antenna Connector	Single 50 Ω connection (board-edge)
RF Power Output	Separate read and write levels, command-adjustable from 0 dBm to +27dBm in 0.01 dB steps, accurate to +/- 1 dBm
Regulatory	Pre-configured for the following regions: FCC (NA, SA) 902-928MHz; ETSI (EU) 865.6-867.6 MHz; TRAI (India) 865-867 MHz; KCC (Korea) 917-923.5 MHz; ACMA (Australia) 920-926 MHz; SRRC-MII (P.R. China) 920.1-924.9 MHz; MIC (Japan) 916.8-922.2 MHz; 'Open' (Customizable channel plan; 860-930 MHz)
Data/Control Interface	
Physical	41 board-edge connections providing access to RF, DC power, communication, control and GPIO signals
Control/Data Interfaces	UART; 3.3V logic levels 9.6 to 921.6 kbps
GPIO Sensors and Indicators	Four 3.3V bidirectional ports configurable as input (sensor) ports or output (indicator) ports
API support	C, C#/.NET, Java
Power	
DC Power Required (Typical)	DC Voltage: 3.3 to 5.5 V for +25 dBm out; 3.7 to 5.5 V for +27 dBm out DC power consumption @ RF level: 3.1 W @ 5 VDC for +27 dBm out*; <1.2 W @ 5 VDC for 0 dBm out
Idle Power Saving Options	Ready: 0.665 W Sleep: 0.080 W Shutdown: T B D
Environment	
Certification	USA (FCC 47 CFR Ch. 1 Part 15); Canada (Industry Canada RSS-247); EU (ETSI EN 302 208 v3.3.1, RED 2014/53/EU), JAPAN (MIC Article 38 Section 24)**
Operating Temperature	-40°C to +60°C (case temperature)
Storage Temperature	-40°C to +85°C
Shock and Vibration	Survives 1 meter drop during handling
Performance	
Max Read Rate	Up to 300 tags/second
Tag Read Distance (Typical)	Over 4.5 meters (15 feet) with 6 dBi antenna (33 dBm EIRP)
Specifications subject to change without notice.	*Best case with good antenna matching **Japan Certification is pending

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ABOUT JADAK:

JADAK, a business unit of Novanta, is a market leader in machine vision, RFID, barcode, printing, and color and light measurement products and services for original equipment manufacturers. The business designs and manufactures custom embedded detection and analysis solutions that help customers solve unique inspection, tracking, scanning and documenting challenges. JADAK is based in Syracuse, New York, with sales and technical locations across the globe. For more information, visit www.jadaktech.com. ThingMagic is JADAK's RFID line of products.

Novanta is a trusted technology partner to OEMs in the medical and advanced industrial technology markets, with deep proprietary expertise in photonics, vision and precision motion technologies. For more information, visit www.novanta.com

JADAK
A Novanta Company

USA Office
phone:+1 315.701.0678
email: info@jadaktech.com
web: jadaktech.com

European Office
phone:+49 89 31 707 100
email: info@jadaktech.com

Asia Pacific Office
phone: +86 512.6283.7080
email: info@jadaktech.com

Novanta

ThingMagic® M7E-HECTO UHF RAIN® RFID Module

22 mm x 26 mm x 3.0 mm H

Features & Benefits:

- Small Surface Mount Technology (SMT) Form Factor for Highly Integrated, Compact Designs
- Low Power Consumption for Efficient Battery-Use
- Features the Impinj E310 RAIN RFID Reader Chip
- Support for EPCglobal Gen2V2 (ISO 18000-63) Protocol Meets Industry Tag Standards
- Reads up to 300 tags / second
- Configured for Multiple Regions, such as FCC / ISED (North & South America), ETSI (European Union), and Other Regions Including India, China, Korea, Australia and Japan
- Single SKU for Global Use
- Support for full Open region (860 to 930MHZ)
- Module Size and Feature Set comparable to ThingMagic M6e-Nano
- Provides better sensitivity, supports more GEN2 profiles and wider range of custom tag commands compared to ThingMagic M6e-Nano

Embedded UHF RAIN® RFID Module

ThingMagic M7E-HECTO is a small, power-optimized UHF RAIN RFID module. With very low power consumption, M7E-HECTO is ideal for battery-operated, low cost, small form-factor portable readers. ThingMagic M7E-HECTO's wide RF output range (0 dBm to +27 dBm) is important for the read/write requirements for RFID-enabled printers and tag commissioning stations.

ThingMagic M7E-HECTO features a surface mount package designed for the efficiency of SMT manufacturing, driving down the total cost for embedding RFID in volume applications. It is ideal for handheld devices, consumables authentication, device configuration and access control.

ThingMagic M7E-HECTO is supported by ThingMagic Mercury API.

Applications:

- Medical Equipment for Healthcare and Pharmaceutical Industries
- Kiosks and Vending Machines
- Mobile Devices, including Printers, Handhelds, and Sensor Networks
- Tag Commissioning Stations
- Battery-operated
- Smartphone Accessories

RAIN RFID

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JADAK A Novanta Company

ES France - Mobilité & Systèmes Embarqués
127 rue de Buzenval BP 26 - 92380 Garches
Tél. 01 47 95 99 80
Fax. 01 47 01 16 22
e-mail : mse@es-france.com
Site Web : www.es-france.com

ThingMagic® M7E-HECTO UHF RAIN® RFID Module

Ordering Information	
Module	M7E-HECTO
Module on Carrier Board	M7E-HECTO-CB
Development Kit	M7E-HECTO-DEVKIT
Physical	
Dimensions	22 mm x 26 mm x 3.0 mm H (0.87 in x 1.02 in x 0.12 in H)
Tag / Transponder Protocols	
RFID Protocol Support	EPCglobal Gen 2V2 (ISO 18000-63)
RF Interface	
RF Transceiver	Impinj E310
Antenna Connector	Single 50 Ω connection (board-edge)
RF Power Output	Separate read and write levels, command-adjustable from 0 dBm to +27 dBm in 0.01 dB steps, accurate to +/- 1 dBm
Regulatory	Pre-configured for the following regions: FCC (NA, SA) 902-928MHz; ETSI (EU) 865.6-867.6 MHz; TRAI (India) 865-867 MHz; KCC (Korea) 917-923.5 MHz; ACMA (Australia) 920-926 MHz; SRRC-MII (P.R. China) 920.1-924.9 MHz; MIC (Japan) 916.8-922.2 MHz; 'Open' (Customizable channel plan; 860-930 MHz)
Data/Control Interface	
Physical	41 board-edge connections providing access to RF, DC power, communication, control and GPIO signals
Control/Data Interfaces	UART; 3.3V logic levels 9.6 to 921.6 kbps
GPIO Sensors and Indicators	Four 3.3V bidirectional ports configurable as input (sensor) ports or output (indicator) ports
API support	C, C#/.NET, Java
Power	
DC Power Required	DC Voltage: 3.3 to 5.5 V for +25 dBm out; 3.7 to 5.5 V for +27 dBm out DC power consumption @ RF level: 3.1 W @ 5 VDC for +27 dBm out*; <1.2 W @ 5 VDC for 0 dBm out
Idle Power Saving Options	Ready: 0.665 W** Sleep: 0.080 W** Shutdown: TBD
Environment	
Certification	USA (FCC 47 CFR Ch. 1 Part 15); Canada (Industry Canada RSS-247); EU (ETSI EN 302 208 v3.3.1, RED 2014/53/EU); JAPAN (MIC Article 38 Section 24)***
Operating Temperature	-40°C to +60°C (case temperature)
Storage Temperature	-40°C to +85°C
Shock and Vibration	Survives 1 meter drop during handling
Performance	
Max Read Rate	Up to 300 tags/second*
Tag Read Distance (Typical)	Over 4.5 meters (15 feet) with 6 dBi antenna (33 dBm EIRP)
Specifications subject to change without notice. *Best case with good antenna matching **Actual performance is TBD ***Japan Certification is pending	

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web: jadaktech.com

European Office
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email: info@jadaktech.com

Asia Pacific Office
phone: +86 512.6283.7080
email: info@jadaktech.com

Novanta

ThingMagic® M7E-MEGA UHF RAIN® RFID Module

46 mm L x 26 mm W x 4.0 mm H

Features & Benefits:

- Small Form Factor Coupled with Powerful Performance
- RF Power Output of +30 dBm Results in Tag Read Distance Over 9 Meters*
- Features the Impinj E510 RAIN RFID Reader Chip
- Support for EPCglobal Gen2V2 (ISO 18000-63) Protocol Meets Industry Tag Standards
- Reads up to 600* Tags/ Second to Support Fast Moving Tags and Large Tag Populations
- Configured for Multiple Regions, such as FCC / ISED (North & South America), ETSI (European Union), and other Regions Including India, China, Korea, Australia and Japan
- Module Size and Feature Set comparable to ThingMagic M6e-Micro

High Performance, 2-Port, Embedded UHF RAIN® RFID Module

ThingMagic M7E-MEGA is one of the smallest 2-port, high performance embedded UHF RAIN RFID modules. ThingMagic M7E-MEGA delivers the size, operating efficiency, power, and flexibility needed to embed UHF RFID into applications where small form factor is important. Its exceptionally small size and powerful performance yield increased efficiency, reduced development costs, and time-to-market advantages.

ThingMagic M7E-MEGA can read up to 600* tags per second and features low power consumption. Its wide RF output level range, from 0 to +30 dBm* (1W), allows it to be used in short range printers or long range readers. Its antenna ports make it easy to embed into demanding applications. It is equipped with UART control / data interfaces.

The two RF connections to antennas can be made via edge pads or U.FL connectors.

ThingMagic M7E-MEGA is supported by ThingMagic API.

Applications:

- Handheld Devices and Scanners
- Battery-operated
- RFID-Enabled Printers, Desktop and Portable
- Tag Commissioning Stations
- Point of Sale Devices
- Smartphone Accessories
- Medical Cabinets

ES France - Mobilité & Systèmes Embarqués
127 rue de Buzenval BP 26 - 92380 Garches
Tél. 01 47 95 99 80
Fax. 01 47 01 16 22
e-mail : mse@es-france.com
Site Web : www.es-france.com

ThingMagic® M7E-MEGA UHF RAIN® RFID Module

Ordering Information	
Module	M7E-MEGA
Module on Carrier Board	M7E-MEGA-CB
Development Kit	M7E-MEGA-DEVKIT
Physical	
Dimensions	46 mm L x 26 mm W x 4.0 mm H (1.8 in L x 1.0 in W x 0.16 in H)
Tag / Transponder Protocols	
RFID Protocol Support	EPCglobal Gen 2V2 (ISO 18000-63) with DRM
RF Interface	
RF Transceiver	Impinj E510
Antenna Connector	Two 50 Ω connections (board-edge or U.FL)
RF Power Output	Separate read and write levels, command-adjustable from -10 dBm to +30 dBm* in 0.5 dB steps, accurate to +/- 1 dBm
Regulatory	Pre-configured for the following regions: FCC (NA, SA) 902-928MHz; ETSI (EU) 865.6-867.6 MHz; TRAI (India) 865-867 MHz; KCC (Korea) 917-923.5 MHz; ACMA (Australia) 920-926 MHz; SRRC-MII (P.R. China) 920.1-924.9 MHz; MIC (Japan) 916.8-922.2 MHz; 'Open' (Customizable channel plan; 860-930 MHz)
Data/Control Interface	
Physical	38 board-edge connections providing access to RF, DC power, communication, control and GPIO signals
Control/Data Interfaces	UART; 3.3V logic levels 9.6 to 921.6 kbps
GPIO Sensors and Indicators	Four 3.3V bidirectional ports configurable as input (sensor) ports or output (indicator) ports
API support	C, C#/.NET, Java
Power	
DC Power Required	DC Voltage: 3.3 to 5.5 V DC power consumption @ RF level: TBD @ +30 dBm; TBD @ power levels under +17 dBm
Idle Power Saving Options	Ready: TBD Sleep: TBD Shutdown: T B D
Environment	
Certification	USA (FCC 47 CFR Ch. 1 Part 15); Canada (Industry Canada RSS-247); EU (ETSI EN 302 208 v3.1.1, RED 2014/53/EU); JAPAN (MIC Article 38 Section 24)**
Operating Temp.	-40°C to +60°C (case temperature)
Storage Temp.	-40°C to +85°C
Shock and Vibration	Survives 1 meter drop during handling
Performance	
Max Read Rate	Up to 600* tags/second using high-performance settings
Max Tag Read Distance	Over 9 meters (30 feet)* with 6 dBi antenna (36 dBm EIRP)
Specifications subject to change without notice. * Actual Max Performance is TBD **Japan Certification is pending	

About JADAK:

JADAK, a business unit of Novanta, is a market leader in machine vision, RFID, barcode, printing, and color and light measurement products and services for original equipment manufacturers. The business designs and manufactures custom embedded detection and analysis solutions that help customers solve unique inspection, tracking, scanning and documenting challenges. JADAK is based in Syracuse, New York, with sales and technical locations across the globe. For more information, visit www.jadaktech.com. ThingMagic is JADAK's RFID line of products.

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A Novanta Company

USA Office
phone:+1 315.701.0678
email: info@jadaktech.com
web: jadaktech.com

European Office
phone:+49 89 31 707 100
email: info@jadaktech.com

Asia Pacific Office
phone: +86 512.6283.7080
email: info@jadaktech.com

ThingMagic® M7E-PICO UHF RAIN® RFID Module

18 mm L x 21 mm W x 3.0 mm H

Features & Benefits:

- Small Surface Mount Technology (SMT) Form Factor for Highly Integrated, Compact Designs
- Low Power Consumption for Efficient Battery-Use
- Features the Impinj E310 RAIN RFID Reader Chip
- Support for EPCglobal Gen2V2 (ISO 18000-63) Protocol Meets Industry Tag Standards
- Reads up to 300 tags / second
- Configured for Multiple Regions, such as FCC/IC (North & South America), ETSI (European Union), and Other Regions Including India, China, Korea, Australia and Japan
- Single SKU for Global Use
- Support for full Open region (860 to 930MHZ)

The Industry's Smallest Embedded UHF RAIN® RFID Module

ThingMagic M7E-PICO is the smallest form factor for a Mercury Series embedded UHF RAIN RFID module. With very low power consumption, it is ideal for battery-operated, low cost, small form-factor portable readers. ThingMagic M7E-PICO's wide RF output range (0 dBm to +24 dBm) is important for the read/write requirements for RFID-enabled printers and tag commissioning stations.

ThingMagic M7E-PICO features a surface mount package designed for the efficiency of SMT manufacturing, driving down the totalcost for embedding RFID in volume applications. It is ideal forhandheld devices, consumables authentication, device configuration and access control.

ThingMagic M7E-PICO is supported by ThingMagic Mercury API.

Applications:

- Mobile Devices, including Printers, Handhelds, and Sensor Networks
- Tag Commissioning Stations
- Battery-operated devices
- Smartphone Accessories
- Medical Equipment for Healthcare and Pharmaceutical Industries
- Kiosks and Vending Machines

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ES France - Mobilité & Systèmes Embarqués
127 rue de Buzenval BP 26 - 92380 Garches
Tél. 01 47 95 99 80
Fax. 01 47 01 16 22
e-mail : mse@es-france.com
Site Web : www.es-france.com

ThingMagic® M7E-PICO UHF RAIN® RFID Module

Ordering Information	
Module	M7E-PICO
Module on Carrier Board	M7E-PICO-CB
Development Kit	M7E-PICO-DEVKIT
Physical	
Dimensions	18 mm x 21 mm x 3.0 mm H (0.71 in x 0.83 in x 0.12 in H)
Tag / Transponder Protocols	
RFID Protocol Support	EPCglobal Gen 2V2 (ISO 18000-63)
RF Interface	
RF Transceiver	Impinj E310
Antenna Connector	Single 50 Ω connection (board-edge)
RF Power Output	Separate read and write levels, command-adjustable from 0 dBm to +24dBm in 0.01 dB steps, accurate to +/- 1 dBm
Regulatory	Pre-configured for the following regions: FCC (NA, SA) 902-928MHz; ETSI (EU) 865.6-867.6 MHz; TRAI (India) 865-867 MHz; KCC (Korea) 917-923.5 MHz; ACMA (Australia) 920-926 MHz; SRRC-MII (P.R. China) 920.1-924.9 MHz; MIC (Japan) 916.8-922.2 MHz; 'Open' (Customizable channel plan; 860-930 MHz)
Data/Control Interface	
Physical	41 board-edge connections providing access to RF, DC power, communication, control and GPIO signals
Control/Data Interfaces	UART; 3.3V logic levels 9.6 to 921.6 kbps
GPIO Sensors and Indicators	Four 3.3V bidirectional ports configurable as input (sensor) ports or output (indicator) ports
API support	C, C#/.NET, Java
Power	
DC Power Required	DC Voltage: 3.3 to 5.5 V for +24 dBm out DC power consumption @ RF level: <2.5 W @ 5 VDC for +24 dBm out*, <1.2 W @ 5 VDC for 0 dBm out
Idle Power Saving Options	Ready: 0.665 W Sleep: 0.080 W Shutdown: T B D
Environment	
Certification	USA (FCC 47 CFR Ch. 1 Part 15); Canada (Industry Canada RSS-247); EU (ETSI EN 302 208 v3.3.1, RED 2014/53/EU), JAPAN (MIC Article 38 Section 24)**
Operating Temperature	-40°C to +60°C (case temperature)
Storage Temperature	-40°C to +85°C
Shock and Vibration	Survives 1 meter drop during handling
Performance	
Max Read Rate	Up to 300 tags/second
Tag Read Distance (Typical)	Over 3 meters (10 feet) with 6 dBi antenna (30 dBm EIRP) **
Specifications subject to change without notice.	*Best case with good antenna matching **Japan Certification is pending

Commented [VS1]: Update Shutdown power consumption from Bala's data

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European Office
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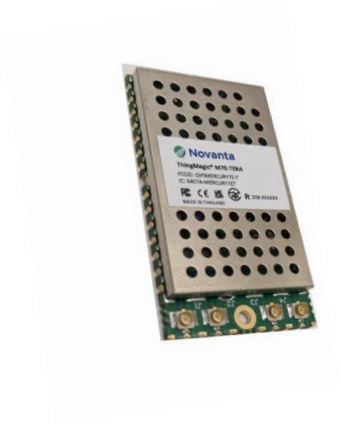
email: info@jadaktech.com

Asia Pacific Office
phone: +86 512.6283.7080
email: info@jadaktech.com

Novanta

ThingMagic® M7E-TERA UHF RAIN® RFID Module



46 mm L x 26 mm W x 4.0 mm H

High Performance, Multi-Protocol, 4-Port, Embedded UHF RAIN® RFID Module

ThingMagic M7E-TERA is a 4-port module that meets or exceeds the performance requirements of the most demanding fixed position multi-antenna reader applications. The M7E-TERA's high read rate and RF power, coupled with its form factor and time-to-market advantages, make it the ideal solution for Original Equipment Manufacturer (OEM) applications. Transmitting up to +31.5 dBm* and reading more than 800* tags/second, ThingMagic's M7E-TERA performance is outstanding in challenging applications.

The four RF connections to antennas can be made via edge pads or U.FL connectors

ThingMagic M7E-TERA is supported by ThingMagic API.

Features & Benefits:

- Small Form Factor Coupled with Powerful Performance
- RF Power Output of +31.5 dBm* Results in Tag Read Distance Over 12 Meters*
- Features the Impinj E710 RAIN RFID Reader Chip
- Support for EPCglobal Gen2 (ISO 18000-63) Protocol Meets Industry Tag Standards
- Reads up to 800* Tags/ Second to Support Fast Moving Tags and Large Tag Populations
- Configured for Multiple Regions, such as FCC / ISED (North & South America), ETSI (European Union), and other Regions Including India, China, Korea, Australia and Japan
- Module Size and Feature Set comparable to ThingMagic M6e

Applications:

- OEM
- Value-Added Reseller
- Solution Providers
- Medical Cabinets
- Race Timing
- Portals with Long Cable Runs
- Inventory Tracking.
- Conveyors Requiring Multiple Antenn

ES France - Mobilité & Systèmes Embarqués
127 rue de Buzenval BP 26 - 92380 Garches
Tél. 01 47 95 99 80
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Site Web : www.es-france.com

ThingMagic® M7E-TERA UHF RAIN® RFID Module

Ordering Information	
Module	M7E-TERA
Module on Carrier Board	M7E-TERA-CB
Development Kit	M7E-TERA-DEVKIT
Physical	
Dimensions	46 mm L x 26 mm W x 4.0 mm H (1.8 in L x 1.0 in W x 0.16 in H)
Tag / Transponder Protocols	
RFID Protocol Support	EPCglobal Gen 2 (ISO 18000-63) with DRM
RF Interface	
RF Transceiver	Impinj E710
Antenna Connector	Four 50 Ω connections (board-edge or U.FL)
RF Power Output	Separate read and write levels, command-adjustable from +5 dBm to +31.5 * in 0.5 dB steps, accurate to +/- 1 dBm
Regulatory	Pre-configured for the following regions: FCC (NA, SA) 902-928MHz; ETSI (EU) 865.6-867.6 MHz; TRAI (India) 865-867 MHz; KCC (Korea) 917-923.5 MHz; ACMA (Australia) 920-926 MHz; SRRC-MII (P.R. China) 920.1-924.9 MHz; MIC (Japan) 916.8-922.2 MHz; 'Open' (Customizable channel plan; 860-930 MHz)
Data/Control Interface	
Physical	38 board-edge connections providing DC power, communication, control and GPIO signals
Control/Data Interfaces	UART; 3.3V logic levels from 9.6 to 921.6 kbps
GPIO Sensors and Indicators	Four 3.3V bidirectional ports configurable as input (sensor) ports or output (indicator) ports
API support	C#/.NET, Java, C
Power	
DC Power Required	DC Voltage: 3.3 to 5V DC power consumption when reading: TBD @ +31.5 dBm; TBD @ power levels under +17 dBm
Power Saving Options	Ready: TBD Sleep: TBD Shutdown: TBD
Environment	
Certification	USA (FCC 47 CFR Ch. 1 Part 15); Canada (Industry Canada RSS-247); EU (ETSI EN 302 208 v3.1.1, RED 2014/53/EU); JAPAN (MIC Article 38 Section 24)**
Operating Temp.	-40°C to +60°C (case temperature)
Storage Temp.	-40°C to +85°C
Shock and Vibration	Survives 1 meter drop during handling
Performance	
Max Read Rate	Up to 800* tags/second using high-performance settings
Max Tag Read Distance	Over 12 meters (36 feet) with 6 dBi antenna (36 dBm EIRP)*

Specifications subject to change without notice.
* Actual Max Performance is TBD
**Japan Certification is pending

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