SkyeModule M9

skyetek®

900MHz UHF RFID Reader/Writer

BENEFITS:

» Meets strict regulatory requirements for worldwide operation

» Superior embeddability for fast integration and time-to-market

» Variety of tag vendor choices to comply with Wal-Mart, DoD, ATA

» Low power consumption

» Cost-effective and highly scalable

» Common Blade technology: common hardware and software interface with the SkyeModule M2 HF reader for maximum design and solution flexibility

FEATURES:

» 862-955 MHz

» Tiny footprint - 49% smaller than a business card

» Extensive tag compatibility and optimization with Tagnostic® and TagIQ™

» Minimal power consumption for maximum read range

» Configurable output power

» Simple firmware upgrades

» Variety of host interfaces: TTL, USB, SPI & I²C

» Simple and intuitive API

» Secure memory support

Product Overview

The SkyeModule™ M9 is the world's smallest, globally compliant UHF module. Its one-of-a-kind combination of high performance, security, and cost/space/power efficiency makes it the industry's price per performance leader, delivering the following benefits:

Ease of integration by using the SkyeAPI, a single library that abstracts, simplifies, and automates tag and protocol-specific functions from the host system.

Investment protection through SkyeTek's Advanced Universal Reader Architecture (AURA) permitting upgrading of modules in the field to grow with the evolution and cost savings in tag and reader technologies.

Tagnostic® support for more EPC Class 1 Gen 1/2 and ISO 18000-6B tags than any other comparable reader allowing customers to fully optimize their application.

TagIQ™ that recognizes the unique characteristics of each tag so that read/write performance is maximized for each individual tag type.

Global SKU that provides regulatory pre-scan certification for major markets including FCC, ETSI (302 208), Korea, Taiwan, Australia/New Zealand, Singapore & Hong Kong.

Unparalleled size that is half the size of a typical business card.

Performance optimization achieved through best-in-class power control (10 – 27dBm), noise reduction technology, and power management – essential for embedded applications.

Industry's first standards-based UHF security. Industry-leading privacy protection and anti-counterfeiting/anti-tampering available on any C1G2 tag with user memory.

Enhanced reliability through anti-collision and dense reader mode capability.

Unprecedented price-performance and TCO, best exemplified by ReaderWare and ReaderDNA licensing which allows customers to manufacture modules at cost.

Applications

The SkyeModule M9 has been created specifically for several applications that share common requirements for tag support, protocol, performance, and security. The M9 is an ideal solution for:

- Product Authentication and Anti-counterfeiting
- Handheld Reading/Encoding
- Inventory Management
- Printing and Encoding
- Patron Management
- Access Control
- Asset Management

*Skye**Module** M9*

Software and Security

Software
SkyeAPI C/.NET API
SkyeTek Protocol v3
SkyeWare 4 developer interface
Demonstration applications

SkyeOS™ Embedded
TagIQ™
Fast Inventory with anti-collision
Field upgradeable firmware bootloader

SkyeSecurity[1]
Clone and tamper protection
Encryption (AES, TDEA)
Key Derivation Function (KDF)
Pseudo-Random Number Generator (PRNG)
Secure key store

Tag Support[2]

Protocol	Verified Manufacturers
EPC C1G1	Alien, STMicro
ISO18000-6B	Fujitsu, NXP
EPC C1G2/ISO 18000-6C	Alien, Impinj, NXP, EM Microelectronics, Intelleflex
IP-X, EM4122, EM4444	EM Microelectronics

Specifications

Frequency
862-955 MHz

Physical	CF[3]	MH[3]
Length:	66 mm	70 mm
Width:	36 mm	53 mm
Height:	5 mm	9 mm
Weight:	10.7 g	12.5 g

Environment
Storage Temperature: -30°C to 85°C
Operating Temperature: -20°C to 70°C

Host Communication Interfaces/ Data Rates
UART(TTL): 9.6-115.2 kbps
SPI Mode 1: up to 10MHz
USB 2.0 Full Speed: 12 Mb/s
I²C: 100/400 KHz

Peripheral I/O Connection
7 programmable GPIO pins CF
4 programmable GPIO pins MH

Compliance[4]

FCC 15.247	EN 302-208
EN 301-489	EN 61000-4-3
AS/NZS 4268:2003	DGT LP002
HKTA 1049	IDA TS SRD
MIC 2005-50	RoHS

Transponder Communication Rate
EPC C1G1: slow & fast modes
EPC C1G2 / ISO 18000-6C: 40, 80 kbps
ISO 18000-6B: 40 kbps

Air-interface Protocols
EPC C1G1
EPC C1G2 / ISO 18000-6C
ISO 18000-6B
ISO 18000-6A[5]

Antenna Connection
50 Ω port with MMCX (female)
VSWR 1.5:1 or lower for best performance

Current Consumption
Sleep Mode: 5 mA
Idle Mode: 170 mA
Scan Mode: 800mA @ 27 dBm
650mA @ 24 dBm
500mA @ 21 dBm

Supply Voltage
4.5-5.5 V

Output Power
Adjustable 10-27 dBm @ 0.1 dB steps
Power Accuracy: ±1 dBm

Singulation Performance
Up to 50 tags/second (25-35 typical)

Read Range
Approx. 3.5m with 6 dBi linearly polarized antenna

Performance dependent on tag type, configuration, and other environmental conditions

DKM9 - SkyeModule M9 Developer Kit

The developer kit for the SkyeModule M9 includes all hardware and software components required to integrate UHF RFID technology quickly and easily into any application:

Hardware
- 1 M9 SkyeModule
- 1 Host Interface Board
- 1 860-960MHz External Antenna
- 1 9V Power Supply
- 1 RS-232 Cable
- 1 USB Cable

- SkyeTek sample tag kit
  - EPC Class1 Gen1, EPC Class1 Gen2, and ISO18000-6B label tags
  - Variety of labels and form factors

Software
- SkyeWare 4 Dev/Demo Software
- Software Libraries (API): C, .NET
- Protocol Command Builder
- Command Line Interface
- Windows DLL

Service
- Technical Support

Notes: [1]Available via firmware upgrade, [2]See Tag Support Matrix for complete details, [3]CF = CompactFlash-style form-factor; MH = Mounting Hole format, [4]Pre-scan compliant. Fit-for-use products require additional certification. [5]Future firmware release.

SkyeTek Reader Technology SkyeTek provides a variety of reader technology at both 13.56 MHz (HF) and 860- 960 MHz (UHF). ReaderDNA, a comprehensive reference design, is available for component level integration of the technology including complete design files, BOM, and test fixture. All SkyeTek readers leverage powerful firmware that drastically reduce hardware costs and are delivered in conjunction with ReaderDNA. SkyeModules are controlled via the SkyeTek Protocol, a powerful but simple communication protocol that grants the user access to all features of an RFID transponder. Further, they have been designed with flexible and modular embedded software that allows one to select only the features desired.

RoHS Compliant

Member AIM GLOBAL

Member EPCglobal