

*rfid as a feature*



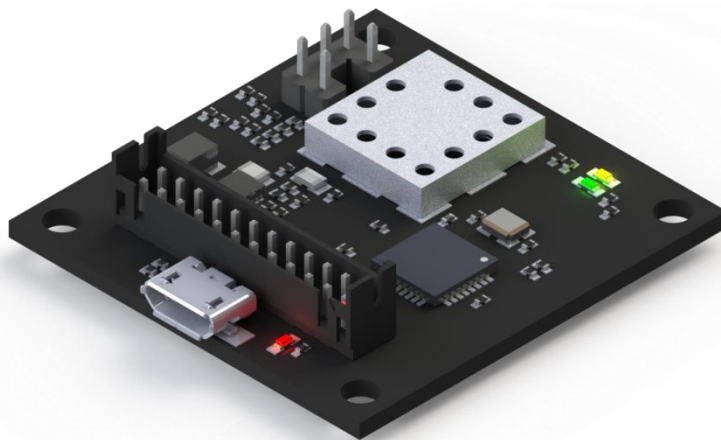
#### BENEFITS:

- » Fast integration and time-to-market
- » Unparalleled investment protection
- » Cost-effective and highly scalable
- » Common Blade technology: common size, connection method, and software interface with the SkyeModule™ M2, M7, M9 and M10 readers for maximum design and solution flexibility

#### FEATURES:

- » Miniscule footprint – about the size of a matchbook
- » Greatest tag compatibility with Tagnostic® and TagIQ™
- » Minimal power consumption and maximum read range
- » Software Adjustable Host Interfaces: UART (TTL), SPI, USB, I2C
- » 4 General Purpose I/O Pins
- » Simple and intuitive API

## SkyeModule Gemini



#### Product Overview

The **SkyeModule™ Gemini** marks the next generation of Skyetek HF reader modules. The Gemini is a low-cost, and ultra-low power, MIFARE and NFC reader/writer module. A cutting edge ARM Cortex microcontroller and latest HF transceiver technology coupled with the reader's intelligent operating system make this module the most versatile HF RFID module at the bottom tier price point. Manufactured in accordance with ISO 9001 and ISO 13485, quality is a top priority for all Skyetek modules.

Supported security features like mutually authenticated AES128 encryption offer a low-cost and robust method of authentication for consumables, making the Gemini ideal for medical, ticketing, security or safety applications. At about the size of a matchbook, this module can be fit into almost any new or existing OEM design. The Gemini module is also well suited for battery powered and other power sensitive applications because of the low power features including software stand-by mode and deep sleep mode. In addition, the wide input voltage range and highly efficient switching power design make this module perfect for battery powered applications right off the shelf.

The Gemini module is one of the first to support not only the extremely popular NFC tags, but also NFC peer-to-peer and tag emulation modes as defined by ISO18092. This unique ability allows for active data passing between NFC enabled smart phones, tablets and other devices.

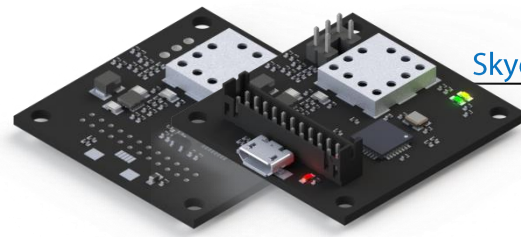
The Gemini is physically the same size and form factor as Skyetek's very first and most popular module the M1. The Gemini module's optional connector is updated to match the Common Blade Interface and can connect to the same interface board as any of the Common Blade devices (M2, M4, M7, M9 and M10). In addition, a micro USB port is available for direct connection to a USB host as well as an antenna output for an external antenna.

#### Features:

- 13.56MHz HF RFID
- Reads and writes to transponders based on ISO14443A/B
- Reads and writes to other NFC devices based on ISO18092
- Emulates NFC tags based on ISO18092
- 3DES authentication for MIFARE Ultralight C tags coming soon
- AES128 authentication for MIFARE Plus tags
- Crypto1 authentication for MIFARE Classic and Plus tags
- Wide and efficient power supply with input from 2.0 – 5.5V
- Sleep mode current down to 10uA
- Easy migration to and from the M2/M4
- Supported host interfaces include USB, TTL level RS232, SPI, I2C
- Modularly certified



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



SkyeModule Gemini

## About SkyeTek:

SkyeTek, Inc continually strives to enable the pervasive adoption of RFID technology. SkyeTek's Tagnostic™ RFID readers work with most industry standard tags and smart labels; their low power requirements and small form factor make them the optimal choice for embedding into new or existing products. SkyeTek's RFID reader technology is available in several formats including reader modules, finished readers and hardware reference designs. SkyeTek markets to OEM customers in targeted vertical markets with several high-volume licensing options available.

## For more information:

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## Software and Security

### Software

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

### SkyeOS™ Embedded

TagIQ™  
Field upgradeable firmware bootloader

## Tag Support

Air Interface	Manufacturer	Product Family	Tags
ISO 14443A	NXP	MIFARE	Mifare Classic 1K/4K, Ultralight/C, Mifare PLUS S2K/X2K/S4K/X4K, Mifare DESFire†
ISO 14443A	NXP	NFC	NTAG203
ISO 14443A	Kovio		NFC Barcode, 2K
ISO14443B	ST Micro	SRI	SRT512, SRI512, SRI2K, SRI4K, SRIX4K

† Select Only

## Specifications

### Frequency

13.56 MHz ± 7 kHz

### Peripheral I/O Connection

4 programmable GPIO pins

### Current Consumption

Sleep Mode: 10µA  
Idle Mode: 10 mA  
Scan Mode: 120 mA

### Physical

Length: 40mm  
Width: 38mm  
Height: 5 mm

### Supply Voltage

2.0-5.5V

### Antenna Options

Internal or 50 Ω output for external connection

### Host Interfaces/Data Rates

UART (TTL): 9.6-115.2 kbps  
SPI: Mode 1 up to 4 Mb/s  
USB: 2.0 Full Speed 12 Mb/s  
I²C: 100/400 kHz

### Transponder

#### Communication Rate

ISO 14443A: 106 kbps  
ISO 14443B: 106 kbps

### Effective Range

Internal Antenna: up to 5cm  
External Antenna: up to 8cm  
(read range and rate are subject to specific environmental conditions)

### Environment

Storage Temperature: -20°C to 85°C  
Operating Temperature: -10°C to 70°C

### Air-interface Protocols

ISO 14443 A/B (parts 2-4)  
ISO 18092

### Compliance

FCC Part 15.225<sup>1</sup>  
FCC Part 15 Modular Approval<sup>1</sup>  
EN 300-330<sup>1</sup>

<sup>1</sup> Planned, pending final testing

## 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.