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# *Nomad<sup>TM</sup> RFID Reader Design Guide*

<http://www.fuwit.com>

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# Nomad RFID Reader Design Guide

## Introduction

This guide provides useful information for developers of applications for the Nomad when equipped with the UHF RFID reader.

## Coexistence with other RF-based functions

When the UHF RFID reader is actively scanning, there is no impact to the following services:

- Bluetooth (BT)
- WiFi
- GPS

WWAN is operational while an RFID scan is active, but the maximum data transfer rate has been found to be reduced by 25%.

## Coexistence with non-RF-based functions

When the UHF RFID reader is actively scanning, there is no impact to the following services:

- Camera
- Barcode Scanner

**Note:** ScanAgent and RFIDSearchLight cannot be used simultaneously but applications can be written that enable dual use.

From an application perspective, the only known conflict is that Notepad is impacted by RFID Searchlight – the record button does not work.

## Power Consumption

The Nomad battery is rated at 18 Watt-hours. The amount of time the Nomad can operate on a full charge depends on the operational state the Nomad is in during that period. The following table shows typical power consumption levels for various common states.

Reference	Nomad State	Power Consumption
A	Average idle power consumption (all wireless off, backlight off, processor idling, room temperature)	1.1 W
B	Additional power consumption when GPS is continuously tracking	0.2 W
C	Additional power consumption when keyboard wedge is enabled	0.4 W
D	Additional power consumption when keyboard wedge is continuously reading tags	3.0 W

The average power consumption can be reduced significantly if the RFID reader is activated periodically rather than continuously. For example, if the reader is configured to search for tags for only 5 seconds every 3 minutes, the average additional power consumption due to RFID services drops from 2.7 W to 0.1 W.

Taking these power consumption figures into account, the table below shows the total expected power consumption based on the services that are active, and gives the anticipated battery life if the Nomad were run continuously in the indicated state.

Services Active	Combined Average Power Consumption	Battery Life
All wireless off, backlight off, processor idling, room temperature = Reference A	1.1 W	17.1 hours
GPS continuously tracking = References (A+B)	1.3 W	14.4 hours
GPS not tracking, keyboard wedge enabled and scanning for tags = References (A+D)	4.1 W	4.3 hours
GPS not tracking, keyboard wedge enabled but not continuously scanning for = References (A+C)	1.5 W	12 hours

Using the power consumption figures provided above, the user can calculate the average power consumption and anticipated battery life based on the proportion of time the reader spends in each state.

## Support

Support for the Nomad RFID Reader is available by contacting:

ThingMagic, A Division of Trimble  
Four Cambridge Center, 12th floor  
Cambridge, MA 02142  
866-833-4069

Or through the company website:

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

## Compliance Information

### FCC Compliance

This equipment complies with Part 15 of the FCC rules for intentional radiators and Class A digital devices when installed and used in accordance with the instruction manual. Following these rules provides reasonable protection against harmful interference from equipment operated in a commercial area.

This equipment should not be installed in a residential area as it can radiate radio frequency energy that could interfere with radio communications, a situation the user would have to fix at their own expense.

This device has been designed to operate with the antenna provided with it. This device is not designed to work with any other antennas.

To reduce radio interference to other users, the antenna type and its gain is chosen such that the equivalent isotropically radiated power (EIRP) is not more than permitted for successful communication.

### EQUIPMENT MODIFICATION CAUTION

Equipment changes or modifications not expressly approved by ThingMagic, Inc., the party responsible for FCC compliance, could void the user's authority to operate the equipment and could create a hazardous condition.

### IMPORTANT USER INFORMATION

In order to comply with FCC and IC requirements for RF exposure safety, a separation distance of at least 20 cm (7.9 in) needs to be maintained between the radiating elements of the antenna and the bodies of nearby persons.