



Zebra Enterprise Solutions

CONCEPT2  
SOLUTION

# Sapphire Technology



DATASHEET

## The Future in Ultra-Wideband Technology

The award winning *Sapphire* product line, developed by Multispectral Solutions (MSSI), part of Zebra Enterprise Solutions (ZES), includes DART for Real-Time Locating System (RTLS) and VISION for Radio Frequency Identification (RFID) applications. Utilizing Multispectral's patented short-pulse, Ultra-Wideband (UWB) technology, *Sapphire* provides a performance level that exceeds the capabilities of other RTLS and RFID technologies.

*Sapphire* has an extensible and flexible architecture enabling tracking operations in challenging environments it offers long battery life, small tag sizes, high tag throughput and high RTLS accuracy. *Sapphire* has successfully enabled high rate of return RFID and RTLS tracking applications capable of handling thousands of assets in industrial and office settings where real time, exceptional tracking and inventorying performance is required.

### Sapphire Solutions Include:

#### Sapphire DART

Designed for indoor applications, the DART RTLS system is comprised of a processing hub connected to a set of UWB receivers which span the coverage area. The processing hub provides power, data, and synchronization to all receivers through a dedicated cabling infrastructure. Embedded software on the hub allows for straightforward system configuration and display of real time tag locations. The easy to use, browser based, Graphical User Interface (GUI) utilizes a Java run-time environment. For large scale deployments, RTLS middleware solutions are available from ZES and a variety of vendors. Alternatively, custom middleware solutions can be developed utilizing the Sapphire Application Programming Interface (API).

#### Sapphire VISION

Designed for demanding indoor RFID applications, VISION fixed readers can be deployed as either a stand alone solution or complement a *Sapphire* DART system installation. A key feature of the reader is the ability to adjust the read range from inches to hundreds of feet to fit the specific user application. The reader can either stream live tag data or show cumulative tag reports via the easy to use, browser based, Graphical User Interface (GUI) utilizing a Java™ run-time environment.

#### Sapphire Tags

These indoor transmit-only devices communicate with *Sapphire* DART and VISION systems wirelessly. Three standard form factors are available: 1x1 Asset Tag, Mini-Badge Personnel Tag, and Micro Asset Tag. Tags are powered with a 3V coin cell battery producing a battery life typically exceeding seven years even while transmitting updates every second.



### SAPPHIRE FEATURES:

- FCC Part 15.250 compliant
- Exceptional performance — Performs in high multi-path environments
- Excellent real-time location accuracy — Better than 30cm (1 foot)
- Long tag battery life — Up to 7 years at 1 Hz blink rate
- Long Range — Up to 200 meters (650 feet) with line of sight
- Unmatched real-time location tag throughput — Up to 2700 tags/hub
- Fast tag transmission rates — Up to 25 times/second
- Fast intuitive setup — typical single location set-up in one day

## Sapphire Starter Solutions

The following recommended *Sapphire* starter solutions are fully extensible and allow customers to easily transition from pilot evaluation to full-scale deployments.

Recommended <i>Sapphire</i> DART Starter Solution		
Quantity	Product	Part Number
1*	<i>Sapphire</i> DART Hub with embedded software	H651A
4*	<i>Sapphire</i> DART Receivers	R651-X
4*	Dual option ceiling mounts	MA651-DO9
4*	Shielded Cat 5e cables (150')	C651-150
2*	<i>Sapphire</i> 1x1 Asset, 1 Hz Tags for reference tags	T651-1x1-401
10*	<i>Sapphire</i> 1x1 Asset, 1 Hz Tags	T651-1x1-401
2	<i>Sapphire</i> 1x1 Asset, 5 Hz Tags	T651-1x1-405
2	<i>Sapphire</i> Mini Badge, 1 Hz Tags	T651-BDG-401
2	<i>Sapphire</i> Mini Badge, 5 Hz Tags	T651-BDG-405
2	<i>Sapphire</i> Micro Asset, 0.5 Hz Tags	T651-MIC-4005
2	<i>Sapphire</i> Micro Asset, 1 Hz Tags	T651-MIC-401

\* Denotes minimum quantity for evaluation

Recommended <i>Sapphire</i> VISION Starter Solution		
Quantity	Product	Part Number
1*	<i>Sapphire</i> VISION fixed reader with embedded software	V652-X
1*	Dual option ceiling mount	MA651-DO9
1*	Shielded Cat 5e cable (150')	C651-150
10*	<i>Sapphire</i> 1x1 Asset, 1 Hz Tags	T651-1x1-401
10	<i>Sapphire</i> 1x1 Asset, 5 Hz Tags	T651-1x1-405
10	<i>Sapphire</i> Mini Badge, 1 Hz Tags	T651-BDG-401
10	<i>Sapphire</i> Mini Badge, 5 Hz Tags	T651-BDG-405
10	<i>Sapphire</i> Micro Asset, 0.5 Hz Tags	T651-MIC-4005
10	<i>Sapphire</i> Micro Asset, 1 Hz Tags	T651-MIC-401

\* Denotes minimum quantity for evaluation

### About Zebra Enterprise Solutions

Zebra Enterprise Solutions, a division of Zebra Technologies Corporation, extends Zebra's reach beyond passive RFID by employing state-of-the-art software and hardware solutions to locate, track, manage, and optimize high-value assets, equipment and people across the world's largest supply chains. Whether tracking containers through a port, optimizing parts for manufacturing, or managing ground support equipment at an airport, the real-time asset management solutions from the combination of Navis, WhereNet, proveo, and Multispectral Solutions provide improved visibility and velocity to gain measurable business improvements. Utilizing products that are based on ISO/IEC 24730-2, Cisco CCX Wi-Fi, precision GPS, and UWB technologies, Zebra Enterprise Solutions offers a wide range of location solutions that are "application matched," enabling its customers to put the right asset in the right place at the right time.

2

For more information please visit us at [www.concept2solution.com](http://www.concept2solution.com) or email us at [sales@concept2solution.com](mailto:sales@concept2solution.com)

©2010 ZIH Corp. Zebra Enterprise Solutions and all product names and numbers are Zebra trademarks, and Zebra, and the Zebra head graphic are registered trademarks of ZIH Corp. All rights reserved. All other trademarks are the property of their respective owners.



Zebra Enterprise Solutions