WHERELAN III
FREQUENTLY ASKED QUESTIONS

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Product Positioning

1. What is WhereLAN III?
   WhereLAN III is Zebra's next generation ISO 24730-2 sensor. It is designed as a "100% soft" receiver in the 2.4 GHz band and incorporates proprietary signal processing techniques. WhereLAN III lowers the customer's Total Cost of Ownership improved system performance over the current-generation G2-LOS sensor it replaces.
   Design and signal processing improvements over G2-LOS result in an order of magnitude Time of Arrival (TOA) accuracy improvement and a doubling of the location accuracy and precision. These improvements permit full-locate deployments in indoor Industrial Manufacturing environments using wireless time synchronization. This results in a large reduction in system deployment costs. WhereLAN III also makes possible a novel wireless time synchronization scheme (2012 release) that self-configures and automatically adapts to a changing RF environment. This results in reduced system design and on-going maintenance support costs.
   WhereLAN III is fully backwards compatible and interoperates with "G2-LOS" systems, which protects the investment of our global customer base. WhereLAN III is compliant with IEEE 802.3af Power over Ethernet (PoE), enabling input power to be furnished by commonly available Ethernet switches. WhereLAN III can optionally connect as a client to any 802.11 b/g Wi-Fi network, facilitating system design and reducing implementation costs by removing the need for a network drop at the point of installation. Finally, WhereLAN III consumes just 12 watts, a 58% reduction of the G2-LAP, which allows it to be powered outdoors via a small and cost effective solar kit.

2. What are the key WhereLAN III value propositions?

   a. WhereLAN III features the same Six-Sigma signal detection reliability as the G2-LOS
   b. WhereLAN III reduces system deployment costs by significantly reducing the need to run wired time cabling to support full-locate indoor deployments, by eliminating the need for a network drop via its integral Wi-Fi client capability, by supporting industry standard 802.3af PoE, and by enabling outdoor power via a small and cost effective solar kit
   c. WhereLAN III reduces system design and maintenance costs by enabling full benefit of Wireless Time II; a self-configuring and auto-adapting Wireless Time Synchronization algorithm

3. Why did Zebra invest in WhereLAN III?
   Zebra is committed to its existing customer base and to continued expansion of its Asset Visibility Solutions. WhereLAN III is part of that total commitment. The product replaces the legacy G2-LOS, whose design is about 9 years old. Various G2-LOS components were on limited availability and made difficult its continued manufacture.

4. What is Wireless Time II?
   In order to provide full-locate, the system requires a common clock against which all Time-of-Arrival (ToA) tag blinks can be referenced. Wireless time synchronization allows the reference clock to be derived from periodic "embedded tag" blinks generated by the network of Location Sensors themselves.

Wireless Time II (WT-II) is a novel proprietary wireless time synchronization algorithm. Unlike the current one, WT-II does not expose any configuration parameters to the system designer.   On system boot-up, WT-II automatically self-configures. It also automatically adapts to changing RF environment.   WT-II makes extensive use of the WhereLAN III's capability to transmit embedded tag blinks on both of its two antennas. This latter feature is vital for optimum WT-II performance.   WT-II is compatible with existing G2-LOSs, although at a reduced performance level.

5. What happens to G2-LOS and G2-LAP and all our worldwide customers who depend on those products? Can WhereLAN replace a G2-LOS?   What about a G2-LAP?

WhereLAN III was designed for backwards compatibility and ease of migration for a G2-LOS. WhereLAN III serves as a functionally backwards compatible replacement for G2-LOS.   Although WhereLAN III uses a different pole mount kit, DC power supply, and Ethernet Power Injector than G2-LOS, the migration from a G2-LOS to a WhereLAN III is straightforward and easy to implement.

Unlike the legacy G2-LAP product, there is no provision for WhereLAN III to serve the function of an 802.11 b/g Access Point. Instead, a version of WhereLAN III optionally supports the reverse; it establishes a client 802.11 b/g Wi-Fi connection to any industry standard Access Point.   In general, customers on M&S who need to replace a G2-LAP will require a WhereLAN III and a separate Access Point.

The topic of G2-LOS and G2-LAP migration using WhereLAN III is covered in further detail in the document "WhereLAN III and G2-LOS Mixed Mode".

Product Features

1. I'm familiar with G2-LOS.   What are the new features of WhereLAN III?

    a) WhereLAN III Time of Arrival detection is about 10x more accurate than G2-LOS.
    b) WhereLAN III supports IEEE 802.3af Power over Ethernet (PoE)
    c) A version of WhereLAN III supports establishing a client connection with any industry standard 802 11 b/g Wi-Fi Access Point.   Unlike G2-LAP, WhereLAN III uses a dedicated antenna for its Wi-Fi connections.
    d) WhereLAN III ships with DHCP enabled.
    e) WhereLAN III ships with Secure Socket Shell (SSH) enabled and Telnet disabled.
    f) WhereLAN III consumes only 12 watts.
    g) WhereLAN III is delivered without a DC input power supply, as it can be powered by an industry standard 802.3af PoE device.

2. How accurate is a WhereLAN III RTLS network?

    RTLS accuracy depends on many factors, including proper coverage design and environmental conditions.   A WhereLAN III RTLS network is inherently more accurate than a corresponding G2-LOS network because WhereLAN IIIs can capture the Time-of-Arrival of WhereTag waveforms much more accurately than G2-LOSs.

    WhereLAN III can deliver 1.6 m R95 location accuracy with 0.5 m standard deviation.   This is approximately a 2x factor improvement over G2-LOS, at 3.3 m R95 location accuracy with 0.9 m standard deviation. The terminology R95 indicates "95% of the time."

3. I heard WhereLAN III can be 1-m accurate versus G2-LOS being 3-m accurate. Why is that important?

    The importance of location accuracy depends on the needs of the underlying application and on the business value said application represents to an organization. As location accuracy increases, so does the set of applications that can benefit from an RTLS solution. Many customer applications pivot on work done on a particular asset at a particular work station or cell. Therefore knowledge of an asset's location and dwell time at a given cell can trigger actionable business flow events.   Let us take a 6 m x 6 m cell as an example. An RTLS solution with 3-m accuracy can be used for cell visibility provided the tagged asset is located in the center of the cell.   By contrast, 1-m accuracy allows the tagged asset to be anywhere within approximately a 5 m x 5 m area within the cell and still deliver cell-level visibility.   Another example where location accuracy can be critical is in tracking the location of parked vehicles on large parking lots after final assembly. Typically, the parking slots are 3 m wide. Hence, an RTLS solution with 1-m accuracy can provide parking-spot visibility whereas a 3-m solution can only provide +/- 1 parking-spot visibility.

4. Which G2-LOS accessories are compatible with WhereLAN III?

    Many of the G2-LOS accessories are compatible with WhereLAN III. The RTLS antennas, the indoor/outdoor "bullhorn" and the indoor "smoke detector" antennas are 100% compatible and carry forward. On the other hand, the G2-LOS pole mount kit, G2-LOS power supply, custom Ethernet Power Injector are not compatible with WhereLAN III and should not be used going forward.

    To facilitate the product transition, all WhereLAN III model types and accessories are grouped together on the new Price List.

5. Why does WhereLAN look so similar to G2-LOS?

For more than nine years, the case design of G2-LOS has been thoroughly field proven in challenging indoor and outdoor environments. WhereLAN III shares much of the basic G2-LOS case design to reduce Non-Recurring Engineering investment, reduce program risk, benefit from the field proven features of the G2-LOS case, and to make "drop-in" replacement as seamless as possible.

6. How can I power up a WhereLAN III?

WhereLAN III can be powered by any standards-compliant IEEE 802.3af network switch. Doing so makes it unnecessary to furnish a separate DC power supply and its required DC input power cable up to the sensor. If the network switch does not support 802.3af, then WhereLAN III may be powered indoors or outdoors using a DC power supply and indoors using a 802.3af PoE injector. Both of these devices are shown on the Price List.

7. What is SSH? What happened to Telnet?

SSH stands for "Secure Shell". SSH allows you to connect to WhereLAN III using a completely encrypted communications session, including user names and passwords used for authentication. SSH is much more secure than Telnet, which operates in the clear. WhereLAN III still supports Telnet. However, WhereLAN III ships from the factory with SSH enabled and Telnet disabled. To use Telnet, you must connect to WhereLAN (e.g., over the serial port or an SSH session) and explicitly enable its use.

8. Which VSS versions is WhereLAN III compatible with?

WhereLAN III has been tested to be compatible with VSS 3.8.0.5 and higher.

Wi-Fi Support

1. Which Wi-Fi standards does WhereLAN III support?

   WhereLAN III supports 802.11 b/g Wi-Fi, as an option, by ordering LOS-5000-00AB.   This version of WhereLAN III contains a small 802.11 b/g Wi-Fi card and an RF cable integral to the case of the product. To support Wi-Fi, you must order the CBK-020-00 adaptor kit and one of the three Wi-Fi antennas, per your System Design.

   The Wi-Fi network parameters are defined via a special file called "wpa_supplicant.config", which must be uploaded to WhereLAN III.   Refer to the WhereLAN III User Guide for further detail.

2. My customer's site is migrating its Access Points to IEEE 802.11.n.   How does WhereLAN III work in this environment?

   IEEE 802.11.n incorporates the use of 40 MHz wide channels and multiple input, multiple output antennas to increase range and data rates. The standard was designed to be fully backwards compatible with both 802.11.g and 802.11.b networks. As such, WhereLAN IIIs can be fully integrated into a customer's existing 802.11.n network seamlessly. Further, either WhereLAN III or the customer's Access Points can be programmed to operate in 802.11.g mode only, alleviating concerns over capacity degradations due to 802.11.b legacy mode.

General

1. Please explain the "Compliant with Trade American Act" note I see on the Price List. What is that all about? I see four different versions of WhereLAN III on the Price List. Please explain.

   The Buy American Act (BAA) and Trade American Act (TAA) are both United States laws governing the purchase of certain equipment for use by U.S. Government agencies. As the WhereLAN III is manufactured in China, the product needs to be "substantially transformed" in order to meet these requirements. There are four models of WhereLAN III; all but the base LOS-5000-00AA are TAA compliant and may be bid and sold to U.S. Government procurements.

2. Where can I sell WhereLAN III?

   As of October 2011, WhereLAN III is certified for operation in the US/IC/EU, and in Colombia, India, Turkey, United Arab Emirates, Australia, New Zealand, Singapore, and Thailand. Zebra is actively pursuing certifications in other countries, with emphasis on China, Brazil, Mexico, and Argentina. By Q2 of 2012, we expect to be able to sell WhereLAN III in all countries with G2-LOS certifications.

3. Does Zebra sell a solar kit for WhereLAN III? If not, how can I help direct my customers in this area?

   No, we do not resell a solar kit for WhereLAN III. The configuration of a specific solar kit depends on the solar profile of the specific customer site and on the required system availability. Solar kits and consultancy services are available from a number of sources, such as Solis Energy, SunWize Energy, and Tessco, among others.