

RFID
JOURNAL
LIVE!

TRACK AND MANAGE **EVERYTHING**

TENTH ANNUAL CONFERENCE AND EXHIBITION

APR. 3-5, 2012 | WALT DISNEY WORLD SWAN AND DOLPHIN RESORT, ORLANDO, FLA

Improving WIP tracking and Production Control in the PCBA process with RFID

BJ Favaro, Cisco, Inc.

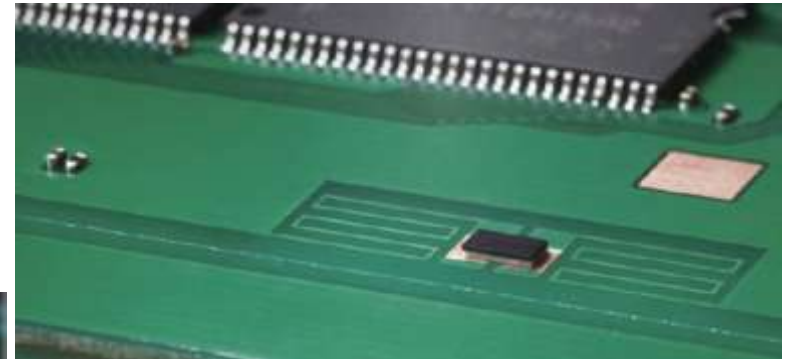
Bill Hajje, Jabil, Inc.

Imbedded RFID on PCBAs

Use Cases

- Board data and asset tracking (*before assembly*)
- DGW/RMA/sorting/material control (reverse logistics)
- Authentication/anti-counterfeiting
- Process monitoring/WIP tracking

Imbedded RFID on PCBAs



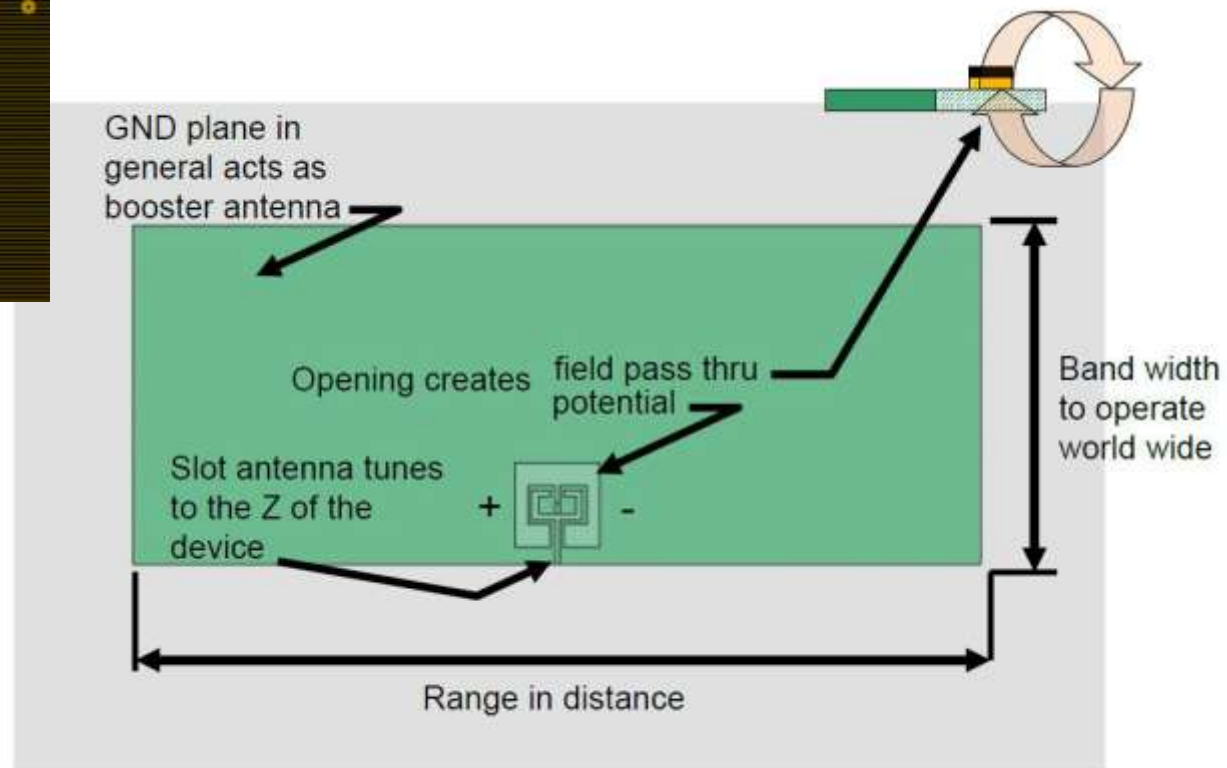
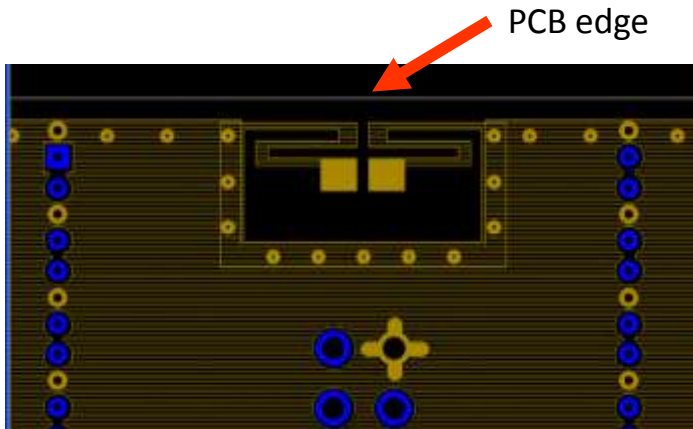
TOPPAN



Murata *Magicstrap* RFID Tag

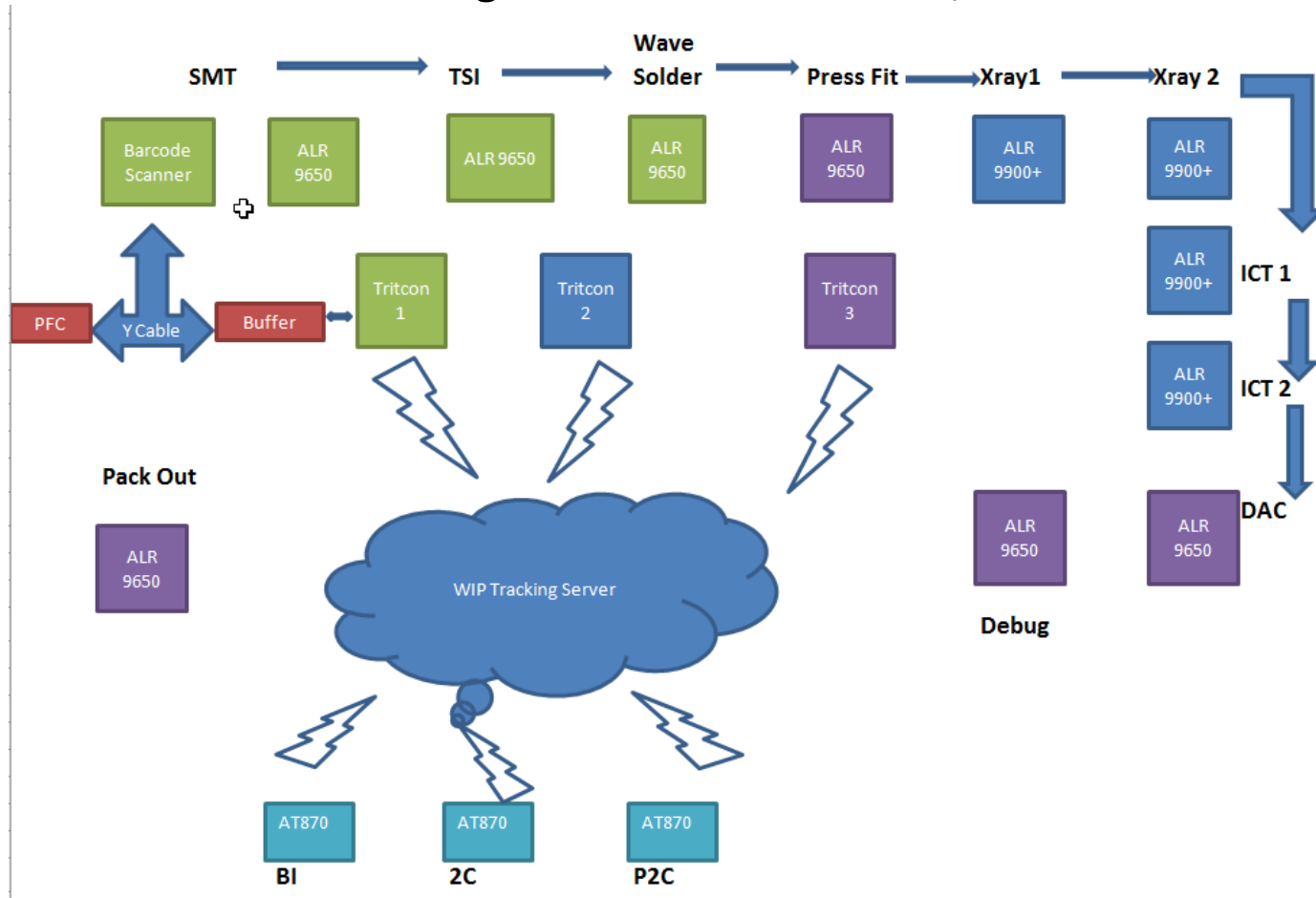
- Compliant EPC global Gen2 Passive RFID Tag
- 850 - 950 MHz UHF operation band
- Integrated circuit
 - Analog F/E
 - μController
 - memory
- Enhanced version with 512 bit user memory
- Custom command set to support encryption for counterfeiting prevention

Murata *Magicstrap* RFID Tag



Process Flow on the Line

Process flow indicating RFID reader locations, fixed and handheld



RFID WIP tracking Software

Process flow diagram for data into our database

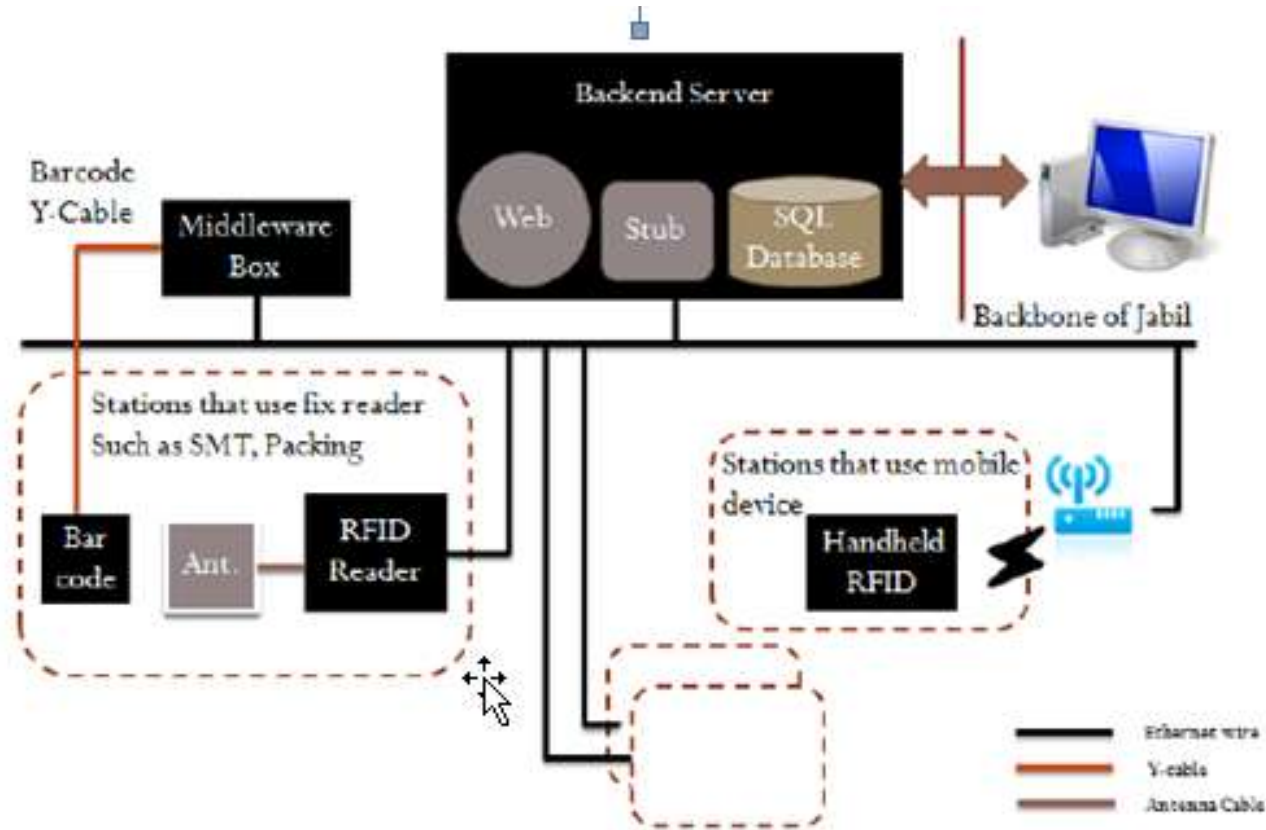
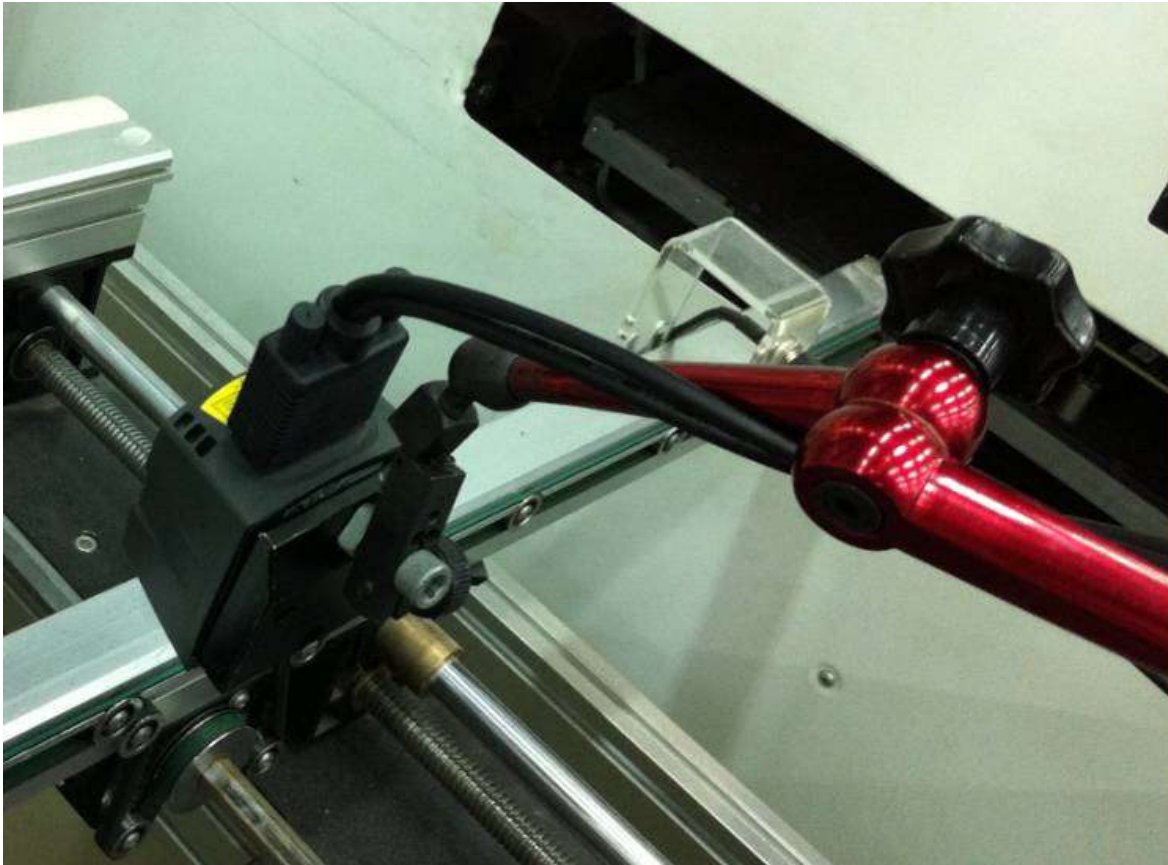


Figure 1. System Architecture.

Process Linking

- First location where the TID is associated with the assembly number and serial number
- The TID now identifies the unique unit throughout the remainder of the process



RFID Readers on the Line



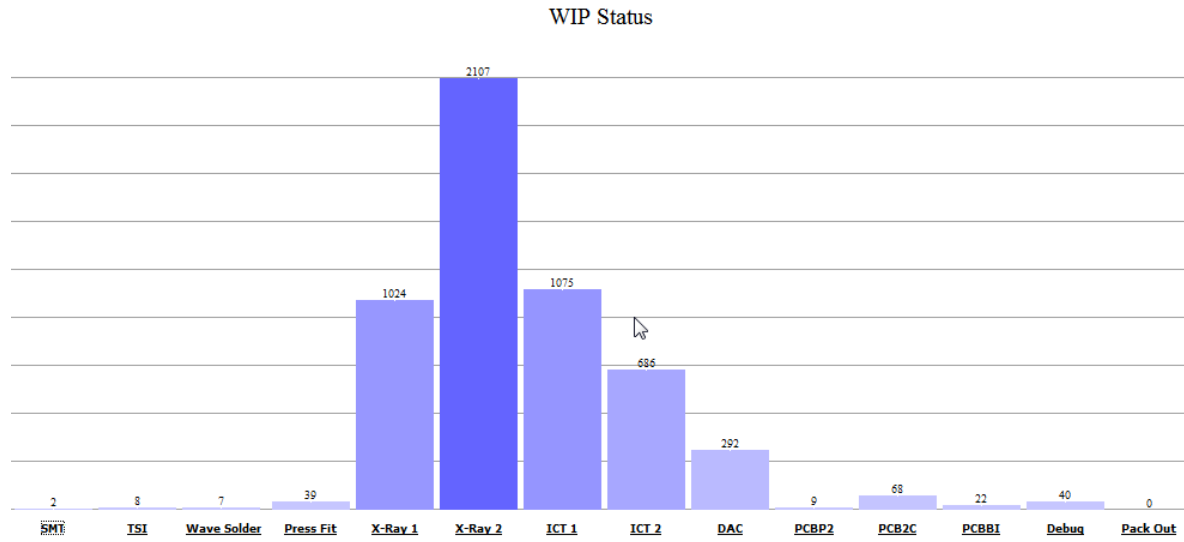
Monopole Antenna



Circular Antenna

Sample Reports

Site Name	Detected RFID Tag
SMT	Scanned TID: E20060031637E18B Scanned Barcode: [REDACTED] Assembly Number: [REDACTED] First Detected: 2011-12-22 15:55:23 Last Detected: 2011-12-22 16:13:58
	Scanned TID: E20060031638342A Scanned Barcode: [REDACTED] Assembly Number: [REDACTED] First Detected: 2011-12-22 16:05:23 Last Detected: 2011-12-22 16:07:21
	Scanned TID: E200600316386623 Scanned Barcode: [REDACTED] Assembly Number: [REDACTED] First Detected: 2011-12-20 04:53:59 Last Detected: 2011-12-20 09:13:51
	Scanned TID: E2006003163842C0 Scanned Barcode: [REDACTED] Assembly Number: [REDACTED] First Detected: 2011-12-20 05:21:36 Last Detected: 2011-12-20 23:53:41
TSI	Scanned TID: E20060031637F523 Scanned Barcode: [REDACTED] Assembly Number: [REDACTED] First Detected: 2011-12-22 15:49:11 Last Detected: 2011-12-22 15:56:11
	Scanned TID: E200600316381327 Scanned Barcode: [REDACTED] Assembly Number: [REDACTED] First Detected: 2011-12-22 15:52:17 Last Detected: 2011-12-22 15:59:20



- Report by station: displays the TID, serial number and assembly number
- WIP status report: displays current WIP count by station as detected by RFID readers

Thank You

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