



***Enabling accurate and complete
flow of Product and Information
throughout the IBCA Supply Chain***

This Session – 30 minutes Then Q and A

- **Brief Review of IBCA Webinars**
 - Bar Coding
 - Mobile Commerce
 - IoT / IIoT
- **RFID New Standard**
- **Q and A**



Customer Behavior Trends



3 in 4 consumers make a purchase on their mobile device at least once a month.



89%

of consumers use their mobile devices while shopping.



Download Report

Source: ScanLife Consumer Behavior Survey

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Customer Behavior Trends

Are you willing to share your location and some personal information with a brand if you are receiving something valuable in return?



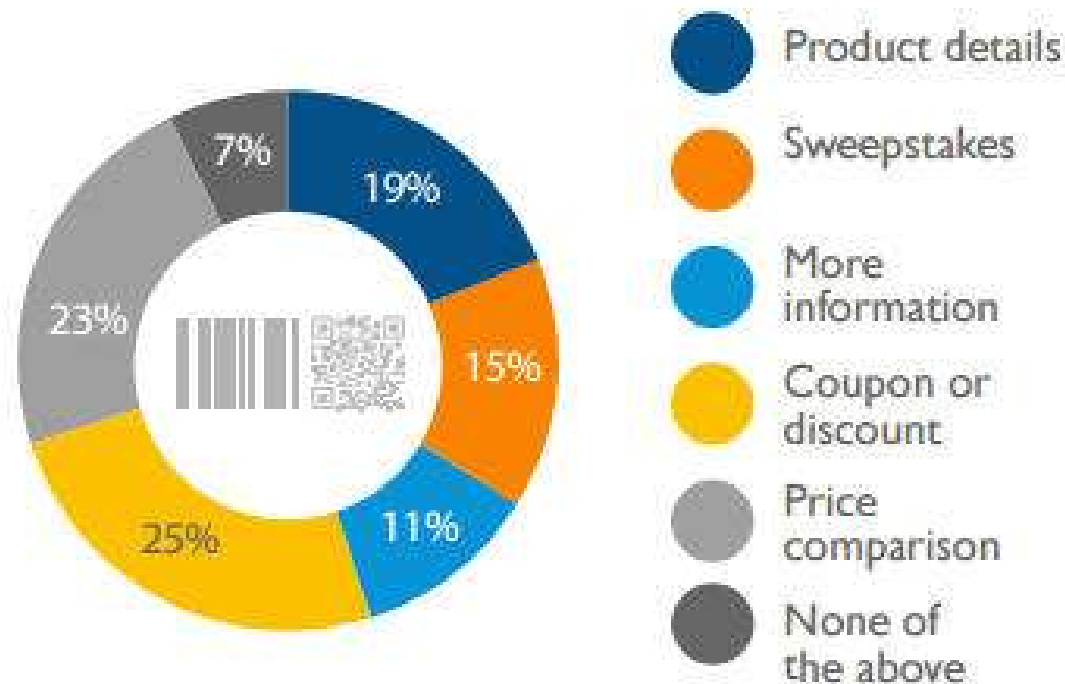
43%

Yes I would share both

Source: ScanLife Consumer Behavior Survey

Customer Behavior Trends

What motivates you to scan a UPC or QR Code?



Source: ScanLife Consumer Behavior Survey

QR Code Usage

- Reasons Lesser Usage in Printed Materials

philly.com/monster
m.applyphilly.com



- Boscov QA Printing Issues



QR Code Usage

Reasons Lesser Usage

- **Expansion of NFC (Apple, Google, Samsung Pay)**
- **GPS in Smart Phones**
- **Retail Store Wide Internet Access for Shoppers**
- **Applications Offered by Retailers**
 - **Possible to Track Shoppers In / Throughout Store**
 - **On-Line Real Time Discount Offers are Possible**

Global eCommerce Growth

Global Online Commerce, 2012 to e2020
(In US\$ billions)



Source: AITE Group Analysis

IoT- What Is Happening Now?



Internet of Things – Key Trends

From 2017 Mobile World Congress

1. Low Power Wide Area Networks (LPWANs)
2. IoT Security
3. Connected Car
4. 5G

Sources: Cisco Jasper IoT Summary Report – Mar. 10, 2017

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Internet of Things – **Key Trends**

From 2017 Mobile World Congress

1. Low Power Wide Area Networks (LPWANs)

- In Past, Unlicensed Technologies Were Highlighted
- Now Core Focus Was on Licensed NB-IoT and LTE-M
- 3GPP (3rd Generation Partnership Project) to be Supported
- LTE-M Was Announced by Many Service Providers

Sources: Cisco Jasper IoT Summary Report – Mar. 10, 2017

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Internet of Things – **Key Trends**

From 2017 Mobile World Congress

2. IoT Security

- This Continues to be a Priority in the IoT Space
- GSMA estimates that worldwide IoT security will increase by 73% 2019 to US\$195 Million

Sources: Cisco Jasper IoT Summary Report – Mar. 10, 2017

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Internet of Things – Key Trends

From 2017 Mobile World Congress

3. Connected Car

- Auto Manufacturers have committed major development resources in this Mobile Space
- AT&T already has more than 11 million cars connected
- Cisco Jasper supports Honda, Daimler, BMW, Ford, and Peugeot with their IoT platform offering

Sources: Cisco Jasper IoT Summary Report – Mar. 10, 2017

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Internet of Things – **Key Trends**

From 2017 Mobile World Congress

4. 5G

- Industry has been talking about 5G for some years
- Standardization of 5G continues to evolve
- Korea Telecom announced 5G Network in 2019.

Sources: Cisco Jasper IoT Summary Report – Mar. 10, 2017

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Perception of Internet of Things

IoT is something that could create new business opportunities for our company in the near future.



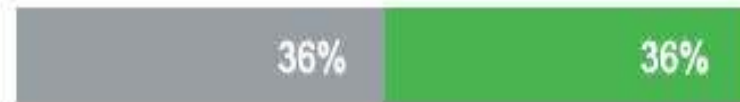
IoT is a great way to improve business efficiency.



IoT is something that will deliver long-term business benefits.



IoT will become the critical interface between companies and their customers.



IoT is potentially the biggest innovation in supply chain management since the Internet was invented.



Somewhat agree
 Strongly agree

Source: Schneider Electric

IloT (Industrial Internet of Things)

Need for New Automation Controllers

- From PLC's have been deployed since 1970's**
- To PAC's (Programmable Automation Controllers)**
- Newer PAC are IloT Ready**
 - Fully Embedded Ethernet - ePAC**
 - Pre-Programmed Application Libraries**
 - Open Engineering Environments**
 - Device-Level Cybersecurity**
 - Fault-Tolerant Design**

Source: Schneider Electric

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RFID Application Guidelines for Metal Returnable Transport Items (Why/What)

- **Increasing Demands for**
 - More advanced traceability
 - Reduction of distribution cost
 - Reduction of logistics materials cost
- **Use of RFID Technology Ideal Solution**
 - For RTI (Returnable Transport Item) Management
- **ISO 17364 RTI Standard Developed**

RFID Application Guidelines for Metal RTI

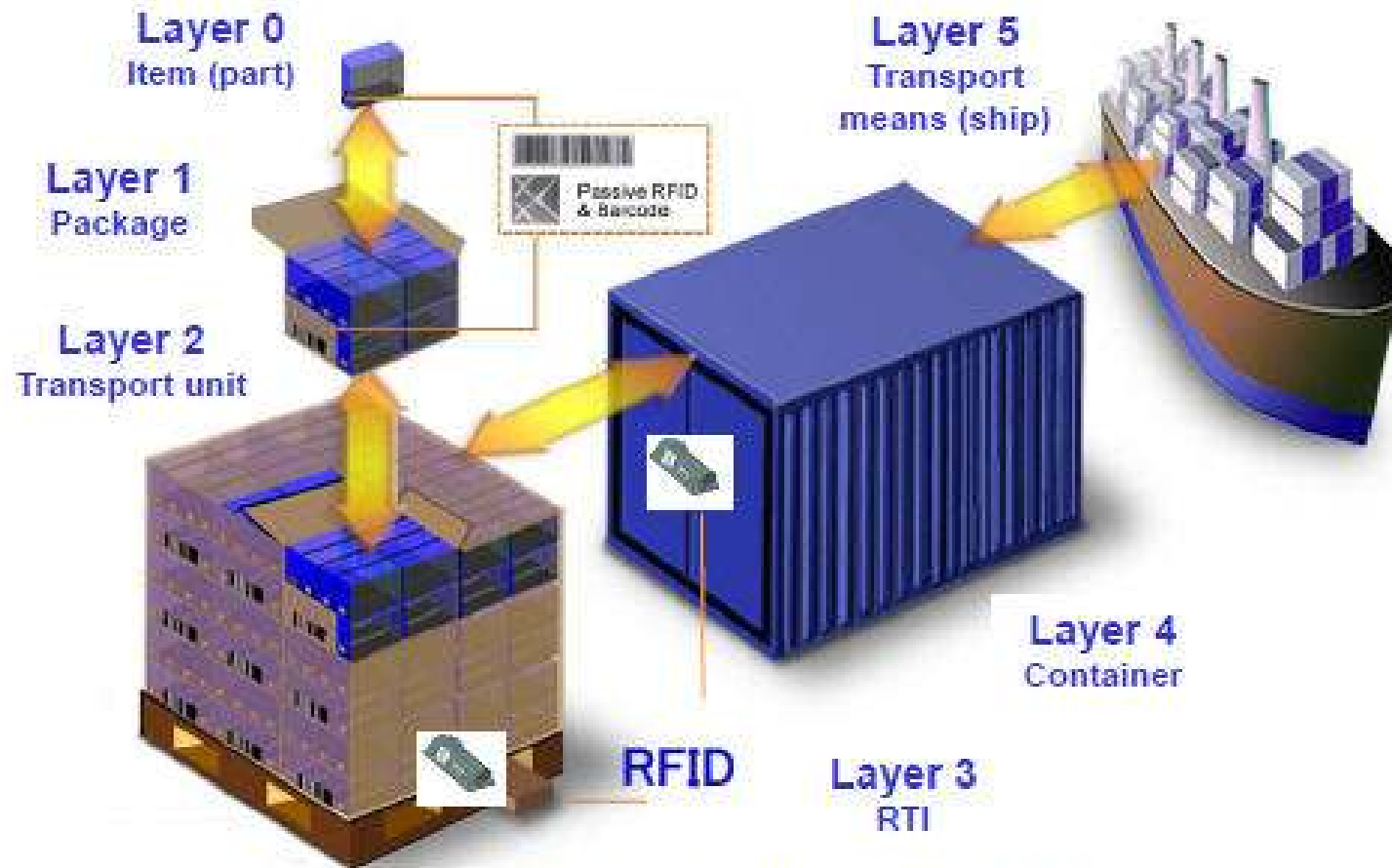


Figure 6.2.1 Supply chain layers

RFID Application Guidelines for Metal RTI

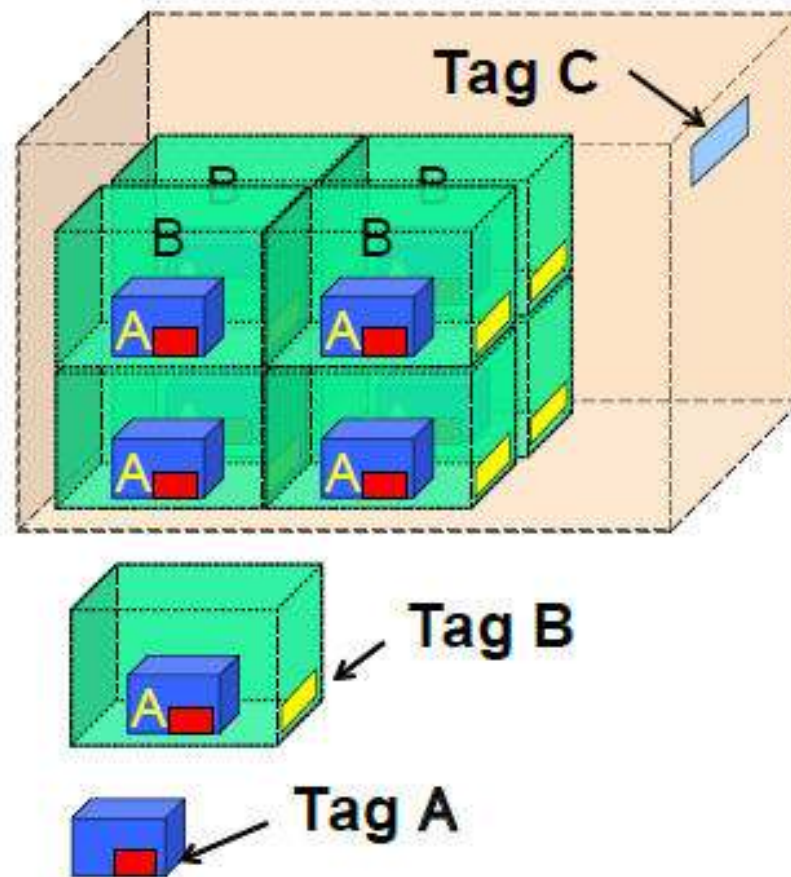


Figure 10.1.2 RF tags with layered structure

RFID Application Guidelines for Metal RTI

Table 6.2.1 Supply chain layers

Layer	Description	RFID standard
5	Transport means	—
4	Marin container	ISO17363
3	RTI	ISO17364
2	Transport unit	ISO17365
1	Package	ISO17366
0	Item (product)	ISO17367

Table 6.6.1 Supply chain layers and identifiers

Layer	Description	ISO standard	DI	AI
5	Transport means	—	—	—
4	Marin container	ISO 10374	—	—
3	RTI	ISO/IEC 15459-5	25B, 55B	8003 (GRAI)
2	Transport unit	ISO/IEC 15459-1	J, 1J to 6J	00 (SSCC)
1	Package	ISO/IEC 15459-4	25S	SGTIN-96
0	Item (product)	ISO/IEC 15459-4	25S	SGTIN-96

DI: Data Identifier, AI: Application Identifier

RFID Application Guidelines for Metal RTI

Basic structure
"Issuing Agency Code (IAC)" + "Company Identification Number (CIN) assigned by AIC" + "Item Number by Company" + "Serial Number by Company"

Note: A plus sign "+" is not included in the symbology.

Table 7.2.1 Identification RTI data structure

Item code			
25S	IAC	CIN	SN
3 digits	3 digits max.	12 digits max.	50 - 18 = 32 digits min.

Table 7.5.2 Structured Object Serial Number

Object Serial Number (OSN)			
Factory identification code (3 digits)	Year/month/day of manufacture (8 digits)	Time of manufacture (4 digits)	Simple serial number (5 digits)

RFID Application Guidelines for Metal RTI

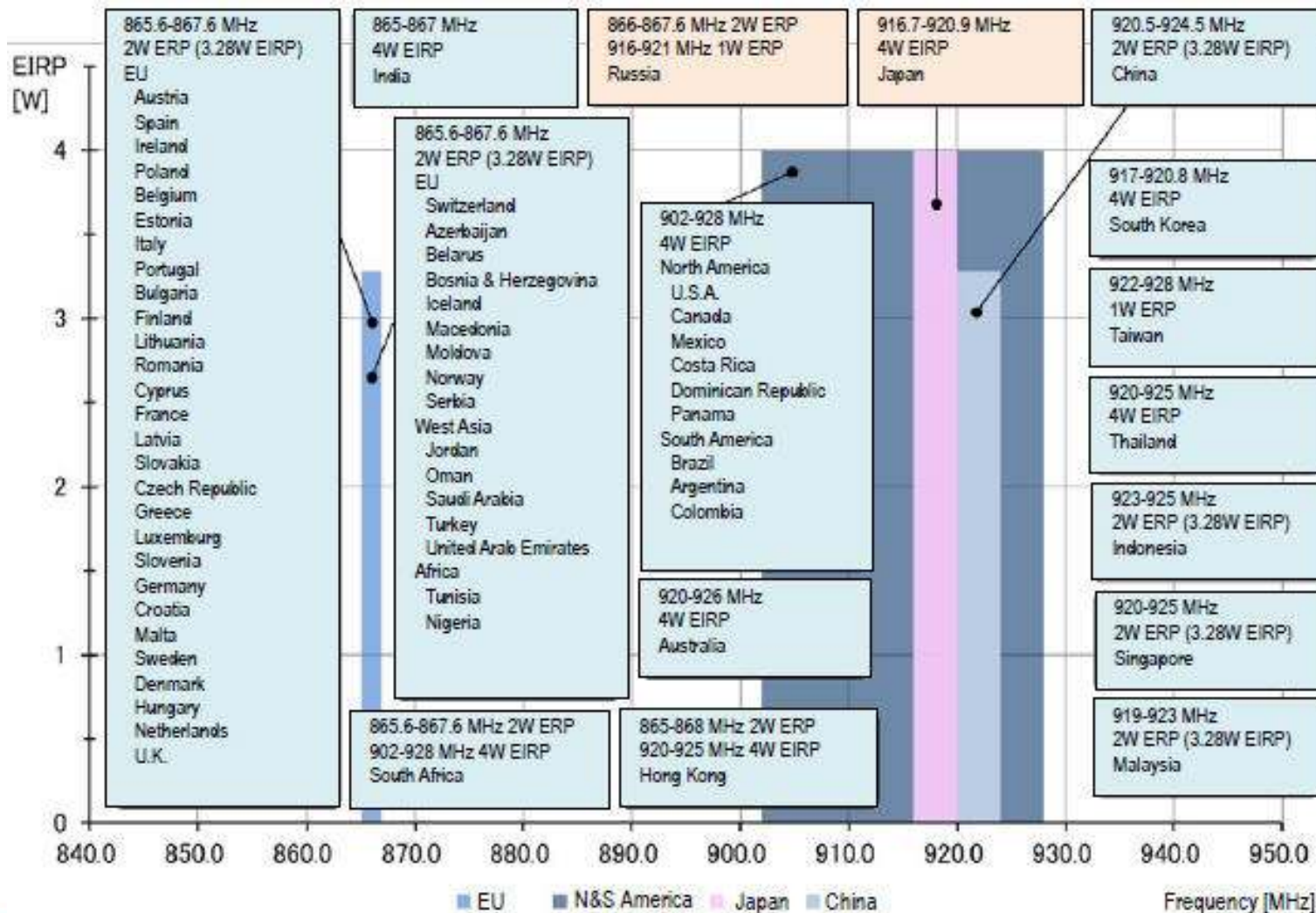
Table 6.4.2 Air interfaces and frequencies

Air interfaces	Frequencies
ISO/IEC 18000-2 Type A	Below 135 KHz
ISO/IEC 18000-3M3	13.56 MHz
ISO/IEC 18000-63	860 to 960MHz
ISO/IEC 18000-7	433 MHz

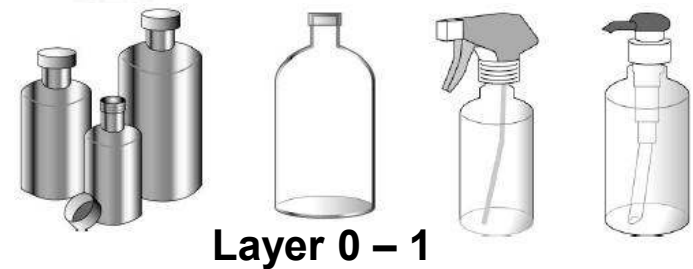
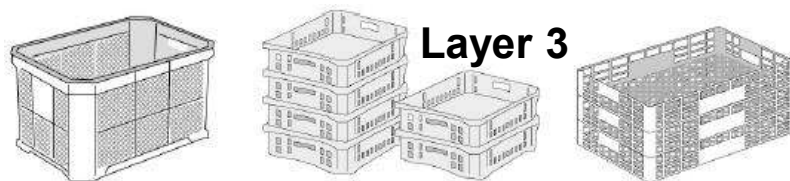
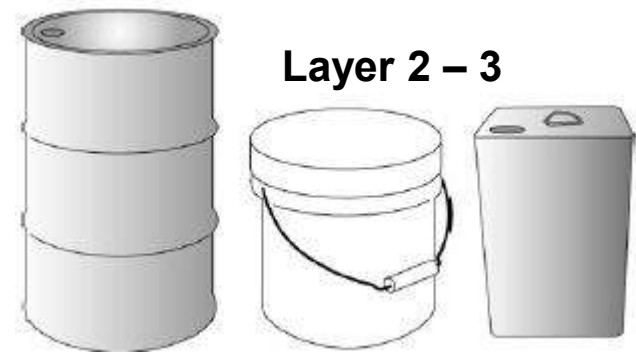
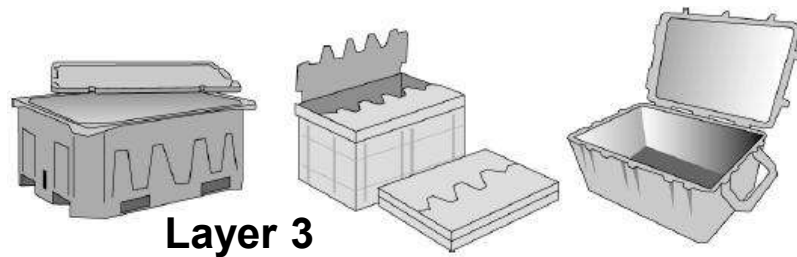
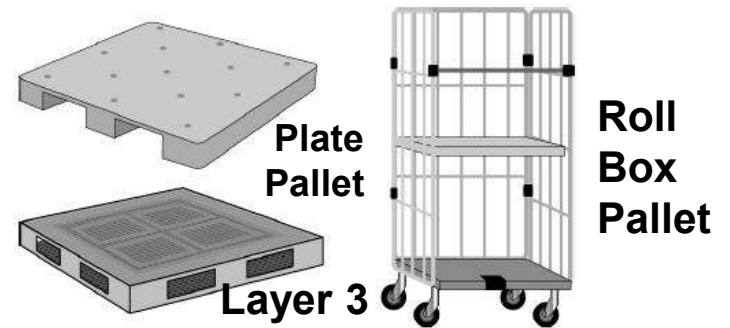
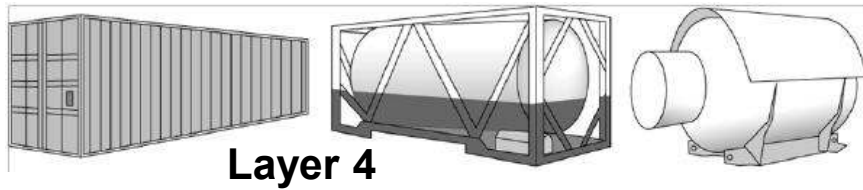
Table 9.4.3 Operating environmental tests

No.	Test item	Test conditions	Result
07	Block shock test	Applies ISO 8611-1:2011 block shock test to the tags	NG
08	Vibration test	3 G, single-axis rebound random vibration for 3 hours	OK
09	Shock test	100 G, sine half-wave for 6 ms Sample attached on a pallet was dropped	OK
10	Salt spray test	35 °C for 96 hours	OK
11	Immunity test	50 V/m (electromagnetic field), 25 kV (static electricity)	OK
12	Chemical-resistance test	Sample was submerged in assumed chemical for 2 hours	Passable

RFID Application Guidelines for Metal RTI



RFID Application Guidelines for Metal RTI



RFID Application Guidelines for Metal RTI



RF Tag

Figure 10.2.1 Metal RTI and RF tag

RFID Application Guidelines for Metal RTI

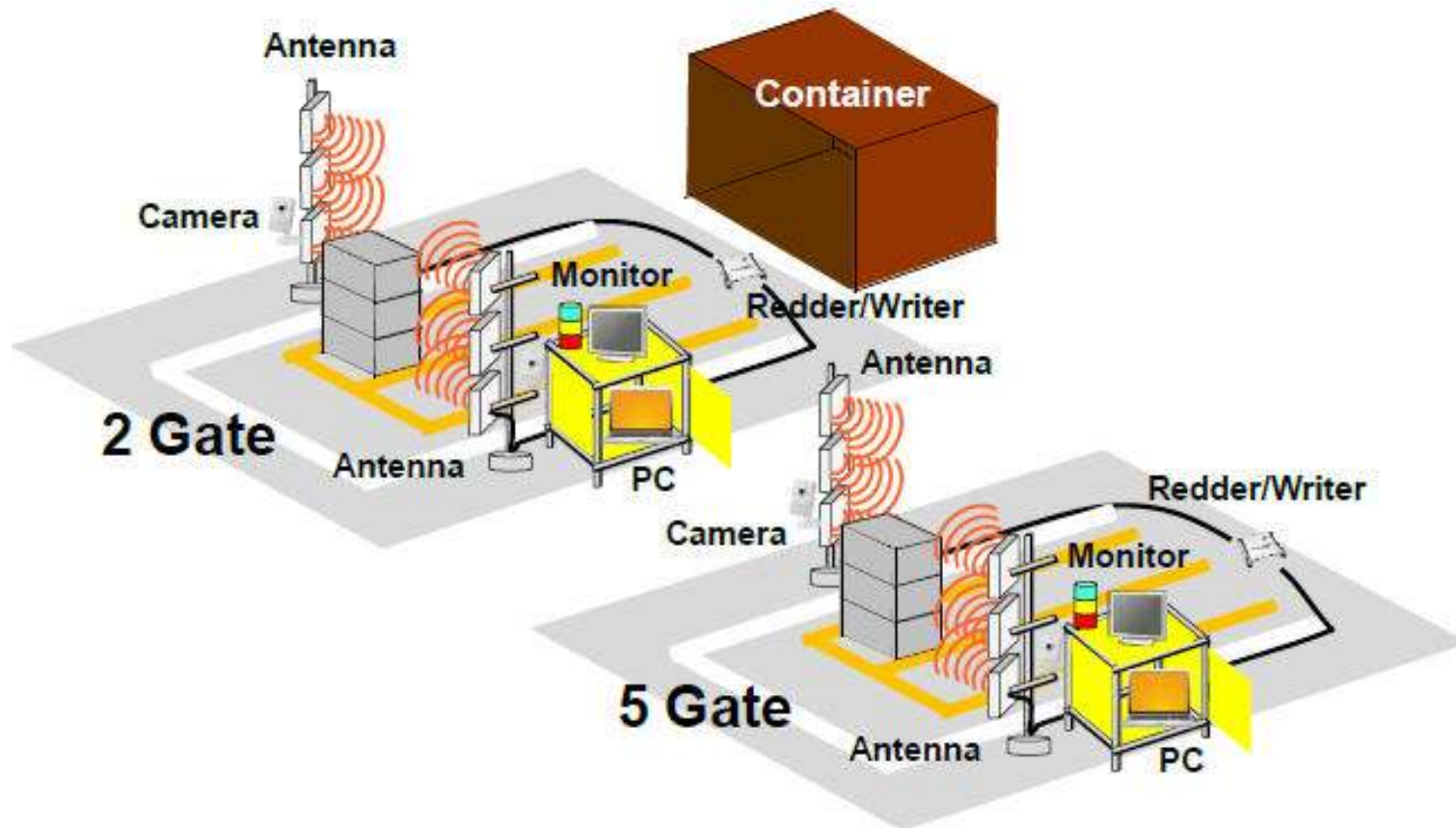


Figure K.1 Reading/writing system

Questions



CONCLUSION

- **Provide Updates of AIDC Technologies**
 - Bar Coding
 - NFC/Mobile
 - IoT/IIoT
- **Introduce RTI **DRAFT** RFID Standard**
- **Continue to Test IBCA SIR Compliance**

Field Number	1	6	9
Field Name	EAN / U.P.C.	Product Name	Manufacture's SKU #