

RFID Solution Achievement

1. Demonstration experiment according to Association for Electric Home Appliances

1) Experimental items

- 1) Demonstration experiment on utilization model of IC tags at home appliance stores
- 2) Demonstration experiment on implementation technology for practical application of wireless IC tag
- 3) Technology survey/demonstration experiment on UHF-band IC tags

Toshiba TEC, as a system vendor for above 1) and 3), provides its cooperation in development of experimental software and hardware including POS, electronic cash registers, and security gates.

2) Period and location of demonstration experiment

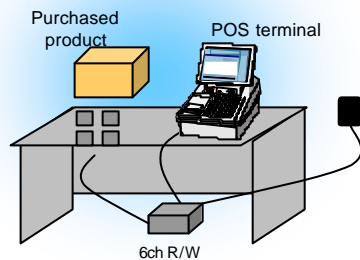
Mar. 9 to 12, 2004: Store of DEODEO Corporation
Mar. 15 to 17, 2004: Logistics warehouse of Matsushita Logistics Co., Ltd.

3) Experimental items

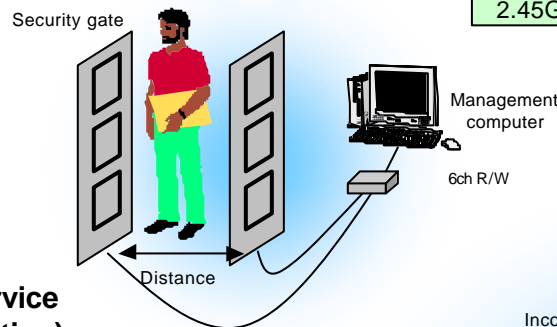
Outcomes of demonstration experiment results

Wireless IC tag	1) Application to store	2) Attachment to the products	3) Application to logistics
950MHz band	Good	OK	Good
2.45GHz band	OK	OK	OK

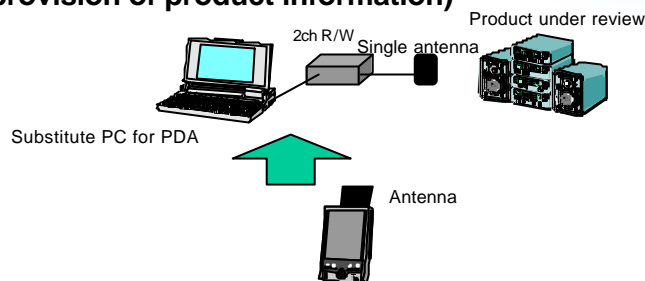
Checkout operation (sales management)



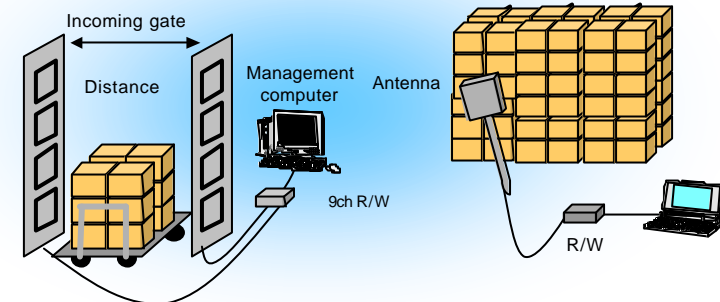
Checkout operation (security management)



Improvement in customer service (provision of product information)



Backyard operation (incoming inspection & inventory)



(Demonstration experiment results)

1) Checkout operation



Single item read results at checkout operation by wireless IC tag system
<Tags in the opposite direction of antenna are readable/writable in the 950MHz band.>

	Availability of reading (tested 3 times)				
	Videotape		Electric pot		
	Upper	Lower	Upper	Lower	Side
950MHz band	Good	Good	Good	Good	Good
2.45GHz band	Not good	Good	Not good	Good	Good



Multiple items read result at checkout operation by wireless IC tag system
<Up to 12 tags are readable/writable by one operation.>

	Number of tags to be read/written by one operation
950MHz band	12
2.45GHz band	10

3) Incoming inspection



2) Inventory



Reading performance at carrying-in by a forklift (under same conditions)

Data size	Experiment results			
	FL		UD	
Frequency	2.45GHz	950MHz	2.45GHz	950MHz
Average number of target wireless IC tags	18.0	18.4	16.4	18.0
Average reading rate of product wireless IC tags	98.5%	98.6%	96.7%	100.0%
Average passing speed (m/minute)	41.2	46.5	56.9	60.6

Comparison of reading performance at carrying-in by a forklift with the previous-year application

Reading accuracy on wireless IC tag-based inventory system

	Read time (Ave. 5 times)	Reading accuracy (Ave. 5 times)	Invisible due to piled cartons	Tagged on the other side
950MHz band	21sec.	99.11%	Good	Good
2.45GHz band	30sec.	97.30%	Not good	Not good

Data size	Experiment results			
	FL		UD	
Frequency	2.45GHz	Previous year's 2.45GHz	2.45GHz	Previous year's 2.45GHz
Average number of target wireless IC tags	18.0	24.8	16.4	25.6
Average reading rate of product wireless IC tags	98.5%	78.7%	96.7%	84.0%
Average passing speed (m/minute)	41.2	5.75	56.9	14.0