결재	입 안	심 사	결 정

MANUAL

■ **(KPC RFID System KT902)**
■ **February 1, 2008**
■ **Version 1.2**

15.240(a) Operation must be limited to commercial & Industrial areas; ie Ports, rail terminals & warehouses.

KPC, INC.

[Contents]

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS. (1)THE DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE AND (2)THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION

ALSO, TO PREVENT INTERFERENCE TO FEDERAL GOVERNMENT READER SYSTEMS, OPERATION GOVERNMENT RADAR SYSTEMS, OPERATION UNDER THE PROVISIONS OF THIS SECTION IS NOT PERMITTED WITHIN 40 KILOMETERS OF THE FOLLOWING LOCATIONS:

DoD Radar Site	Latitude	Longitude
Beale Air Force Base	39° 08′ 10″ N	121° 21′ 04″ W
Cape Cod Air Force Station	41° 45′ 07″ N	070° 32′ 17″ W
Clear Air Force Station	64° 55′ 16″ N	143° 05′ 02″ W
Cavalier Air Force Station	48° 43′ 12″ N	097° 54′ 00″ W
Eglin Air Force Base	30° 43′ 12″ N	086° 12′ 36″ W

CAUTION : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

As a further condition, the grantee shall provide information on the locations where the devices are installed to the FCC Office of Engineering and Technology, which shall provide this information to the Federal Goverment through the National Telecommunications and Information Administration.

The user of the device shall be responsible for submitting updated information in the event the operating location or other information changes after the initial registration by the grantee. The information provided by the grantee or user to the Commission shall include the name, address, telephone number and e-mail address of the user, the address and geographic coordinates of the operating location, and the FCC identification number of the device. The material shall be submitted to the following address:

Experimental Licensing Branch,
OET, Federal Communications Commission,
445 12th Street, SW., Washington,
DC 20554, ATTN: RFID Registration.

Professional installation is required. Installers are responsible for ensuring that the proper antenna is used as described in the FCC filing.

1. Summary

A) The RFID system for containers is composed of an "Active RFID Tag" and a "Reader", and the communication between the tag and reader follows a Master-Slave model.

B) Containers are embedded with 433.92Mhz RFID tag, and the reader, if necessary, gives a wake-up signal, activates the RFID tag, so that it can obtain container-related information.

C) The reader works according to the order of middleware or a terminal(or a computer). The communication protocol between the reader and the tag follows ISO/IEC 18000-7.

D) By using a RFID tag system, the recognition rate and recognition distance for containers is greatly improved, so that it can lay the foundation for the job automation of gate, CY storage, and shipment.

E) By making the best use of wireless/network technology, this system can be flexibly applied regardless of container's movement of position

2. Composition

2.1 Deceives Composition

No.	Model Name	Type	Remarks
1	RFID Tag	433.92MHz active tag (wake-up, 7.5*4.5*3.0 cm)	KT902
2	RFID reader	Fixed type	KR951

2.2 Dimension

Section	Contents
KT902 (KPC Tag 900)	≫Dimension: 7.5cm*4.5cm*3.0 cm
KR951 (KPC Reader 950)	≫Dimension: 21.0cm*16.6cm*6.75cm

3. Specification of the System

3.1 RFID Tag

Tag Name	KT902
UHF	Transceiver
Frequency	433.92Mhz
Modulation	FSK
Range	100m
Power	3.6mW
Tag Wake-up	UHF
Air Protocol	ISO/IEC 18000-7
Standards	ISO/IEC 18000-7
Memory	
Tag ID	4bytes(RO)
User ID	16bytes(RW)
User Memory	64Kbytes
Beacon	yes
Range(unobstructed)	~100m
Battery	
Type	Non-replaceable, Non-rechargeable
Volts/Material	3.6V/Lithium
Life	3years(5 read events/day)
Re-Usable	yes
Temperature	Operation: -10 to +50
	Storage: -10 to +50
Humidity	100% Condensing
Approval	MIC

3.2 RFID Reader

Reader Name	KR951
Case Material	Polycarbonate with glass
Environmental Temperature	Operating: −10 to +50
	Storage: −10 to +50
Humidity	100% Condensing
RF Frequency(Transceiver)	433.92Mhz
Range	100m
Modulation	FSK, deviation 35Khz for receiver, 50Khz for transmit
Sensitivity	95 dBM
IF Frequency	307.2Khz
Data Rate	27.8Kbps
Air Protocol	ISO/IEC 18000−7
RFID Tag Compatibility	All KPC RFID Tags
Network Interface	Ethernet, RS485, RS232, Wireless LAN
Upgrades	Supports firmware downloads
Diagnostics	Supports remote reader performance status reports
DC Source	7.5VDC
Type Approval	MIC
Other Mounting	Mounting Kit

4. Function of the System

□ The communication protocol and operation between the reader and the tag follows ISO/IEC 18000-7.

5. Requirements of the System

Section	Description	Remark
Battery check (RFID tag)	In case that the battery remains within 20% of its total power source. It sounds the alarm.	When receiving a wake-up signal. It sends the alarm
Read/Write Memory (RFID tag)	At any time, users can read and write the data in a specified memory.	
Wake-up Range conrtrol (Reader)	The wake-up signal range should be able to be controlled	The wake-up range can be set at intervals of 5m in time of its installation
Firmware Upgrade (Reader)	Upgrade is available through LAN	
Log storage (RFID tag/reader)	Tag: Keeps 10 logs Reader: Keeps 50 logs	Tag: Reader ID, Time of read/write memory Reader: Manages a tag history
Encoding of data communication (RFID tag/reader)	Encoding for data security	Use of T-DES
Tolerance (RFID tag/reader)	Be, tolerant of saltiness, humidity, impact, and temperature	
Self-examination (RFID tag/reader)	Self-examination its hardware and software on a regular basis	It sounds the alarm, and also has the function of restoration

6. Installation of the System

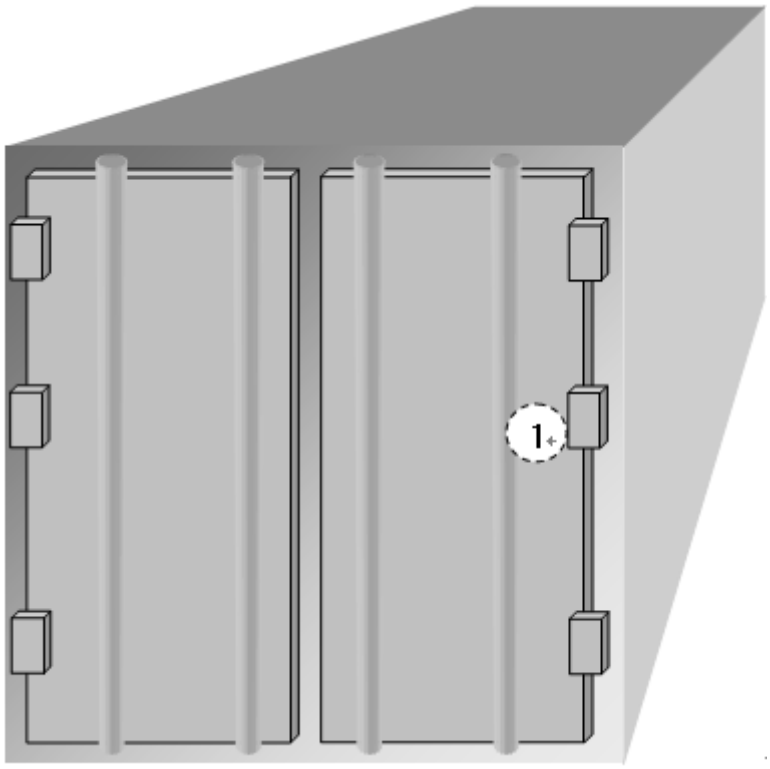
□ Container tag(KT902) attachment position

* Considering the ISO standard, a tag is attached above the door at the right side in the rear of a container.

* The tag is attached at a little higher place than its middle.

*Taking into consideration the friction that can take place during transportation or stevedore, the tag is attached in the concave place of a container.

* As illustrated in the below picture, it is to be placed at a little higher place than #1



□ Reader(KR951) is to be installed at a place 2 meters high from the ground.

7. System Operation and Tests

□ Basic Operation

A reader(KR951) communicates with a server(or middleware) over TCP/IP, and communicates with a tag(KT902) over RF. Orders sent via a server(or middleware) are transmitted to the reader(KR951), witch gives a wake-up signal, send the orders to the tag(KT902), receives the response data from the tag(KT902), and finally transmits them to the server(or middleware).

□ Test Modes

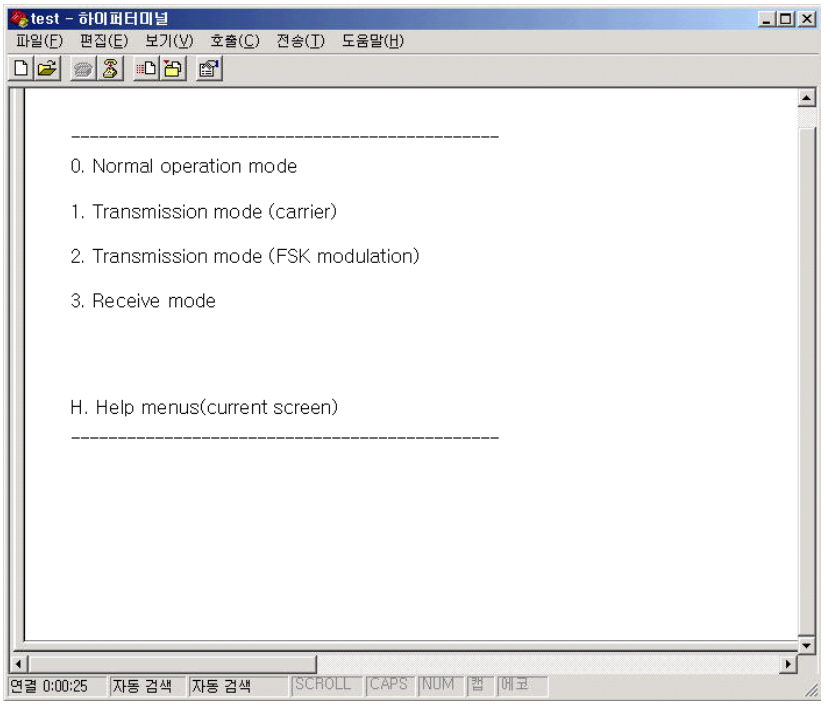
The reader provides the following test modes.

1. Carrier transmission
2. Modulated signal transmission
3. Waiting to receive
4. Normal operation(basic operation)

The test modes can be performed by linking a cable to th serial terminal of a PC and a reader

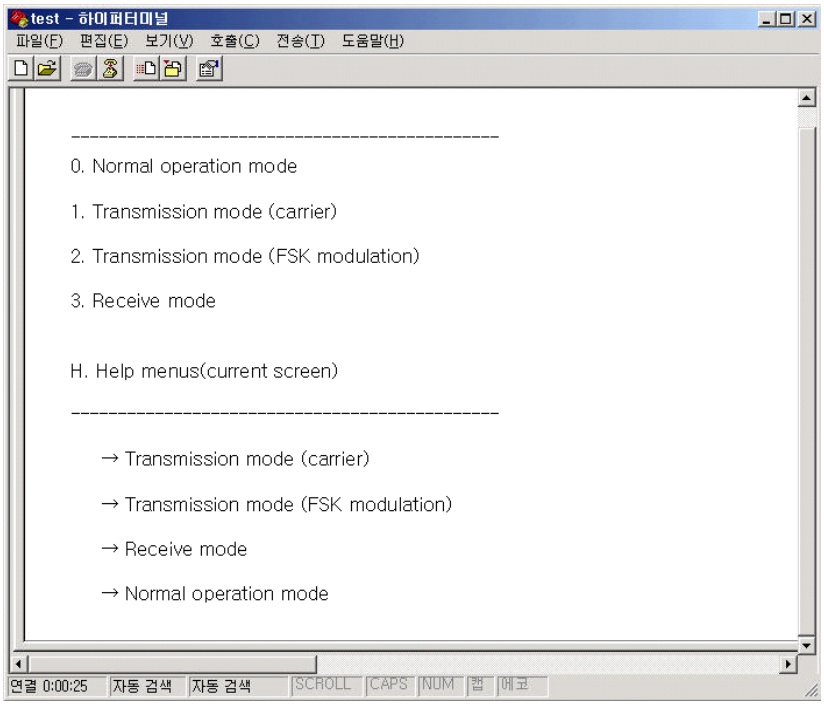
* Serial
  - Buad Rate : 115200bps
  - Flow Control : NO
  - Data Bit : 8 bit
  - Parity : NO
  - Stop Bit : 1 bit

After linking a cable to the serial terminal and alignment, push the keyboard "H"(or "h"), and then the following menus come out.



* Help menus screen

As illustrated in the above help menu screen, push the corresponding key to see what you want.



* Menu Selection

8. A/S

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