

## National IT Industry Promotion Agency RFID/USN Center

### TEST CENTER DESCRIPTION:

The RFID/USN Center (RUC) is established by the Ministry of Knowledge Economy and Incheon Metropolitan City in order to become the u-IT hub for Northeast Asia in 2006 in the Knowledge-Based Industrial Zone within Songdo District nearby Incheon International Airport. In this area, the RUC is equipped with the most advanced apparatus and expert, and providing local and foreign companies with an overall value chain of RFID/USN products and technologies, manufacturing, prototype assembly, reliability testing, (*USN proving*,) wireless performance, RFID proving, design support, mobile RFID testing, passive RFID testing, standards and interoperability testing, and certification service.

### SERVICES/SOLUTIONS:

**RFID/USN Research and Development** – Development of HF/UHF RFID tag, performance analysis for Wireless Sensor Network and RFID/USN application Technology to industrialize and research of standards for UHF passive RFID reader/tag and RFID/USN Standardization.

- **HF/UHF Passive RFID** – Development of environmental-friendly and price competitiveness 13.56MHz RFID Label Tag for library application using RUC owned RFID chip assembly facility and technology.
- **Wireless Sensor Network** – Development and implementation of the Low Power Performance Analysis System for real field Test-beds like Primitive RTLS, Coordinate RTLS, Packing Lot and Street-Light.
- **RFID/USN Application Technology** – H/W and S/W technology about commercialized tags for performance testing, research and energy efficient verification for USN platform at a variety of environmental conditions.
- **RFID/USN Standard** – Development of testing certification standards and offer the service by RFID/USN technical standards.

**RFID/USN Technology Services** – Total technology services in connection with the RFID/USN industry as a whole are offered, including design, prototype assembly and standard specifications testing.

- **Design Support Service** – It is to provide CAE(Computer Aided Engineering). Customers need the service both before and after implementing of prototype. In design phase, it provides core technologies for H/W development based on EDA/CAD platforms. And in Early phase of

prototype, it provides the optimization techniques on the prototype system with measurement-based models and EDA/CAD.

- **Prototype Assembly Service** – Prototype assembly is the service that detaches a quality chip from semiconductor wafer, combines it with various RFID antenna or substrates, and implements as his products available for use. The tag and semiconductors package completed through assembly operations protect a silicon chip from external environment and make it operate as product by providing electrical passage connecting signal of chip with antenna or various boards. Training – brief description.
- **Performance Test & Certification Service** – As 900MHz RFID RF and protocol performance test service, it supports conformance and performance test in the same environment as various certification standards and rules at home and abroad. Moreover, it also supports total performance analysis, which various RFID H/W should satisfy.
  - **EPCglobal Static Test Service** : For Applied Tag Performance in static test scenarios to find the best application of a particular tag, or tag comparisons, on its respective, case of pallet.
  - **EPCglobal Dynamic Conveyor Portal Test Service** : For Case, Pallet and Item Level consistent performance for the reading of RFID tags as they pass though the Conveyor Portals in actual supply chain implementations.
  - **EPCglobal Dynamic Door Portal Test Service**: For Case, Pallet and Item Level consistent performance for the reading of RFID tags as they pass though the Door Portals in actual supply chain implementations
  - **Interoperability Test Service** : Testing the equipment developed by a company, connecting with the equipments from the other company or other equipments is called interoperability performance test.
  - **Conformance Test Service** : As 900MHz manual RFID RF and protocol performance test service, it supports conformance and performance test in the same environment as various certification standards and rules at home and abroad. Moreover, it also supports total performance analysis, which various RFID H/W should satisfy.
  - **Reliability Test Service** : Reliability means that some components, materials, products, or systems maintain the initial quality and performance without breakdown in given environmental condition for some time (time, distance, cycle, etc.) and the test executed for checking the above requirements is called reliability service.

- **BMT(BenchMark Test) Service** : BMT can be used to select a device with the best performance for each application environment where RFID/USN devices are used.
- **PCT(Performance & conformance Test) Service** : Test and evaluate the performance satisfaction for the system installed through PCT.

**RFID/USN Education and Training** – RFID/USN Center offers RFID/USN site practical exercise training programs with tag packaging, understanding and practice of 900MHz RFID standard, practice of RFID tag sensitivity measurement, RFID field application test and USN Test-Beds about in one day.

- **Tag Packaging and Analysis** : Semi-Auto Flip-chip Bonder and Bonding Tester
- **Understanding and Measurement of 900MHz RFID Standard** : HF conformance test equipment and UHF conformance test equipment
- **RFID tag sensitivity measurement** : 2D/3D sensitivity and read range pattern measurement in fully anechoic chamber
- **RFID field application test** : Conveyor system and dock door system with logistics scenario
- **Practice exercise of USN Test-Beds** : Real field Test-Beds like primitive RTLS, coordinate RTLS, parking lot and street-light, etc

**RFID/USN International Symposium and Conference of Business Solutions** – Acquisition of new RFID technology about improvement of tag interrogation depending on the environmental conditions like liquids, metal, and etc. Provided RFID/USN industrial trends, market trends and the key technology from world-famous experts.

- **RFID/USN Engineering Lab Seminar** : Monthly
- **RFID/USN International Conference** : Yearly
- **RFID/USN Technology Seminars and Consulting Sessions Touring 10 Regions** : Yearly
- **RFID/USN Infrastructure Committee** : Establish a cooperative framework for promoting the RFID/USN industry and advancing customer services.
- **RFID/USN Technology Service Users' Committee** : Gather user opinion regarding RFID/USN engineering lab operation, equipment procurement and membership.

- **RFID/USN Exhibitions** : Promote the center and business through center and business-combined exhibition halls.

**RFID/USN Consulting for Difficulty of Technology and Business Solution** – Acceptance and processing of difficulty of technology through E-mail or phone call from customers and also visit to the RUC depending on the level of consulting.

- **RFID/USN Design Consulting** : Supporting of design and analysis for RF/analog, sensor I/F, wireless communication, indoor/outdoor channel modeling and antenna design, etc.
- **RFID/USN Measurement and Analysis Consulting** : Supporting of measuring and analyzing for 2D/3D RFID/USN tag sensitivity, antenna radiation pattern in fully anechoic chamber, RFID/USN standards, RFID/USN application technology in real-environment, and USN network performance, etc.
- **RFID/USN Technology Seminars and Consulting Sessions Touring 10 Regions**

**RFID/USN Tour** – Progressing by application to RUC's homepage and related department. Special engineers explain about technology and related equipment for understood basic concepts and application technology of RFID/USN/MEMS.

### **INDUSTRY VERTICALS SERVED:**

- ✓ Retail
- ✓ Transportation
- ✓ Consumer Goods
- ✓ Logistics
- ✓ Government
- ✓ Healthcare
- ✓ Finance
- ✓ School
- ✓ RFID design center
- ✓ Industrial Manufacturing
- ✓ RFID Vendors
- ✓ Specialized Industries

### **AWARDS/KEY ACHIEVEMENTS:**

- ✓ 2009 KOLAS (Korea Laboratory Accreditation Scheme) Accredited(Reliability)
- ✓ 2009 ISO9001 : 2008 Certified
- ✓ 2009 Authorized Mobile RFID Test Laboratory

### **REFERENCES:**

- ✓ Please contact the RUC for reference contacts.

### **COMPANY CONTACT INFORMATION**

**Bang, Okkyeong (Senior Researcher)**

[okbang@ruc.or.kr](mailto:okbang@ruc.or.kr) (Email)

+82-32-720-8335 (Phone)

+82-32-720-8301 (Fax)

<http://www.ruc.or.kr>