

Korea Communications Commission started acquiring core technologies to preoccupy the 'blue-ocean' M2M communications market of the future

Korea Communications Commission announced that it would start [the development of a M2M (Machine to Machine) terminal standard platform based on WiBro/LTE (Long Term Evolution)] and [the development of core technologies for ultra-low power (Nano Joule/bit)¹⁾ communication] to reinforce national technical competitiveness in future broadcasting areas.

Korea Communications Commission collected opinions from 20 industrial, academic and research experts on these tasks for six months from June 2010 to February 2011 and chose them as fields that need concentrated efforts to acquire core source technologies for the next-generation M2M communication.

① Development of standard platform for WiBro/LTE-based M2M terminals

[The **development of standard platform for WiBro/LTE-based M2M terminals**] project will be carried out to develop terminal standards for M2M which is expected to become a **new next-generation killer service** with the matching funds of 6.51 billion won by the

1) One nano Joule of energy is used to send one bit data.

consortium of Modacom (supervising entity), KT, Picosnet, and Ajou University (4.35 billion won of government fund and 2.16 billion won of private fund / for 2011, 1.9 billion won of government fund and 0.98 billion won of private fund).

The WiBro/LTE-based M2M terminal standard platform development project aims to present the standards for M2M terminal platform in a **new mobile communication environment for wireless access, authentication/security, quality assurance, and remote control**, and provide **tools and test environment for the development of software and hardware**.

* Major M2M terminal manufacturers

- Overseas: Sierra Wireless, Motorola, Trimble, e device, etc.
- Domestic: Nuri Telecom, Infobank, Ehwa Technologies Information, Modacom, etc.

In the past, M2M terminals required the development of separate platforms (**wireless access, authentication/security, quality assurance, remote control, etc.**) for each mobile communication service provider and each communication network (2G, 3G, etc.)

However, when the WiBro/LTE-based M2M terminal standard platform is developed, standard platform functions can be applied regardless of mobile communication service provider and communication network (WiBro, LTE), which will reduce the terminal production cost. This will improve the competitiveness of domestic small and medium terminal developers and **greatly assist them develop overseas markets**.

② Development of core technologies for ultra-low power (1nJ/bit) communication

[**The development of core technologies for ultra-low power (1nJ/bit) communication**] project aims to develop low-power communication that is **improved about 50 times compared to the present** in order to cope with future smart mobile communication in full scale. This project will be carried out until 2013 by the consortium of Samsung Electronics (supervising entity), Yonsei University, Pohang University of Science and Technology, KAIST, and Korea Electronics Technology Institute with the matching funds of 8 billion won (4 billion won of government fund and 4 billion won of private fund / for 2011, 1 billion won of government fund and 1 billion won of private fund).

The core technology for ultra-low-power communication will improve the power consumption of local area wireless communication **from 50 nJ/bit to 1 nJ/bit** and **develop a ultra-small/body-attached antenna** which is appropriate for low-power transmission and reception.

1 nJ/bit is the energy consumed to send 1 bit of data. This 1nJ technology will enable the application of M2M mobile sensing technology to bio-sensing, aquatic ecosystem environment monitoring, and ultra-precise convergence biotechnology fields in which it has been difficult to apply wireless sensing technology owing to the limitations of power supply.

* $1\text{nJ} = 1\text{J} \times 10^{-9}$, $1\text{J} = 1\text{Watt} \times 1\text{sec}$

Furthermore, if ultra-low power technology and ultra-small /body-attached antenna technology can be applied to remote medical care, the long-term remote transmission of human bio-data is enabled which will realize the dream of life extension through continuous management of body conditions.

In particular, an official from Korea Communications Commission said that as the 1nJ technology can be applied to all mobile devices such as smart phones in addition to M2M terminals, it will lead global standardization and greatly contribute to our advancement into global mobile terminal market through its convergence with domestic advanced mobile communication technologies.

Korea Communications Commission revealed that even though these technologies are required for the activation of M2M, their development have high risks and cannot be carried out single companies; therefore, they will be carried out through consortiums of industrial, academic and research entities with government support.

Attachments:

1. Development of standard platform for WiBro/LTE-based M2M terminals
2. Development of core technologies for 1 nJ/bit ULP (Ultra Low Power) communication. The End.

[Attachment 1]

Development of Standard Platform for WiBro/LTE-based M2M Terminals

Project Outline

Division	Commercialization					
Supervising Entity	Modacom		Participating Entities	KT, Picosnet, Ajou University		
Research Period	2011.3 ~ 2012.2 (2 years)					
Research Fund	'11	'12	'13	'14	'15	Total
(100 mil won) Government/Private	19/9.8	24.5/11.9	-	-	-	43.5/21.6

Project Details

o Details of Technology Development

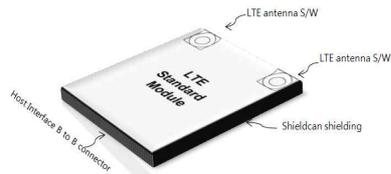
- Development of a standard platform for M2M terminals for price reduction of M2M modules
 - ※ M2M technology enables new communication businesses without human involvement by mounting mobile communication modules in various devices and equipment.
- Development of international standard platform technologies including M2M service and terminal technology.

o Application Areas

- Beyond the existing 2G/3G mobile communication and communication solutions such as WiFi and Zigbee, it will be applied to various B2B and B2C markets for measurement, monitoring and control by connecting with 4G mobile communication technologies such as WiBro/LTE.

o Development Outputs

- M2M terminal platform S/W SDK²⁾, M2M terminal platform H/W RDK³⁾, M2M gateway, etc.



<H/W RDK development board>

<M2M communication module>

<M2M gateway>

2) SDK : Software Development Kit

3) RDK : Reference Development Kit

[Attachment 2]

Development of Core Technologies for 1nJ/bit ULP (Ultra-Low Power) Communication

Project Outline

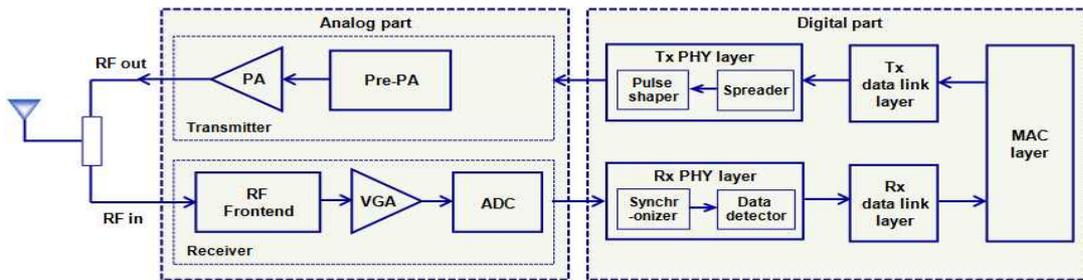
Division	Source Technology					
Supervising Entity	Samsung Electronics		Participating Entities	Yonsei Univ, Pohang Univ of Science & Technology, KAIST, Korea Electronics Technology Institute		
Research Period	2011.3 ~ 2013.2 (3 years)					
Research Fund	'11	'12	'13	'14	'15	Total
(100 mil won) Government/Private	10/10	10/10	20/20	-	-	40/40

Project Details

o Details of Technology Development

- Development of 1nJ/bit-class ultra-low power communication technologies for M2M support by digital equipment
 - ※ The current ZigBee offers the performance of 50nJ/bit@250kbps.
 - ※ The goal of this project is to achieve the performance of 1nJ/bit@1Mbps.
- Development of ultra-small/body-attached antenna (size, radiation efficiency) that is appropriate for low-power transmission and reception

< Composition and Applications of ULP Communication Technology >



< Basic Structure of ULP Wireless Communication Modem >

o Application Areas

- Expansion of life care to healthcare, wellness, and home/vehicle fields
- Entrance of IT+non-IT convergence industries into the value chain (example: Continua Health Alliance)
 - ※ Continua Health Alliance aims to build an ecosystem in which individual medical systems are mutually compatible.



< Evolution of Object-to-object communication >

(Source: SRI Consulting Business Intelligence ('09), SAIT reorganized)

o Development Outputs

- An ultra-low power wireless communication chip, an ultra-low power wireless communication test bed, and a simulator for ultra-low power networking technology and system verification