FUJITSU MICROELECTRONICS
ASIA GROUP E-newsletter
21st Issue May – June 2008

THE POSSIBILITIES ARE INFINITE FUJITSU

Corporate Message

May and June has been vibrant with activities. At Fujitsu Microelectronics Asia Group, we continue to innovate and introduce advanced products into the market and engaging with new partners.

Partner engagements were highly successful with Fujitsu Microelectronics Asia participating in several tradeshows to support its partners and showcase the latest products. These tradeshows also provided more opportunities for customer interactions, to better understand their needs and requirements and to enable us to provide them with more relevant innovative products and services.....

2008Sino-Japanese Automotive Electronics Technology Summit Forum, Guangzhou, China.

Micro Electronics 2008 Automotive Electronics Technology Forum, Shenzhen.

Power Supply Engineers' Technology Exchange Convention of China Power Institute.

2008 WiMAX Expo, Taipei.

- Fujitsu Microelectronics further explores education investment in "Joint Educational Lab" to create innovative new experience
- Fujitsu Microelectronics launches mobile WiMAX chipsets for mobile devices
- Interview clipping from Nikkei Electronics Asia: WiMAX vendors see promising future
- Interview clipping from EETimes China: The New China Strategy of EDGA after the Establishment of FML
- Technical article from Electronic Engineering & Product World The marketing strategy of 16-bit MCU

About Fujitsu Electronic Devices Group (Asia)

Collaborating collectively on its distinct strengths and expertise, Fujitsu Microelectronics (Shanghai) Co Ltd, Fujitsu Microelectronics Asia Pte Ltd and Fujitsu Microelectronics Pacific Asia Ltd collectively form Fujitsu Electronic Devices Group Asia (EDGA), to provide a one-stop center for its semiconductor products to all customers in the Asia-Pacific region. Apart from sales and marketing of semiconductor products, EDGA also offers flexible business and system solutions for the digital AV, automotive, consumer electronics, and mobile and wireless markets, as well as design and technical support for customers, locally and regionally.

With technology resource centers and ASIC design support centers strategically located in Shanghai, Hong Kong and Taiwan, EDGA can speedily and competitively meet customers' stringent design-in requirements on ASSP, MCU and ASIC products. With heavy investments in design and engineering capabilities and application support resources, complemented by a regional network of design partners, suppliers and distributors, EDGA can readily delivers innovative and value-added solutions and varied range of products to its target markets in the Asia-Pacific region.

Fujitsu Microelectronics Asia Pte Ltd (FMAL) was established in 1986 to provide semiconductor sales and support solutions to customers in Southeast Asia, India and Oceania. FMAL offers a diverse array of application-oriented semiconductor products and solutions such as ASIC, ASSPs, microcontrollers/microprocessors (FR-V), System Memory (Flash Memory/FRAM/FCRAM) and System LSIs (DVD MPEG Source Decoders/MPEG –2 Encoders).

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The tradeshows are: 2008 China Sino-Japanese Automotive Electronics Technology Summit Forum in Guangzhou, Micro Electronics 2008 Automotive Electronics Technology Forum in Shenzhen, Power Supply Engineers' Technology Exchange Convention of China Power Institute, and 2008 WiMAX Expo in Taipei. Innovation in area of automotive electronics, power management and WiMAX were exbibited at these shows.

Fujitsu Microelectronics Asia also made headway in developing new partnerships. Being a leading supplier and developer of WiMAX chip and solution, we have established a partnership with Accton Technology Corporation, a global OEM/ODM leader in the advanced networking and communication equipment, as Accton's WiMAX baseband SoC partner. On a similar note, Jurong Technologies Industrial Corporation (JTIC), through its subsidiary I-Sirius Pte Ltd, has also selected Fujitsu as its WiMAX baseband SoC partner.

Sunny Chan,Senior Director of Corporate Development, Fujitsu Microelectronics Asia

Moving forward, Fujitsu Microelectronics (Shanghai) Co Ltd announced an establishment of an MCU Joint Educational Lab together with the Shanxi University of Science and Technology, to carry out Students Research Training project which provides a platform for university students to participate in innovative research and experiments under the guidance of teaching professionals.

Find out more details from the 21st issue of Fujitsu Microelectronics Asia e-Newsletter!

HOME

Press Releases

Fujitsu Microelectronics further explores education investment in "Joint Educational Lab" to create innovative new experience

Shanghai, June 26, 2008 – Fujitsu Microelectronics (Shanghai) Co Ltd announces that Fujitsu will establish a Joint Educational Lab together with the Shaanxi University of Science and Technology, and will carry out the Students Research Training (SRT) project. The training strives to establish a platform for university students to practise and participate in innovative projects, as well as to encourage students to carry out innovative experiments under the guidance of teachers.

For more information, please visit:
http://www.fujitsu.com/cn/fmc/en/news/archives/2008/0626.html

Fujitsu Microelectronics launches mobile WiMAX chipsets for mobile devices

Singapore, June 23, 2008 – Fujitsu Microelectronics Asia Pte Ltd (FMAL) announced a new mobile WiMAX chipset optimized for mobile WiMAX devices such as smart phones and PDAs. Sample shipment will start in August 2008. The chipset includes a baseband LSI, MB86K22; an RF LSI, MB86K52; and a power management LSI, MB39C316. These three devices are essential to produce a competitive WiMAX module. The chipset was designed to fit in the 12x12mm WiMAX module. The standby current – which has a direct impact on battery life – will not exceed 0.5mA, facilitating the development of more competitive mobile WiMAX terminals.

For more information, please visit:
http://www.fujitsu.com/sg/news/pr/fmal_20080623.html

Fujitsu and Jurong Technologies collaborate to develop new range of WiMAX products

Singapore, June 3, 2008 – Fujitsu Microelectronics Asia Pte Ltd (FMAL) and Jurong Technologies industrial Corporation (Jurong Technologies) are pleased to announce that Jurong Technologies, through its subsidiary I-Sirius Pte Ltd, has selected Fujitsu as its WiMAX baseband SoC partner. I-Sirius will use Fujitsu's Mobile WiMAX baseband SoC, which is fully compliant with IEEE802.16e-2005 standard, to develop WiMAX products such as embedded modules, USB dongles and Express cards. Both companies will also collaborate on strategic product positioning to enhance market penetration of these products.

For more information, please visit:
http://www.fujitsu.com/sg/news/pr/fmal_20080603.html

Fujitsu teams up with Accton on mobile WiMAX

Taipei, June 2, 2008 – Fujitsu Microelectronics Pacific Asia Ltd, Taiwan Branch, has built up a partnership with Accton Technology Corporation (Accton), a global OEM/ODM leader in the advanced networking and communication equipment, as the latter's WiMAX baseband SoC partner. Based on Fujitsu's Mobile WiMAX baseband SoC, which is fully compliant to IEEE802.16e-2005 standard, Accton will develop WiMAX products such as MID, USB dongle, and Express cards. Both companies have announced a partnership to develop WiMAX products and collaborate on business developments to allow for the strategic product positioning in the market.

For more information, please visit:
http://www.fujitsu.com/cn/fmc/tw/news/archives/2008/0611-2.html

HOME

Activities

Fujitsu attended 2008 Sino-Japanese Automotive Electronics Technology Summit Forum, Guangzhou, China

With the evolution of automotive industry, automobile makers are increasingly dependent on advanced functions of electronics devices made for cars. The Japanese automobile industry, which owns the most advanced automotive technology and products, has been looking forward to build a professional channel to cooperate and communicate with China's automotive industry. As an influential technical media, NIKKEIBP organized the 2008 China (Guangzhou) Sino-Japanese Automotive Electronics Technology Summit Forum on June 25, 2008. The theme is automotive electronics products with some introduction on new trends of automotive technology.

Wang Yu, Senior Marketing Manager, delivered his speech, "Fujitsu Microelectronics in Automotive Electronics System" at 2008 Sino-Japanese Automotive Electronics Technology Summit Forum.

Enjoying a high reputation in automotive electronics industry, Fujitsu Microelectronics (Shanghai) was invited to attend this forum. Mr Wang Yu, Senior Marketing Manager at Fujitsu Microelectronics, delivered a speech on "Fujitsu Microelectronics in Automotive electronics System" and made some recommendations on Fujitsu Microelectronics's automotive products such as 16-bit microcontrollers (16LX/16FX/FR), Graphic Display Controllers (GDC), IDB1394 and easy-to-use development tools.

Fujitsu attended Micro Electronics 2008 Automotive Electronics Technology Forum -- Shenzhen

On May 29, 2008, Fujitsu Microelectronics (Shanghai) Co Ltd attended the 2008 New Automotive Electronics Seminar in Shenzhen. Mr Wang Yu, Senior Marketing Manager at Fujitsu Microelectronics, delivered a speech titled “Fujitsu Microelectronics in automotive”, to introduce Fujitsu Microelectronics’ competitive advantage, achievements and future plans in developing automotive electronics devices.

Fujitsu Booth

Wang Yu’s Speaking Session at Seminar

Fujitsu Microelectronics Attended the Power Supply Engineers' Technology Exchange Convention of China Power Institute

Liyao Liang, Technology Engineer at Fujitsu Microelectronics, delivered a speech, “About the Market and Product Application of the Power Supply IC of Flat Panel TV” at the convention.

The Power Supply Engineers' Technology Exchange Convention of China Power Institute is a premier meeting for engineers in power supply industry. Chaired by China Power Institute, the authoritative organization of power supply industry, the convention aims to explore the new power technologies, overcome challenges faced by engineers as well as to strengthen mutual communication among engineers in power field.

At the 2008 Power Supply Engineers' Technology Exchange Convention, Liyao Liang, technology engineer at Fujitsu Microelectronics, delivered a speech on “About the Market and Product Application of the Power Supply IC of Flat Panel TV”. He also talked about Fujitsu Microelectronics’ achievements in power supply industry and views on future development of the industry.

Fujitsu Microelectronics Demonstrated New Products in 2008 WiMAX Expo, Taipei

From June 2 to 6, 2008, Fujitsu Microelectronics participated in 2008 WiMAX Expo, Taipei, held at the Taipei International Convention Center. At the 54m2 booth, Fujitsu Microelectronics demonstrated the video streaming on JRC mobile base station and Fujitsu broadband SoC, as well as solutions developed with partners, which included PCMCIA Card, Express Card, USB dongle, Mobile handheld, Outdoor/Indoor CPE.

Mr Makoto Awaga, General Manager of Mobile Solution Business Division of Fujitsu Ltd, gave a presentation on “New Service Business Created by WiMAX Deployment”. He received interviews from media such as Digitimes and Reuters, discussing Fujitsu Microelectronics’ new achievements and ideas in developing WiMAX solutions.

Fujitsu Booth

Demo

Mr Makoto Awaga in media interview

Mr Makoto Awaga, General Manager of Mobile Solution Business Division of Fujitsu Limited, spoke on “New Service Business Created by WiMAX Deployment”.

STB Adv. in India

India is another important market for Fujitsu Microelectronics. Launching the new series of SmartMPEG chipsets, Fujitsu Microelectronics has embarked on an advertising campaign across key media in India, such as Broadcast & CableSat and Cablequest. Advertisements will be placed throughout the months of June, July and August.

The digital TV revolution is growing, and Fujitsu Microelectronics is meeting the demand for STBs and iDTV with its innovative range of **SmartMPEG** chipsets. The MB86H20B, for example, is an integrated MPEG-2 decoder which includes hardware extensions to support a low Bill of Material for STBs and iDTVs.

The MB86H20C takes it further with advanced support for PVR applications, which includes two MPEG decoders, USB 2.0 OTG and 3TS interfaces.

Not surprisingly, Fujitsu Microelectronics is at the heart of the digital TV revolution, working with a variety of partners to bring great advances in television services.

For the right decoder to fit your needs, you can find all the right answers at Fujitsu Microelectronics — **The Future of Digital TV**.

MB86H20B	MB86H20C
Basic Pay TV, STB Includes hardware extensions required to support a low Bill of Material for STB & iDTV	**Interactive STB** Advanced digital TV decoder to meet the needs of tomorrow's STB and iDTV market
• ARC Tangent A4 @ 130.5MHz • 1x MPEG-2 MP@ML video decoder • 1x MPEG-1 layer 1/2 audio decoder • 2x TS interface • 24bit true color OSD menu • ITU656 input/output • Support 1xCI and 2x CAS SmartCard • PAL/NTSC/Secam Video Encoder • Supports both Nor/NAND flash • 7-segment LED supported	• Includes all the features of MB86H20B **Other key enhancements** • Improved ARC CPU @ 202MHz • additional 1x MPEG-2 MP@ML video decoder (total 2x) • additional 1x TS interface (total 3x) • Support personal video recorder (PVR) with advanced Time Shifting feature • USB 2.0 OTG • JPEG & MP3 decoding • Low power consumption of 360mW

Applications:

Cable – DVB-C basic and advanced interactive PVR payTV STB
Satellite – DVB-S basic and advanced interactive PVR payTV STB
Terrestrial – DVB-T basic and advanced interactive PVR payTV STB, iDTV portable devices like GPS PND, mobile phone and portable TV

For more information, email us at MPEGinq@fmal.fujitsu.com

FUJITSU MICROELECTRONICS ASIA PTE LTD

FUJITSU

Media Interview

NIKKEI MICRODEVICES

Nikkei Electronics Asia, June 2008

Mr Makoto Awaga, General Manager of Mobile Solution Business Division of Fujitsu Limited, was interviewed by Nikkei Electronics Asia and he introduces the promising future of WiMAX.

SPECIAL WiMAX

WiMAX Vendors See Promising Future

With commercial WiMAX services set to begin later this year, WiMAX silicon and equipment manufacturers are understandably excited about the opportunities this will present for their latest WiMAX offerings. The excitement could be sensed at the inaugural WiMAX Forum Congress Asia, held in Singapore on April 9-10, 2008.

The WiMAX Forum, which organized the show, said the two-day conference and exhibition had proved an immediate success; by the close of the event, over 92% of the floor space that had been occupied this year had already been booked for next year's show, to be held in Singapore on April 28-29, 2009.

The event this year attracted some 2,700 visitors and 50 exhibitors, surpassing the expectations of the organizers. Ron Resnick, president and chairman of the WiMAX Forum, said that the show had succeeded in achieving its objectives: it provided the WiMAX industry with a trade show that was high in energy, with the exhibition floor busy during both days; and it facilitated extensive networking and information gathering opportunities, bringing experts from all the key vendors together under one roof. About 500 delegates attended the two-day conference, which addressed issues surrounding the WiMAX industry across the Asia-Pacific region.

Agilent's One-Box Testers

At the exhibition, Agilent Technologies of the US announced the availability of a new MIMO capability for its E6651A Mobile WiMAX test set. The tester is universal equipment offering a unique combination of flexible base station emulation and RF parametric tests in one integrated unit, with support for IEEE 802.16e 2005 protocol conformance test (PCT). The equipment is targeted at different groups within engineering companies, such as those focusing on protocol development, RF and baseband verification, or application integration.

Agilent's E6651A Tester

According to C J Meurell, European operations general manager, Wireless Business Unit of Agilent Technologies UK Ltd, who is responsible for all of the company's one-box test equipment, the enhancement is in response to customer demands to enable the same test equipment to handle multiple wireless technologies.

He said that although the tester targets mainly WiMAX silicon vendors, it is also used by other parties in the ecosystem, such as base station manufacturers and mobile CPU makers. "The main reason is that if silicon vendors, base station manufacturers and mobile handset manufacturers all use the same test equipment, they will have a common platform to help them debug and analyze the devices. When they find a problem, they can duplicate the problem in the same environment, which not only makes their work easier, but also eliminates any possible conflicts due to misinterpretation of the problem."

Agilent also displayed its N8300A one-box RF parametric test equipment targeted at manufacturing and design engineers who need a standard-compliant 802.16d and / or a physical layer (PHY) test tool for fixed and Mobile WiMAX Tx and Rx applications. According to Meurell, the N8300 is tester for both WiMAX and Wireless LAN. "The trend is that many of the wireless technologies are merging onto one single chip. Many of our customers like this feature because they don't have to reinvest in another production line. More and more test equipment coming to the market will have to be flexible and firmware configurable. They want one piece of equipment that can address whatever wireless technologies are taking place at any given time."

Fujitsu's 2nd-Gen Chip

Fujitsu Microelectronics Ltd of Japan displayed designs based on its current Mobile WiMAX solution which

combines the company's first-generation baseband processor and RF module. The MB86K21 baseband processor is designed to optimize power consumption using Fujitsu's 90nm process technology, and is fully compliant with the IEEE 802.16e-2005 Mobile WiMAX standard. It targets applications such as PC cards or USB dongles for WiMAX.

Makoto Awaga, general manager of Fujitsu's Mobile Solutions Division, and deputy general manager of its NGW Project, said the company is developing a second-generation WiMAX solution which integrates all functionalities into a single chip. Called 16e#2A, the new chip comprises three main parts: a SIP package, which houses the baseband processor and memory (SDRAM); an RF chip, which has full MIMO capabilities; and a PMM IC to handle power conversion and management functions. The size of the chip is 250mm^2 (15.8 x 15.8 x 1.5mm^3). With its small footprint and low power consumption, the chip will target mobile devices and other embedded applications.

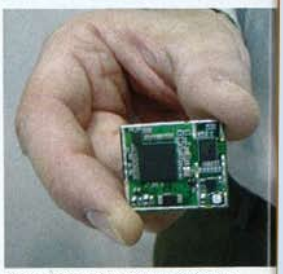
Fujitsu's Awaga

Awaga said that currently all WiMAX solutions are used by products and applications related to wireless communications; however, as both the footprint and the price of WiMAX solutions continue to fall, they will find their way into products that are not currently designed to use wireless communications. These include household appliances such as refrigerators, rice cookers and audio/video equipment, etc. "For example, in the future consumers may be able to buy household appliances which can automatically download software updates or patches through wireless networks," Awaga added. He also said that with the deployment of WiMAX infrastructure, consumers in some developing countries who cannot afford to pay for 3G services may be able to communicate via WiMAX phones at very low cost.

In developed countries, however, the market for WiMAX is likely to be driven by applications that require high data rates, to enable tasks such as the transfer of audio and video content. Awaga expects new services will emerge, and Fujitsu will develop solutions to cope with these new services.

Beceem's WiMAX Chip

Fujitsu's key competitor, Silicon manufacturer Beceem of the US, announced at the show its new WiMAX solution, the BCSM250, claimed to be the world's first full-featured, 65nm single-chip WiMAX Wave 2 solution. This is the first WiMAX solution to combine a baseband processor, a dual-band 2GHz and 3GHz radio, memory, a power management unit and host interfaces in a single chip. It is also claimed to reduce power consumption by at least 30% compared to other solutions, while peak data rates are increased to 40Mbps. With its footprint of 11 x 11mm, and its low power consumption, the chip targets consumer portable devices. Engineering samples of the chip are now available, with production quantities expected in the second half of 2008.


Beceem's BCSM250 Prototype

According to Lars Johnsson, VP business development, Beceem, the BCSM250 is the company's fourth-generation WiMAX chip; its predecessor, the BCS200, is already well established in the Mobile WiMAX market. He said that the BCS200 has been chosen by ZTE of China for its business arrangements with Sprint of the US. It is also the first chip to meet all of Sprint's requirements.

Johnsson said that combining the radio with the baseband into one single chip has increased the chip's performance to 40Mbps, compared to 33Mbps with the previous model. "We knew that the baseband can play a lot of magic, but it needs to work with clear radio signals. We looked around but were not happy with the radio chips commercially available, so we decided to build our own radio in CMOS and integrate it into the chip. This also gave us better control on our product roadmap," he said.

He added that flexibility is a key feature of the new chip. "With WiMAX, radio flexibility is very important; therefore, our single chip radio supports all WiMAX frequencies. We are also able to put two antennas each on a single chip, which allows our customers' products to support multiple

frequencies."

Keithley's MIMO Unit

Keithley Instruments Inc of the US demonstrated its 2895 MIMO synchronization unit, which is used with a 2820 RF vector signal analyzer, a 2920 RF vector signal generator, and/or signal analysis software to form a complete MIMO test system. The system is designed to meet the requirements of 802.11n WiFi and 802.16e Mobile WiMAX Wave 2 multi-input, multi-output communications standards. It can initially be configured as a 2 x 2 system, and upgraded at a later date to three or four channels by adding standard instruments.

Keithley's 2895 MIMO Synchronization Unit

Ronald Rausch, senior industry marketing management, Wireless/RF Business Unit, Keithley Instruments Inc, said the most outstanding features of the system are its precise and stable synchronization and its easy upgradeability. In addition, the instruments do not need to be dedicated to a MIMO system. They can be configured as either a MIMO system or as stand-alone SISO (single-input, single-output) instruments by selecting the configuration in firmware and changing a few rear-panel cables.

R&S's WiMAX Tester

At the exhibition, Rohde & Schwarz of Germany demonstrated its CMW270 WiMAX communication tester, which now offers the capability to emulate a base station (signaling mode). According to the company, this is a simple and user-friendly product, and the new capability enhances flexibility and test depth. The tester also offers a measurement speed said to be ten times higher than that of other test solutions. It is used mainly in the production of WiMAX chipsets and mobile stations.

The company said it has improved the measurement accuracy of the tester regarding the stability and linearity of the measurements to provide utmost repeatability. The tester combines signal generation and signal analysis in a single box. Three inter-connectable RF connectors in the RF front end reduce the complexity of the test setup.

Rohde & Schwarz's CMW270 Communication Tester

The tester supports WiMAX IEEE 802.16e and is designed to accommodate future expansion of the standard. Covering the frequency range from 100MHz to 6GHz, the tester supports all RF profiles defined by the WiMAX Forum.

NEC's Virtual PC Center

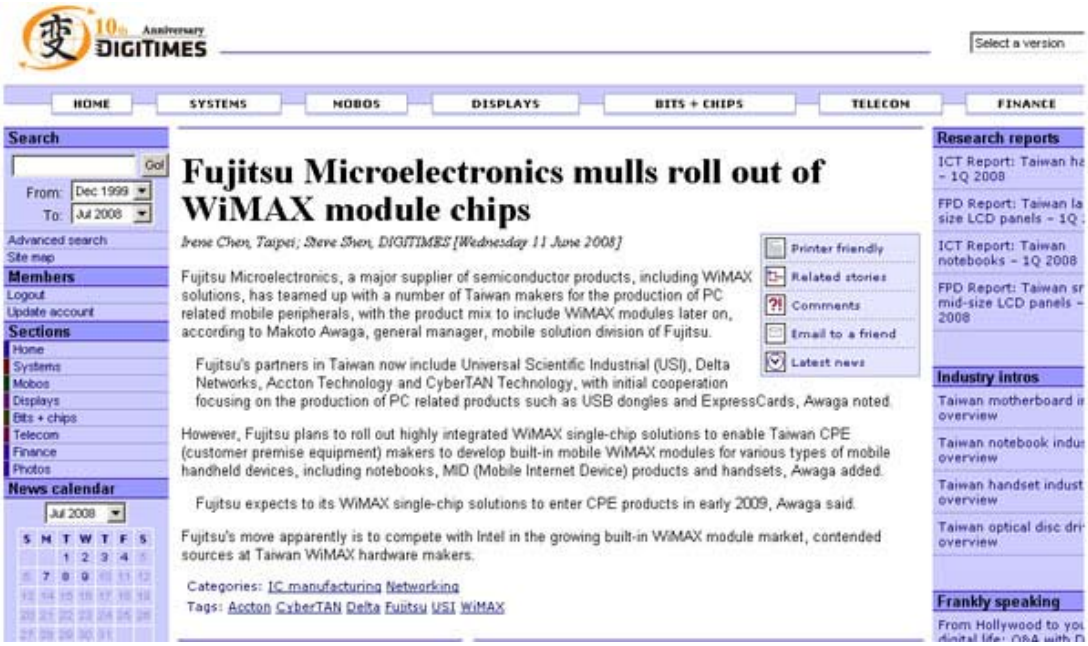
In addition to its WiMAX products, NEC Asia Pte Ltd also demonstrated its Virtual PC Center at the show, featuring the new US110 palm-sized thin client terminal. The Virtual PC Center is a computer network which allows users to carry out PC applications through the thin client terminals. Apart from lower cost, the Virtual PC Center offers better security because all data are stored in the central server instead of on the thin client terminals.

According to Stanley Tsang, director, Solutions IT Infrastructure & Managed Services, Enterprise Business Group, NEC Asia Pte Ltd, the company decided to demonstrate its Virtual PC Center at a WiMAX event because, while the product can be used with any wired or wireless broadband network, WiMAX fully enhances its capabilities. He said that because PCs are increasingly used for multimedia applications, they can benefit from the higher bandwidth enabled by a WiMAX network. One major advantage with NEC's thin client terminals, he added, is that they are equipped with an IC which can de-encode multimedia files on the client side, and which has enough processing power to play high-resolution video at full frame rates. NEC's thin client terminals are also equipped with line-in/line-out functions, which allow users to use VoIP services such as Skype more smoothly.

by Keith Chan

TW Digitimes, June 11, 2008

DigiTimes, Taiwan, interviewed Mr Makoto Awaga, General Manager of Mobile Solution Business Division of Fujitsu Limited, on the development of WiMAX module chips.



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Fujitsu Microelectronics mulls roll out of WiMAX module chips

Irene Chen, Taipei; Steve Shen, DIGITIMES [Wednesday 11 June 2008]

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Fujitsu Microelectronics, a major supplier of semiconductor products, including WiMAX solutions, has teamed up with a number of Taiwan makers for the production of PC related mobile peripherals, with the product mix to include WiMAX modules later on, according to Makoto Awaga, general manager, mobile solution division of Fujitsu.

Fujitsu's partners in Taiwan now include Universal Scientific Industrial (USI), Delta Networks, Accton Technology and CyberTAN Technology, with initial cooperation focusing on the production of PC related products such as USB dongles and ExpressCards, Awaga noted.

However, Fujitsu plans to roll out highly integrated WiMAX single-chip solutions to enable Taiwan CPE (customer premise equipment) makers to develop built-in mobile WiMAX modules for various types of mobile handheld devices, including notebooks, MID (Mobile Internet Device) products and handsets, Awaga added.

Fujitsu expects to its WiMAX single-chip solutions to enter CPE products in early 2009, Awaga said.

Fujitsu's move apparently is to compete with Intel in the growing built-in WiMAX module market, contended sources at Taiwan WiMAX hardware makers.

Categories: IC manufacturing Networking
Tags: Accton CyberTAN Delta Fujitsu USI WiMAX

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Frankly speaking
From Hollywood to you

THE BUSINESS TIMES

Business Times, June 5, 2008

Singapore Business Times published news article on Fujitsu Microelectronics Asia's WiMAX collaboration with Jurong Technologies Industrial Corporation.

THE BUSINESS TIMES

Partners: *Shinichi Machida (left), president of Fujitsu Microelectronics Asia Pte Ltd and Chiang Chee Ming*

S'pore ODM in WiMax tie-up with Fujitsu

By WINSTON CHAI

HOMEGROWN original design manufacturer (ODM) Jurong Technologies Industrial Corporation has struck a landmark deal with Japanese IT giant Fujitsu to develop a new range of wireless broadband equipment.

The new networking gear – including embedded modules for laptops, dongles and PC cards – will support WiMax (Worldwide Interoperability for Microwave Access), an emerging technology for delivering high-speed wireless Internet services.

Jurong Tech subsidiary i-Shirise will use Fujitsu's WiMax chip platform to develop the new products.

In addition, the two companies will cooperate on a promotion to increase the take-up of the new offerings, according to a joint statement.

"With adoption of data into everyday life, VoIP (voice over Internet protocol) technologies, chats and messaging services utilising mobile data, we can see that data mobility will go the same way as market acceptance as voice mobility," said Jurong Tech president and CEO Chiang Chee Ming.

Despite its promise of enabling high speed wireless broadband, WiMax deployment in Singapore is limited due to the availability of WiFi and cellular-based connectivity alternatives.

It is only used by a company called Qmax to deliver residential broadband packages in selected districts. Besides QMax, Singapore Telecom uses WiMax to offer specialised services for shipping companies in local ports.

Outside Singapore, the technology is attracting greater interest from industry players, with major computer makers such as Acer and Lenovo considering to incorporate WiMax chips in some of their newer notebooks.

Chip giant Intel has also said it will support WiMax with its new Montevina chipset.

"The technologies for data mobility include GPRS (general packet radio service), 3G, HSDPA (high speed downlink packet access), Wi-Fi and WiMax," Mr Chiang told BT.

"We are sure that each of these technologies will find its own niche and usage pricing, and hence co-exist. Currently we are jointly working with several customers in India and Japan for the new WiMax products."

THE BUSINESS TIMES

Biz IT
Published June 5, 2008

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By WINSTON CHAI

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Partners: Shinichi Machida (left), president of Fujitsu Microelectronics Asia Pte Ltd and Cheang Chee Ming

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电子工程专辑

EETimes China, June 16-30, 2008

Mr Edwin Kwong, Senior Vice President of Fujitsu Microelectronics Pacific Asia Ltd, interviewed by EETimes China. He explained the new China strategy of EDGA after the establishment of FML.

精英访谈

脱离母公司后富士通微电子亚太集团的中国新策略

作者：徐建生

2008年初，富士通宣布将旗下的半导体部门拆分为单独运营的富士通微电子。拆分后的富士通会有什么新变化，将会遇到哪些新挑战？对于未来的半导体市场他们又有怎样的见解和看法？本期精英访谈，我们邀请到了富士通微电子亚太集团高级副总裁**邝国华**，请他为大家一一回答这些问题。

富士通微电子的此次剥离恰好发生在行业发展趋缓的2008年，为什么选择这个时机？新公司所面临的最大挑战又是什么？

当一家公司发展到一定程度时，就会有这种拆分的需求，比如NEC电子，Motorola，philips，西门子，东芝，三菱等。至于我们为什么选择在这个时间来进行，主要还是与行业的发展现状有关，技术的进步正在拉高半导体行业的投资风险，然而在激烈的竞争下他们又需要快速地做出决定，大公司虽然有资金雄厚等优势，但是在速度和灵活性方面有时反而不及小公司，拆分的目的是为了提高运作和决策的速度，而富士通微电子仍然是富士通集团的全资子公司。

挑战主要有两个：首先，企业效益是否变好；其次，企业运营是否真正更有效率。要实现这两个目标相当不易，特别是每个人都盯着你看的时候，压力和挑战会更大，不过富士通微电子对于未来还是充满了信心。

从其他半导体企业拆分后的情况来看，拆分仍然具有一定的正面意义，事实上，大部分被拆分的半导体公司运营都还不错，不过需要注意的是，虽然拆分能够加快决策速度，但是在拆分后一旦做错了决定，承担的后果反而会更加严重。

过去几年来富士通微电子在中国的业绩如何？主要的优势产品有哪些？今后最看好哪些领域？

过去几年里，富士通微电子在中国大陆的业务一直都保持着两位数的增长，另外，2003年富士通在上海成立分公司的时候只有不到30人，现在已经增加到了100多个人的规模。

简单来说，我们在中国的业务主要分为四部分：COT代工服务和数码影音，汽车电子，通讯IC，COT方面，90nm、65nm代工厂和IC设计能力帮助我们赢得了许多国内客户，特别是通信行业，我们简国内主要的通信大企业都有着密切的合作关系，有些合作甚至可以追溯到上世纪80年代，数码影音方面，我们已经占据了国内有线电视超过30%的市场份额，而随着中国数字电视平移项目的不断开展，这个数字还在上升，至于高清，无论中国还是全球市场今年的需求都在上升，我们也会推出各种相应的解决方案，富士通微电子汽车电子的产品包括单片机和多媒体处理器两类产品，由于产品可靠度较高，已经得到汽车行业特别是欧洲市场的广泛接受，事实上，大部分的国产汽车厂商也都在使用我们的产品。

过去几年来，富士通微电子在通信方面一直致力于WiMAX技术的推广，由于在移动性和长距离通信方面比GSM、3G、Wi-Fi等技术更具优势，我们非常看好WiMAX的未来，并进行了大量的投资，目前市面上已经出现了采用WiMAX的USB Dongle和基站产品，这对扩大这项技术的影响力非常有益，接下来希望在手机、汽车、家电等多个应用中WiMAX都能一展身手，举例来说，由于最远可以覆盖75公里半径范围的距离，WiMAX比电缆更适合于交通监控的通信系统。

WiMAX和3G、Wi-Fi等标准并不是简单的竞争关系，用"互补"来形容会更贴切，相比目前主要通过运营商来提供内容的做法，通过WiMAX技术用户将会接触到更多更广的内容。

"我们的目标是，以成都威斯达为平台，将其发展成为一个拥有500人规模的、富士通微电子海外最大的研发中心。"

邝国华
富士通微电子亚太集团高级副总裁

此外，直到今天采用GPRS和3G的手机和采用Wi-Fi的电脑仍然无法方便快速地进行沟通，而一旦WiMAX进入这两个领域，手机与电脑的通信问题就不复存在，最后，在美未覆盖无线通信网络的区域采用WiMAX作为通用协议，还可以节省3G、Wi-Fi、GSM通信网络重复建设带来的资金投入。

相比于许多跨国公司把设计中心设在北京和上海，收购成都威斯达并将其作为研发中心的做法令富士通和大多数国际同行有些不同。布局西南有什么重要的意义吗？

首先要明确你要建立什么职能的办事机构，许多公司都将销售机构设在了北京、上海、深圳、台北，所以在建立研发中心的时候，也理所当然地认为应该放在这些城市，然而这样就很容易偏离了原本设立研发中心时的初衷，特其变成一个销售支持中心，与销售机构不同的是，研发中心需要比较宽松和宁静的环境。

另外从人才供应的角度来讲，相对北京、上海这种人才需求和供应都很大的城市，也许选择一个供应较大但需求较小的城市会有更大的发展空间。

举例来讲，由于人才需求较大，上述城市工程师的跳槽十分频繁，这不利于进行长远和重点项目的研发，不过在中国大陆，西安、成都、武汉等地也分布着数量庞大的重点大学，相对而言，这些地方人才供应充足，但需求却不是很大，而单在与成都威斯达接触时我们就已经考虑到了这一点。

在音视频领域收购一家本土公司又是出于什么样的市场战略？是希望在中国本土标准的音视频技术上有所作为吗？富士通微电子目前在该领域已经取得了哪些成绩和突破？

除了研发环境之外，选择收购成都威斯达的另外一个原因就是，如果我们需要进行一些本地化项目的开发时——比如开发未来中国大陆的卫星电视广播芯片，或者该本地数字地面广播的芯片——必须有人能够理解这些规范，并和标准制订者进行交流。我们需要这样的人才，而成都威斯达恰恰能提供这些人才。

实际上，富士通微电子所有的研发中心是面向全世界的，当然，根据各自的特点每个研发中心都有重点专攻的领域，比如威斯达在数码影音方面的工作会多一些，而上海的研发中心则主要是负责汽车电子和家电方面。此外，除了音视频，威斯达也承担着单片机和一些模拟产品的研发工作。

English Version:

The New China Strategy of EDGA after the Establishment of FML

Reporter: Liao Jiansheng

"Chengdu West Star is a first step towards achieving our goal of establishing Fujitsu Microelectronics' largest overseas R&D center with 500 employees."– Kwong Kwok Wah, Senior Vice President of Fujitsu Microelectronics Pacific Asia Ltd

In early 2008, Fujitsu Electronic Devices Group Asia (EDGA) announced that its semiconductor business will be split to become a wholly owned subsidiary called as "Fujitsu Microelectronics Ltd". With this move, what are some of the changes and challenges that Fujitsu will face? What does Fujitsu think of the future of the semiconductor market? In this issue, we are pleased to invite Mr Kwong Kwok Wah, Senior Vice President of Fujitsu Microelectronics Pacific Asia Ltd, to share some insights to these questions.

Fujitsu Microelectronics Ltd was established only earlier this year. Industry development in 2008 has slowed down, so why did you choose to do this now? What is the biggest challenge faced by the new company at the moment?

When a company has been developed to an extent, it will need to be separated and established into a new company. Examples of other companies that have done this include NEC Electronics, Motorola, Philips, Siemens, Toshiba, Mitsubishi and so on. As to why we have chosen this timing, it is mainly because of the current state that semiconductor industry is in. Technology advancements represent increasing investment risks. With fierce competition, companies have to make decisions fast. Although large companies have the advantage of abundant capital, they cannot be compared to small companies in terms of nimbleness and flexibility. One of the reasons for the split was to streamline operations and facilitate quicker decision-making. Fujitsu Microelectronics is still a wholly-owned subsidiary of the Fujitsu Group.

There are two major challenges: Can this new company increase profits and operate more efficiently? It is rather difficult to achieve these two targets simultaneously. And the pressure is even greater because the entire industry is watching. But Fujitsu Microelectronics is confident about the future.

For other semiconductor companies that have also been spun off, the results have been positive. As a matter of fact, most spin-off companies operate fairly well. But it is worthy to note that although a spin-off can result in faster decision-making, the consequences of poor decisions can be severe.

How has Fujitsu Microelectronics performed in China over the past few years? Which are your key products? Which industries or sectors are you eyeing now?

It has been double-digit growth over the past few years. In addition, when Fujitsu established its Shanghai branch in 2003, there were fewer than 30 employees. We have now more than 100 employees.

Briefly, our business in China mainly has four units: COT outsourcing service, digital audio and video, automobile electronics, and communication ICs.

In our COT outsourcing service, our 90nm and 65nm foundries and IC design ability has helped us win many domestic clients, especially in the communication industry. We work closely with major domestic communication companies, some from as early as 1980s.

In terms of our digital audio and video business, we have 30 percent of the market share in domestic antenna televisions (CATVs). With the development of digital TV projects in China, this percentage will continue to rise. As for high-definition TV, the demand this year is increasing in China and globally. We will be launching new solutions to meet these demands.

Products that Fujitsu Microelectronics produces for the automotive industry include microcontroller units (MCU) and

multimedia processors. Our products have been widely accepted, especially in the European market, because they are reliable. In fact, most of the local automobile manufacturers now also use our products.

Fujitsu Microelectronics is committed to promoting WiMAX technology for communication, and has been doing so for the past few years. As we have an advantage over GSM, 3G, and Wi-Fi technology for mobile and long-distance communications, we are optimistic about the future of WiMAX and we are investing a lot in it.

Moreover, the introduction of WiMAX-enabled products such as USB dongles and base station to the market helped to strengthen the impact of this technology. We hope that WiMAX will be adopted in more applications such as mobile phones, automobiles and home appliances. For example, with a maximum radial range of 75 kilometers, WiMAX is more suitable than cable in communication traffic monitoring.

Moreover, GPRS and 3G-enabled mobile phones, and computers on Wi-Fi cannot communicate conveniently and rapidly. WiMAX resolves this issue. Last but not least, adopting WiMAX as a general protocol in areas not covered by wireless communication network provides significant cost savings and returns on investment.

Many MNCs establish R&D centers either in Beijing and Shanghai, but Fujitsu Microelectronics has bucked the trend with Chengdu. What was the main reason for setting up in the Southwest?

First of all, one must be clear about the function of your office. Many companies set up their sales centers in Beijing, Shanghai, Shenzhen and Taipei. Many companies think it is quite reasonable to establish R&D centers in these cities, too. But over time, they forget the original intention of establishing the R&D center, and it doubles up as a sales support center. R&D centers are different from sales organization; R&D centers need space and a quiet environment to thrive.

In terms of the talent demand and supply situation, cities such as Beijing and Shanghai may have a large supply of talents but there is a correspondingly high demand. Because of this, engineers in these cities changed jobs frequently, which is not conducive when you want to undertake long-term R&D and major ongoing projects.

In mainland China, there are a large number of key universities in Xi'an, Chengdu, Wuhan and so on. Comparatively speaking, the talent supply in these places is adequate while the demand is not very high. We took these factors into consideration earlier on.

What was the strategy behind the purchase of a local audio-visual frequency company? Do you plan to develop audio-video frequency technology based on China's local standard? So far, what achievements and breakthroughs have Fujitsu Microelectronics made?

Apart from R&D, another reason for the acquisition of Chengdu West Star was to enable us to undertake localized project. For example, to develop satellite TV broadcasting chips in mainland China or chips for local digital terrestrial broadcast, there must be someone who understands the local requirements, and able to communicate with the regulatory authorities. We need such talents, and Chengdu West Star can provide these talents.

As a matter of fact, we have our eyes set on the global market for all our R&D centers. As such, every center has its own specializations. For example, West Star is more focused on digital audio and video, while the R&D center in Shanghai is mainly responsible for automotive electronics and home appliances. In addition to audio-video frequency, West Star is also responsible for the R&D of MCUs and some analog products.

電子產品世界
ELECTRONIC ENGINEERING & PRODUCT WORLD Monthly

Electronic Engineering & Product World, May 2008

Mr Welch Ding, MCU Products Manager of Fujitsu Microelectronics, accepted an interview by Electronic Engineering & Product World. He analyses the marketing strategy of the 16-bit MCU.

Technology Corridor

A Strategy of 16-bit MCU

—Is There A Grey Zone between 8-bit and 32-bit?

16-bit MCU Overview

■ Reporter: Yingjiu

Editor: Wang Ying

16-bit single-chip (micro-controller unit, MCU) has remained a disputable product zone: on its top are a large batch of manufacturers and rich production lines of 32-bit MCUs and in the downstream even are various of 8-bit single chips peering around. Hence, such a viewpoint was popular in the industry 4 or 5 years ago: 16-bit single-chip is the grey zone between 8-bit and 32-bit MCUs, having little chance of development except the niche markets such as automobile. After several years, what about the market of 16-bit single chips?

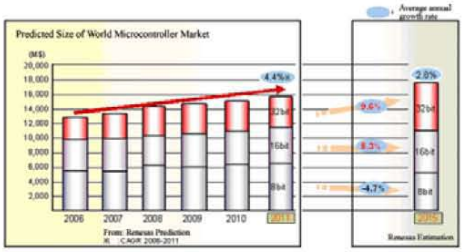
The market expands steadily

Many 16-bit manufacturers believe that 16-bit single chip has its unique market positioning so that its market size shall not shrink and is irreplaceable and that 16-bit MCU shall increase steadily.

Welch Ding MCU product manager, Fujitsu Microelectronics

"According to Renesas prediction, annual growth rate of 16-bit and 32-bit MCUs in China shall be above 10%", said Chang Qingpu, general manager of Beijing Technology Center of Renesas System Solution (Beijing) Co., Ltd. However, global growth rate of single chip market is a little lower (as shown by Figure 1).

According to latest research report by Strategy Analysis, annual average composite growth rate of 16-bit MCU shall amount to 28% in the future 5 years. Ding Jiezhao, MCU product manager of Fujitsu Company analyzed that judged from Fujitsu experience in micro-electronics, 8-bit has the trend to occupy the entire low-end market. In part of medium and high-end markets, 32-bit MCU shall take up part of 16-bit MCU market by way of reducing the prices. But as constrained by its cost, it cannot have the same performance price ratio as 16-bit MCU in general. Thus it is believed that 16-bit MCU shall has greater performances in areas of auto electronics and industrial control by means of its outstanding performance price ratio, for example, the power system, integrated instrument panel, air conditioner and body module of automobiles are basically designed by use of 16-bit MCUs. 8-bit MCU is certainly a prerequisite production line of almost every MCU manufacturer due to its lower technical threshold and huge size of low-end market.



The future of 32-bit MCU is full of chances due to its introduction of open ARM framework, reduced entry threshold for competitors and continual expansion of application in the market.

Freescale also agrees that 16-bit single chip has a stable position in field of automobile. Kang Xiaodun, manager of automobile electronic engineering in charge of Freescale Semiconductor in China area commented: "the market of 16-bit single chip in field of automobile electronics shall be irreplaceable due to its long development period and long product life cycle. Therefore, 16-bit MCU can cover part market of 32-bit MCU and 8-bit MCU. In addition, its development process shall be simpler than 32-bit and just a little difficult than 8-bit. So when suppliers of the automobile electronics develop platform or more projects with shared resources, 16-bit MCU shall have a relative large space due to its vast coverage.

It can be seen that as performance of 8-bit MCU increases and cost of 32-bit MCU decreases, MCU market shall not be so clearly divided. Instead, it shall represent a trend of mutual coverage and mutual penetration. 16-bit single chip has become a grey zone between 8-bit and 32-bit. Some manufacturers think that the grey zone shall become narrower and narrower while some manufacturers believe the grey zone can be made broader and broader by concentrated digging. Diao Yong, business development manager in charge of TI MSP430 in China area thinks, "The division between 16-bit single chip and other bits products has become dimmer and dimmer, which, thus, brings opportunity for flexible development of 16-bit MCU." TI's microcontroller production line only manufactures 16-bit MSP430. Diao Yong is optimistic with growth of 16-bit MCU market. In fact many MCU markets are not only decided by bit width of the bus for in many applications bit width of the bus is not a key factor to be considered. Such factors like MCU's power consumption, simulated and digital peripherals integrated on the chip and development feasibility are key considerations in deciding MCU applications. Traditional 16-bit MCU sacrificed power consumption while pursuing bit width and speed, resulting in complicated development means and thus limiting application of 16-bit MCU. If 16-bit MCU can solve the problem of power consumption, integrate with abundant simulated and digital peripherals and realize feasibility in development, 16-bit MCU can compete with 8-bit MCU even 32-bit MCU in some market areas in addition to maintaining the original market applications.

Editor: Wang Ying

Due to division of production lines, most of 16-bit single chip manufacturers also produce 8-bit and 32-bit products, so as to help customers of various levels to select MCU types fit for their system requirements and enable the customers to keep largest competition forces with sufficient divergence in comparison with their competitors. For example, Fujitsu's 8-bit, 16-bit and 32-bit MCUs can remain compatible with basic commands. If the customer wants to update 8-bit MCU to 16-bit MCU, it is only required to change a small part of codes.

Why is number of the players so limited?

Different from 8-bit and 32 bit which has so many participants, number of 16-bit single chip manufacturers are so few. The reason may be that the few large manufacturers are so successful in the market to monopolize the market so that it is very difficult for other manufacturers to get in. Thus they directly moved to the market of 32-bit MCUs depending on ARM core. For example, Chang Qingpu, general manager of Beijing Technology Center of Renesas System Solution (Beijing) Co., Ltd. said, "Renesas turnover in 16-bit single chip occupies 40% of market shares." Therefore, Companies whose mainstream embedded business is 16-bit MCU such as Renesas, Infineon and TI have dominated the field for years.

However, there are still warriors that challenge the monopoly. For instance, Microchip announced entering the market of 16-bit single chip in October 2005 after topping the world in turnover of 8-bit MCUs and began to sell its 16-bit single chips in batches in first half of 2006. When Steve Sanghi, Microchip CEO, was visiting Beijing, he said he was optimistic with positioning on 16-bit MCUs and thought that 16-bit MCU cannot be replaced by 8-bit and 32-bit, especially DSC (digital signal controller) developed on basis of 16-bit single chip for use in motor control. It is worth mentioning that Microchip did not announce entering the market of 32-bit single chip until November 8, 2007, which indicated that Microchip listed development of 16-bit single chip as one of its strategic steps to lead the embedded world. However, practical Microchip did not follow suit to increase bit numbers of the single chip. As said by Ganesh Moorthy, its executive Vice President, new chip manufactured by Microchip shall first satisfy its customers' needs and then expand outwardly. In expansion, Microchip has noticed that China has a large number of engineering graduates each year and thought this is a remarkable potential resources of design. Therefore in this year Microchip and this magazine (Electronic Engineering & Product World) co-held "2007~08 Microchip 16-bit embedded control design competition", which revealed Microchip's firm confidence in developing 16-bit MCUs.

However, Freescale having tremendous strengths in 32-bit processor thinks space of 16-bit is very narrow. Because as price of 32-bit MCU keeps reducing and some 8-bit MCUs become greater, space of 16-bit MCU has contracted to some unique markets, such as automobile, storage, digital camera and video camera. Feasible and low cost 8-bit products are extremely attractive in the market while 16-bit requires larger processing power, storage space and greater pins. Freescale's Coldfire series used for control have 16-bit and 32-bit frameworks but its development of 32-bit becomes better and better. Besides, Flexis single chip produced by the company last summer is compatible with software and pins between 8-bit and 32-bit.

Technical trend of 16-bit MCU

Seamless transplant with 8- and 32-bit. As required for update and upgrade by the product, the engineer needs to easily transplant from primary MCU to 16-bit or from 16-bit to higher MCU.

Networking. Kang Xiaodun, manager of Freescale said that to address the development requirements for automobile electronics networking, it is necessary to develop greater MCU used for different networks.

Improved manufacture process and performance. Ding Jiezhao from Fujitsu pointed out: 16-bit MCU mainly faces medium and high end markets, and shall adopt higher and more advanced manufacturing technology with increasingly greater CPU processing capacity and continuously reduced power consumption and cost. Therefore, to certain degree, maybe the future 16-bit MCU can take over some high end market of 8-bit MCU while keep a price gap with 32-bit MCU.

Kang Xiaodun
Manager of automobile electronic engineering in charge of Freescale Semiconductor in China area

Diao Yong
Business development manager in charge of TI MSP430 in China area

Editor: Wang Ying

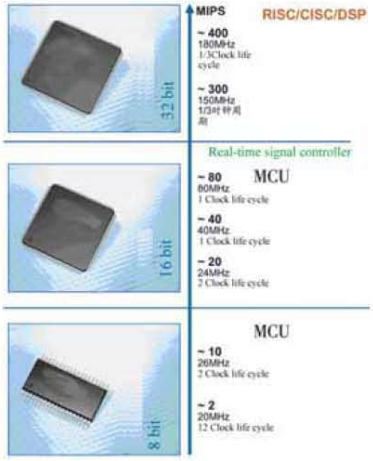


Figure 2 Division between 8-bit, 16-bit and 32-bit (take division by Infineon as an example)

Able to extend to traditional 8-bit market. Diao Yong from TI said that as we know market application of MCU is not only decided by bit width of the bus. Such factors like MCU's power consumption, simulated and digital peripherals integrated on the chip and development feasibility are key considerations in deciding MCU applications. If 16-bit MCU can realize low even super-low power consumption, integrate with abundant simulated and digital peripherals and realize feasibility in development, 16-bit MCU can become first choice of the customers in traditional 8-bit MCU market and be widely used in more and more innovative areas with a prospective future of applications.

Three mainstream applications

Xia Yuhong, senior application engineer and manager in charge of Microchip business in Greater China, concluded that current needs for 16-bit MCU driven by Chinese market mainly are:

- **Consumer electrics.** China has a significant position in production and sale of consumer electrics but interest space of enormous traditional industry of home appliances has shrunk gradually as the production technology and the market become mature and aged. Manufacturers of home appliances have set their emphasis on research and market development of new type home appliances, such as inverter air conditioner, energy saving refrigerator, networking home appliances and intelligent home furnishings. Traditional 8-bit MCU cannot fit for development of such products while chip and development cost of 32-bit MCU cannot fit this application. 16-bit MCU is just between these two and can better cater for requirements of these products. In addition, the ascendant digital consumable electronics are huge pushing forces of 16-bit MCU, such as set-top box, mobile phone, PDA and portable media player. These products features short life cycle, large group of consumers, and high requirements for MCU performance, thus constituting main battlefield of 16-bit MCU.
- **Automobile electronics.** 32-bit MCU is mainly used in automobile information system while 8-bit or 16-bit is mainstream of automobile electronics. Application prospect of 16-bit MCU in automobile electronics are superior to 8-bit MCU due to its intrinsic advantages in such as high speed data processing (16-bit), flexible peripheral interface (CAN, LIN) and high speed peripheral (A/D, PWM).
- **Industrial control.** such as application in inverter, digital controlled machine tool, thermal meter, auto control. This industrial control occasions have a lower requirement for speed than reliability. 16-bit MCU is very appropriate for application in this field due to its moderate system size and good real-time performance.

Xia Yuhong
Senior application engineer and manager in charge of Microchip business in Greater China

Advantages of products by each manufacturer

Infineon

Shi Jinyan, senior supervisor of microcontroller from Infineon points out that it still needs to made a big decision to replace with a novel good platform, even though cost of the chip reduces by 20%. This is because customers of industrial enterprises are mainly medium and small enterprises. Main software designers in many of Chinese companies are senior management of the companies at the same time, required to manage the enterprise and design the products at the same time. Therefore, transforming software platform (requiring 1~2 men year) includes not only the usual cost to development the software, sometimes also includes higher time cost of management. Thus, the companies aim to reduce the research and development cost by more than 1 man year when transforming the platform. Conformity of the core with the peripherals can reduce the customer's burden in research and development and at the same time it is necessary to provide the customers with whole set of tools.

To address the field of motor control, Infineon selects two production lines: 8-bit and 16-bit and provides supportive solutions with the company's single chips and power components as the chip. Its XE166 series pushed forward at beginning of this year fit for 16-bit real-time signal controllers used in industries. XE166 combines advantages of C166 and XC166 with improved real-time performance. In addition, the embedded voltage stabilizer and oscillator realizes higher integration. What's more, speed of inner core becomes faster at maximum of 80MIPS and integrates DSP unit with greater storage capacity, currently at maximum of 768kB flash memory. For motor drive, it owns double synchronous ADC and 4 PWM units. In time of appearing in the market, the time to develop the product is shortened due to compatibility with C166 code.

Editor: Wang Ying

Fujitsu Microelectronics

Fujitsu existing 16LX products have acquired greater market position in variable frequency home appliances, automobile electronics and industrial control. Its market share in some application fields even amounts to 80%. New 16FX series of products formally launched by Fujitsu recently all adopt 0.18μm manufacturing processes with a CPU processing capacity more than 21MIPS and CAN bus integrated with 2 channels. The series support more new type communication interfaces, mainly oriented towards application in automobile electronics and industrial control. Compared with previous 16LX, performances of new 16FX are improved by 5 times while the price remains basically the same.

Freescale

Freescale's S12X 16-bit microcontrollers carry a powerful XGATE coprocessor, which can undertake a large part of computer intensive operations of CPU. This multifunctional and high efficient coprocessor is dedicated to deal with interrupt events without CPU interference. XGATE is operated from RAM at a speed 2 times higher than clock speed of the CUP to reduce CUP's pressure in executing time-consuming interruption operations and enable it concentrate on work related to the application.

The 16-bit MCU carrying XGATE has been vastly praised in the market. This 16-bit MCU is used in almost all automobile electronics from power assembly control to body control with performances closer to 32-bit MCU and price almost equal to that of 8-bit MCU, such as medium and low shit power assembly control, safety air bag, ABS control, body gateway.

TI

In recent years, annual growth of MSP430 in the world has exceeded 50%, vastly and mainly used in instrumentations, industrial control, medical apparatus, radio/radio frequency and computer peripherals. TI's future concentration is on application of MSP430FE42X in single chip anti-theft electricity meter and MSP430FGXXX in portable individual medical apparatus.

Major advantages of MSP430 lie in its super-low power consuming framework. Life span of the battery can be largely improved to address its power supply, for instance, it consumes only 0.1μA in RAM maintaining mode, 0.8μA in real-time clock mode and 250μA/MIPS in working mode. Apart from this, it also integrates with rich simulation/intelligent peripherals with more than 100 parts. In addition, it also adopts 16-bit RISC CPU to support various applications with simpler codes.

Microchip

Microchip has dsPIC, PIC24F and PIC24H series, featuring high, medium and low end series with complete types and providing the users with optimized selection. These products are well compatible from inner core to peripherals and using the same development circumstances to maximize the customer's development efficiency.

Microchip provides excellent supporting 16-bit development tools with high compatibility and slim risk of development. Simulation tool (MPLAB-IDE), development tools (PM3, ICD2, REALICE), product documents, application notes, compiling tools (C30, compiler), development board (Ethernet, voice processing, common board), and library functions (DSP library, peripheral library, etc.) shall be manufactured to place synchronously as the new product is launched.

To address different markets, Microchip 16-bit series are divided into common use series, sensor series, digital power SMPS and motor control series.

Renesas

Renesas Technology announced that it shall launch an innovative new type CPU framework design for CISC (complicated instruction set computer) in first half of year 2009, which is based on 32-bit with two series and two development orientations. The orientation that centers on low power consumption is mainly a 16-bit framework while the orientation of high performance is mainly a 32-bit framework. After the new series is produced, it shall replace the original 32-bit and 16-bit single chips, such as M16C, H8S, R32C and H8SX series.

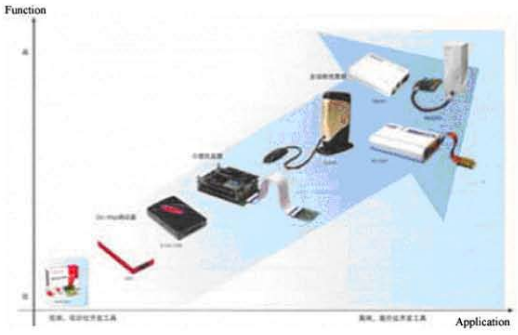


Figure 2 8~32-bit development tools (take Renesas development tools as examples)

New type RX framework realizes some significant performances to sufficiently meet the following company objectives:

- High working frequency: 200MHz;
- Processing performances (MIPS/MHz): 1.25 MIPS/MHz(Dhrystone v2.1 benchmark);
- High code efficiency: the target code in reduced by 30% in amount compared with exiting products;
- Low power consumption: 0.03mA/MHz.
- Compatibility and scalability. To provide the customers with seamless upgrading path to MCU or other compatible parts with higher performance, Renesas plans to provide all components having RX framework with a whole set of development tools. The new tool chain is expected to simplify system design and transplant of application code. Therefore the customers can use less time to complete development of new product. The new tool chain includes a C compiler that can guarantee duplicate of codes so as to protect the customer's investment on H8 and M16C series.

References:

1. Gao Lei, Kang Xiaodun, 'Configuration and programming of S12 MCU peripheral coprocessor', Electronic Engineering & Product World, January 2008
2. Manfred Choutka, 'XE166: 16-bit MCU for real-time application and optimized design', Electronic Engineering & Product World, March 2008
3. '16-bit MCU is on the ascendance and the designing competition is on a raging fire', Electronic Engineering & Product World, April 2008

世界电子元器件
GLOBAL ELECTRONICS CHINA

Global Electronics China, May 2008

32 bit MCU with Internal FlexRay for Vehicle Control System

New Products | FR Family MB91F465XA

32-bit Microcontroller with Built-in FlexRay for Automotive Control Systems
FR Family MB91F465XA

Optimal for next-generation automotive control systems with built-in FR CPU cores capable of fast control and peripheral resources with reinforced functions.
This product is a 100MHz-operation microcontroller that offers various built-in functions including FlexRay, which is under the spotlight for the next-generation automotive network, and already widely used CAN.

Overview

In recent years, X-by-Wire technology, which is used to electrically control conventional hydraulically controlled systems, has been receiving increased attention for its use in next-generation automotive systems. Automobile data has been increasing in volume and becoming more and more complex. As such, faster and more reliable networks are necessary. In this context, FlexRay shows great promise as a next-generation automotive network.

The FlexRay microcontroller "MB91F465XA" that FUJITSU has developed has a built-in 32-bit RISC, FR core to increase the maximum operation frequency to 100MHz. Its high versatility and compact specifications will allow a flexible shift from the various existing CAN bus systems to FlexRay. Furthermore, it can be applied as a gateway between conventionally used CAN and FlexRay.

Fig.1 shows the target applications of FlexRay.

Product Features

Fig.2 presents the block diagram.

The built-in resources in this product deliver the following features:

Photo 1 External View

FR60 core

This product adopts an FR60 core that is instruction-compatible with the FR series. The FR60 core is FUJITSU's 32-bit RISC CPU core that realizes high performance and low power consumption and is capable of operation at a maximum operation frequency of 100MHz.

Built-in Flash memory capacity

- Main Flash memory: 544Kbytes
- Flash memory security addressed

Built-in RAM capacity

- 32Kbytes
- Instruction cache: 8Kbytes

FlexRay communication controller

An IP provided under license from German Bosch that conforms to FlexRay Ver2.1. Supports communication speed up to 10Mbps.

CAN controller

Conforms to Parts A and B of CAN specification version 2.0. There are 32 built-in message buffers for data and ID with ranking. Supports communication speed up to 1Mbps.

Various timers

- 16-bit free-run timer
- 16-bit input capture
- 16-bit output compare
- 16-bit PPG: Selection possible from one-shot output/PWM output (synchronous output possible up to 4 channels)
- 16-bit reload timer

Various interfaces

- LIN-supporting USART (with 16bytes FIFO)
- I2C interface

High-speed A/D converter

Sequential conversion A/D converter realizing 10-bit resolution (Minimum conversion time 3μs, total error ±3LSB: Vcc=Avcc=3.0V to 5.5V)

Figure 1 Target Applications for FlexRay

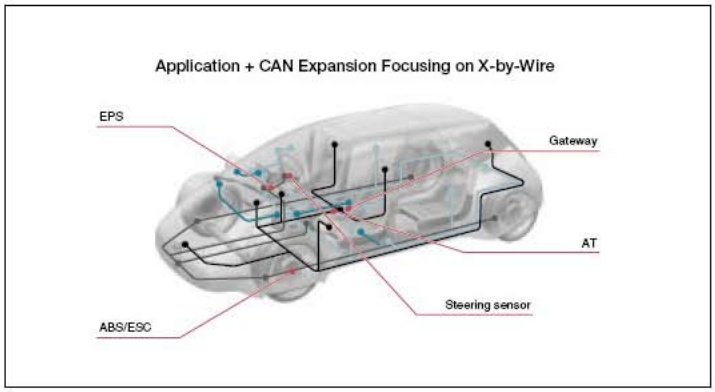
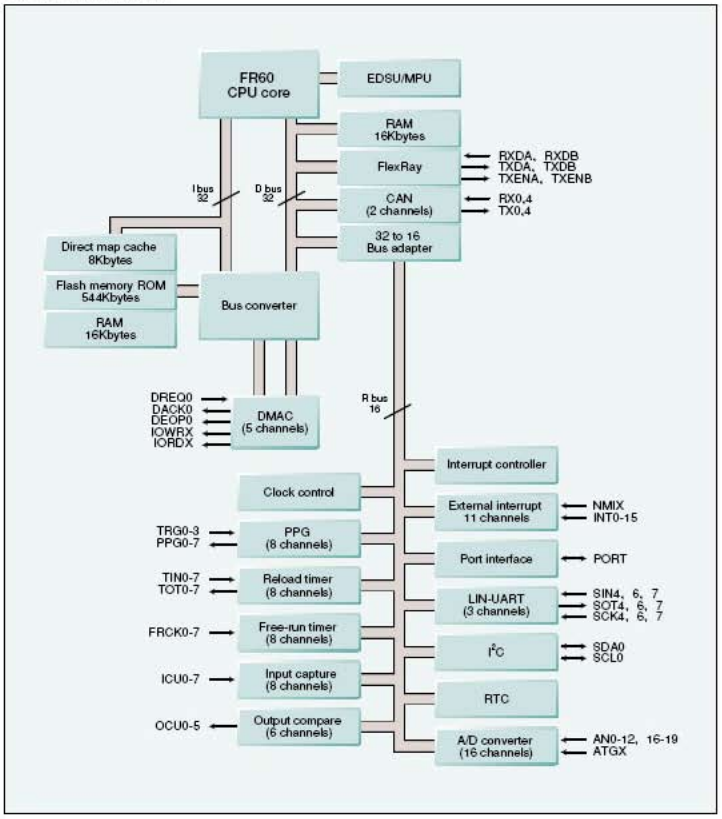


Figure 2 Block Diagram



Low power consumption mode: Sleep/stop functions

The low power consumption modes are sleep mode (program stops) and stop mode (device stops). Utilizing them, standby current consumption can be reduced dramatically.

I/O port

- Input permission setting: Setting possible for each port
- Input level setting: Selection possible from 4 input levels; CMOS /CMOS hysteresis /Automotive/ TTL
- Pull-up resistor setting: Setting possible for each port (standard: 50kΩ)

Table 1 presents the voltage for each input level.

Other peripheral functions

- External interrupt
- DMAC
- Watchdog timer
- Real-time clock
- Clock monitor
- Low voltage detection circuit
- Power-supply voltage: 3.0V to 5.5V

Application Fields

The number of applications that utilize the motor in automobiles has been increasing and many of these applications are connected to the CAN bus network. Specifically, EPS (electric power steering) executes CAN communication, sensing by AD converter, and so forth during high-speed operation to control the motor.

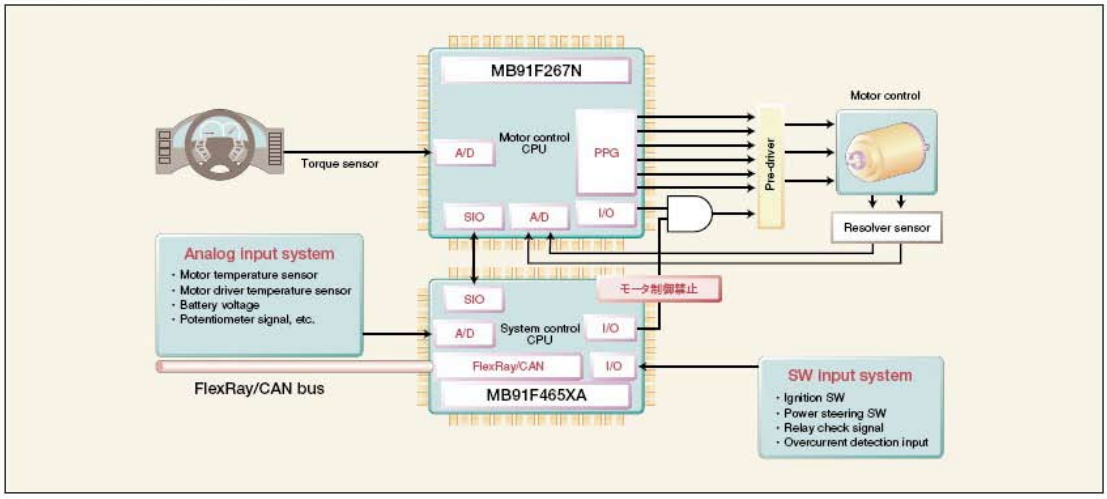
In the future, the EPS system is expected to be connected to the FlexRay network. In this case, motor control must be implemented to suit the carrier frequency and FlexRay will require processing within the communication cycle, resulting in many restrictions in terms of time. This problem can be solved using separate microcontrollers for motor control and system control. This allows this product to be used for system control including FlexRay control with fewer restrictions in system control or time as well as lower program development difficulty.

Fig.3 presents the EPS system block diagram with adoption of this product.

Table 1 Input Level Settings and Input Voltage

Item	VIL (V)	VIH (V)	Input level
Input voltage	0.3Vcc	0.7Vcc	CMOS input
	0.2Vcc	0.8Vcc	CMOS hysteresis input
	0.5Vcc	0.8Vcc	Automotive input
	0.8	2.1	TTL input

Figure 3 EPS System Block Diagram



Development Environment

Like the conventional FR Series, this product is supported by the FUJITSU integrated development environment SOFTUNE V6. SOFTUNE V6 application software is designed to simplify programming tasks in order to meet the diverse needs of program designers.

Furthermore the evaluation board for FlexRay (MB2006-02), which is capable of immediately evaluating FlexRay, is available.

Table 2 lists the development tools. *

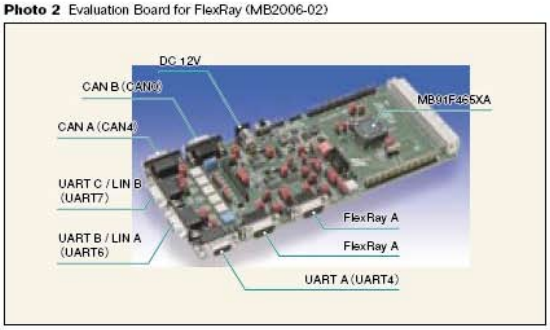
NOTES

* Other company names and brand names are the trademarks or registered trademarks of their respective owners.

Table 2 Development Tools

Hardware	Emulator main unit	MB2198-01
	Adapter board	MB2198-600
	Evaluation chip	MB91V460 (already on the adapter board)
	Header board	MB2198-602 (LQFP-100: 0.5mm-pitch, 14mm×14mm)
	FlexRay expansion board	MB2198-603
	Evaluation board	MB2006-02 (MB91F465XA incorporated)
Software	SOFTUNE V6 Workbench	
	SOFTUNE V6 C compiler	
	SOFTUNE V6 assembler	
	SOFTUNE V6 C/C++ analyzer	
	SOFTUNE V6 C checker	

Photo 2 Evaluation Board for FlexRay (MB2006-02)



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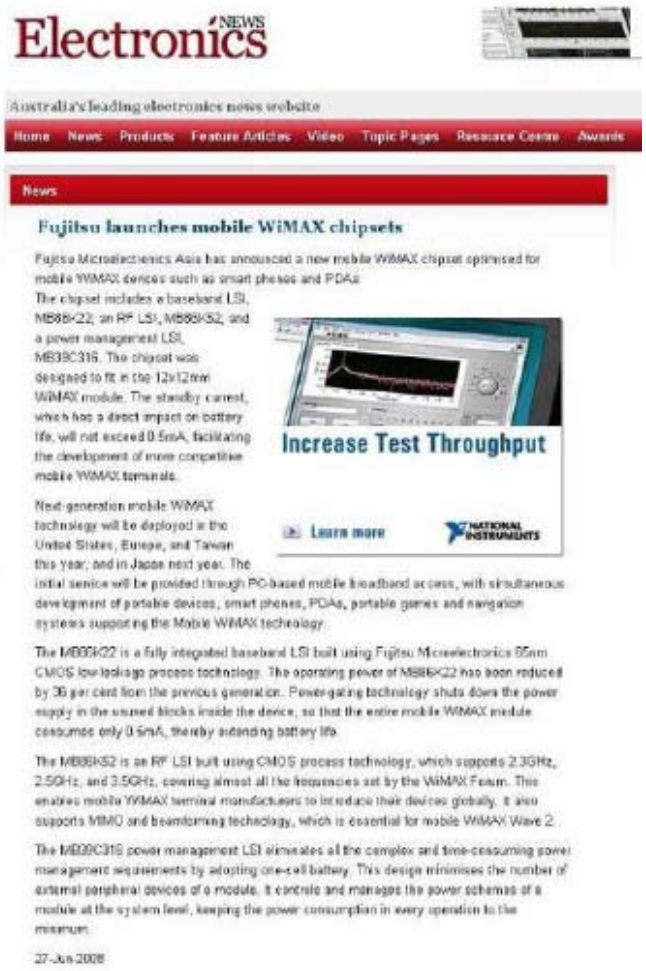
Electronics News
July 27, 2008

Fujitsu launches mobile WiMAX chipsets



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News

Fujitsu launches mobile WiMAX chipsets

Fujitsu Microelectronics Asia has announced a new mobile WiMAX chipset optimised for mobile WiMAX devices such as smart phones and PDAs.

The chipset includes a baseband LSI, MB86K22; an RF LSI, MB86K52; and a power management LSI, MB39C316. The chipset was designed to fit in the 12x12mm WiMAX module. The standby current, which has a direct impact on battery life, will not exceed 0.5mA, facilitating the development of more competitive mobile WiMAX terminals.

Next-generation mobile WiMAX technology will be deployed in the United States, Europe, and Taiwan this year, and in Japan next year. The initial service will be provided through PC-based mobile broadband access, with simultaneous development of portable devices, smart phones, PDAs, portable games and navigation systems supporting the Mobile WiMAX technology.

The MB86K22 is a fully integrated baseband LSI built using Fujitsu Microelectronics 65nm CMOS low-leakage process technology. The operating power of MB86K22 has been reduced by 36 per cent from the previous generation. Power-gating technology shuts down the power supply in the unused blocks inside the device, so that the entire mobile WiMAX module consumes only 0.5mA, thereby extending battery life.

The MB86K52 is an RF LSI built using CMOS process technology, which supports 2.3GHz, 2.5GHz, and 3.5GHz, covering almost all the frequencies set by the WiMAX Forum. This enables mobile WiMAX terminal manufacturers to introduce their devices globally. It also supports MIMO and beamforming technology, which is essential for mobile WiMAX Wave 2.

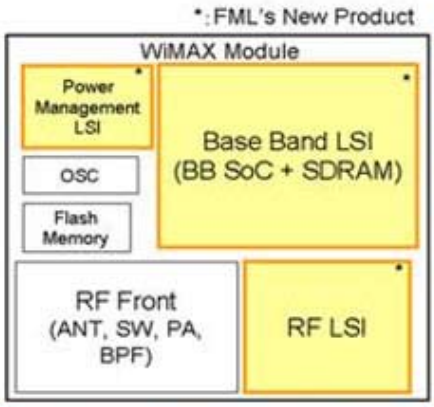
The MB39C316 power management LSI eliminates all the complex and time-consuming power management requirements by adopting one-cell battery. This design minimises the number of external peripheral devices of a module. It controls and manages the power schemes of a module at the system level, keeping the power consumption in every operation to the minimum.

27-Jun-2008

Tuesday, June 24, 2008

Fujitsu intros mobile WiMAX chipsets

BANGALORE, INDIA: Fujitsu Microelectronics Asia Pte Ltd (FMAL) has announced a new mobile WiMAX chipset optimized for mobile WiMAX devices such as smart phones and PDAs. Sample shipment will start in August 2008.



The chipset includes a baseband LSI, MB86K22; an RF LSI, MB86K52; and a power management LSI, MB39C316. These three devices are essential to produce a competitive WiMAX module. The chipset was designed to fit in the 12x12mm WiMAX module. The standby current - which has a direct impact on battery life - will not exceed 0.5mA, facilitating the development of more competitive mobile WiMAX terminals.

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The mature software stacks of the chipset have been proven in the previous generation product, and the power management schemes have been optimized at the system level. These advantages enable mobile WiMAX terminal manufacturers to focus on designing attractive user interfaces and service-oriented applications.

Chipset key features

The MB86K22 is a fully integrated baseband LSI built using Fujitsu Microelectronics 65nm advanced CMOS low-leakage process technology. The operating power of MB86K22 has been reduced by 36 percent from the previous generation. Power-gating technology shuts down the power supply in the unused blocks inside the device, so that the entire mobile WiMAX module consumes only 0.5mA, thereby extending battery life.

The MB86K52 is an RF LSI built using CMOS process technology, which supports 2.3GHz, 2.5GHz, and 3.5GHz, covering almost all the frequencies set by the WiMAX Forum. This enables mobile WiMAX terminal manufacturers to introduce their WiMAX devices globally. MB86K52 also supports MIMO and beamforming technology, which is essential for mobile WiMAX Wave 2.

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Tech News - Straight from Asia
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Fujitsu, Jurong Technologies to Develop New Range of WiMAX Products

Jun 6, 2008 15:58
Nikkei Electronics Asia

Fujitsu Microelectronics Asia Pte Ltd (FMAL) and Jurong Technologies industrial Corp of Singapore have announced that Jurong Technologies, through its subsidiary I-Sirius Pte Ltd, has chosen Fujitsu as its WiMAX baseband SoC partner.

I-Sirius will use Fujitsu's Mobile WiMAX baseband SoC, which is fully compliant with IEEE802.16e-2005 standard, to develop WiMAX products such as embedded modules, USB dongles and Express cards. Both companies will also collaborate on strategic product positioning to enhance market penetration of these products.

Fujitsu WiMAX Baseband SoC solution is a IEEE802.16e-2005, WiMAX Forum Wave2 (MiMO) profile compliant which supports Beamforming, Matrix A and Matrix B. Fujitsu has already field-tested these features with real BS through air interface, and is ready for the Wave 2 certification. Fujitsu's Mobile WiMAX SoC delivers high throughput which is close to the theoretical maximum achievable with MiMO.

Electronics Design, Strategy, News
EDN ASIA

Fujitsu and Jurong Technologies collaborate to develop new range of WiMAX products

(Top News, 05 Jun 2008)

Fujitsu Microelectronics Asia and Jurong Technologies Industrial Corporation are pleased to announce that Jurong Technologies, through its subsidiary I-Sirius Pte Ltd, has selected Fujitsu as its WiMAX baseband SoC partner. I-Sirius will use Fujitsu's Mobile WiMAX baseband SoC, which is fully compliant with IEEE802.16e-2005 standard, to develop WiMAX products such as embedded modules, USB dongles and Express cards.

Both companies will also collaborate on strategic product positioning to enhance market penetration of these products. The companies will showcase the latest WiMAX products from their collaboration at the Fujitsu booth (C6-1, Hall 2) during the 2008 WiMAX Expo, Taipei in Taipei Show Hall 2 to be held from 2nd to 6th June 2008.

"We are pleased to enter into this landmark collaboration with Fujitsu, a global leader in WiMAX technologies, as we are very impressed with their open technical policy, comprehensive hardware and software documentation, and competitive reference design pricing," said Mr Cheang Chee Ming, President and Chief Executive Officer of Jurong Technologies. "Through this co-operation, we are confident of providing flexible first-class WiMAX products based on Fujitsu's WiMAX SoC."

Embedded Design

Fujitsu rolls mobile WiMAX chipsets

Posted: 26 Jun 2008

Fujitsu Microelectronics Asia Pte Ltd (FMAL) today announced a new mobile WiMAX chipset optimised for mobile WiMAX devices such as smart phones and PDAs. The chipset features three devices that are essential to produce a competitive WiMAX module: a base band LSI, MB86K22; an RF LSI, MB86K52; and a power management LSI, MB39C316.

The chipset was designed to fit in the 12x12mm WiMAX module. The standby current—which has a direct impact on battery life—will not exceed 0.5mA, facilitating the development of more competitive mobile WiMAX terminals. Sample shipment will start in August 2008.

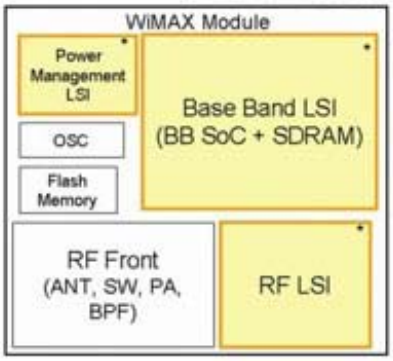
Chipset Key Features

MB86K22 is a fully integrated base band LSI built using Fujitsu Microelectronics 65nm advanced CMOS low-leakage process technology. The operating power of MB86K22 has been reduced by 36 per cent from the previous generation. Power-gating technology shuts down the power supply in the unused blocks inside the device, so that the entire mobile WiMAX module consumes only 0.5mA, thereby extending battery life.

MB86K52 is an RF LSI built using CMOS process technology, which supports 2.3GHz, 2.5GHz, and 3.5GHz, covering almost all the frequencies set by the WiMAX Forum. This enables mobile WiMAX terminal manufacturers to introduce their WiMAX devices globally. MB86K52 also supports MIMO and beamforming technology, which is essential for mobile WiMAX Wave 2.

MB39C316 power management LSI eliminates all the complex and time-consuming power management requirements by adopting one-cell battery. This design minimises the number of external peripheral devices of a module. MB39C316 controls and manages the power schemes of a module at the system level, keeping the power consumption in every operation to the minimum.

*: FML's New Product



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The mature software stacks of the chipset have been proven in the previous generation product, and the power management schemes have been optimised at the system level. These advantages enable mobile WiMAX terminal manufacturers to focus on designing attractive user interfaces and service-oriented applications.

*This highly integrated WiMAX chipset features the low power and small form factor essential to the development of attractive mobile WiMAX terminal products," said Makoto Awaga, General Manager of the Mobile Solution Business Group of Fujitsu Microelectronics Limited in Japan.