# Smart Meter Industry Game Changer with Advanced Chip Family

Accent announced its second generation *ASMgrid*™

standard product family targeted at the demanding performance needs required by Smart Meters. *ASMgrid2*™

incorporates optimized flexibility to support and track next-generation home-area-network (HAN) and near-area-network (NAN) communication standards including IEEE 802.15.4g, G1 and G3, PRIME, IEEE 1901.2, home area networking with IEEE 802.15.4. The ASSPs feature breakthrough system capability to address the demanding performance, cost, and scalability needs of Smart Grid equipment manufacturers.

While Smart Grid trials and deployments are in full force in many parts of the world, solution providers are still defining more advanced communication standards and product features which would be required in electric meters. Unfortunately, silicon solutions available today fall short in either providing support for newer technologies or doing so in both a cost effective and scalable manner. The *ASMgrid2* product family reconciles these competing forces through market leading silicon integration and technology innovation at the architectural and design level.

To provide complete advanced smart meter solutions, the *ASMgrid2* system-on-chip architecture encompasses a broad range of technologies including high-precision analog-front-ends, RF transceivers, non-volatile memories, and processing capabilities needed to run required protocol stacks and vendor application software. Each one of the three devices in the *ASMgrid2* product family contains an ARM® processor for unmatched performance, code density, and development capability. In addition to other processing, the ARM processors are also used in combination with hardware acceleration for Accent's SUNFX™ modems, providing adaptable solutions for still evolving utility communication standards.

"We're delighted Accent is adopting Cortex-M and ARM9 series processors as key technology elements in what is certain to be a significant enabler for the smart grid industry," said Eric Schorn, VP Marketing, Processor Division, ARM. "The ARM architecture provides an ideal low-power processing solution to meet the sensitive performance and cost needs of smart meters that are expected to operate for periods up to 20 years on a single battery."

"The *ASMgrid2* standard product family represents industry-first solutions in terms of technology, integration, and feature set specifically designed to Smart Meter deployments occurring in North America and Europe," said Federico Arcelli, CEO of Accent. "The *ASMgrid2* innovative ASSP family represents compelling solutions for equipment manufacturers seeking to support the latest and future meter communication technologies with built-in system scalability plus rich feature set to address their long product life cycles."

| **PRODUCT DETAILS** Product Name | ASM201 | ASM211 | ASM221 |
|---|---|---|---|
| Processor | ARM ARM9EJS | ARM Cortex-M0 | ARM Cortex-M3 |
| SRAM | 512 KB | 64 KB | 96 KB |
| Codec | 8 MSB 8B 32FS | Direct Keypad or Flash | Direct Keypad or Flash |
| On-chip Memory | 16 MB Flash, 64 MB SRAM | 64 MB Flash, 16 MB SRAM, 1 KB EEPROM | 512 MB Flash, 64 MB SRAM |
| Off-chip Memory Support | NAND/Serial and Serial Flash/NAND | Serial Flash | NAND/Dynamic Flash/NAND |
| Energy Measurement | Single phase or Sampler 0.1% accuracy, 2000:1 dynamic range | - | Single/phase or Sampler 0.1% accuracy, 2000:1 dynamic range |
| LCD | Up to 128 pixels, 4 and 5 V support | - | LCD 16x-class support |
| Home Area Support | 2.4 GHz, IEEE 15.4 (ZigBee PRO, SEP2.0 Ready) 250 Kbps | - | Support via serial interface |
| Near Area Support | Protocol stack processing | Sub 1GHz, IEEE 15.4g 800 Kbps | Inclusive Sub1, PRIME, IEEE1901.2 of 100 Kbps |
| Power Management | sub-system standby operation 10 MA (reduction 8MA) | Sleep and reduced power Voltage Scaling | sub-system standby operation 10 MA (reduction 8MA) |
| Security | AES-hardware, memory protection, secured ports | Secured ports | AES-hardware, memory protection, secured ports |
| Package | 100LFBGA, 100BGA | 56QFN | 64BQFP, 100LFBGA |

**ASM201** – *ASMgrid2* SYSTEM-ON-CHIP FOR SMART HOME, COMMUNICATION, AND METER PROCESSING

To satisfy the increased processing and ever expanding memory needs required in smart metering, Accent offers the ASM201. The device's unprecedented integration replaces as many as five ICs for unparalleled system capability and significant cost reduction compared to alternative solutions. In addition to an integrated IEEE 2.4 GHz RF transceiver, the ASM201 incorporates ample performance for a complete communication processing solution, for the home area and near area networking, as well as for meter application stacks. Battery-mode operation is supported by microamp standby modes as well as latch-based RAM for quickest power-down with retained state information.

**ASM211** – *ASMgrid2* SYSTEM-ON-CHIP SUB-GHZ TRANSCEIVER FOR ADVANCED RF MESH NETWORKS

For meter-to-meter wireless mesh networking, dominant in North America, Accent offers the ASM211 as a companion device for ASM201 or for operation with other MCU offerings. The chip's RF transceiver and software-based, hardware accelerated Accent SUNFX™-4G modem is the industry's first PHY solution to support the draft IEEE 802.15.4g standard's mandatory FSK modes and high-data rate, OFDM options for 800 Kbps operation and a sensitivity of -110 dBm. The flexible solution also offers support for existing FSK-based proprietary products.

**ASM221** – *ASMgrid2* SYSTEM-ON-CHIP FOR OFDM POWERLINE AND SMART METER PROCESSING

The ASM221 addresses next generation metering needs for countries in Europe, as well as others, requiring advanced OFDM powerline communication including G3, PRIME, and IEEE1901.2. The ASM221 only requires a few discrete components and high-voltage line driver, providing the industry's first single-chip meter solution for these applications. The Accent SUNFX™-PLC modem, similar in approach to SUNFX-4G, also provides G1(S-FSK) support for backward compatibility. As with the ASM201, the ASM221 incorporates advanced low-power features for battery-mode operation as well required performance and memory for a single processing meter solution.

**Availability**

Product sampling is expected to begin in Q4 2011 for the *ASMgrid2* ASSP family.

**About Accent**

Founded in 1993, Accent (www.accent-soc.com [1]) is an ISO 9001:2008 certified world leading semiconductor supplier of communications and metering technologies for the Smart Grid industry. The company is backed by renowned investors such as Sofinnova Partners and Taiwood Venture Capital. Accent is a worldwide operation with offices in Italy, China, France, and United States. Accent's *ASMgrid* product families integrate the widest technology breadth supporting current and future Smart Grid standards to provide equipment manufacturers off-the-shelf standard products plus complete software platforms for rapid time to market and significantly reduced development cost.

**Posted by Janine E. Mooney, Associate Editor**

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[1] http://www.accent-soc.com