Cellphone Core Chip Trends: Market Analysis of Baseband, Application Processor, RF and Power Management Chips

Description: This extensive market study covers the core integrated circuits that enable cellphones. In this study, the authors don't just track basebands and application processors, but also track and forecast RF transceivers, power amplifiers, and power management units. Together, these chips comprise the core chips of all cellphones. The report provides 2010 vendor market shares for all of these core cellphone chip types and forecasts units, ASPs and revenues for all of them through 2015.

Of course, the buzz is now about fourth-generation cellular, in the form of LTE (Long Term Evolution). The authors highlight the currently-available LTE chips and their “sockets” at mid-2011.

To forecast baseband processors separately from application processors would be folly, since the two increasingly occupy the same die (or the same package). Stand-alone basebands currently account for barely half of that market, but will see that share diminish as technology and price pressures push for more integrated solutions.

The digital baseband processor market is now segmented into three categories:
- Stand-alone digital baseband processors (SA DBB)
- Integrated communication processors (Com DBB: application processors + baseband)
- Integrated ultra-low-cost (ULC DBB) baseband with RF transceiver on the same die

This study explores the dynamics of each of these baseband types and profiles the chip providers and market shares for each of them.

In a similar vein, application processors are characterized in three different types:
- Stand-alone Application Processors (SA-Processor)
- Integrated communication processors (Com-Processor)
- Video Co-Processors as adjuncts to basic RISC engines

This study explores the dynamics of each of these application processor types and profiles the chip providers and market shares for each of them.

The RF transceiver is a key component of mobile handsets, as it is the actual radio transmitter and receiver - once separate devices, but now available as a single device - and increasingly being integrated onto the baseband chip (at least for 2.5G solutions). The complexity of new radio components for advanced handsets has pushed the leading suppliers into two camps, those that specialize in power amplifiers bundled with transceivers as an optimized solution, and those that offer ultra-compact, multi-band transceivers and matching basebands fabricated with the latest CMOS technology.

Cellular handsets and other mobile devices require efficient power management unit (PMU) devices as companions to all processors, whether baseband or application processors, to ensure optimal system operation and long battery life. Because power management technology requires mixed-signal capability, analog baseband (ABB) and audio codecs are often integrated on the same die.

The authors believe that there is no other core cellphone chip market study available that has the breadth or depth of coverage of this one. You are invited to scan the table of contents to get an idea of the full extent of this valuable study and all of the components and companies covered.

With this valuable resource, you will be better equipped to understand the market and new business opportunities, to know your potential customers and to be better informed about your competitors. The market metrics provided are aimed at providing you with dependable information for your company's next business plans.

As with all of Forward Concepts' reports, your satisfaction is guaranteed!
Carter L. Horney, a recognized authority on microprocessor and DSP implementation in telecommunications, is the author of this study. Mr. Horney is an independent consultant and Forward Concepts Associate specializing in semiconductor product strategy and market planning. He was formerly Division Planner for Rockwell International's Digital Communications Division and earlier Strategic Marketing manager for Rockwell's Semiconductor Products Division. Mr. Horney was responsible for the product planning, which led Rockwell (now Conexant Systems) to dominate the worldwide FAX and dial modem chip market. He was appointed a Rockwell Engineering Fellow and received many commendations for outstanding achievement in Computer Architecture, Engineering, Technical Marketing, Product Planning and Customer Relations. Mr. Horney has a B.S. in Mathematics and Physics and an M.S. in Mathematics from Western Illinois University.

Will Strauss, President of Forward Concepts, is an internationally-recognized authority on markets driven by DSP Technology (and wireless is the largest DSP market), and was a significant contributor to this study.

Report provided only in electronic form (PDF): 281 Pages, 65 Figures, 45 Tables, plus Appendix

Contents:

I. EXECUTIVE SUMMARY
   A. Overview
   B. Baseband Processors
   C. Application Processors
   D. RF Chips
   E. Analog Baseband & Power Management Units

II. BASEBAND PROCESSORS
   A. Overall Baseband Processor Market Shares
   B. Digital Baseband Processor Forecast by Air Type
   C. Announced LTE Baseband Chips
   D. Early LTE Aircard/USB Modems
   E. Early Multimode 3G/4G LTE Smartphones
   F. Digital Baseband LTE Forecast
   G. LTE Baseband Supplier Profiles
      1. Altair Semiconductor Ltd.
      2. Broadcom/Beceem (4G LTE/WiMAX Baseband)
      3. Cavium Networks (LTE, 3GPP Rel 8 baseband)
      4. Innofidei (LTE baseband chip)
      5. Intel-Infineon (LTE CMOS RF and 3G/LTE basebands)
      6. Leadcore Technology (LTE/TD-SCDMA Platform)
      7. LG Electronics
      8. MediaTek
      9. NVIDIA/Icera (LTE and HSPA+ /EDGE platform)
      10. Qualcomm (LTE/3G multimode platform)
      11. Renesas Mobile Corp. (LTE Baseband +3G HSPA Platform)
      12. Samsung (LTE and WiMAX Baseband)
      13. Sequans Communications (LTE and WiMAX Baseband Chip only)
14. ST-Ericsson (LTE 4/3G Platform – DBB, ABB and RF devices)
15. ZTE

H. WCDMA Baseband Market & Vendor Shares

I. WCDMA, WEDGE, HEDGE Baseband Supplier Profiles
1. Broadcom (WEDGE & HSDPA Basebands)
2. Icera Semiconductor (21 Mbps HSPA+ Baseband)
3. Intel/Infineon (7.2 Mbps HSDPA Baseband Chip Set Platform)
4. MediaTek (Othello MT6268 WEDGE Platform)
5. Qualcomm (21-42 Mbps HSPA+ Platforms)
6. ST-Ericsson (WCDMA/HSPA+ Connect Platforms)

J. CDMA Baseband Market & Vendor Shares

K. CDMA2000 Baseband Supplier Profiles
1. VIA Telecom
2. Qualcomm (CDMA2000 1x Advanced Chip Set)
3. Qualcomm (CDMA2000 EV-DO Rev. A)
4. Qualcomm (Tri-mode CDMA1x EV-DO Rev. A, HSPA+/EDGE)

L. TD-SCDMA Baseband Supplier Profiles
1. Leadcore Technology (TD-HSDPA IP)
2. MediaTek (TD-SCDMA/GSM Baseband & RF)
3. Marvell (TD-HSPA Baseband, Apps Processor)
4. Spreadtrum (TD-HSDPA DBB & RF, CMMB receiver, Triple-SIM)
5. ST-Ericsson-TG3 (TD-HSPA Baseband, RF, ABB)

M. TD-SCDMA Baseband Market & Vendor Shares

N. GSM/GPRS Baseband Market & Vendor Shares

O. GSM, GPRS & EDGE Baseband Supplier Profiles
1. Broadcom (Monolithic EDGE BB/RF Transceiver)
2. Intel/Infineon (Class 12 EDGE BB, RF & PMU Platform)
3. Marvell (Tri-band EDGE Baseband)
4. MediaTek (GPRS/EDGE Class 12 Platform)
5. MediaTek (Othello Quad EDGE Platforms)
6. MStar Semiconductor (GSM/GPRS & EDGE baseband)
7. ST-Ericsson (Quad GPRS or EDGE-RX monolithic modem)

P. Dual-SIM, GPRS & EDGE Baseband Supplier Profiles
1. Infineon (EDGE Dual-Active Standby)
2. MediaTek (MT6253 ULC GSM/GPRS, dual standby, single talk)
3. ST-Ericsson (GSM/GPRS ULC Dual- SIM, dual standby, single talk)
4. Spreadtrum (GSM/GPRS triple SIM, triple standby, single talk)

Q. Low-Cost Monolithic Baseband/RF Market & Vendor Shares

R. Ultra-Low-Cost Monolithic Chip Forecast by Air Type

S. EDGE Baseband Market & Vendor Shares

T. PHS & iDEN & Vendor Shares

U. PHS Chipset Supplier Profiles
1. Atheros Communications
2. GCT Semiconductor (CMOS PHS Xceivers)
3. OKI (W-OAM Enhanced PHS Baseband)

III. STAND-ALONE APPLICATION PROCESSORS

A. Overview
B. Coprocessors vs. Application Processors

C. Communication Processor Market Impact

D. Application Processor Market & Vendor Shares

E. Application Processor Forecast

F. Stand-alone Application Processor Suppliers
1. Huawei (Hisilicon K3, MW-Mobile 6.5 Professional)
2. Marvell (55nm ARMADA Applications Processors)
3. Marvell (PXA3xx Applications Processor Family)
4. Marvell (Triple-Core Processor)
5. MediaTek (65nm Standalone Applications Processor)
6. NVIDIA (Tegra2 Dual A9 Standalone Applications Processor)
7. NEC Electronics (40nm EMMA Mobile Dual Cortex-A9 Engine)
8. ST-Ericsson (Nova dual Cortex-A9s)
9. Renesas Electronics (SH-Mobile Application Processors)
10. Samsung (SCS3C2442 Low-Cost MCP Application Processor)
11. Samsung (45nm SC36410 MCP Application Processor)
12. Samsung (SSPC110 1 GHz Cortex-A8 Application Processor)
13. Samsung-Apple A5 (S5Pv210 1.2 GHz Dual Cortex-A9+ Mali400 GPU)
14. Samsung (APV310, 1.0 GHz Dual Cortex A9+ Mali400 GPU)
15. ST-Ericsson (STn88xx ARM9 Application Processor)
16. Texas Instruments (OMAP343X Applications Processors)
17. Texas Instruments (1GHz OMAP4430 Dual A9 Processor)

G. Image & Video Co-Processor Supplier Profiles
1. Broadcom (VideoCore Graphics Processor)
2. MtekVision (Camera Signal Processor)
3. ST-Microelectronics (Image Signal Processor)
4. Texas Instruments (720P Video Co-Processor)
5. CoreLogic (Image & SD-D1 Co-Processors)
6. Vimicro (JPEG/M 1.3Mp Image Co-Processor)
7. Renesas (12 MP Camera Processor)

H. 3D Video Co-Processor Supplier Profiles
1. Movidius
2. Texas Instruments (OMAP 4440 and OMAP5)
3. NVIDIA (Tegra 2 3D)

IV. COMMUNICATION PROCESSORS

A. Communication Processor Overview

B. DBB Com-Processor Forecast by Air Type

C. Communications Processor Market Shares

D. Communications Processor Forecasts

E. Communications Processor Supplier Profiles
1. Broadcom (Cat 8 HSDPA Baseband-Processor)
2. Broadcom (21 Mbps HSPA+ Cortex A9 Com-Processor)
3. Texas Instruments (EGPRS Communications Processor)
4. Texas Instruments (OMAPV1030 EGPRS Com-Processor)
5. MediaTek (MT6516 EDGE ARM926 Com-processor)
6. MediaTek MT6573 HSDPA/HSUPA 7.2/5.76 Com-Processor
7. Marvell (65nm WEDGE/TD-SCDMA Com-Processor)
8. Panasonic (Single-Chip UniPhier HEDGE Com-Processor)
9. NEC Electronics/Renesas (HSDPA Cat8 /GSM Com-Processor)
10. Renesas Electronics (MP5225 HSPA+/LTE Dual-A9 Com-processor)
11. Qualcomm (Multi-chip HEDGE & EV-DO Multimedia Platforms)
12. Qualcomm (HD Snapdragon HSPA Com-Processor)
13. Qualcomm (ARM11 HSDPA/HSUPA Low Def Platform)
14. Renesas Technology (G3 HSPA/GSM Com-Processor)
15. ST-Ericsson (Hybrid U6715 ARM926E-J S HSPA Com-Processor)
16. ST-Ericsson (Hybrid U5500 DualA9 HSPA Com-Processor)
17. ST-Ericsson (Two-chip OMAP3430 HSUPA Com-Processor)

V. RADIO TRANSCEIVERS

A. Overview

B. Radio Technology Evolution

C. Overall RF Transceiver Market Shares

D. GSM/GPRS Transceiver Market Shares

E. EDGE Transceiver Market Shares

F. CDMA Transceiver Market Shares

G. WCDMA/UMTS Transceiver Market Shares

H. PHS, PDC, TDMA, iDEN Transceiver Market Shares

I. Radio Transceiver Forecast

J. 2G/3G RF Transceiver Supplier Profiles
1. AKM (Tri-band WCDMA/HSDPA Xceiver)
2. MediaTek (TD-SCDMA and WCDMA Xceiver)
3. MediaTek (CMOS quad GSM/GPRS Xceiver)
4. Broadcom (Polar EDGE Xceiver & EDGE ULC)
5. Broadcom (65nm Bands I-X WCDMA/HSPA Xceiver & EDGE)
6. Fujitsu (90nm 10-band HSPA/EDGE RF Subsystems)
7. GCT Semiconductor (CMOS 800 MHz CDMA2000 Xceiver)
8. Intel/Infineon (130nm CMOS WEDGE & LTE Xceivers)
9. ST-Ericsson (3GPP Rel 6 WCDMA/HSPA Xceiver)
10. ST-Ericsson (Cat 7/8 GSM/GPRS/EDGE/WCDMA Xceiver)
11. ST-Ericsson (130nm dual band CMOS TD-SCDMA Xceiver)
12. Qualcomm (CMOS Diversity WEDGE Xceiver + GLONASS GPS)
13. RCA Microelectronics (CMOS TD-SCDMA, GPRS Xceivers)
14. Renesas (SOI BiCMOS 8-band HEDGE & EDGE Xceiver)
15. Skyworks Solutions (WEDGE & EDGE Xceivers)
16. Icera (CMOS 7-band WCDMA/HEDGE Xceiver)
17. Sony Semiconductor (SiGe BiCMOS WCDMA/HSPA Xceiver)
18. Spreadtrum (7-band CMOS WEDGE, TD-SCDMA Xceiver)

K. 4G LTE RF Transceiver Chip Suppliers
1. Altair Semiconductor (1.9-2.7 GHZ CMOS Transceiver)
2. FCI/Silicon Motion (CMOS LTE Transceiver)
3. Fujitsu Microelectronics (LTE FDD1-17, TDD-34, 38 Transceiver)
4. GCT Semiconductor (R8 FDD Multiband +700 MHz)
5. Huawei-Option’s M4S (Reconfigurable RF Transceiver)
6. Icera/NVIDIA (multi LTE/HSPA+)
7. Intel/Infineon (LTE/3GPP Rel. 7/8, 1-IX band Transceiver)
8. Maxim (2.3-2.7 GHz WIMAX/TD-LTE Transceiver)
9. Huawei Technologies (M4S SAW-less reconfigurable transceiver)
10. Renesas (LTE Software Reconfigurable Radio)
11. ST-Ericsson (LTE 4 band RF bundled platform)

VI. INTEGRATED BASEBAND & RF CHIPS
A. ULC Handset Suppliers

B. ULC Modem Market Size & Vendor Shares

C. ULC Modem Market Forecast

D. Ultra-Low-Cost (BB/RF) Modem Supplier Profiles
1. Broadcom (2.5G Multimedia EDGE Modem, H.264)
2. Infineon (Monolithic GSM and EDGE, MPEG4)
3. MediaTek, Inc. (GSM/GPRS Monolithic Platform)
4. ST-Ericsson (GSM/GPRS and EDGE Monolithic)
5. Qualcomm (WCDMA/HSDPA Single-Package Modems)
6. Qualcomm (CDMA 1x Single-Chip & MCP Modems)
7. Atheros (PHS baseband/RF)

VII. CELLPHONE POWER AMPLIFIERS

A. Overview

B. Cellphone Power Amplifier Market Share Leaders

C. Cellular Power Amplifier Segmentation

D. Mobile Power Amplifier Five Year Forecast

E. Cellular PA Supplier Profiles
1. Anadigics
2. Avago Technologies
3. Maxim Semiconductor (CDMA, PDC and AMP)
4. Mitsubishi Electronic Devices (GaAs Hybrid CDMA and WCDMA)
5. Renesas Technology Corp
6. RF Micro Devices
7. RDA Microelectronics (Quad GSM & TD-SCDMA 1800)
8. Skyworks
9. TriQuint Semiconductor

F. LTE PA Supplier Profiles
1. Anadigics (FDD 1, 2, 7, 8, 20, 3/4/9/10, 5/6/18/19, 12/17,13/14; TDD 38, 40)
2. Mitsubishi Electric
3. Skyworks (FDD 1, 4/9, 5/6, 7, 8, 9, 13/14, 12/17 and TDD 38/40)
4. RFMD (Single bands 12/13 or 7)
5. TriQuint Semiconductor (band 13, 17 of the USA 700 MHz)

VIII. POWER MANAGEMENT UNITS

A. Overview

B. PMU Audio Codec/Speakerphone Drivers
1. AKM Semiconductor (CMOS 24-bit Audio)
2. Cirrus Logic (CMOS Audio Codec)
3. Texas Instruments (Audio Codec+ USB and miniDSP)
4. Maxim (Stereo Audio Codec)
5. Wolfson Microelectronics (Stereo Codec with SPKR drivers and Class W headphone)

C. PMU Market Shares

D. PMU Five-Year Forecast

E. PMU Company Profiles
1. Anpec Electronics (Battery charge management)
2. Broadcom
3. Dialog Semiconductor (CMOS PMU/Audio subsystem)
4. Infineon (RF-Baseband Power Management)
5. Linear Technology (Energy Management)
6. Maxim Integrated Products
7. MediaTek (Baseband)
8. Micrel (BiCMOS, discrete specific PMUs)
9. National Semiconductor
10. Qualcomm (Cellular Power Management)
11. Ricoh Electronic Devices (7 channel PMU + white LED driver)
12. ST-Ericsson (Application Processor PMU)
13. Texas Instruments (Processor PMUs)
14. Wolfson Microelectronics (Audio Codec, MEMS Mics)

IX. APPENDIX

A. WIRELESS ACRONYMS & ABBREVIATIONS

Ordering:

Order Online - [http://www.researchandmarkets.com/reports/2019517/](http://www.researchandmarkets.com/reports/2019517/)

Order by Fax - using the form below

Order by Post - print the order form below and send to

Research and Markets,
Guinness Centre,
Taylors Lane,
Dublin 8,
Ireland.
Fax Order Form
To place an order via fax simply print this form, fill in the information below and fax the completed form to 646-607-1907 (from USA) or +353-1-481-1716 (from Rest of World). If you have any questions please visit http://www.researchandmarkets.com/contact/

Order Information
Please verify that the product information is correct.

Product Name: Cellphone Core Chip Trends: Market Analysis of Baseband, Application Processor, RF and Power Management Chips
Web Address: http://www.researchandmarkets.com/reports/2019517/
Office Code: SC231YHP

Product Format
Please select the product format and quantity you require:

<table>
<thead>
<tr>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic (PDF) -</td>
</tr>
<tr>
<td>Enterprisewide:</td>
</tr>
<tr>
<td>USD 3850</td>
</tr>
</tbody>
</table>

Contact Information
Please enter all the information below in BLOCK CAPITALS

Title: Mr [ ] Mrs [ ] Dr [ ] Miss [ ] Ms [ ] Prof [ ]
First Name: __________________________ Last Name: __________________________
Email Address: * __________________________
Job Title: __________________________
Organisation: __________________________
Address: __________________________
City: __________________________
Postal / Zip Code: __________________________
Country: __________________________
Phone Number: __________________________
Fax Number: __________________________

* Please refrain from using free email accounts when ordering (e.g. Yahoo, Hotmail, AOL)
Payment Information

Please indicate the payment method you would like to use by selecting the appropriate box.

☐ Pay by credit card:  You will receive an email with a link to a secure webpage to enter your credit card details.

☐ Pay by check:  Please post the check, accompanied by this form, to:
Research and Markets,
Guinness Center,
Taylors Lane,
Dublin 8,
Ireland.

☐ Pay by wire transfer:  Please transfer funds to:
Account number 833 130 83
Sort code 98-53-30
Swift code ULSBIE2D
IBAN number IE78ULSB98533083313083
Bank Address Ulster Bank,
27-35 Main Street,
Blackrock,
Co. Dublin,
Ireland.

If you have a Marketing Code please enter it below:

Marketing Code: ____________________________

Please note that by ordering from Research and Markets you are agreeing to our Terms and Conditions at http://www.researchandmarkets.com/info/terms.asp

Please fax this form to:
(646) 607-1907 or (646) 964-6609 - From USA
+353-1-481-1716 or +353-1-653-1571 - From Rest of World