FORWARD CONCEPTS® Electronics Market Research
1575 W. University Drive Suite 111 • Tempe, AZ 85281 • U.S.A.
Tel: +1-480-968-3759 Fax: +1-480-968-7145 E-mail: DSP@fwdconcepts.com
www.forwardconcepts.com

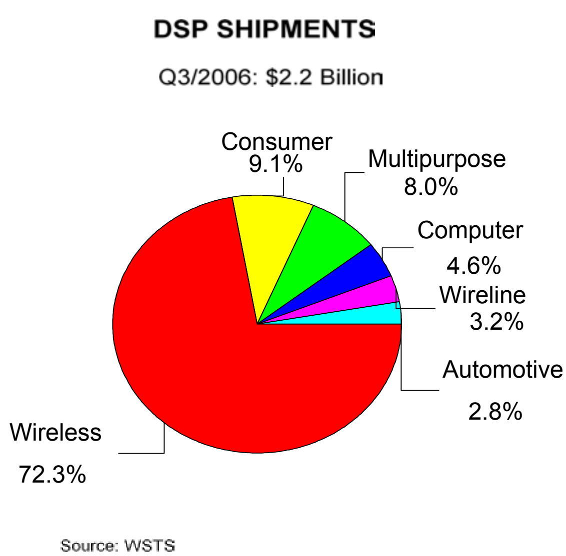
FORWARD CONCEPTS' DSP/WIRELESS MARKET BULLETIN

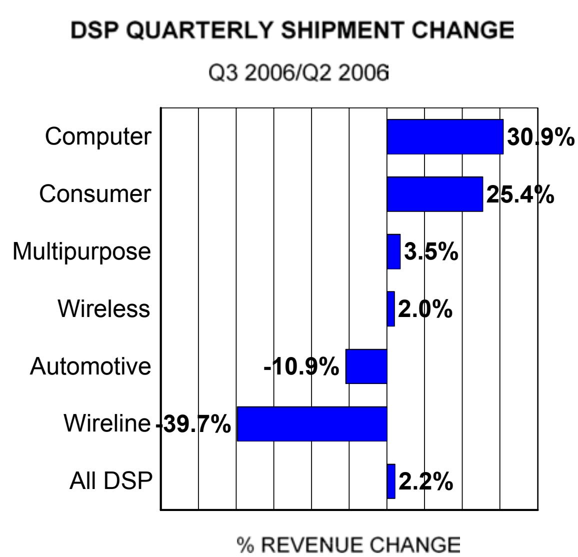
November 6, 2006

Lowering our 2006 DSP Forecast

Although September DSP chip shipments were up a phenomenal 32.5% over the previous month (on a 3-month rolling average basis), that was not enough to lift shipments for the third quarter beyond 2.2% (to the $2.2-billion level). Of course, that's on a revenue basis. On a unit basis, quarterly shipments were up a more respectable 6.7%, but that means that ASPs were off by 4.3%...largely due to a severe (10%) drop in quarterly prices for DSPs in cellphones. We attribute most of that drop to a greater mix of low-end cellphones for the third-world market, not a decrease in silicon area value. Computer and consumer segments had dramatic gains over Q2, while wireline (telecom) shipments were down almost 40%...as illustrated in the chart.

In light of the lackluster Q3 growth and lower cellular forecasts for the fourth quarter by Nokia, Motorola and Texas Instruments and problems at Infineon/BenQ, we believe that the touted projections (by others) of billion-unit cellphone shipments will not happen in 2006. Consequently, we are lowering our 2006 DSP chip revenue forecast from 15% to 10% (to the $8.4 Billion level).





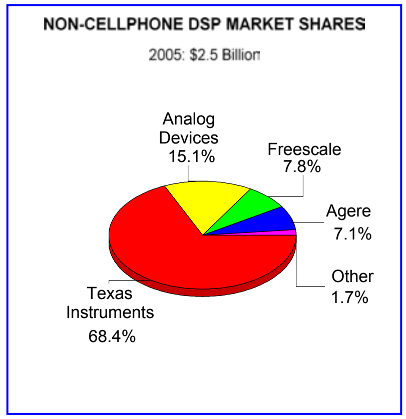
Also Lowering Our Long-Term DSP Forecasts... Because Of Accounting Practices, Not Falling Sales

It's no secret: integration is increasing in the chip business. System on chip (SoC) solutions are becoming an increasing percentage of the semiconductor business...just as SSI (small-scale integration) was passed by LSI and later VLSI, SoC is changing the landscape. A number of chips that have been traditionally reported as individual chip type are increasingly being sucked into SoC solutions...whether they be ASICs, ASSPs, or customer-specific chips.

For example, A/D and D/A converters are now ubiquitous in MCUs and DSPs, decreasing the reported market growth of those circuits as separate chips. In a similar manner, DSP cores are becoming ubiquitous in SoC chips for wireless, multimedia, and control markets. The World Semiconductor Trade Statistics (WSTS) data collection arm of the Semiconductor Industry Association (SIA) has dictated that **SoC implementations of DSPs paired with RISC or other cores are now to be reported in another category**.
Not all companies will immediately follow this dictate because of legacy accounting, but TI, the 800-pound gorilla in the DSP business, will likely be reporting its "single-chip" GSM cellular solution in the "**MOS Special Purpose Logic, Cellular Subscriber**" category beginning in January. Since that is likely to result in tens of millions of "DSPs" no longer reported as "DSP chips", we are forced to lower our long-term DSP chip forecasts from our earlier 18% for next year to 15% (to the $9.7 Billion level). Of course, we expect that DSP technology will continue to be pervasive and driving the entire semiconductor market. We'll be reporting more on this trend with updated calibration in future newsletters.

Non-Cellphone DSP Market offers Surprises

As one might expect, an analysis of DSP chip revenues by the traditional players indicates that cellphone chip shipments amounted to over two-thirds of their collective shipments. The table below indicates our estimates of last year's non-cellphone market shares of the traditional DSP chip suppliers compared to their total DSP shares. As one might expect, TI still rules the roost, but Analog Devices becomes a clear number two in that category, passing Agere and Freescale.



Non-Cellphone DSP Revenues

Company	Total 2005 DSP Revenues ($Millions)	Est. Cellphone DSP Revenues	Est. Non-Cellphone DSP Revenues	Cellphone % of DSP Revenues
Agere	$495	$319	$176	64.4%
Analog Devices	$673	$300	$373	44.6%
Freescale	$1,076	$884	$192	82.2%
Texas Instruments	$4,450	$2,757	$1,693	62.0%
Other	$941	900	$41	95.6%
Total	**$7,635**	**$5,160**	**$2,475**	**67.6%**

FPGA DSP Shock

One often forgets that "DSP Chips" are not the only chips that execute DSP algorithms. FPGAs continue to have an increasing role in the market for DSP silicon. Examining the "Non-Cellphone DSP" revenues of the traditional DSP houses in the above table, Forward Concepts believes that both Xilinx and Altera had DSP FPGA revenues in excess of $200 million in 2005, essentially ranking them ahead of both Freescale and Agere in non-cellphone DSP silicon shipments (we included wireless infrastructure shipments in the non-cellphone DSP revenues in the chart).

FPGA DSP Performance Measures

While we're on the subject, our colleagues at Berkeley Design Technology Inc. (BDTI) have just published a new report, "**FPGAs for DSP, 2nd Edition: Benchmarking & Competitive Analysis**." For more information, go to their website at: **www.bdti.com/fpgas2006** Use the code FWDCONCEPTS for a 10% discount on the report

Another One Bites the Dust

SkyWorks Solutions Inc. has dropped out of the cellphone baseband chip market. The company has had a strong record of shipping R.F. chips to the cellphone market, but never reached critical mass with their baseband shipments. They were selling GSM baseband chips into tier-three handset vendors. Ironically, they had recently licensed StarCore's DSP IP for their next-generation (read: WCDMA) baseband, but apparently found out that the technical barriers and development costs were too high. The company indicated that the associated layoffs (450 people) and restructuring will save the company $70 million per year. All of that savings can't be attributed to the baseband chips, but it's a clear indicator that entry to the baseband chip market is not for those who aren't well-heeled (or don't have a demonstrably better solution).

New DSP/Wireless/Multimedia Chip Survey

Forward Concepts is conducting its annual survey of the applications for integrated circuits that employ **digital signal processing (DSP)** technology (not just DSP chips). For this, we invite technical people to participate in our on-line survey (it's not easy).

We understand that you have many pressing things to do and appreciate sharing your valuable time for us. As appreciation, your email address will be entered into a drawing for of two **new-model** Apple 4GB **iPOD Nano's**, each a $200 value. The survey will remain open until November 20th. Since we are inviting a specialized group of people, your chances of winning are high. For details, click here:
www.fwdconcepts.com/survey

As always, I invite your comments.

Will Strauss
wis@fwdconcepts.com