



OBJECTIVE ANALYSIS

Semiconductor Market Research

OBJECTIVE ANALYSIS ALERT!

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APPLE STORY PORTENDS NAND & DRAM SHORTAGE

On Thursday, April 26, DigiTimes ran an article titled *Samsung and Apple in talks about NAND flash purchase, say sources*. The article quoted unnamed sources who told that: "Apple is asking for 400-500 million 4Gbit NAND flash equivalent chips from Samsung."

Can Apple Really Use that much NAND?

Although Objective Analysis will wait and see if this story bears out, we decided it was certainly worth investigating. Simple math tells us that this level of flash consumption would make 50-60 million 4-gigabyte iPods or 25-30 million of Apple's current top-of-the-line 8-gigabyte models.

Mind that this is Apple's request from Samsung alone. It would be fair to assume that Apple spreads around their purchases according to each NAND maker's market share implying that Samsung will be given about 60% of the business, since they sell about 60% of the world's non-captive NAND (that is – excluding SanDisk's captive supply). This would push our estimate of Apple's 2H iPod shipments up to 40-50 million 8-gigabyte units.

Apple sold 30 million iPods in the second half of last year, so this seems to be a pretty reasonable number. It becomes more reasonable in light of their introduction of the iPhone and even more so if you anticipate that the company could introduce a 16-gigabyte iPod nano before year end. After all, the original 4-gigabyte nano was introduced using NAND that cost Apple \$28/ gigabyte, and today's NAND prices are about ¼ that level.

What about those Shortages?

The really important part of the article was further down: "Samsung is not 100% sure its capacity can meet the need," and later "Hynix also has barely enough capacity to meet Apple's needs."

If the story in the DigiTimes article is true, it bodes well for NAND and DRAM makers, since both Hynix and Samsung, top players in both markets, have capacity that can be converted within a quarter or so to produce either technology. If these two companies believe that they will be running at or near their limit, it is very likely that the NAND and DRAM markets will simultaneously become tight, allowing prices to stabilize.

Objective Analysis can confidently stand behind our forecast for a 2007 revenue increase of 6.3% to \$268 billion. Although 2007 started out with a NAND price collapse, and

although DRAM prices have recently softened, this story (along with today's SIA announcement of 1% sequential WSTS growth in March) gives evidence that the situation is turning around for both of these technologies, adding credence to our projection.

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