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Nvidia Can't Afford 55nm Just Yet

Yields stay in the low 40%, earnings diminish and partners are unhappy with the situation

If anyone questions why things are this way, the answer is quite simple. The NVIDIA G200 core consists of one point four billion transistors. And that is quite a great number when it comes to putting all those transistors on a chip manufactured using the 65nm process, mainly because the number of faulty chips per wafer would be a big one too.

[admark=1]Before the launch, the chip was expected to become quite expensive, meaning \$100-110, due to the fact that suggested yields were somewhere in the low 40%. This may sound somehow extreme, but the reality may prove to be better than we thought. The release of G200 caused, in fact, many Nvidia partners to be left outside and unhappy, as there was quite a shortage in chips. On the other hand, those Nvidia partners that got the chip seem rather unhappy too, considering the margins. Since its associates are quite upset with the situation, the Santa Clara company is pushing itself to the limits in the development of the 55nm "G200b", trying to get it ready as soon as possible. That would be a great achievement for the graphics card manufacturer, but things point in the opposite direction right now. Yet, if the company manages to get it to work, the G200 at 55nm is expected to be about 470mm², and a 300mm wafer should have enough room for about 120 dies. At best, this will get yields closer to 50%, but, given the circumstances, Nvidia would probably be more than satisfied if they are above 40%. Another piece of the puzzle consists of the limitations to partners' playing ground Nvidia has brought with its new Unilateral Minimum Advertised Price Policy (UMAP), which also minimized competition among the company's associates. Partners are very likely to get upset if Nvidia decides to launch new cards based on existing cores, but at the same time lowers prices, because the earnings are diminishing this way. On top of that we also have AMD's new RV770 chip, which may look pretty tempting to some of those partners.