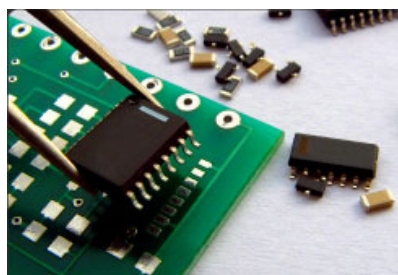


# EXHIBIT D



## IHS iSuppli Market Research

- [Research Reports](#)
- [Database Tools](#)
- [Analyst Access](#)

[Contact Us >>](#)

### RESEARCH AREA

[Automotive Infotainment & Telematics](#)
[China Electronics Supply Chain](#)
[Display Materials & Systems](#)
[Home & Consumer Electronics](#)
[Manufacturing & Pricing](#)
[Media](#)
[Memory & Storage](#)
[MEMS & Sensors](#)
[Mobile & Wireless Communications](#)
[Photovoltaics](#)
[Semiconductor Value Chain](#)
[Teardowns](#)
[TMT Financial Advisory](#)
[Advanced Search >](#)

## Press Release

[Headlines](#)
[Products](#)
[Analysts](#)
[Email](#) | [Print](#)

### New iPad 32GB + 4G Carries \$364.35 Bill of Materials

March 16, 2012  
ANDREW RASSWEILER

The new iPad, equipped with 32 Gigabytes (GB) of NAND flash memory and 4G Long Term Evolution (LTE) wireless capability, carries a bill of materials (BOM) of \$364.35. When the \$10.75 manufacturing costs are added in, the cost to produce the new iPad rises to \$375.10. The BOM of the 16GB 4G LTE version amounts to \$347.55, and the 64GB version is estimated at \$397.95.

The \$364.35 BOM represents 50 percent of the \$729.00 retail price of the 32GB LTE version of the new iPad.

The very lowest-end version of the new iPad, with 16GB memory and no LTE, carries a combined BOM and manufacturing cost of \$316. The highest-end model, with 64GB memory and integrated LTE, has a total BOM and manufacturing expense of \$408.70.

Please note that these teardown assessments are preliminary in nature, account only for hardware and manufacturing costs and do not include additional expenses such as software, licensing, royalties or other expenditures.

The new iPad is more expensive to produce than the iPad 2 at the time of product launch, even though the retail price points are the same. The 32GB LTE model's BOM is nearly 9 percent higher than an iPad 2 equipped with 32GB and 3G wireless, which carried a cost of approximately \$335 at the time of product launch. Major factors driving up the BOM include the addition of the high-resolution Retina display, LTE wireless and a larger-capacity battery.

The table below summarizes the major components in the new iPad.

New iPad Preliminary Bill of Materials (BOM) Cost Analysis

Components / Hardware Elements	iPad 2		New iPad (3rd Generation)					
	WiFi	WiFi + 3G	WiFi			WiFi + 4G		
	16GB	16GB3	16GB6	32GB7	64GB8	16GB9	32GB10	64GB11
Retail Pricing (As of March 2012)	\$399.00	\$529.00	\$499.00	\$599.00	\$699.00	\$629.00	\$729.00	\$829.00
Total BOM Cost	\$236.95	\$262.55	\$306.05	\$322.85	\$356.45	\$347.55	\$364.35	\$397.95
Manufacturing Cost	\$8.15	\$8.45	\$10.00	\$10.00	\$10.00	\$10.75	\$10.75	\$10.75
BOM + Manufacturing	\$245.10	\$271.00	\$316.05	\$332.85	\$366.45	\$358.30	\$375.10	\$408.70
<b>Major Cost Drivers</b>								
<b>Memory</b>								
NAND Flash	\$16.80	\$16.80	\$16.80	\$33.60	\$67.20	\$16.80	\$33.60	\$67.20
DRAM	\$7.60	\$7.60	\$13.90	\$13.90	\$13.90	\$13.90	\$13.90	\$13.90
<b>Display &amp; Touchscreen</b>								
Display	\$57.00	\$57.00	\$87.00	\$87.00	\$87.00	\$87.00	\$87.00	\$87.00
Touchscreen	\$40.00	\$40.00	\$40.00	\$40.00	\$40.00	\$40.00	\$40.00	\$40.00
<b>Processor</b>								
Camera(s)	\$4.10	\$4.10	\$12.35	\$12.35	\$12.35	\$12.35	\$12.35	\$12.35
Wireless Section - BB/RF/PA (Module)		\$25.60				\$41.50	\$41.50	\$41.50
User Interface & Sensors & Combo Module (WLAN/BT/FM)	\$15.35	\$15.35	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00
Power Management	\$5.85	\$5.85	\$10.00	\$10.00	\$10.00	\$10.00	\$10.00	\$10.00
Battery	\$22.75	\$22.75	\$32.00	\$32.00	\$32.00	\$32.00	\$32.00	\$32.00
Mechanical / Electro-Mechanical / Other	\$47.80	\$47.80	\$50.50	\$50.50	\$50.50	\$50.50	\$50.50	\$50.50
Box Contents	\$5.50	\$5.50	\$5.50	\$5.50	\$5.50	\$5.50	\$5.50	\$5.50

Source: IHS iSuppli Research, March 2012

Among all component suppliers, Samsung Electronics continues its reign as the big winner in the individual iPad analyzed by the IHS iSuppli Teardown Analysis Service. Samsung supplied both the display and the applications processor. The new iPad's Retina display represents the most expensive single component in the tablet, at \$87, while the applications processor costs an estimated \$23. Combined, this gives Samsung a 30.2 percent share of the 32GB LTE version of the new iPad's bill of materials, the largest for any supplier.

In the individual new iPad analyzed, the NAND flash was supplied by Toshiba Corp. However, Samsung also is a source of NAND for the new iPad. In a 32GB LTE iPad where Samsung is also the supplier of the NAND, Samsung's share of the BOM rises by \$33.60 to a total of \$143.60, amounting to 39.4 percent of the total BOM. However, Toshiba, Hynix Semiconductor and others also are all NAND suppliers to Apple, and each will claim a portion of those revenues.

Although we are not certain, IHS believes that the battery cells are supplied by Samsung. If this turns out to be the case, Samsung will account for nearly 50 percent of the new iPad's BOM.

"The Retina display represents the centerpiece of the new iPad and is the most obvious enhancement in features compared to previous-generation models," said Andrew Rassweiler, senior principal analyst, teardown services, at IHS. "The first two generations of the iPad employed the same type of display—a screen with resolution of 1,024 by 768 pixels. For the third-generation new iPad, Apple has taken a significant step up in display capabilities and expense, at four times the resolution and 53 percent more cost."

The new iPad's Retina display has a resolution of 2,048 by 1,536 pixels. It costs \$87, compared to \$57 for the screen used in the iPad 2. The \$87 cost accounts for 24 percent of the BOM of the new iPad with 32GB NAND and LTE, making the Retina display the most expensive single component in the tablet.

As IHS announced in a previous release, we believe Apple likely has qualified three sources for the display in the new iPad: Samsung, LG Display and Sharp Corp. (see [Apple Display Spending Expected to Nearly Double in 2012, Helped by Surging iPad Sales](#)). **However, it is likely that all the volume shipments of the new iPad display are currently coming from Samsung. In line with this view, the individual new iPad torn down by IHS includes a Samsung-sourced Retina display.**

The touch screen for the new iPad costs an estimated \$40, or 10.9 percent of the total BOM. As in the iPad 2, the main suppliers in this area are still TPK, Wintek and Chi Mei.

The wireless section costs \$41.50 and accounts for 11.4 percent of the BOM. Because this section provides support for the LTE capabilities of the new iPad, it is significantly more expensive than the \$25.60 wireless section of the iPad 2, which supported the 3G air standard. **The big winner in this section is Qualcomm Inc., whose MDM9600 baseband processor provides the core LTE functionality.** IHS believes that the wireless section is the same for both AT&T and Verizon versions of the new iPad, although that hasn't been confirmed yet.

**The A5X applications processor costs \$23, and represents 6.3 percent of the total BOM. Samsung manufactures the A5X for Apple.** However, for this device, Samsung serves as a foundry partner to Apple, and not as an independent semiconductor supplier. Apple is the designer and owner of the intellectual property of the A5X, and **Samsung manufactures the part on a contract basis. This means that Samsung likely commands a lower margin on the device that it would otherwise.**

**"The NAND flash memory is one of the key profit-generating components for Apple in the new iPad line, as it has been in previous iPads and in the iPhone family," Rassweiler noted. "Apple makes far and away more money in selling consumers NAND flash than NAND flash manufacturers make selling it to Apple. And the more flash in the iPad, the higher the profit margin there is for Apple."**

For example, the retail price of the 32GB LTE-enabled new iPad is \$100 higher than the 16GB model. However, Apple's BOM for the 32GB version is only \$16.80 more compared to the 16GB model.

The new iPad camera module design and cost is the same as in the iPhone 4 camera module. The two camera modules cost a combined \$12.35, representing 3.4 percent of the BOM.

The battery delivers a major upgrade from the previous model. The lithium polymer battery in the new iPad supports 42.5 watt hours, up about 75 percent from 25 watt hours in the iPad 2. However, because of price decreases during the past year, the new battery costs only 40 percent more than the old one, at \$32.00, compared to \$22.75 for the one in the iPad 2.

[The New iPad Photo Analysis - Exploded View](#)

[Learn More > Apple iPad MC73LL/A Hardware Analysis](#)

IHS iSuppli's [market intelligence](#) helps technology companies achieve market leadership. Catch the latest [teardown](#), [BOM cost](#), [bill of materials](#) from all across the world straight from our immensely experienced analysts. iSuppli provides comprehensive IHS iSuppli's® [Teardown portal provides deeper insights into bill of materials, BOM cost, photo analysis and graphical representation of electronics](#). To learn more, call us at 1-310-524-4007. for new and upcoming devices in the market. To know more, send us an e-mail on [info@isuppli.com](mailto:info@isuppli.com) or contact us on +1.310.524.4007.



[info@isuppli.com](mailto:info@isuppli.com) | +1.310.524.4007