

FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

For the month of February 2006 No. 2

TOWER SEMICONDUCTOR LTD.  
(Translation of registrant's name into English)

RAMAT GAVRIEL INDUSTRIAL PARK  
P.O. BOX 619, MIGDAL HAEMEK, ISRAEL 23105  
(Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover Form 20-F or Form 40-F.

Form 20-F  Form 40-F

Indicate by check mark whether the registrant by furnishing the information contained in this Form is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.

Yes  No

On February 6, 2006, the Registrant announced that it manufactures wireless LAN chips for Atheros Communications. Attached hereto is a copy of the press release.

This Form 6-K is being incorporated by reference into all effective registration statements filed by us under the Securities Act of 1933.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

TOWER SEMICONDUCTOR LTD.

Date: February 6, 2006

By: /S/ Nati Somekh Gilboa

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Nati Somekh Gilboa  
Corporate Secretary

TOWER SEMICONDUCTOR MANUFACTURES WIRELESS LAN CHIPS  
FOR ATHEROS COMMUNICATIONS

Tower's RF CMOS Technology Used in Production of Atheros Single-Chip  
WLAN Products

MIGDAL HAEMEK, ISRAEL - February 6, 2006 - Tower Semiconductor Ltd. (NASDAQ: TSEM; TASE: TSEM), A pure-play independent specialty foundry, today announced that the company has begun the production of wireless LAN products for Atheros Communications, Inc. (NASDAQ: ATHR), a leading developer of advanced wireless solutions. The wireless LAN semiconductor market in which Atheros competes is projected to be \$3 billion in 2009.1

"We are pleased to add Tower Semiconductor to our list of qualified vendors," said Paul Franklin, vice president of operations at Atheros Communications. "We have set stringent qualification standards for all of our wafer suppliers and Tower has passed on all levels."

"We are glad that Atheros has chosen to manufacture some of its advanced wireless devices in Tower's Fab 2," said Yossi Netzer, general manager of mixed-signal & RF product line at Tower Semiconductor. "The Atheros WLAN products feature breakthrough technologies that save power while increasing throughput and extending the range of 802.11 networks. The company achieves this high performance in integrated, single-chip RF designs manufactured using low-cost, digital CMOS. We look forward to a longstanding relationship that enables Atheros to continue to bring superior products to market."

ABOUT TOWER SEMICONDUCTOR LTD.

Tower Semiconductor Ltd. is a pure-play independent specialty wafer foundry established in 1993. The company manufactures integrated circuits with geometries ranging from 1.0 to 0.13 micron; it also provides complementary technical services and design support. In addition to digital CMOS process technology, Tower offers advanced non-volatile memory solutions, mixed-signal and CMOS image-sensor technologies. To provide world-class customer service, the company maintains two manufacturing facilities: Fab 1 has process technologies from 1.0 to 0.35 micron and can produce up to 16,000 150mm wafers per month. Fab 2 features 0.18-micron and below standard and specialized process technologies, and has the current capacity of up to 15,000 200mm wafers per month. Tower's Web site is located at <http://www.towersemi.com/>.

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1 Worldwide WLAN Semiconductor Forecast, 2005-2009, IDC Research, April, 2005

SAFE HARBOR

THIS PRESS RELEASE INCLUDES FORWARD-LOOKING STATEMENTS, WHICH ARE SUBJECT TO RISKS AND UNCERTAINTIES. ACTUAL RESULTS MAY VARY FROM THOSE PROJECTED OR IMPLIED BY SUCH FORWARD-LOOKING STATEMENTS. A COMPLETE DISCUSSION OF RISKS AND UNCERTAINTIES THAT MAY AFFECT THE ACCURACY OF FORWARD-LOOKING STATEMENTS INCLUDED IN THIS PRESS RELEASE OR WHICH MAY OTHERWISE AFFECT OUR BUSINESS IS INCLUDED UNDER THE HEADING "RISK FACTORS" IN OUR MOST RECENT ANNUAL REPORT ON FORMS 20-F, F-1, F-3 AND 6-K, AS WERE FILED WITH THE SECURITIES AND EXCHANGE COMMISSION AND THE ISRAEL SECURITIES AUTHORITY.

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