

FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

For the month of April 2007

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 April 11, 2007, the Registrant announced that Tower Semiconductor and Paragon Communications completed development of XNN (R)-based power amplifier booster. 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: April 11, 2007

By: /s/ Nati Somekh Gilboa

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Nati Somekh Gilboa  
Corporate Secretary

TOWER SEMICONDUCTOR AND PARAGON COMMUNICATIONS JOINTLY ANNOUNCE DEVELOPMENT  
COMPLETION OF XNN(R)-BASED POWER AMPLIFIER BOOSTER

PRODUCT USES TOWER'S 0.18 MICRONS RFCMOS PROCESS

MIGDAL HAEMEK, Israel and HAIFA, Israel - April 11, 2007 - Tower Semiconductor (Tower), Ltd. (NASDAQ: TSEM; TASE: TSEM), an independent specialty wafer foundry, and Paragon Communications Ltd., a provider of solutions for enhancing performance of wireless power amplifiers and systems, today announced the manufacturing of XNN(R)-based Power Amplifier (PA) booster.

This innovative product is based on Paragon's patented technology to monitor the Radio Frequency (RF) envelope and modulate the amplification. The product attains up to 6dB improvement in output power, as well as major efficiency and heat dissipation improvements over existing solutions. The XNN PA booster chip will be manufactured on Tower's 0.18-micron process, including its RF-CMOS feature, at Tower's FAB2 facility.

"With Tower's state-of-the-art RF-CMOS process and invaluable technical support including design services, we were able to attain outstanding performance enhancements to Wi-Fi and WiMax PA's of up to 6dB in output power, 50% in efficiency and heat dissipation, while maintaining the same linearity criteria of the PA," said Zeev Cohen, VP R&D, Paragon. "We have proven on silicon, by using complex test chip, that our concept works and our product will attain the performance targets. Tower has provided a one-stop shop in terms of capabilities from design to manufacturing. Tower's teams assisted in taking the Paragon concept from patent to silicon reality through Tower Design services group and RF specialists. We are very pleased with our partnership with Tower and look forward to a long-term business relationship."

"The Wi-Fi market is exploding and with the new 802.11n MIMO based standard it is expected to grow exponentially over the next 4 to 5 years," commented Eli Plotnik, CEO, Paragon. "This market, together with the emerging WiMax and next generation Cellular LTE markets, positions Paragon with the high quality XNN(R) PA booster chip that will be manufactured at Tower, as a market leader in this field".

"We are pleased that Paragon made effective use of our RF-CMOS capabilities. Our technology helps in enabling the XNN functionality, performance and chip-level integration thereby facilitating attainment of the product goals," said Yossi Netzer, general manager, RF and Mixed Signal product line, Tower. "Paragon is an example of a dynamic young company, that benefits from the close cooperation with Tower's design and manufacturing teams, thereby yielding excellent technical results and setting the foundations for business success."

#### ABOUT PARAGON

PARAGON COMMUNICATIONS LTD. provides solutions for enhancing performance of wireless power amplifiers and systems. Paragon offers its XNN(R) technology that enhances output power, efficiency and simultaneously reduces power consumption and heat dissipation in Wi-Fi, WiMAX, Cellular and other wireless systems. Paragon holds many patents for enhancement of PA's and wireless systems performance.

For further information please visit our Web site at [www.paragon-communications.com](http://www.paragon-communications.com).

#### 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 & RF-CMOS, and CMOS image-sensor technologies. To provide world-class customer service, the company maintains two manufacturing facilities, each with standard and specialized process technology processes: Fab 1 ranging from 1.0 to 0.35 and Fab 2 featuring 0.18 and 0.13-micron. Tower's Web site is located at <http://www.towersemi.com>.

#### 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 Form 20-F, Forms F-1, F-3 and 6-K, as were filed with the Securities and Exchange Commission and the Israel Securities Authority. We do not intend to update, and expressly disclaim any obligation to update, the information contained in this release.

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