

## MACOM and STMicroelectronics Accelerate GaN-on-Silicon Support for 5G Wireless Network Buildouts

February 25, 2019

- *Wafer supply expansion to enable cost, scale, and industrialization of GaN-on-Silicon for the global 5G network buildout*
- *Wide bandgap efficiency and gain to meet 5G antenna range and energy efficiency*

LOWELL, Mass. & GENEVA--(BUSINESS WIRE)--Feb. 25, 2019-- [MACOM Technology Solutions Holdings, Inc.](https://www.businesswire.com/news/home/20190225005285/en/) (NASDAQ:MTSI) ("MACOM"), and STMicroelectronics (NYSE:STM) ("ST") today announced the 2019 expansion of 150mm GaN-on-Silicon production capacity in ST's fabs, and 200mm as demand requires. The expansion is designed to service the worldwide 5G Telecom buildout. This builds upon the broad GaN-on-Silicon agreement between MACOM and ST announced in early 2018.

This press release features multimedia. View the full release here: <https://www.businesswire.com/news/home/20190225005285/en/>



The global rollout of 5G networks and move to Massive MIMO (M-MIMO) antenna configurations is expected to create a substantial increase in the demand for RF Power products. Specifically, MACOM estimates there will be a 32X to 64X increase in the number of Power Amplifiers required. In turn, this is expected to more than triple dollar content over the course of a 5-year cycle of 5G infrastructure investment and thus drive an estimated 10X to 20X decrease in the cost per amplifier. (Photo: Business Wire)

infrastructure, aerospace and defense companies, helping solve their most complex challenges in areas including network capacity, signal coverage, energy efficiency and field reliability, through its best-in-class team and broad portfolio of analog RF, microwave, millimeterwave and photonic semiconductor products.

The global rollout of 5G networks and move to Massive MIMO (M-MIMO) antenna configurations is expected to create a substantial increase in the demand for RF Power products. Specifically, MACOM estimates there will be a 32X to 64X increase in the number of Power Amplifiers required. In turn, this is expected to more than triple dollar content over the course of a 5-year cycle of 5G infrastructure investment and thus drive an estimated 10X to 20X decrease in the cost per amplifier.

"Major base station OEMs understand they need wide bandgap GaN performance with transformational cost structures and manufacturing capacity to meet 5G antenna cost, range and energy efficiency targets in the field. By teaming with ST, we believe MACOM is uniquely poised to provide it all — performance, cost and high-volume supply chain," said John Croteau, President and CEO of MACOM. "We anticipate that our joint investment at this early stage in bringing on more capacity positions us to service up to 85% of the global 5G network buildout."

"ST has built a strong foundation as a global leader in Silicon Carbide and we are now moving forward with RF GaN-on-Silicon, which will enable OEMs to build a new generation of high-performance 5G networks," said Marco Monti, President of the Automotive and Discrete Product Group, STMicroelectronics. "While Silicon Carbide is ideal for certain power applications such as automotive power conversion, GaN-on-Silicon provides the necessary RF performance, scale and commercial cost structures to make 5G a reality. With this move ST and MACOM aim to unlock the industry bottleneck and fulfill the demand for 5G buildouts."

For more information on MACOM's GaN-on-Silicon technology, visit: <https://www.macom.com/gan>

### About MACOM:

MACOM enables a better-connected and safer world by delivering breakthrough semiconductor technologies for optical, wireless and satellite networks that satisfy society's insatiable demand for information.

Today, MACOM powers the infrastructure that millions of lives and livelihoods depend on every minute to communicate, transact business, travel, stay informed and be entertained. Our technology increases the speed and coverage of the mobile Internet and enables fiber optic networks to carry previously unimaginable volumes of traffic to businesses, homes and Data Centers.

Keeping us all safe, MACOM technology enables next-generation radars for air traffic control and weather forecasting, as well as mission success on the modern networked battlefield.

MACOM is the partner of choice to the world's leading communications infrastructure, aerospace and defense companies, helping solve their most complex challenges in areas including network capacity, signal coverage, energy efficiency and field reliability, through its best-in-class team and broad portfolio of analog RF, microwave, millimeterwave and photonic semiconductor products.

MACOM is a pillar of the semiconductor industry, thriving for more than 60 years of daring to change the world for the better, through bold technological strokes that deliver true competitive advantage to customers and superior value to investors.

Headquartered in Lowell, Massachusetts, MACOM is certified to the ISO9001 international quality standard and ISO14001 environmental management standard. MACOM has design centers and sales offices throughout North America, Europe, and Asia.

MACOM, M/A-COM, M/A-COM Technology Solutions, M/A-COM Tech, Partners in RF & Microwave, The First Name in Microwave and related logos are trademarks of MACOM. All other trademarks are the property of their respective owners. For more information about MACOM, please visit [www.macom.com](http://www.macom.com) follow [@MACOMtweets](https://twitter.com/MACOMtweets) on Twitter, join MACOM on [LinkedIn](https://www.linkedin.com/company/macom) and [Facebook](https://www.facebook.com/macom) or visit the MACOM [YouTube Channel](https://www.youtube.com/channel/UC...).

#### **SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS:**

This press release contains forward-looking statements based on MACOM's beliefs and assumptions and on information currently available to MACOM. These forward-looking statements include, among others, statements about the anticipated global 5G network buildout, MACOM's expectations for an increase in demand for RF Power products, MACOM's projected market share of the global 5G network buildout, the ability of OEMs to build a new generation of high-performance 5G networks and MACOM's ability to meet demand for 5G buildouts. These forward-looking statements reflect MACOM's current views about future events and are subject to risks, uncertainties, assumptions and changes in circumstances that may cause those events or our actual activities or results to differ materially from those expressed in any forward-looking statement. Although MACOM believes that the expectations reflected in the forward-looking statements are reasonable, it cannot and does not guarantee future events, results, actions, levels of activity, performance or achievements. Readers are cautioned not to place undue reliance on these forward-looking statements. A number of important factors could cause actual results to differ materially from those indicated by the forward-looking statements, including, but not limited to, those factors described in "Risk Factors" in MACOM's Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and other filings with the Securities and Exchange Commission. MACOM undertakes no obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.

#### **DISCLAIMER FOR NEW PRODUCTS:**

Any express or implied statements in MACOM product announcements are not meant as warranties or warrantable specifications of any kind. The only warranty MACOM may offer with respect to any product sale is one contained in a written purchase agreement between MACOM and the purchaser concerning such sale and signed by a duly authorized MACOM employee, or, to the extent MACOM's purchase order acknowledgment so indicates, the limited warranty contained in MACOM's standard Terms and Conditions for Quotation or Sale, a copy of which may be found at: <http://www.macom.com/purchases>.

#### **About STMicroelectronics**

ST is a global semiconductor leader delivering intelligent and energy-efficient products and solutions that power the electronics at the heart of everyday life. ST's products are found everywhere today, and together with our customers, we are enabling smarter driving and smarter factories, cities and homes, along with the next generation of mobile and Internet of Things devices.

By getting more from technology to get more from life, ST stands for life.augmented.

In 2018, the Company's net revenues were \$9.66 billion, serving more than 100,000 customers worldwide.

Further information can be found at [www.st.com](http://www.st.com).

View source version on businesswire.com: <https://www.businesswire.com/news/home/20190225005285/en/>

Source: MACOM Technology Solutions Holdings, Inc.

#### **SALES**

North Americas -- Phone: 800.366.2266

Europe -- Phone: +353.21.244.6400

India -- Phone: +91.80.43537383

China -- Phone: +86.21.2407.1588

#### **MACOM MEDIA CONTACTS**

Ozzie Billimoria

MACOM Technology Solutions Inc.

978-656-2896

[ozzie.billimoria@macom.com](mailto:ozzie.billimoria@macom.com)

Colin Boroski

Rainier Communications

508-475-0025 x142

[cboroski@rainierco.com](mailto:cboroski@rainierco.com)

Anja-Maria Hastenrath

embedded PR

+49 (0)89 64913634-11

[ah@embedded-pr.de](mailto:ah@embedded-pr.de)

#### **ST INVESTOR RELATIONS:**

Céline Berthier

Group VP, Investor Relations

Tel: +41 22 929 58 12  
[celine.berthier@st.com](mailto:celine.berthier@st.com)

**ST MEDIA RELATIONS:**

Alexis Breton  
Corporate External Communications  
STMicroelectronics  
Tel: + 33 6 59 16 79 08  
[alexis.breton@st.com](mailto:alexis.breton@st.com)