

## Advanced Semiconductor Technology from STMicroelectronics Underlies Tomorrow's Mobile Network Infrastructures

*ST's BiCMOS-based RF transceiver enables mobile-network backhaul data rates above 10Gbps while increasing spectrum efficiency in millimeter-wave bands*

**Geneva, July 28, 2015** - STMicroelectronics' advanced BiCMOS55 SiGe<sup>1</sup> technology has been selected by the European E3NETWORK R&D initiative for developing energy-efficient, high-capacity transmission systems in next-generation mobile networks.

Skyrocketing mobile-data usage requires networks to support greater capacity and higher data rates. This places new challenges on the backhaul infrastructure, accelerating the transition to advanced network architectures, such as Heterogeneous Network and Cloud RAN (Radio Access Network), and higher frequency bands (such as the E-band<sup>2</sup>), where more spectrum is available to support faster data-rate channels.

To build these super-efficient mobile networks, equipment manufacturers need high-performance electronic components that combine large-scale chip integration, reduced power consumption, and optimized cost. The E3NETWORK project leverages the integration and power advantages of ST's BiCMOS55 SiGe technology delivering Heterojunction Bipolar Transistors (HBT) with  $F_t$  up to 320GHz in 55nm lithography. This technology allows the integration of a high-frequency analog section with high-performance, dense digital blocks such as logic, AD/DA converters, and memories.

E3NETWORK is designing an integrated E-band transceiver using ST's BiCMOS55 technology for fronthaul and backhaul infrastructure, which enables digital multi-level modulations, highly focused "pencil-beam" transmissions, and data rates above 10Gbps. The pencil-beam property facilitates a high degree of frequency reuse in the deployment of backhaul and fronthaul links, while preserving the spectrum efficiency over the millimeter-wave interval.

An EU project within the Seventh Framework program, E3NETWORK ("Energy efficient E-band transceiver for backhaul of the future networks") brings together a consortium of companies including CEIT (Spain), Fraunhofer (Germany), Alcatel Lucent (Italy), CEA (France), INXYS (Spain), OTE (Greece), SiR (Germany), Sivers IMA (Sweden), and STMicroelectronics (Italy).

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<sup>1</sup> 55nm Bi-polar Complementary Metal-Oxide-Semiconductor Silicon-Germanium

<sup>2</sup> The 71-76 and 81-86 GHz bands (widely known as "E-band") are permitted worldwide for ultra-high-capacity point-to-point communications

**Note to Editors:**

[ST's BiCMOS technology](#) combines the strengths of two different processes into a single chip: bipolar transistors offer high speed and gain, which are critical for high-frequency analog sections, whereas CMOS devices excel for constructing simple, low-power logic gates.

*By integrating the RF, analog, and digital parts on a single chip, ST's BiCMOS55 SiGe devices drastically reduce the number of external components while optimizing power consumption.*

**About STMicroelectronics**

ST is a global leader in the semiconductor market serving customers across the spectrum of sense and power and automotive products and embedded processing solutions. From energy management and savings to trust and data security, from healthcare and wellness to smart consumer devices, in the home, car and office, at work and at play, ST is found everywhere microelectronics make a positive and innovative contribution to people's life. By getting more from technology to get more from life, ST stands for life.augmented.

In 2014, the Company's net revenues were \$7.40 billion. Further information on ST can be found at [www.st.com](http://www.st.com).

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