

## **SEQUANS** Sequans Ranked #3 Among LTE Baseband Suppliers

For implementation, Sequans scored 0 for mobile handset baseband market share. It scored 10 for target devices, as it is targeting everything but handsets. It is capable of supporting handsets, but will have to wait until LTE-only handsets start hitting the market. It scored 20 for its LTE-only solutions and 15 for key mobile operator relationships. Sequans has been working with China Mobile and is a primary supplier of chipsets for testing, has been involved in the Japanese WiMAX market, is working with Reliance Infotel in India, and is certified on Verizon Wireless' network in the US. It scored 20 for product availability.

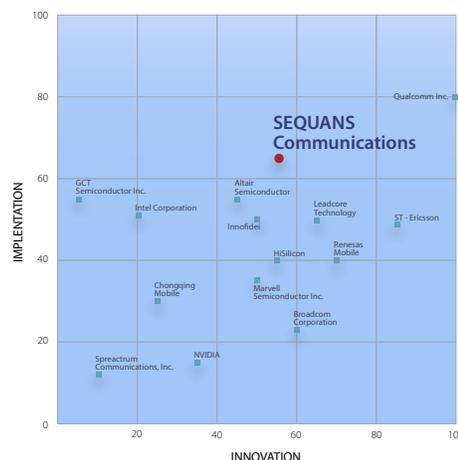
For innovation, Sequans scored 5 for chipset integration for having a dual-4G WiMAX/LTE solution to market. It is the only dual-4G solution on the market as Altair has dropped support for WiMAX and Wavesat was acquired by Cavium which focuses on network processors. There are service providers out there transitioning between WiMAX and LTE that could use the dual capability. Sequans scored 30 for supporting both modes of LTE. It scored 10 for product features for supporting Release 9. The company scored 10 for unique product offerings. It has a wide range of LTE-only solutions including a dual-4G WiMAX/LTE solution and, more importantly, a low cost and low power solution for consumer electronics and M2M with reduced performance to cut cost. This is a highly unique solution on the market right now that will open up opportunities for Sequans.

Considering Sequans is a pure play 4G chipset vendor, the company has its bases covered in terms of product offerings and carriers around the world. The company even partnered with Nationz for TD-SCDMA. This not only gives it a partnered solution for TD-SCDMA/LTE, but it also positions Sequans with a Chinese vendor which will make it more likely to win business in China. Sequans needs to do the same for GSM/WCDMA. The alternatives are much more difficult – acquiring a company or developing 2G/3G IP in house.

### Methodology

This vendor matrix compares mobile baseband vendors who are offering or have announced solutions with LTE. This includes standalone LTE (or LTE-only) products, multimode 2G/3G/LTE products, and products integrated with application processors and/or wireless connectivity. The common denominator is the LTE baseband. This does

LTE Baseband Semiconductor Vendor Matrix



not compare against the greater mobile baseband landscape which includes vendors and products that have solutions with 2G and 3G but not LTE since, at this point, having LTE is of critical importance with some mobile operators in the US, Japan, and South Korea requiring LTE in products allowed on their network, and other huge opportunities in China and India that will require LTE. In addition, the market for LTE baseband vendors is in flux because the market is new and the competitive landscape is changing, whereas the market for 2G/3G solutions without LTE is relatively stable.

The overall winners are Qualcomm, ST-Ericsson, and Sequans. Qualcomm is extremely strong across the board and has the highest market share for baseband solution in handsets, resulting in a position far out in front of its competitors. ST-Ericsson has strong products on the market and is coming to market with competitive features.

*“Sequans has scored very high – third overall and top among singlemode LTE-only vendors - considering it is a smaller company. Sequans has a long history in 4G including handset wins, and will carry over this momentum into LTE. It doesn't directly compete with the larger semiconductor vendors offering multimode LTE products and it offers a nice range of LTE baseband solutions for different needs, including some unique products. Of note is the company's low cost LTE baseband solution focused on consumer electronics and M2M.”*

## Implementation Criteria:

- **Handset Baseband Share:** The revenue-based mobile baseband market share for handsets provides an important indication of the ability to sell solutions in large volumes. This was weighted at 30 out of 100 and market share was scaled with Qualcomm scoring 30 and the rest of the companies scored to scale.
- **Targeted Devices:** This shows the device types that are primarily targeted by LTE baseband vendors. Handsets are important, but tablets are also important for building mindshare and getting notable product wins, while all other device types (external modems, CE, M2M, etc.) have future growth potential and also allow some of the smaller vendors to compete. This was weighted 15 out of 100.
- **LTE-only Solutions:** These are vital in the near term to serve as an add-on to existing 2G/3G baseband solutions, but are important in the long term for devices on aggressive LTE carriers like Verizon Wireless which are starting to offer LTE-only devices on its network. LTE-only solutions are also a lower cost alternative where older technologies are not required. This was weighted 20 out of 100.
- **Key Mobile Operator Relationships:** There are certain markets where strong relationships are important to get product wins. These are the US (especially Verizon Wireless), China (especially China Mobile), India (especially Reliance Infotel), Japan, and South Korea. These relationships allow for early testing and pre-certification which makes it easier for device vendors to include their chipsets. This was weighted 15 out of 100.
- **Product Availability:** The vendor has to have at least one product shipping on the market currently to have scored the full 20 out of 100 here. If the vendor has only announced a product or is only sampling it, then it scored zero.

## Innovation Criteria:

- **Chipset Integration:** The more integration, the higher the score here which is weighted 30 out of 100. This is divided as 10 for 2G/3G integration with LTE, 10 for wireless connectivity, and 10 for application processor integration.

- **LTE Modes Offered:** Some products support only FD-LTE or only TD-LTE. At this point, most products support both in the same chipset. A full score was given to vendors who had at least one product supporting both, which is important for device vendors to reduce SKUs and support operators who want to roam across modes or have mixed spectrum themselves. This is weighted 30 out of 100.
- **Product Features:** This primarily considers the 3GPP release supported, with Release 10 getting a full score, and 4X2 MIMO being considered secondarily. This is weighted 20 out of 100.
- **Unique Product Offerings:** This is weighted 20 out of 100 and considers vendors who have unique solutions that would allow them to differentiate themselves and get more design wins. This could include the most integrated solutions and also solutions like very low cost and low power LTE-only solutions for the CE and M2M markets.

## Rankings

After individual scores are established for Innovation and Implementation using the above criteria, an overall company score is established using the Root Mean Square (RMS) method:

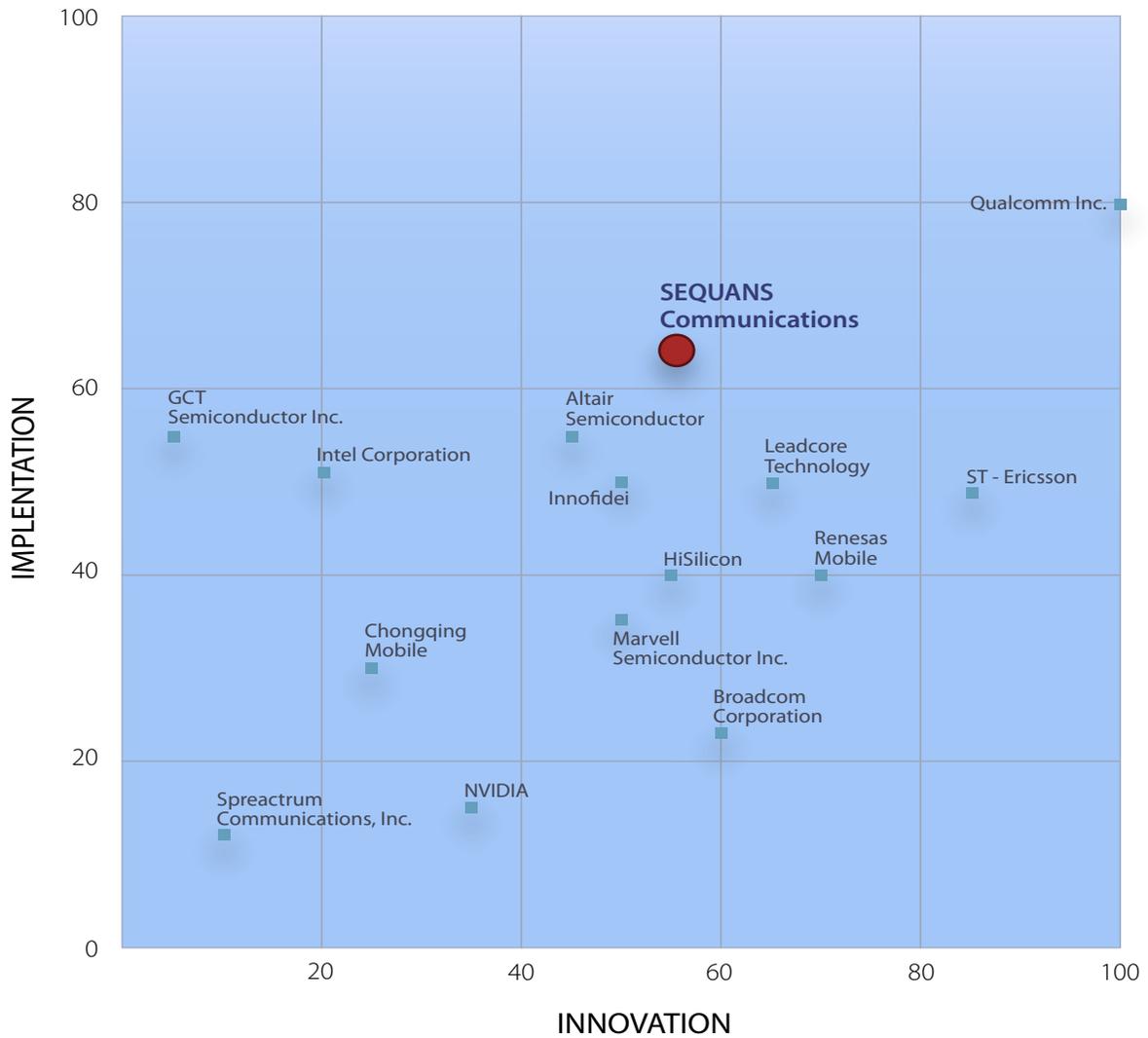
$$Score = \sqrt{\frac{innovation^2 + implementation^2}{2}}$$

The resulting overall scores are then ranked and used for percentile comparisons.

The RMS method, in comparison with a straight summation or average of individual innovation and implementation values, rewards companies for standout performance.

For example, using this method a company with an innovation score of 9 and an implementation score of 1 would score considerably higher than a company with a score of 5 in both areas, despite the mean score being the same. ABI Research believes this is appropriate as the goal of these matrices is to highlight those companies that stand out from the others.

### LTE Baseband Semiconductor Vendor Matrix



Company	Score	Rank
Qualcomm Inc.	90.6	1
ST-Ericsson	69.4	2
SEQUANS Communications	60.2	3
Leadcore Technology	58.0	4
Renesas Mobile	57.0	5
Altair Semiconductor	50.2	6
Innofidei	50.0	7
HiSilicon	48.1	8
Broadcom Corporation	45.4	9
Marvell Semiconductor Inc.	43.2	10
GCT Semiconductor Inc.	39.1	11
Intel Corporation	38.7	12
Chonqing Mobile	27.6	13
NVIDIA	26.9	14
Spreadtrum Communications Inc.	11.0	15

For questions on this research, please contact ABI Research. Visit our website at [www.abiresearch.com](http://www.abiresearch.com) for contact details.

© 2013 ABI Research. Used by permission. Disclaimer: Permission granted to reference, reprint or reissue ABI products is expressly not an endorsement of any kind for any company, product, or strategy. ABI Research is an independent producer of market analysis and insight and this ABI Research product is the result of objective research by ABI Research staff at the time of data collection. ABI Research was not compensated in any way to produce this information and the opinions of ABI Research or its analysts on any subject are continually revised based on the most current data available. The information contained herein has been obtained from sources believed to be reliable. ABI Research disclaims all warranties, express or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.