

## Building a Better Dish – the Radio Waves' Way

Executive VP and General Manager Andy Singer Describes What It Takes to Deliver Antenna Systems That Meet the Requirements of Today's Broadband Wireless Systems

Radio Waves specializes in designing and producing microwave antennas, but the company's corporate roots provide additional synergies that benefit its customers. For starters, the company is owned by a large, diversified UK-based technology company called Smiths Group plc.

Smiths Group is involved in four main engineering activities — detection, medical, aerospace and specialty engineering. The Smiths Interconnect specialty engineering segment includes such microwave technology companies as Polyphasor, Transtector, Summitek, Florida RF Labs, EMC Technology, Radio Waves, Times Microwave Systems, TRAK Microwave and TECOM. With the clout of the Smiths Group behind it, Radio Waves can offer a single package that includes the antenna and LMR® jumper cable, simplifying matters for customers.

BWB asked Andy Singer, Radio Waves' executive VP and general manager, to describe Radio Waves' vision in developing and providing the antenna component of broadband wireless systems.

He describes the company's approach to innovation and how it is working to meet

current market demands for higher performance, lower cost equipment.

**BWB:** Please describe Radio Waves' products and services and what sets the company apart from its competitors.

**Singer:** We design, manufacture and market microwave antennas covering bands from 2 GHz to 60 GHz. Our singular focus is microwave antenna systems. Because of this focus, we provide more innovative solutions, quicker delivery, and more personal service and support than our competitors. When companies around the world seek a partner that can deliver innovative microwave antenna solutions reliably and quickly, they turn to us.

**BWB:** What is your history before joining Radio Waves?

**Singer:** Prior to joining the company, I had various engineering, product management and marketing management positions with a number of companies in the industry, including Allen Telecom Group and the Radio Frequency Systems division of Alcatel.

**BWB:** For those who don't know, antenna technology can be purchased directly by service providers, and it is bundled into a full solution by equipment manufacturers. Explain more about the marketplace for your products.

**Singer:** Your description of how the business works is correct. There are several channels into the market. One of our major channels is via microwave radio OEMs, such as Stratex Networks, which sells systems on a turn-key basis, thus making projects simpler for the network operator. There are also distributors that will stock and sell our microwave antennas to end users. The other major channel is direct. For instance, we have a number of cellular operators globally that purchase antennas directly from Radio Waves.

Andy Singer, Radio Waves' Executive VP and General Manager.



**BWB:** Please describe how new products are developed at Radio Waves. How is innovation treated at the company? How long is a new product development cycle and who spearheads this cycle — engineers, product managers or both?

**Singer:** We at Radio Waves are truly global leaders in executing rapid new product development. Most microwave antenna companies might take four to eight weeks to deliver a standard catalog antenna, but we can deliver new designs in this amount of time. Our product management/sales team will make the initial decision to move forward with a project and then our engineers will take over and work directly with our customer's engineers. We really don't have any levels of bureaucracy. Decisions are made quickly, allowing us to move forward and get the work done to satisfy the customer. Our rapid design time and flexible manufacturing techniques allow us to deliver a new design in four to eight weeks.

**BWB:** In an era where carriers demand higher performance, better reliability and lower costs, how does the antenna serve the customer's value proposition?

**Singer:** An antenna's cost is on the order of one-tenth that of the microwave radio. Thus, if an antenna can be chosen that optimizes the performance of a link, return on the investment in the antenna is high. Because there can be such a large variation in performance from one antenna design to the next, this can make a noticeable difference in network performance. There is also the issue of reliability. Antenna manufacturers typically offer warranties that last one year or three years for their products. Clearly, a longer warranty suggests that the manufacturer has greater confidence in the product's design and quality.

**BWB:** As bandwidth needs grow, demanding greater throughput, non-line-of-sight capability and more, what advancements are required of antenna manufacturers?

**Singer:** One of the requirements we've seen is the use of narrower beamwidth sectors to allow greater capacity networks to be deployed. Another requirement is the delivery of antennas with lower side lobes to minimize interference in crowded areas. There is also a desire for antennas that are easier to install, so that systems can be deployed quickly.

**BWB:** In a global economy, R&D may occur in the United States and manufacturing overseas. How does Radio Waves achieve new product development?

**Singer:** By manufacturing the majority of our antennas where we design them — in the United States, at our "antenna center of excellence" in Billerica, Mass. Manufacturing our products in the United States is something all of us are proud of at Radio Waves.

**BWB:** Is more innovation occurring in unlicensed wireless or licensed wireless gear?

**Singer:** There are innovations occurring across both segments. For instance, we just developed a narrow, 40-degree H-plane sector antenna for an international 3.5 GHz fixed wireless operator. We also just announced our new Discriminator™ antenna, which is a one-foot dish meeting FCC Category A specifications for the 23 GHz band.

**BWB:** Radio Waves makes products for operation in the 2 GHz to 60 GHz frequency bands. Where does your company see market growth occurring?

**Singer:** There are growth opportunities across all of these products. The hard part is that we continue to see extreme pricing pressure, which makes it a tough business. Software definable capacity radios and their associated antenna systems, such as the new Stratex Networks' Eclipse product, have potential for rapid growth due to the flexibility these systems offer to network operators. In the point-to-multipoint side of the business, high-capacity products such as Aperto Networks' system should do very well.

**BWB:** Discuss the issue of capacity for mobile wireless networks and what Radio Waves is doing to meet these network needs.

**Singer:** As global consumers utilize their wireless devices to talk, browse the Web or send multi-megapixel pictures to their friends, the network must have backhaul links for this growing level of data. An increase in data traffic will require an increase in the number and capacity of the microwave radios that provide backhaul. At Radio Waves, we are bullish on microwave

**BWB:** Higher frequency spectrum is being made available by the Federal Communications Commission upward of 60 GHz. There has been some consolidation among millimeter wave equipment providers. For instance, YDI Wireless bought TeraBeam for its Harmonix Corp. millimeter wave radios. Why have we been seeing such activity focused on the upper bands?

**Singer:** It's all about the need to have affordable and, in many cases, quickly deployable capacity. At these higher frequencies, while the distance is limited, the capacity is very high due to the available bandwidth.

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