

The Renaissance of BridgeWave

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THE ROAD TO THE NEW BRIDGEWAVE

It has been said that success is based on one's ability to change faster than one's competition, customers, and business. And for over 10 years, BridgeWave served the wireless point-to-point market offering a product portfolio including both microwave and millimeter wave radios. During the mid-2000s, the company dominated the millimeter wave market – owning over 65 percent market share. But as with all markets, whenever there is a technology shift, it opens the door for new entrants... and BridgeWave was caught by surprise when established companies such as Huawei and NEC – and startups like Siklu – began offering lower cost, more competitive solutions.

Along with a solid OEM business, BridgeWave's main sales channels included distributors, VARs, and systems integrators focused on the

enterprise market. As it became clear that high capacity millimeter wave radios would play an even more significant role in carrier and service provider networks, competitors seized the opportunity to take on BridgeWave with more competitive, lower priced products aimed directly at this market. These carriers and ISPs, who routinely purchase millimeter wave and microwave systems in large quantities, wanted high capacity radios at very low prices - prices which were unheard of at that point in time.

Rather than modify its go-to-market and pricing strategies to match competitive moves, BridgeWave opted to continue the company's focus on its OEM business and the less-price sensitive enterprise market. This turned out to be a missed opportunity for the company, made even more significant when, within a relatively short period of time, some of BridgeWave's largest OEM

customers took their millimeter wave businesses in-house and thus became new BridgeWave competitors.

BridgeWave began to realize the severity of the situation, including how much the market demand had changed from a fat pipe radio, to one that was spectrally efficient, with smaller channel sizes and multi-gigabit capacity capabilities. They did make some progress by introducing a more innovative 70-80GHz radio, called the FlexPort 80, which allowed BridgeWave to retain business from Tier 1 carriers, but the product was not scalable in price. Thus, it was not enough to recapture market share for the once thriving company, so BridgeWave decided to seek a strategic buyer to bring the company back.

Enter REMEC Broadband Wireless, an OEM manufacturer of both millimeter wave and microwave radios, with whom BridgeWave already had a close partnership. REMEC had been BridgeWave's turnkey supplier for volume production of BridgeWave radios since 2007. Further, REMEC – which had been successfully selling most of its microwave ODU's for decades on a large scale and via private label to large microwave OEMs – saw a market opportunity with the BridgeWave brand and its sales channels.

REMEC leveraged the similarities they shared with BridgeWave and made significant moves to benefit BridgeWave over the longer term, reinvesting in new engineering and marketing teams,

energizing sales and operations and, ultimately, jettisoning products that the market had passed by.

Although REMEC had the technology to help overhaul the product line at prices that could match the market's demand, the company required more capital to catch BridgeWave's competition and catapult BridgeWave ahead. REMEC recognized that owning its technology would ensure long-term leadership and profitability for BridgeWave, and that required significant in-house technology investments to eliminate dependence on third-party, off-the-shelf technology.

Moseley, a well-funded, privately held company well versed in small-midsize wireless companies – was an attractive suitor for REMEC and, in 2015, Moseley acquired REMEC, and thus, BridgeWave. Moseley already owned a number of wireless brands, including Axxcelera, CarrierCom, EBand, and Moseley Broadcast, each having its own specific market focus. For BridgeWave, this meant that all the pieces to rebuild a stronger, more competitive BridgeWave had come together – BridgeWave with the global brand name, REMEC with the engineering and operations expertise, and Moseley, the capital to make it happen.

THE NEW BRIDGEWAVE – A CULTURE OF INNOVATION

Since the Mosely acquisition in mid-2015, a flurry of in-house technology innovation has been occurring, with new BridgeWave microwave and millimeter

wave products emerging. Currently the product portfolio consists of the Etherflex and FlexPort μ Wave microwave radios, a 60GHz radio – the BW64 –and 70-80GHz radios including the Flex4G-UHA, Flex4G-3000, and the new Flex4G-LITE and Flex4G-5000 radios. The following chart highlights BridgeWave’s product offerings.

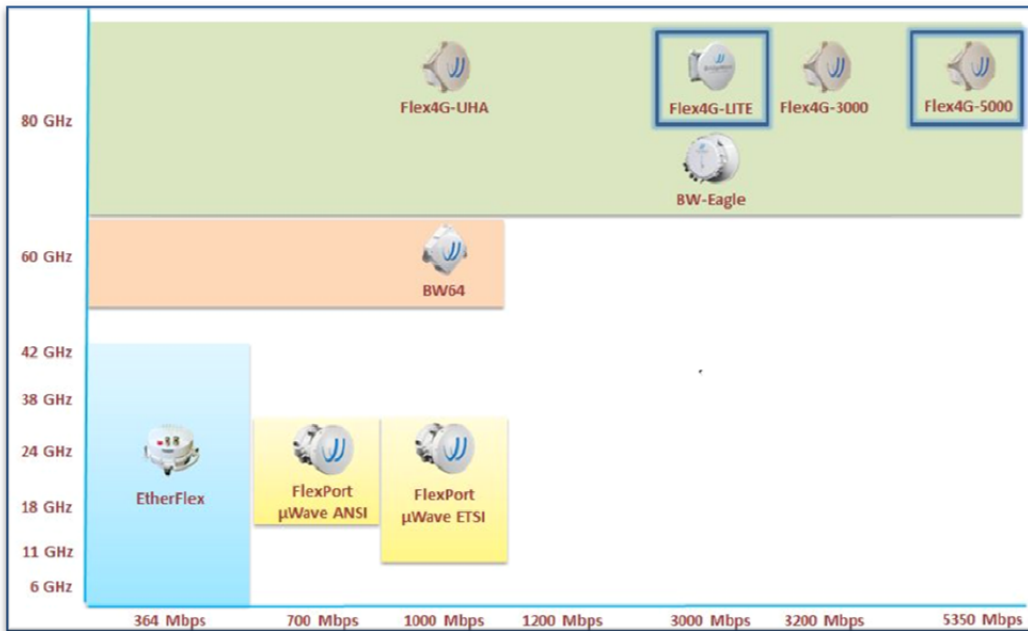
hope will cut across verticals, even catering to the ultra-cost conscience ISP market.

REMEC’s expertise in volume manufacturing, combined with an overhaul of pricing, is resulting favorably for the company. The table on the next page illustrates how BridgeWave’s new radios stack up to some of the features

that the market considers to be cutting edge. What is important to note is that typically one radio will not have every characteristic listed, but should have the majority.

Thus, BridgeWave radios are

being compared to the best performance and features of several different radios. These characteristics are important to operators and enterprises looking for carrier class functionality. Further, latency, capacity, and spectral efficiency are critical characteristics for millimeter wave radios to be relevant in the upcoming 5G networks. Thus, the following table compares vital characteristics of competitively designed carrier class 70-80 Ghz millimeter wave radios with those that BridgeWave offers.



Source: BridgeWave Communications

BridgeWave is about to introduce a new microwave product line that they claim will significantly outperform competitive products in the market at a lower price point. At the same time, BridgeWave plans to introduce a true 10Gbps millimeter wave radio, which is expected to have performance at par to fiber, but at significantly lower costs. The new microwave and millimeter wave products, built on custom ASICs developed in-house, should offer robust performance metrics at prices that they

Key Networking Specifications Competitive Functionality	Advanced Radio Specifications on the Market	BridgeWave Flex4G-UHA	BridgeWave Flex4G-LITE	BridgeWave FLEX4G-3000	BridgeWave Flex4G-5000
Adaptive Modulation	64 QAM and Higher	BPSK	QPSK through 64QAM	BPSK through 256QAM	BPSK through 256QAM
Capacity (FDD)	1 Gbps standard, 3 Gbps, some up to 10Gbps	1Gbps 1+0 radio; 2Gbps 2+0 radio	3Gbps 1+0 radio; 6Gbps 2+0 radio	3.2Gbps 1+0 radio; 6.4Gbps 2+0 radio	5.35 Gbps/1+0 radio; 10.7 Gbps/2+0 radio
Channel Width	Variable Channel Size < 250 MHz	1250MHz	250/500/750MHz	250/500MHz	250/500/750MHz ETSI 1000/1250MHz ANSI
Latency	20 μSeconds or Less	as low as 30 μSec	50 μSeconds or Less	as low as 13 μSec	as low as 13 μSec
Carrier Ethernet	Advanced/Carrier Ethernet	Advanced Ethernet	Advanced/Carrier Ethernet	Advanced/Carrier Ethernet	Advanced/Carrier Ethernet
Hitless Adaptive Modulation	Enabled	AdaptRate (Adaptive Bandwidth)	Enabled	Enabled	Enabled
Forward Error Correction	LDPC	Reed Solomon	Reed Solomon	Reed Solomon	LDPC
Advanced Ethernet Interfaces	2.5Gbps and 10Gbps Ethernet	1Gbps	1/2.5Gbps	1/2.5/10Gbps	1/2.5/10Gbps
Weight	8.4 lbs (3.8kg)	6.5 lbs (3 kg)	7.0 lbs (3.2kg)	9.6 lbs (4.4 kg)	9.6 lbs (4.4kg)
Security	AES 128-bit and 256-bit	Inherently secure antennas. Option: FIPS-197 certified 256-bit AES Encryption (export controlled)	Inherently secure antennas	Inherently secure antennas. Option: FIPS-197 certified 256-bit AES Encryption (export controlled)	Inherently secure antennas. Option: FIPS-197 certified 256-bit AES Encryption (export controlled)
Power Consumption	50 Watts or Less	36 Watts	32 Watts or less	48 Watts	53 Watts
Link Budget @1Gbps with 30cm Antennas	170dB or Greater	168dB	171.6dB	170dB	175dB
Radio Link Aggregation	Yes	No	No	Yes	Yes
CPRI Interface	Yes	No	Yes	Yes	Yes

Source: Sky Light Research & BridgeWave Communications

Technology is important, but it will relegate a company to a niche status if it is not accompanied by competitive pricing. BridgeWave has overhauled its prices, and these newest products are offered at list prices 40-50 percent less compared to the prices the company was offering several years ago.

THE NEW BRIDGEWAVE – A CULTURE OF SERVICE

Besides technology and pricing advancements, BridgeWave has also integrated REMEC’s culture of service. This involves not only working more closely with the market to develop products that will scale into the future,

but also helping customers in all aspects of network design and deployment.

A recent example occurred in my own backyard in Scottsdale AZ. Using BridgeWave gigabit radios, BridgeWave helped a gated golf community design and build a multi-gigabit fiber ring to backhaul voice and high definition video connectivity between the property’s security headquarters and multiple entrance/exit private access gates. Wi-Fi radios had been providing connectivity, however, capacity was lacking, so by adding the overlay of BridgeWave 80Gbps radios, the community is now able to securely monitor entry points scattered around the 8,000-acre golf community. The radios not only added additional 3Gbps

of capacity, but also AES encryption for security. During the installation, problems not associated with BridgeWave or its radios developed. Putting the spirit of customer service into action, BridgeWave took control and resolved the problem, instead of wasting valuable installation time to get the company responsible for the issue out to the site. Needless to say, the customer was impressed.

SUMMARY

The next 12 months will be interesting to watch as BridgeWave leverages its relationships with REMEC and Moseley, and delivers on its promise to provide customers with cost-effective, high volume, quality microwave/millimeter wave products. Within the next six months, the company plans to announce two new products built on its custom ASICs. The first of these is a high capacity licensed microwave

system supporting 6-38GHz frequency bands at aggressive price points. The other is an 80GHz system which will deliver 10Gbps capacity for true fiber replacement.

The company has always known what is needed, and now that all the pieces are in place, it is able to successfully execute on that knowledge.

ABOUT SKY LIGHT RESEARCH

Sky Light Research is a third party market research firm, specializing in wireless backhaul equipment and the applications that drive them. This includes, microwave point-to-point radios, millimeterwave point to point radios; and unlicensed broadband point-to-point radios. Sky Light was founded in 2001 by Emmy Johnson. Emmy@SkyLightResearch.com or +1-480-563-2251