BridgeWave

# Choosing the Right Gigabit Wireless Link: 60GHz and 80GHz (E-Band)

White Paper

# INTRODUCTION

60GHz and 80GHz (E-Band [71-86GHz]) wireless links have clearly emerged as the preferred solutions to extend gigabit networks between sites or to connect sites into fiber optic network backbones. No other wireless products offer their unique combination of capacity, reach, availability, security and value. Still, within this category there are several product options to choose from. BridgeWave offers the broadest family of gigabit wireless products, both at 60GHz and in the 80GHz, to address a wide range of applications.

The first application decision to be made is usually to choose between 60GHz license-free links and 80GHz lightly-licensed links. 60GHz links offer the best value on the market for customers who prefer license-free operation and require link distances that are generally less than one mile. 80GHz links, on the other hand, can support applications beyond a mile and offer an alternative for customers who prefer licensed-band operation. Both 60GHz and 80GHz links are easy to install, highly immune to interference, offer up to 99.999% availability, and provide highly secure wireless connections

# 60GHz LINK ADVANTAGES

60GHz links are unique in the RF world in terms of offering license-free operation without the interference risks associated with lower-frequency license-free links. The combination of narrow antenna beamwidths (< 1.5 degrees) and the link-protection effects of 60GHz oxygen attenuation make it highly unlikely that one 60GHz link will interfere with another. Combining these factors with BridgeWave antennas' outstanding side-lobe performance means that multiple radios can be collocated on a single roof or structure with ease, even utilizing the exact same transmit and receive frequencies. These same characteristics also make these links inherently resistant to data interception and denial of service attacks, providing the most physically secure radio connections possible.

60GHz link capabilities make them the natural choice for extending LANs between campus buildings, connecting enterprise sites into metro fiber backbones, and creating virtual fiber backbones and meshes whenever construction costs or delay make fiber installation unattractive. 60GHz links are also the technology of choice to provide truly independent redundancy for critical fiber connections in both private and public networks.

60GHz links enjoy cost benefits that result both from highly flexible 60GHz spectrum regulations and from being produced in the highest manufacturing volume of all gigabit-speed radios. 60GHz GigE links typically sell at price points comparable to lower-frequency, license-free 100Mbps links, essentially providing users with GigE speeds at 100Mbps prices.

## 80GHz LINK ADVANTAGES

While 60GHz links are the preferred solution for most private and public network enterprise and government connectivity applications, BridgeWave introduced 80GHz links to meet the needs of applications that require increased link distances and network operator applications where licensed-band operation is preferred. 80GHz links can typically cover one to four mile distances, depending on geographic location and application availability requirements. 80GHz links out-reach 60GHz links both due to the higher transmit power allowed by 80GHz spectrum rules and because 80GHz signals experience very little attenuation in strength due to atmospheric oxygen.

While 80GHz links lack the extra interference protection provided by oxygen attenuation for 60GHz links, 80GHz links achieve their interference protection from the combination of their narrow antenna beamwidths and the use of a lightweight licensing database registration process. Lower-frequency licensed-band radio links typically require a licensing process that can take weeks to complete and involve significant effort and costs on the part of the user. 80GHz links, on the other hand, are licensed using an automated on-line database registration system that typically take less than fifteen minutes to complete, at a cost of a few hundred dollars or less.

80GHz links can be registered in the United States directly by the user (after obtaining a nationwide FCC 80GHz license costing less than $1,000), or can be licensed through BridgeWave for a nominal fee per link. 80GHz licensing provides the benefits of licensed-band frequency protections without the delays and uncertainties associated with traditional licensed-band radios. In the exception cases where an 80GHz link cannot be registered through the automated system, users have the choice of licensing them through the more traditional link licensing process or using 60GHz license-free links for these applications.

While 80GHz links are priced higher than 60GHz links, they offer a comparable price/performance value proposition. BridgeWave offers gigabit 80GHz links that are priced competitively with lower-frequency 100Mbps licensed-band products.

## THE CHOICE IS YOURS

Only BridgeWave gives you the choice of both 60GHz and 80GHz links. Both technologies provide full gigabit-speed connectivity with the ease-of-deployment traditionally associated only with license-free links and interference-immunity traditionally associated only with licensed-band links.

BridgeWave is the most experienced manufacturer of gigabit radio links, employing state-of-the-art HALT and HASS test methodologies in a manufacturing facility that has earned ISO9001 certification for over five years running. Whichever products you choose, you can be confident that BridgeWave links will deliver reliable, full-speed performance for years to come.

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