



**LIGHTPOINTE™**

**LIGHTPOINTE WHITE  
PAPER SERIES**

**“Light Licensing”: A Quick and  
Low Cost License Process for  
71-76 GHz Radio Systems**



## Introduction

In 2003, the North American FCC made a significant amount of millimeter-wave spectrum, between 71 and 95 GHz, available for commercial, high quality, multi-gigabit point-to-point wireless communications. This allocation of the millimeter-wave (MMW) spectrum, widely known as E-Band, offers over 250 times the bandwidth capacity of the widely used, lower frequency microwave bands. Unlike the lower frequency bands, the MMW spectrum allows for full duplex data rates of 1.25 Gbps and beyond in cost-effective, point-to-point wireless configurations.

Radio systems in these millimeter-wave bands are characterized by their highly directional “pencil beam” transmissions. These characteristics allow for excellent frequency reuse since systems can be engineered to operate in close proximity to one another without causing interference. For this reason, the FCC adopted an innovative licensing approach specifically for these bands. Rather than mandating a traditional, cumbersome, and time consuming coordination and licensing approach, as widely used for lower frequency microwave links via the standard ULS database, the FCC defined a unique online link registration process through a shared industry database. As a result, the 71-76 GHz “light licensing” scheme is less cumbersome and significantly quicker than the typical FCC licensing process. In the United States, radio links can be coordinated in as fast as 30 minutes and for less than \$200 for 10 years under a Master License. Other countries, and in particular European countries under the CEPT administration, are currently not only following the U.S. approach of releasing the MMW spectrum for commercial use, but the regulation authorities in these countries are also looking at a similar “Light Licensing” process.

This paper explores E-Band licensing in more detail, and explains how the process operates within the United States.

## The E-Band Licensing Scheme

In 2005, the FCC introduced a non-exclusive, internet-based, “light license” process for the MMW E-Band allocations of 71-76 GHz, 81-86 GHz, 91-94 GHz and 94.1-95 GHz<sup>1</sup>. This novel system allows a rapid license application and approval at a cost much lower than traditional site licenses. The process has encouraged the adoption of competitive high data rate services in the US, with over 100 links registered in 2006 – its first full year of operation.

### **Application for a nationwide license**

Before any links can be licensed, the applicant needs to apply to the FCC for a nationwide master license for use of any of the E-Band frequency allocations. This application takes a few days and carries a one-time fee of \$1,095. After approval from the FCC, the applicant can apply for an unlimited number of individual link licenses anywhere in the 12.9 GHz of spectrum available between 71 and 95 GHz, on a non-exclusive basis. The license is valid anywhere in the USA and its territories.

It should be noted that Rayawave is already approved as a nationwide licensee of E-Band links, and able to license links for its own use or on its customer’s behalf. As such, if ownership of the link license is not important to the user, Rayawave can provide this service for the customer, further cutting the time and cost of link registration.

### **Application for individual link licenses**

The link registration process is very simple, fast and straightforward. The complete process is conducted online via a coordinated database managed by three FCC-appointed database managers – Comsearch, Micronet Communications or Frequency Finder Inc. Although each database manager offers their own licensing experience, data is coordinated between the three and a common core database is maintained. Given the ease and automation of the registration and coordination process, plus the competition between the database managers, costs are kept low, allowing links to be licensed with any of the database managers for less than US\$200 per link.

Once logged in to one of the database manager’s websites, the applicant enters a few basic technical parameters of their proposed link. This includes longitudinal and latitudinal coordinates of each end of the link, plus standard technical parameters of the wireless equipment and antenna. The registration system then assigns a date/time stamp, and conducts an automated interference analysis with other links in the proximity to identify any potential interference conflict. Licensees can make changes to their link data at this time as necessary to mitigate interference. After passing the interference analysis, a second round of checks determines if the link is being used close to

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<sup>1</sup> A full summary of this process is given in FCC Public Notice DA 05-311, February 2005.

international borders or radio astronomy quiet zones or if any additional antenna registration is required. Finally, the system automatically submits link parameters to the National Telecommunications and Information Authority (NTIA) to analyze potential conflicts against existing federal government links in the area.

The total analysis generally takes less than 30 minutes, and concludes with the licensee receiving either a green or a yellow light indicator from the program. A green light indicates that all criteria have been met and registration has been successful. Following electronic payment, a 10 year link license is electronically issued, valid as long as the link is constructed within the following 12 months. If a yellow light is returned, some concern with the link has been flagged, and the licensee has to manually file with the FCC in order to complete the registration. There are no FCC fees associated with this further filing, but it could take several weeks to complete the process.

## Summary

In managing the millimeter-wave spectrum from 71 to 95 GHz, the FCC introduced a unique industry-managed link coordination scheme. This streamlined licensing process allows for quick and easy link analysis and registration while providing full interference protection against existing links. The complete online process allows 10-year link licenses to be generally obtained in less than 30 minutes for less than \$200 per link.

## About LightPointe

LightPointe was founded in 1998 and has become the global market leader for high capacity wireless outdoor bridges with over 5000 systems deployed in over 60 countries worldwide and in vertical markets such as Health Care, Education, Military & Government networks, large and small campus enterprise networks, Wireline and Wireless Service Provider networks. Over the last 10 years the company has established a unique diversified product portfolio based on high capacity Free Space Optics (FSO) and Millimeter Wave (MMW) technology. With more than 10 patents granted in the FSO, RF/MMW and in the hybrid bridging solution space LightPointe has established a strong IP and patent portfolio position manifesting the company's technology leadership position.

LightPointe has a long list of global customers including but not limited to Wal-Mart, DHL, Sturm Foods, Siemens, Sprint, AOL, FedEx, BMW, Lockheed Martin, Dain Rauscher, Barclays, Nokia, Deutsche Bank, IBM, Corning, Cisco, Huawei just to mentioned a few. For more information please visit the Lightpointe website at [www.lightpointe.com](http://www.lightpointe.com)