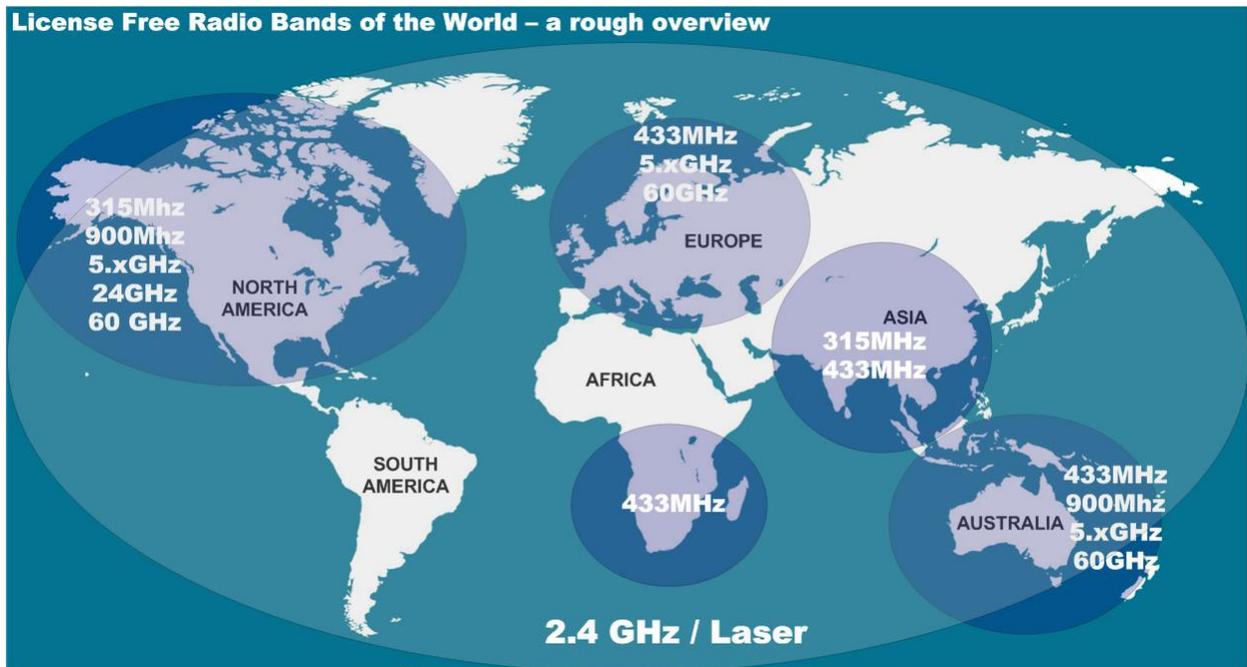




### *A Look into License Free Radio Spectrum World Wide*

In an Era of IP network explosion, the license-exempt wireless communication platform has expanded its role beyond simple voice communication. It has reached the mass market segment to provide a reliable alternative to hardwiring for voice over IP, IP TV, and security applications to name a few. There are several great reason why wireless is a preferred medium over hard wiring. Wireless is economical, faster time to deployment, secure, and reliable. In many cases, wireless is the only option.

License exempt wireless is available worldwide in several frequency bands. The most popular and uniformly accepted is 2.4GHz frequency. 2.4 GHz frequency allocation is adequate for voice and data communication therefore usage of cordless telephones and wireless computer access points worldwide find their home in this band. Among other license free bands, not all are uniformly acceptable worldwide. National restrictions may limit or omit the use of certain frequency bands for one country versus another country. The following map provides a rough overview of license free frequencies supported or not supported world wide.



**Figure 1.** License Free Bands of the World – a rough overview

When considering wireless communication for data and video security applications, there are two wireless technology options, proprietary or standardized. The install base for proprietary wireless technology is small and costly relative to standardized wireless technology based on Wi-Fi (802.11). Wi-Fi is well proven and readily available since late 1998. It is also one of the most successful industry standards in history. Wi-Fi is experiencing rapid advancement with newer extensions released to enhance wireless performance. WiMax is another wireless standard rapidly gaining grounds and hold a lot of promise for the licensed bands. However, the industry anticipates cost effective WiMax equipment to emerge within a few years time frame. Long range wireless equipment by Inscap Data based on WiFi is available today and brings host of benefits to the security market. Table I provides a rough overview of license free bands and characteristics and use of each band if available in your deployment region.

License Free Frequency	Equipment Cost	Allowable Tx Power	Channel Bandwidth	Data Rate	Non-Line-of-Site Support	Purpose
315/433 MHz	Good	Good	Poor	Poor	Excellent	Voice
900 MHz	Good	Good	Poor	Poor	Very Good	Voice/Data
2.4 GHz	Excellent	Good	Very Good	Very Good	Good	Voice/Data/Video
5.x GHz	Very Good	Good	Very Good	Very Good	Good	Voice/Data/Video
24 GHz	Poor	Very Good	Very Good	Very Good	Poor	Data/Video
60 GHz	Poor	Excellent	Excellent	Excellent	Poor	Data/Video
FSO/Laser	Very Poor	Excellent	Excellent	Excellent	Very Poor	Data/Video

**Table I.** License Free Frequency Review (FSO, Free Space Optics)

Illegal or improperly use of license free radio equipment is a federal offense and extreme care should be considered when using it in your country. Confirm with national authorities when in doubt if a particular frequency band is considered license free or when a new frequency band will be available in your region. The following table provides information on fourteen regional spectrum management authorities and their website.

Country / Region	National Spectrum Authority	Website
Australia	Australian Communications and Media Authority	<a href="http://www.acma.gov.au">www.acma.gov.au</a>
Brazil	Agencia Nacional de Telecomunicações	<a href="http://www.anatel.gov.br">www.anatel.gov.br</a>
Canada	Industry Canada	<a href="http://www.ic.gc.ca">www.ic.gc.ca</a>
China	Ministry of Information Industry	<a href="http://www.mii.gov.cn">www.mii.gov.cn</a>
France	National Frequency Agency (NFA)	<a href="http://www.anfr.fr">www.anfr.fr</a>
Germany	Federal Network Agency Bonn, Federal Republic of Germany	<a href="http://www.bundesnetzagentur.de">www.bundesnetzagentur.de</a>
Italy	The Communications Regulatory Authority (Agcom)	<a href="http://www.agcom.it">www.agcom.it</a>
Japan	Japan Ministries of Internal Affairs and Communications	<a href="http://www.soumu.go.jp">www.soumu.go.jp</a>
South Korea	Ministry of Information and Communication	<a href="http://www.mic.go.kr">www.mic.go.kr</a>
Russia	Ministry for Communication and Information of the Russian Federation	<a href="http://www.gov.ru">www.gov.ru</a>
South Africa	The Independent Communications Authority of South Africa	<a href="http://www.icasa.org.za">www.icasa.org.za</a>
United Arab Emirates	Supreme Committee for the Supervision of the Telecommunication Sector	<a href="http://www.tra.gov.ae">www.tra.gov.ae</a>
United Kingdom of Great Britain & Northern Ireland	Office of Communications	<a href="http://www.ofcom.org.uk">www.ofcom.org.uk</a>
United States of America	Federal Communications Commission	<a href="http://www.fcc.gov">www.fcc.gov</a>

**Table II.** Country or Regional Radio Spectrum Authority

Radio transmission power and antenna gain combination or EIRP at specific frequencies are primary technical considerations in deploying license free radio equipment. EIRP stands for equivalent isotropic radiated power and is defined by each country's spectrum authority. In the United States, equipment operating on 2.4 GHz frequency may not exceed a maximum of 36 EIRP for point to multipoint communication as stated in the FCC part 15 rules. License free radio spectrum is a great tool for the industrial, medical, and scientific community for the advancement of cost effective radio communication technology. After all, wireless is economical, faster time to deployment, secure, and reliable. In many deployment scenarios, wireless is the only option.

For inquiries regarding Inscape Data's license free radio equipment and wireless options for network video systems, please contact an Inscape Data channel partner.