

10 Reasons Why the Link Wireless Telephone System Operates in the 902-928 MHz Band

1. More Bandwidth

The 902-928 MHz band has 26 MHz of bandwidth available, versus only 10 MHz of bandwidth in the 1920-1930 MHz band. Systems operating at 902-928 MHz can therefore provide significantly more capacity than 1920-1930 MHz systems.

2. Spread Spectrum Performance

Spread spectrum transmission provides superior in-building performance by minimizing the interference effects of dispersive fading and multipath. In contrast, the FCC rules limit systems in the 1920-1930 MHz band to narrowband transmission.

3. Better Radio Signal Propagation

Free-space radio propagation loss is proportional to frequency. This means a radio signal at 1920 MHz has more than twice the propagation loss of a radio signal at 902 MHz. Therefore, systems operating at 902-928 MHz can cover more area per base station than systems operating at 1920-1930 MHz, providing superior overlapping coverage with fewer base stations.

4. No Band Sharing with Licensed Microwave Systems

The 1920-1930 MHz band is currently occupied by nearly 200 point-to-point microwave links across the country. In addition, there are nearly 1000 microwave links operating in the bands adjacent to the 1920-1930 MHz band. The existence of these licensed microwave systems limits the locations where unlicensed in-building wireless systems can be installed to prevent potential interference.

5. No Site Coordination

To minimize the potential of interfering with a licensed point-to-point microwave system, unlicensed systems operating at 1920-1930 MHz can not be installed or expanded without a frequency coordination study. Systems using the 902-928 MHz band can be installed and expanded at any time without any coordination issues.

6. No Disablement Requirements

Because the 1920-1930 MHz band is occupied by licensed point-to-point microwave links, all unlicensed products using that band must include a mechanism to prevent end-users from moving the system to a location that has not been coordinated. Furthermore, products operating at 1920-1930 MHz require vendor intervention whenever a system is turned up, moved, or expanded.

7. Proven Operating Environment

The FCC rules governing the 902-928 MHz band have been in effect since the early 1980s. The types of applications and products that are appropriate for this band are well known, as well as the potential effects of interference from collocated systems. The FCC rules for the 1920-1930 MHz band were finalized in 1995. The "listen before talk" etiquette required for interference mitigation in the 1920-1930 MHz band is an untried technology that may limit system performance as more systems are deployed.

8. No Interference from L-PCS Base Stations

The 1920-1930 MHz band is immediately adjacent to the band allocated for licensed (public) PCS base stations (1930-1945 MHz). Licensed PCS base stations are authorized to transmit at up to 1600 Watts, which is over 10,000 times the maximum power allowed in the 1920-1930 MHz band. It is likely that a licensed PCS base station operating nearby an unlicensed 1920-1930 MHz system will limit the traffic capacity of the unlicensed system.

9. No Spectrum Clearing Fees

For every handset and every base station sold that operate in the 1920-1930 MHz band, the vendor must pay a fixed fee to contribute to the cost of clearing the fixed microwave systems from the band. This fee will be required until all clearing costs are paid, which may take ten years or more.

10. More Cost Effective

The 902-928 MHz band requires fewer base stations than the 1920-1930 MHz band (Reason 3), does not require additional clearing fees (Reason 9), and does not require site coordination (Reason 6). Furthermore, radio components are less costly and more reliable at 902-928 MHz than at 1920-1930 MHz.

8 Myths about Wireless Voice Spectrum

- 1. More spectrum will be available for wireless systems at 1920-1930 MHz**
Recognizing the limited capacity of systems operating at 1920-1930 MHz, some vendors claim that the FCC will allocate an additional 10 MHz of spectrum for these systems, bringing them closer to the 26 MHz of spectrum available at 902-928 MHz. An FCC rule change requires several years of public notices and comment cycles before it is enacted. To date, no company has even submitted a petition to the FCC for additional spectrum, nor has the FCC announced any plans to consider additional unlicensed voice spectrum.
- 2. The FCC will require all wireless voice systems to use 1920-1930 MHz**
Attempting to denigrate the other unlicensed bands available for wireless voice systems, some vendors make claims that the FCC has mandated that the only unlicensed voice spectrum is the 1920-1930 MHz band. To the contrary, the 1920-1930 MHz band is only the latest allocation of unlicensed spectrum by the FCC and in no way changes any of the rules governing any other unlicensed bands.
- 3. The 1920-1930 MHz band allows interoperability with public PCS systems**
The 1920-1930 MHz band is surrounded by 120 MHz allocated for licensed (public) PCS services. The proximity of these bands leads some vendors to imply that their unlicensed handset will operate with public PCS systems. However, of the five different radio interface standards being implemented by the public PCS providers, none are compatible with any of the radio interfaces used by unlicensed systems. Therefore, interoperability with licensed PCS would require a costly dual-mode handset.
- 4. Systems at 1920-1930 MHz are licensed**
It is true that systems operating at 1920-1930 MHz can not be installed without a frequency coordination study; however, this study does not give them any license or protection from interference. The coordination study is required to insure that the unlicensed voice system does not interfere with any existing licensed point-to-point microwave systems. Unlicensed voice systems at 1920-1930 MHz do not have any protection from interference from licensed point-to-point microwave systems, or even from other unlicensed voice systems installed nearby.
- 5. The 1920-1930 MHz band is dedicated to unlicensed wireless voice systems**
Eventually this may be true, but today and for many years the 1920-1930 MHz band must be shared with fixed point-to-point microwave systems. The FCC allows these microwave systems to operate on a primary basis until they are relocated to other facilities or until April 4, 2005. Until this time (or sooner if all point-to-point systems are relocated), unlicensed voice systems at 1920-1930 MHz must be coordinated prior to installation and can not be moved or expanded by the customer without another coordination study.
- 6. The 902-928 MHz band will be auctioned off for other applications**
The FCC has taken no action to auction off the 902-928 MHz band and does not intend to do so. The 902-928 MHz band is used by many large and small manufacturers of sophisticated wireless voice and data systems. The market for these products exceeds \$500 million dollars annually. Therefore, it is implausible that the FCC would put forth any proposal to reallocate this band for other uses and hinder a significant commercial base.
- 7. The 902-928 MHz band is crowded and has interference problems**
There are several hundred devices certified by the FCC for operation in the 902-928 MHz band. Nearly all of these devices are sophisticated systems designed for commercial use. Consumer products like garage door openers, baby monitors, and microwave ovens do not operate in this band. Most unlicensed systems that use the 902-928 MHz band are designed to coexist with other unlicensed systems without harmful effects from interference. The size of the market for 902-928 MHz products (see Reason 6) is evidence of these products' ability to coexist.
- 8. The 902-928 MHz band is an ISM band used by medical devices**
The 902-928 MHz band is one of eleven bands allocated by the FCC for Industrial, Scientific, and Medical use (ISM). ISM products use microwave energy for thermal, biological, or chemical effects — not for communication. For this reason, ISM devices are well shielded to prevent radio energy from escaping. This shielding also prevents interference from other radio devices. There are no medical telemetry or communication systems that are classified as ISM devices. Communication systems operating at 902-928 MHz are no more likely to cause interference with or receive interference from ISM equipment than any other radio device.