

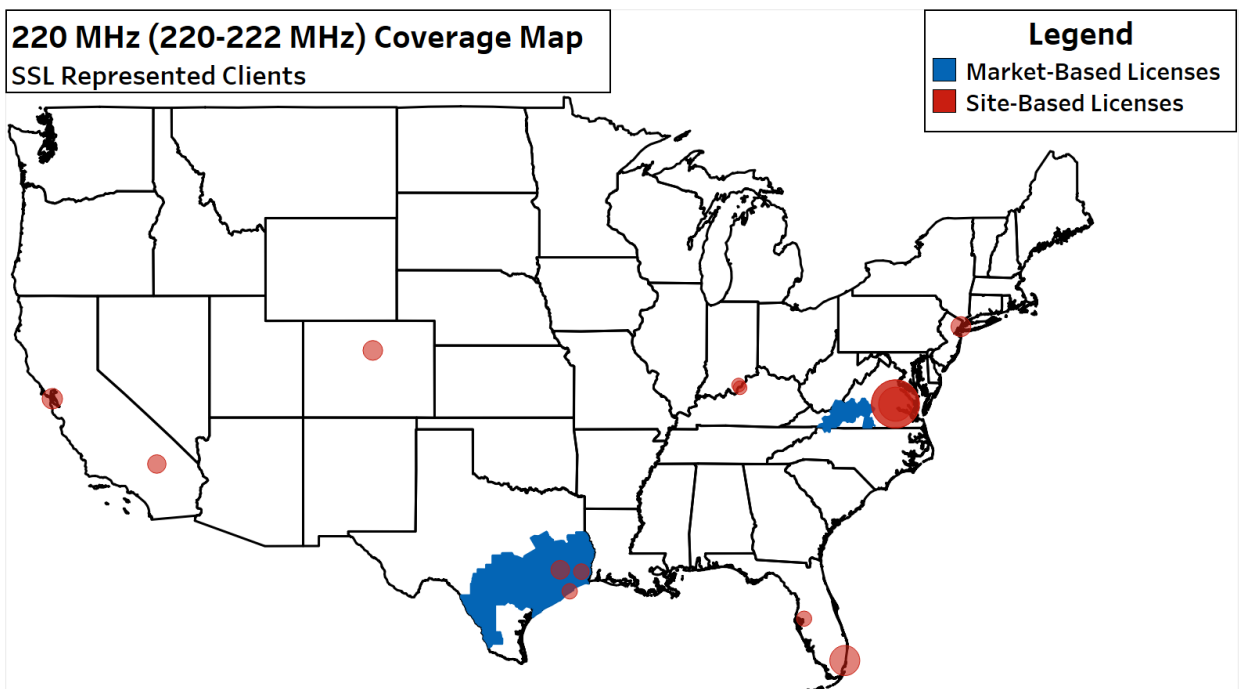


## Wireless Spectrum Licenses in the 220 MHz Services (220-222 MHz) Band Ideal for Utility and Critical Infrastructure Industry Applications Available in San Francisco CA, East TX, and Key East Coast Markets

Select Spectrum is offering twenty-two **220 MHz Services Phase I Site-Based and Phase II Area-Based FCC licensed spectrum**, with licenses collectively providing coverage over a population of nearly 50 million, or 15.1% of the total U.S. population.

The 220 MHz Band is composed of 5 kHz wide, paired, channel frequencies, with each channel offering a total of 10 kHz capacity. FCC regulations permit aggregation of adjacent channels so that operators may utilize 10 or 15+ kHz wide channels that can support a wide variety of voice and data applications. Please inquire for details on the availability of adjacent channel opportunities.

Available 220 MHz license coverage is shown below; with area-based Phase II “QA” licenses shown as blue, site-based Phase I “QT” licenses in red.



**220-222 MHz spectrum has excellent propagation and can be used for a broad range of applications including fixed & mobile data, voice, and video.** Licenses are held and in use by utilities, passenger/freight rail lines, and others for a wide range of applications, including, land mobile radio (LMR), M2M/Internet of Things (IoT), supervisory control and data acquisition (SCADA), distribution automation (DA), smart grid applications, and Oil/Gas applications.

The 220 MHz band is shown with its neighboring service groups below:

216 MHz	217 MHz		218 MHz		219 MHz		220 MHz		222 MHz		225 MHz
Low-Power Radio Service (Unlicensed)	AMTS		218-219 MHz		AMTS		220 MHz		Amateur		
	B	A	A	B	B	A					
		217.5 MHz		218.5 MHz		219.5 MHz					

220 MHz licenses provide excellent propagation and the FCC has approved the 220 MHz band for a broad range of uses. The mixed 5 kHz interleaved and contiguous channel plan is suitable for broadcast or two-way; mobile or fixed; voice or narrowband data. Licenses can be aggregated to use wider carriers of 12.5, 25 or more kHz. Maximum base power is based on height above average terrain. FCC Part 90 rules allow up to 125 Watts ERP from the base station with maximum mobile power of 50 Watts ERP. Networks may employ point-to-point, point-multipoint (tall site) and/or cellular architectures. These limits, along with the excellent propagation in the band, allow long range and high reliability in urban and rural areas. Systems have been shown to perform well in the presence of multiple large obstacles including skyscrapers, forested areas and mountains.

220 MHz spectrum identified for use by a variety of utilities, including **Orange & Rockland Utilities/Consolidated Edison, Pepco/Exelon, San Diego Gas & Electric**, and dozens of rural Utility Cooperatives via direct ownership or lease from the **National Rural Telecommunications Council**.

The band is characterized by a combination of wide geographical area licenses with operational flexibility, allowing frequency reuse at multiple sites within the licensed areas, and priority site licenses over dense metropolitan areas. These characteristics make the spectrum ideal for a meeting utility and critical infrastructure networks that require excellent propagation over wide geographic operating areas and/or have increased need for additional capacity over urban hubs.

For LPWAN/IoT deployments, the 220-222 MHz band channels support a wide variety of sensor ecosystems and IoT-oriented applications serving industries ranging from critical infrastructure, industrial, enterprise, agriculture, etc.

Equipment for the band is made by Ondas Networks [www.ondas.com](http://www.ondas.com), 4RF [www.4rf.com](http://www.4rf.com), GE MDS [www.gedigitalenergy.com](http://www.gedigitalenergy.com), CalAmp <http://www.calamp.com>, XetaWave [www.xetawave.com](http://www.xetawave.com), Cambium <http://www.cambiumnetworks.com>, Alligator Communications [www.alligatorcom.com](http://www.alligatorcom.com), Tait Communications [www.taitradio.com](http://www.taitradio.com), L3Harris [www.harris.com](http://www.harris.com) and Hytera <http://www.hytera.com>. The band is also compatible with a new IEEE wireless standard – 802.16s “GRIDMAN”. This high reliability standard is intended for use by utilities and other critical infrastructure operators.