



## WHAT IS CDMA450?

*CDMA450 is the industry name for a CDMA2000 network operating within the 450 MHz frequency band (410-430 MHz; 450-470 MHz; 470-490 MHz).*

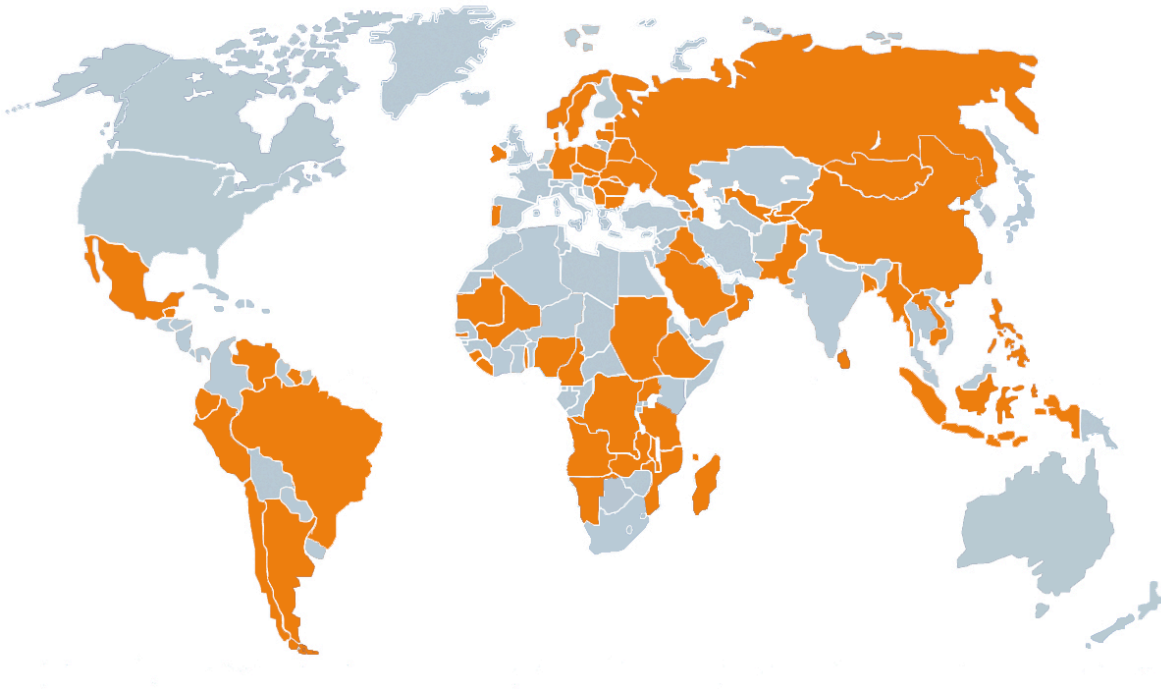
TECHNOLOGY	SPECTRUM
<p><b>CDMA2000</b> represents a family of 3G IMT-2000 standards that include CDMA2000<sup>®</sup> 1X and EV-DO radio technologies, using 1.25 MHz carriers.</p> <ul style="list-style-type: none"> <li>➤ <b>CDMA2000 1X:</b> circuit-switch voice communications and packet data services, with peak data rates up to 153.4 kbps in the uplink (UL) and downlink (DL).</li> <li>➤ <b>CDMA2000 1xEV-DO Release 0 (Rel. 0):</b> packet data only solution, with DL peak data rates up to 2.4 Mbps, average throughputs of 300-600 kbps; and UL peak data rates up to 153.4 kbps, average throughputs of 70-90 kbps. Backward compatible to 1X.</li> <li>➤ <b>CDMA2000 1xEV-DO Revision A (Rev. A):</b> IP-based low latency, packet data only solution, with DL peak data rates of 3.1 Mbps, average throughputs of 600-1400 kbps; and UL peak data rates up to 1.8 Mbps, average throughputs of 500-800 kbps. Rev. A leverages CDMA's IP infrastructure and several enhancements to provide integrated voice, broadband data and video services. Backward compatible with 1X and EV-DO Rel. 0.</li> <li>➤ <b>CDMA2000 Multicarrier EV-DO:</b> Part of the 1xEV-DO Revision B (Rev. B) standard, Multicarrier EV-DO is a software upgrade to Rev. A networks that increases peak data rates to 9.3 Mbps and 5.4 Mbps in the UL and DL, respectively, within 5 MHz.</li> </ul>	<p>The 450 MHz frequency band includes the 410-430 MHz, 450-470 MHz and 470-490 MHz sub band allocations.</p> <p>The broad 450-470 MHz spectrum allocation was identified by the International Telecommunication Union (ITU) World Radio Conference 2007 (WRC-07) to deliver IMT-2000 3G services. This decision was made by WRC-07 largely due to the rising number of IMT-2000 networks being deployed in the 450-470 MHz band. All of these deployments currently use CDMA2000 technology.</p> <p>The favorable propagation characteristics of the lower 450 MHz frequency band enable substantial network coverage advantages and the potential to offer significant capital and operating cost advantages for network operators. Fewer base stations (and backhaul connections) are needed to cover an equivalent geographical area as shorter bandwidth frequencies. These cost advantages can be transferred to the end user to deliver affordable telephony, Internet connectivity and a large selection of mobile broadband services, which is particularly significant in rural areas where purchasing power is limited.</p> <p>To date, CDMA2000 is the only standard published by TIA and approved by ITU for IMT-2000 in the 450 MHz frequency bands.</p>

## **CDMA450: An Affordable Rural Telecommunications Solution**

### **Industry-Leading Voice Capacity, Extended Coverage, and Broadband Connectivity**

118 operators in 62 countries have deployed CDMA450 networks to provide 3G CDMA services to more than 20 million users in both rural and urban areas around the world. These networks are addressing a range of user needs, from basic voice to mobile high-speed data, and from wireless local loop replacement of fixed telephony to full mobility.

CDMA450 networks can host a number of compelling applications, including position location services, push-to-talk, mobile instant messaging, public safety applications, infotainment, tele-medicine, remote learning, multiplayer gaming, mobile commerce, audio/ringtone downloads, mobile video streaming, camera and camcorder applications, asset management and telematics. All of these applications and services can be employed not only for commercial use, but also for public safety usage.



In **Latin America**, there are CDMA450 operations in Argentina, Belize, Chile, Ecuador, Mexico, Peru and Suriname. Large operators, such as Telefónica in Peru and Telmex in Mexico, are using CDMA450 for service offerings in urban and rural areas. Smaller operators, like Valtron in Peru and ETAPA in Ecuador, are also using it for rural services in the Andean mountains.