

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
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INDOOR POSITIONING SYSTEMS: POTENTIAL INTERFERENCE TO GNSS

Abstract

Over the years the Global Positioning System (GPS) has become an international asset that facilitates an annual multi-billion dollar profits to an ever growing list of commercial applications. It has become a system that people around the world can no longer live without, many of whom are not even aware how GPS is infused into their everyday lives. Due to its economic and security potential, other nations, such as Russia, China, and those represented in the European Union, have developed, or are in the process of developing, their own Global Navigation Satellite System (GNSS) constellations to provide services similar to GPS. Furthermore, the combination of GNSS capabilities with social media assets has led to innovative thinkers to develop, and market, ways to provide PNT services in places where it is difficult, or physically impossible, for GPS navigation signals to reach including. Such places include the streets in high-rise urban environments and indoors. There are possibilities and innovations in the works, such as GPS signal re-radiators for indoor positioning and the Japanese Indoor Messaging System (IMES), hoping to achieve success in these environments. However, because these technologies are broadcasting signals within GPS frequency bands there is a significant risk of unintentional interference with other GPS services. This paper will examine various indoor positioning systems that are currently under consideration and analyze the regulatory and technical issues that may arise.