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OPPORTUNITIES AND CHALLENGES OF SATELLITE COMMUNICATIONS IN MARITIME VHF
BANDS**Abstract**

Maritime transport faces challenges such as significant increases in transport volumes, growing environmental requirements and a shortage of seafarers in the future. This gave rise to the concept of autonomous ships which has the potential to overcome these challenges and allow for more efficient and competitive ship operation and increases in the environmental performance of vessels. Reliable maritime communication is one of the key enablers of this concept. In this context, maritime satellite communications can play a major role to provide end to end information automated service provision ship to ship, ship to shore, shore to ship.

The modernization of maritime communications in VHF has taken momentum by introducing VHF data exchange system (VDES) that replaces traditional analogue voice communication channels with digital data exchange links. In preparation for the Agenda Item 1.16 of the World Radio Conference, held in November 2015 (WRC15), a significant work was carried out to define the specifications of VDES including both the terrestrial and satellite components. As the outcome of WRC-15, the use of VDE terrestrial components as well as the ship-to-satellite use of Application Specific Messages (ASM) was approved. In addition, a new mandate (known as Resolution 360) was proposed for the World Radio Conference 2019 dedicated to VHF data exchange via satellite (both on the uplink and downlink). Resolution 360 encourages all administrations to carry out further studies on satellite uplink and downlink and invites administrations to participate in, and support, field trials of the VDES satellite component.

In this paper, we review the status and the use of spectrum in VHF maritime band for two-way satellite communication systems. The paper also addresses design directions and trade-offs in VDE satellite definitions and provides a mission concept serving relevant maritime applications.