Department of the Air Force
Scientific Advisory Board

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE
WASHINGTON DC

Implications of Spectrum Management for the Air Force Study

Abstract

Over the next decade, the Air Force faces rapidly growing difficulties in gaining access to those parts of the electromagnetic spectrum that it needs to accomplish its missions. Current Air Force systems are largely unprepared to deal with the increasingly dense global spectrum environment in which they must operate, with the inevitable future losses of currently available spectrum, and with a worldwide regulatory process that largely views defense spectrum use as an impediment to advancing an increasingly wide range of emerging commercial wireless services.

The Air Force Scientific Advisory Board (SAB) was thus tasked to conduct a Study on Implications of Spectrum Management for the Air Forcell by assessing current spectrum use in Air Force systems, identifying potential loss of capability when spectrum is limited or must be shared, and assessing technology solutions for more efficient spectrum use in existing, emerging, and future systems. The Study began in January 2008 and was completed in August 2008. This Report presents the major findings from this Study and gives the Recommendations made by the SAB to best position the Air Force to meet the spectrum management challenges it faces in a worldwide spectrum environment that is becoming increasingly constrained and in which dedicated spectrum access is no longer assured.

The Study Team received extensive briefings from across the Air Force including representatives of operational commands and recently deployed forces as well as perspectives from the Air Force science and technology, test and evaluation, and acquisition communities. Additional briefings were received from the Air Force Frequency Management Agency, as well as from the Defense Spectrum Organization and others within the Department of Defense, from other Government organizations, major defense contractors, relevant federally funded research and development centers, from commercial telecommunications and other spectrum-related industries, and from academia. Further source material provided additional inputs to the Study, including numerous technical reports and papers related to spectrum management from industry, the Air Force Research Laboratory (AFRL), and universities. Members of the Study Team also made fact-finding trips to Air Combat Command (ACC), Air Force Space Command (AFSPC), and Air Force Special Operations Command (AFSOC) to obtain additional operational perspectives on spectrum management problems directly from the users within the Air Force who rely on spectrum access in warfighting situations.

The Study Team included members from academia, industry, and various government organizations with broad expertise and backgrounds. The Study leadership acknowledges the outstanding efforts put forth by the members of the Study Team, by the Executive Officers who participated in the Study, and by the Air Force SAB Secretariat in supporting the Study.

SAF PA Approval: 2025-0620