

Report of the Working Group B: Enhancement of performance of Global Navigation Satellite Systems services

1. The Working Group B on Enhancement of Performance of GNSS Services held its first meeting on 6 September 2007 and in accordance with the ICG workplan (A/AC.105/879), considered the assigned actions.
2. The recommendations of the Working Group are summarized as follows:
 - The Working Group recommended to align its further work on models and algorithms for ionospheric and tropospheric corrections for GNSS systems with a paper titled “Ionospheric effects on GNSS Aviation Operations” submitted by the International Civil Aviation Organization (ICAO) GNSS panel;
 - The Working Group agreed that the problem of multipath and related mitigation actions affecting both GNSS systems and user receivers, especially for mobile receivers would be addressed by the use of (i) advanced modulation techniques such as, a binary offset carrier (BOC), a multiplexed binary offset carrier (MBOC) and an alternate BOC; (ii) choice of ranging codes; and (iii) choice of centre frequencies vis-à-vis the signals-in-space characteristics of present and planned GNSS;
 - The Working Group noted that extension of GNSS services for indoor applications is closely linked with terrestrial mobile services technology, modulation schemes such as, frequency modulation (FM), carrier offset frequency division multiplex (COFDM), and evolving technologies for broadband wireless access (BWA) like WiFi and Worldwide Interoperability for Microwave Access (WiMAX), which are getting integrated with 3G/4G techniques for personal computers and mobile phones. It was also noted that usability of GNSS services for indoor applications could be further improved if GNSS systems incorporated modern GNSS signal structures with modulations like BOC and MBOC, and a use of a powerful pilot carrier, which would help to improve tracking and acquisition performance of a receiver. Other technologies like communications, micro-electro-mechanical systems for supporting a GNSS based positioning need to be explored.