SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Joint session on Dual Use (civil and military) Aspects of Telecommunications and GNSS (7)

Author: Mr. Bian Lang
Xi'an Institute of Space Radio Technology, China, bianl35@163.com

Mr. Yansong Meng
China, yansongmeng@gmail.com
Prof. Lixin Zhang
China, zlx_best@yahoo.com.cn
Dr. Xiaoxia Tao
China, taoxx504@yeah.net
Mr. Qibing Xu
China, flysky0202@163.com
Mr. Wang Lei
China, 282157678@qq.com
Dr. Guan Gangqiang
China, closetoqiang@163.com
Dr. Liu Wenshan
China, xunhu6@163.com
Prof. Xu Lina
China, changannongming@163.com
Mr. Xiaoping Qian
China, saibeiwind@163.com
Mr. Han Hong
China, 41637763@qq.com
Dr. Fan Ruijun
China, 2642190750@qq.com

RECENT RESEARCH ON SATELLITE AUTONOMOUS INTEGRITY MONITORING(SAIM) TECHNOLOGY

Abstract

Detecting navigation signal faults on-board autonomously could reduce the period of Time-to-Alarm (TTA), and prevent user to be exposed to worsen PVT services efficiently, once the signal error beyond the alarm threshold. This paper researches the recent development of SAIM technology of GPS and GALILEO, analyses the statistical characterization of navigation signal in-orbit in the past, and concludes that the satellite clock fault is the main integrity factor of Global Navigation Satellite System (GNSS). This paper imposes a method of satellite clock integrity monitoring to determine the integrity status of clock, through synthetically processing timing signal and information of itself and inter-satellite measurement. Meanwhile, this paper gives two possible ways of alarming manner of SAIM, and assesses the TTA in each manner.