

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Mobile Satellite Communications and Navigation Technology (3)

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GENERAL CONCEPT OF MOBILE SATELLITE COMMUNICATION SYSTEM IN CHINA

Abstract

This paper discusses several issues on researching and designing Mobile Satellite Communication System in China, including the architecture of the whole system, the conceptive designing of the communication system, the feasibility of combination and inter-manipulation between the existing 2G/3G mobile communication and the satellite mobile communication, and some other problems to be solved in the future development.

Firstly, an introduction of the general concept of future mobile satellite communication system in China is schemed out. This system is designed specially that consists of just 1 or 2 GEO satellites to provide telecom services to majority territory of Chinese mainland. This architecture designing is quite different from European's GlobalStar program and United States' Iridium program. Moreover, the deploying of only 1 satellite would cost possibly higher EIRP (67dBW or more) and larger antenna (13m or bigger), which is to be studied as a key issue.

Secondly, an analytical description of the conceptive designing of the communication system is performed. Since we have only one or two satellites on the sky, we could not achieve signals handover, roaming and relaying operations merely via space segment. It is necessary for us to make full use of the resources and advantages of some existing networks on ground, such as 2G-TDMA/3G-CDMA, even future 4G WiFi networks. Therefore, the feasibility of combination and inter-manipulation between the existing 2G/3G mobile communication and the satellite mobile communication is a key issue to be analyzed. For instance, 3G (also named G3 in China) is widely known as a mature technique in mobile communication today, we could utilize current 3G network to deliver signals from personal to personal directly, or through two steps between personal and satellite in a specific condition like salvage or emergency communication.

Furthermore, the combination between satellite and territorial networks would also bring out many benefits. On the one hand, the satellite communication system is a powerful complementary to the territorial networks, it can seamlessly cover wider areas such as mountains and basins that territorial networks can hardly compare with. On the other hand, any receiver or handheld terminals based on 2G/3G can be easily compatible with most existing devices and equipments, thus will remarkably spare the development costs on receivers and other terminals.

Finally, besides all above issues, many other problems, including global station, gateway, internet accessing, connecting with local/existing telecom systems, flexible handover among networks, etc, will be also discussed in this paper later.