

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)  
Mobile Satellite Communications and Navigation Technology (6)

Author: Dr. Amane Miura

National Institute of Information and Communications Technology (NICT), Japan, amane@nict.go.jp

Dr. Hiroyuki Tsuji

National Institute of Information and Communications Technology (NICT), Japan, tsuji@nict.go.jp

Mr. Kunio Endo

National Institute of Information and Communications Technology (NICT), Japan, k-endoh@nict.go.jp

Dr. Yoshiyuki Fujino

National Institute of Information and Communications Technology (NICT), Japan, fujino@nict.go.jp

Dr. Morio Toyoshima

National Institute of Information and Communications Technology (NICT), Japan, morio@nict.go.jp

ON CAPACITY EVALUATION IN SATELLITE-TERRESTRIAL INTEGRATED MOBILE  
COMMUNICATIONS SYSTEM**Abstract**

Currently, satellite-terrestrial hybrid communications systems have been studied and developed. In Japan, the RD project on such hybrid mobile communications system for cellular phone (called STICS) has been carried out. In STICS, the interference between satellite and terrestrial system exists since the system shares the same frequency band between satellite and terrestrial link, which degrades the system capacity. Therefore it is important to evaluate the system capacity under the existence of the interference to appropriately design the STICS system. We have been developed a tool to analyze the capacity of terrestrial and satellite links in STICS. The analysis tool consists of the interference estimation simulator and the newly developed capacity calculation program. The interference estimation simulator has a function of calculating desired and undesired signal power for each link (satellite uplink/downlink, terrestrial uplink/downlink) by using input parameters for the links. The capacity calculation program outputs the system capacity based on the C/N0 calculation by using the desired and undesired signal power as input parameters. Analyzable service area is the Japanese island and the sea area. The tool can analyze the effect of STICS system parameters such as the cluster number and spatial guard band. The tool also can evaluate various traffic scenarios such as the usual and disaster scene by using appropriate traffic distribution data. The effectiveness of frequency sharing scheme in STICS will be verified by using this analysis tool. The final paper will include the analysis results.