

GPS L2C Signal Quality Analysis

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BIOGRAPHIES

Liliána Sükeová is an M.Sc.E student in the Department of Geodesy and Geomatics Engineering, University of New Brunswick. She graduated from the Slovak Technical University, Bratislava in 2005.

Marcelo Santos is an associate professor in the Department of Geodesy and Geomatics Engineering at UNB. He holds a M. Sc. in geophysics from the National Observatory in Rio de Janeiro, and a Ph.D. in geodesy from UNB. He has been involved in research in the fields of space and physical geodesy, GNSS, and navigation. Dr. Santos is currently the president of the Geodesy Section of the Canadian Geophysical Union and chair of the International Association of Geodesy Working Group on the use of Numerical Weather Models for Positioning.

Richard Langley is a professor in the Department of Geodesy and Geomatics Engineering at the University of New Brunswick in Fredericton, Canada, where he has been teaching and managing research since 1981. He has a B.Sc. in applied physics from the University of Waterloo and a Ph.D. in experimental space science from York University, Toronto. Professor Langley has been active in the development of GPS error models since the early 1980s and is a contributing editor and columnist for GPS World magazine. He is a fellow of The Institute of Navigation (ION) and was a co-recipient of the ION Burka Award for 2003. He is also a fellow of the International Association of Geodesy and an associate fellow of the Royal Institute of Navigation.

Rodrigo Leandro is a Ph.D. candidate of the Department of Geodesy and Geomatics Engineering, University of New Brunswick (UNB), Canada, where he has been a student since 2004. Mr. Leandro is also a research and development engineer of Trimble Terrasat, Germany. He holds an M.Sc.Eng. in civil engineering from the University of São Paulo, in São Paulo, Brazil, and has been involved in research in the fields of geodesy and satellite positioning. Mr. Leandro has received a best student paper award from the Canadian Geophysical Union and a student paper award from The Institute of Navigation, both in 2004. In 2006 Mr. Leandro has also received a best presentation award from The Institute of Navigation.

Okwuchi Nnani is an M.Eng student in the Department of Geodesy and Geomatics Engineering at the University of New Brunswick. He received a B.Sc degree in Surveying, Geodesy and Photogrammetry in 1992 from the University of Nigeria, Nsukka. He has over 13 years work experience as a surveyor in Nigeria and Jamaica. He is currently working under Marcelo C. Santos

Felipe Nievinski is an M.Sc.E student and research assistant in the Dept. of Geodesy and Geomatics Engineering, University of New Brunswick. At the end of 2004 he received his degree in geomatics engineering from the Federal University of Rio Grande do Sul, Brazil. He is a member of The Institute of Navigation, the American Geophysical Union, and the Society for Industrial and Applied Mathematics.

ABSTRACT

A new generation of Global Positioning System (GPS) satellites, called Block IIR-M, has been launched since December of 2005. These satellites are part of the modernization effort that the GPS is undergoing. The signals transmitted by these satellites contain a new civilian code superimposed on the L2 carrier, called the L2C code. Research into the characteristics of the L2C code is based on an International GNSS Service (IGS) L2C dedicated Test Network. This network is composed of both existing stations as well as newly established ones with receivers capable of tracking the L2C signal. The IGS L2C Test Network is composed only of Trimble receivers.

The University of New Brunswick (UNB), Fredericton Campus, Department of Geodesy and Geomatics Engineering (GGE), obtained a Trimble R7 and a Trimble NetR5 receiver on loan from Cansel, a Canadian distributor of Trimble products. Both receivers are capable of tracking the L2C code. The Trimble R7 receiver was collocated with IGS station UNB1 (now station UNBJ), sharing the same antenna, and has become a part of the L2C signal tracking network since January 2006. From November 2006 we have replaced the R7 receiver by the NetR5.

This paper presents results of our analysis on the L2C data collected by the L2C Test Network. Our



