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POWER SPECTRAL DENSITY CHARACTERISTICS OF L1C GPS SIGNAL

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ABSTRACT

This paper describes the Multiplexed Binary Offset Carrier (MBOC) spreading modulation that has been recommended by the GPS-GALILEO Working Group on Interoperability and Compatibility. The MBOC(6,1,1/11) power spectral density is a mixture of BOC(1,1) spectrum and BOC(6,1) spectrum, that would be used by GALILEO for its Open Service (OS) signal at L1 frequency, and also by GPS for its modernized L1 Civil (L1C) signal. A number of different time waveforms can produce the BOC(6,1,1/11) spectrum, allowing flexibility in implementation, although interoperable waveforms remains an objective for GALILEO and GPS. One of them is Composite BOC (CBOC). The CBOC uses multilevel spreading symbols formed from the weighted sum of BOC (1,1) and BOC(6,1) spreading symbols, interplexed to form a constant modulus composite signal. This paper describes the definition of MBOC, represents its power spectral density and compared with BOC. Autocorrelation function of MBOC is also examined. This paper also describes generation of L1C GPS signal and its characteristics.

KEYWORDS: GPS, L1C Signal, BOC, CBOC, Power Spectral Density

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