In December, 2005, the L2C signal was introduced to improve the accuracy, tracking and redundancy of the GPS system for civilian users. The L2C signal also provides improved SNR data when compared with the L2P(Y) legacy signal. However, GNSS network operators have been hesitant to use the new signal as it is not well determined how it affects the positions derived from L2 carrier phase measurements. The L2C carrier phase is in quadrature with the L2P(Y). Some receiver manufacturers correct for this when logging L2C phase while others do not. In cases where both L2C and L2P(Y) are logged simultaneously, translation software must be used carefully in order to select which phase is used in positioning. Modifications were made to teqc in early 2010 to eliminate potential confusion in that part of the process. To date L2C analyses have been restricted to special applications such as snow depth and soil moisture using SNR data.

We use several different methods to determine the effect that tracking and logging L2C has on carrier phase measurements and positioning for various receiver models and configurations. Twenty-four hour zero-length baseline solutions using L2 show sub-millimeter differences in mean positions for both horizontal and vertical components. Direct comparisons of the L2 phase observable from RINEX files with and without the L2C observable show sub-millicycle differences. The magnitude of the variations increased at low elevations. The behavior of the L2P(Y) phase observations or positions from a given receiver were not affected by the enabling of L2C tracking.