

Title (en)
LOCATING A MOBILE UNIT USING COHERENTLY PROCESSED SATELLITE SIGNALS COMBINED WITH SIGNALS FROM STATIONARY BEACONS

Title (de)
FINDEN EINER MOBILEINHEIT UNTER VERWENDUNG KOHÄRENT VERARBEITETER SATELLITENSIGNALE IN KOMBINATION MIT SIGNALEN VON STATIONÄREN BAKEN

Title (fr)
LOCALISATION D'UNE UNITE MOBILE AU MOYEN DE SIGNAUX SATELLITE TRAITES DE MANIERE COHERENTE ASSOCIES A DES SIGNAUX DE BALISES STATIONNAIRES

Publication
EP 1257841 A4 20090513 (EN)

Application
EP 00984480 A 20001218

Priority
• US 0034306 W 20001218
• US 17628900 P 20000118
• US 58561900 A 20000602
• US 58562200 A 20000602

Abstract (en)
[origin: WO0153848A2] A method and system for finding the position of a mobile unit with respect to the satellites of a satellite network such as the Global Positioning System and with respect to the base stations of a wireless communications network. Each satellite transmits a signal that consists of a series of frames of a pseudonoise sequence. The frames of a signal received from the satellite network by the mobile unit are arranged as columns of a matrix and are processed coherently to provide estimated pseudoranges and estimated rates of change of pseudoranges for in view satellites. The coherent processing includes performing an orthogonal transform on the rows of the matrix, multiplying the elements of the matrix by Doppler compensation factors, and then, for each satellite in view, convolving the columns of the matrix with the pseudonoise sequence of that satellite. Other pseudoranges are inferred from synchronization burst sequences received by the mobile unit from one or more base stations. If the base stations are not mutually synchronized, reference units are provided to determine the time offsets between the base station clocks and the satellite network clock and to transmit these time offsets to the mobile unit, so that all the pseudoranges include the same bias relative to the satellite network clock. The pseudoranges are processed and reconciled by a dynamic estimator that includes a linear optimal estimator such as a Kalman filter, to produce successive estimates of the location of the mobile unit as the mobile unit moves.

[origin: WO0153848A2] A method and system for finding the position of a mobile unit (10) with respect to the satellites (70) of a satellite network such as the Global Positioning System and with respect to the base stations (Figure 2) of a wireless communications network. Each satellite transmits a signal that consists of a series of frames of a pseudonoise sequence. The frames of a signal received from the satellite network by the mobile unit are arranged as columns of a matrix and are processed coherently to provide estimated pseudoranges and estimated rates of change of pseudoranges for in view satellites. The coherent processing includes performing an orthogonal transform on the rows of the matrix, multiplying the elements of the matrix by Doppler compensation factors, and then, for each satellite in view, convolving the columns of the matrix with the pseudonoise sequence of that satellite.

IPC 8 full level
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CPC (source: EP KR)
G01S 1/68 (2013.01 - KR); **G01S 19/12** (2013.01 - EP); **G01S 19/252** (2013.01 - EP); **G01S 19/256** (2013.01 - EP); **G01S 19/29** (2013.01 - EP)

Citation (search report)
• [ADX] US 5663734 A 19970902 - KRASNER NORMAN F [US]
• [AD] WO 9944073 A1 19990902 - ERICSSON INC [US]
• See references of WO 0153848A2

Designated contracting state (EPC)
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WO 0153848 A2 20010726; **WO 0153848 A3 20020502**; AU 2109201 A 20010731; CN 1425226 A 20030618; EP 1257841 A2 20021120; EP 1257841 A4 20090513; IL 150417 A0 20021201; JP 2003520968 A 20030708; KR 20020076254 A 20021009

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