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(54) **EARTH TILING SYSTEM FOR PROVIDING REGIONAL BASED SERVICE IN A MOBILE SATELLITE COMMUNICATION NETWORK**

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(51) **Int. Cl.**⁷ **H04Q 7/38**

(52) **U.S. Cl.** **455/456; 455/429; 455/446**

(58) **Field of Search** 455/427, 428, 455/429, 430, 431, 446, 448, 12.1, 13.1, 13.2, 13.3, 517, 456.7; 345/428; 283/34, 35; 434/150

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(57) **ABSTRACT**

A method and apparatus for determining the proper satellite communications service to be provided to a subscriber unit that may be integrated with the geographically defined service areas used in terrestrial cellular communications systems. The pre-existing geographically defined service areas are subdivided into quadrilateral tiles wherein each tile corresponds to a single service area. In addition, the tiles are mapped to a grid having a plurality of regularly spaced grid locations. A lookup table is created that references each grid location to the tiles that overlap the grid locations. The position of the subscriber unit and an approximated region of error within which the subscriber unit is likely to be located are used as input. The approximated region of error is mapped to the grid to identify the grid locations that align with the approximated region of error. Thereafter, the lookup table is accessed to identify the tiles associated with the aligning grid locations and the identified tiles are then used to identify the service area in which the subscriber unit is located so that the proper communications service may be provided. If necessary, geometrical point in polygon inclusion methods and ellipse and polygon intersection methods are used to more accurately identify the tiles of interest.

1 Claim, 15 Drawing Sheets

