THE DESIGN OF 1.8GHZ BASE STATION ANTENNA WITH CIRCULAR POLARIZATION

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ABSTRACT

IN GENERAL, THE WAVE POLARIZATION FOR MOBILE COMMUNICATION IS LINEAR POLARIZATION,USUALLY THE RECEIVING ELECTRIC FIELD INTENSITY ARE COMPOSED OF FIELD INTENSITY BY DIRECT PATH AND FIELD INTENSITY BY MULTIPATH.DUE TO THE MULTIPATH EFFECTS,THE AMPLITUDE OF RECEIVED POWER IN BOTH BASE STATION AND MOBILE HANDSET ARE VARYING ALONG THE COMMUNICATION PATH.THIS IS THE FADING EFFECT.A CIRCULAR POLARIZATION WAVE CAN IMPROVE THE FADING EFFECT. IN THIS STUDY, THE TWO IMPORTANT PARAMETERS, AMPLITUDE AND PHASE OF TWO ORTHOGONAL WAVE ARE DETAIL DISCUSSED.THE ERROR IN BOTH PARAMETERS WILL DEGRADE THE AR PERFORMANCE OF CIRCULAR POLARIZATION WAVE. IN ORDER TO DESIGN THE POLARIZER,THE ELECTRIC FIELD INTENSITY PARALLEL AND VERTICAL COMPONENTS OF ELECTRIC FIELD INTENSITY ARE USED TO FIND THE WAVE PROPAPATION KG C AND KG ⊥RESPECTIVELY.FOR THE IDEAL CP POLARIZER THE OUTPUT PHASE DIFFERENCE OF BOTH ORTHOGONAL ELECTRIC FIELD INTENSITY SHOULD BE 90 °. FROM THE MEASURED KG C AND KG ⊥VALUE, FOR THE IDEAL CP CONDITION, THE DEPTH OF CP POLARIZER CAN BE DECIDED. IN THIS THESIS,A CIRCULAR POLARIZER IS DESIGNED AND MANUFACTURED TO MODIFY THE BASE STATION ANTENNA FROM LINEAR POLARIZATION TO CIRCULAR POLARIZATION. THE AXIAL RATIO IS IMPROVED FROM 19DB TO 1DB FOR 60 ° AZIMUTH ANGULAR COVERAGE.

Keywords : 無

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