An Equal/Unequal Power Divider in Various Types and control patterns

陳昭文、張道治

E-mail: 9223686@mail.dyu.edu.tw

ABSTRACT

In this paper, it was discussed the vertical control that design the uniform distribution and the cosecant square distribution. Because the Base Station Antenna to set up in a multi-story building, that down title 6 degree increase communication quality. Cosecant square patterns have as low a level as possible toward the interference zone where the same frequency is used and, conversely, have as high a level as possible toward the service zone. In the virtual those using a Wilkinson power divider (WPD) and an Unequal power divider (UPD). The result of operate frequency range is from 1.7GHz through 2.2GHz in the WPD for s11 to be small than -10dB and the isolation to be small than -20dB. In the UPD for s11 to be small -10dB and amplitude and phase all conform to the cosecant square patterns and down title 6 degree. The purpose of first case is attention in high isolation for WPD. The second case is emphasized in cosecant square patterns and down tilted 6 degree for UPD.

Keywords : isolation ; cosecant square patterns ; down title ; Wilkinson power divider ; unequal power divider ; phase delay

Table of Contents

REFERENCES

[1] Simon Haykin , Communication Systems, 3rd ed, Hamilton printing company, 1931, p737.

[2] http://www.2cm.com.tw/docs/serial/8/c00825.htm [3] http://www.ewh.ieee.org/r2/baltimore/Chapter/Comm/adapt/tsld038.htm [4] Martin S. Smith, Introduction to Antennas, Published by Macmillan Education LTD, 1988, P59~63.

[5] 張盛富、戴明鳳,無線通信之射頻被動電路設計,全華科技股份有限公司,7.1998,P6-1~6-37.

[6] Jin-Lin Hu, Chi-Hou Chan, Shi-Ming Lin, ” Synthesis of shaped-beam pattern for mobile antenna, ” Antennas and Propagation Society, 1999. IEEE International Symposium 1999 , Volume: 3 , Aug 1999, P1596 -1599 [7] D. Eclercy, M. Rammal, A. Reineix and B. Jecko, “ Comparison between real and power optimization methods for arrays synthesis of antennas, ” Electronics Letters, 18th January 1996 Vol. 32 , No2, P84~85.

[8] Yong U. Kim, Nespor, J.D., “ Shaped beam synthesis and conditional thinning for planar phased array, ” Antennas and Propagation Society International Symposium, 1996. AP- S. Digest , Volume: 2 , 21-26 Jul 1996, P802 -805.

[9] G. Franceschetti, G. Mazzarella, G. Panariello, “ Array Synthesis with Excitation Constraints ”,IEEProceedings. Vol. 135, Pt. H, No. 6, December 1988,P400~407.

[10]O.M. Bucci, G. Franceschetti, G. Mazzarella, G. Panariello, “ Intersection Approach to Array Pattern Synthesis, ” IEE Proceedings. Vol. 137, Pt. H, No. 6, December 1990,349~356.

[11] Kumar, S.J., Chakraborty, A., Das, B.N., “ Scanning of cosecant beams generated by a tilted planar array of nonisotropic radiators, ” Antennas and Propagation, IEEE Transactions on Antennas and Propagaton, Volume: 39 Issue: 6 , Jun 1991, P851~854.
[12]Tong, K.F., Tong, H.Y., Pun, Y.B., Luk, K.M., Chan, C.H, “ Design of linearly fed shaped-beam pattern microstrip antenna array, ” Antennas and Propagation Society International Symposium, 2000. IEEE , Volume: 2 , 2000, P494~497.
[13] Pozar, David M, MICROWAVE ENGINEERING 2nd-ed.New York of The United States Of America: P 369-366.1998.
[14] Dau-Chyrh Chang; Yi-Chung Cheng; “ Development of eight meters inverse cosecant square reflector antenna, ” Antennas and Propagation Society, 1999. IEEE International Symposium 1999 , Volume: 2 , Aug 1999 Page(s): 1160 -1163 vol.2