The Study of MRLP for CP Antenna Measurement

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ABSTRACT

In generally, circular polarization antennas are applied by satellite communication system, such as satellite communication system global positioning system(GPS) etc, the performance of circular polarization antennas are determined on axial ratio. In the antenna measurement systems, the measured method is take phase and amplitude of circular polarization antenna to plot antenna pattern by analysis software, if the mechanism error and vector network analyzer are instable, the results will be error, and consuming time to process data. In this thesis, by using the linear wideband (100 MHz ~ 26 GHz) horn antenna as transmitting antenna, which developed Mechanical Rotated Linear Polarized (MRLP), and time domain antenna measurement system. While the linear transmitting antenna rotating, it can be measured axial ratio. The feed consisted of the MRLP and horn antenna (1 GHz ~ 30 GHz) and applied to compact antenna time domain test range system, the new system is used for testing the axial ratio of different kinds of circular polarization antenna, it is low cost and save space, the test results are quire agreed with traditional measurement system.

Keywords : circular polarization　GPS　axial ratio　phase and amplitude　wideband　MRLP　time domain antenna measurement system

Table of Contents

REFERENCES

[1] C. A. Balanis, ANTENNA THEORY, John Wiley & Sons, pp.505-512, 1997.

[2] D.C. Chang, ANTENNA ENGINEERING, Da-Yeh University pp.261-274, 2002.

[3] C.A. Balanis, ANTENNA THEORY, John Wiley & Sons, pp.64-72, 1997.

[4] Warren L Stutzman, Gary A Thiele, " Antenna Theory and Design", Second Edition, Wiley 1998. Chapter 6.

[5] 　　　," 　　　　　　　　　　　",　　　,　　　　　　　　　, 94　[6]　　," 2.3 GHz　　　　　　　",　　　,　　　　　　　　, 92　[7] D.C. Chang, C.C. Wu, " The Study of MRLP for CP Antenna Measurement," 2004 International Conference on Electromagnetic Applications and compatibility, paper No. EMC-46, Exhibition Hall, World Trade Center, Taipei, Taiwan, October 14~15, 2004 [8] H. Jasik Ed," Antenna Engineering Handbook",McGraw-Hill,NeW York, 1961,Chapter 6.

[9] C. D.C. Chang, C.H. Liao, C.C. Wu, T.K. Chang, " Quiet Zone Evaluation of CATR at Da Yeh University," Taiwan EMC conference , Taipei, vol.2, pp.626-630, October.2003 [10] Dau-Chyrh Chang, Chao-Hsiang Liao, and Chih-Chun Wu," Compact Antenna Test Range

Without Reflector Edge Treatment and RF Anechoic Chamber," IEEE Antenna and propagation Magazine, Vol.46, No.4, August 2004, pp.27~37.

[11] Nilavalan, R., Hilton, G.S, Benjamin, R," Wideband printed bowtie antenna element development for post reception synthetic focusing surface penetrating radar" Electronics Letters, Volume: 35, Issue: 20, 30 Sept. 1999 Pages:1771 – 1772 [12] John, D.K.; Ronald J.M.; " Antennas for all applications" 3rd edition, Mc Graw Hill