Design for a Dual-band Low-Profile Antenna on a Metallic Enclosure

陳家龍、邱政男

E-mail: 364790@mail.dyu.edu.tw

ABSTRACT

In this thesis, a dual Wireless Local Area Network (WLAN) band low-profile antenna is designed to place on a metallic enclosure. Since the metallic enclosure may highly degrade the antenna performance, a high impedance surface (HIS) is added to overcome this difficulty. For this design, a full-wave simulator is used. Also, the measured results agree well with the simulated ones.

Keywords : High Impedance surface、Wireless Local Area Network、Meander line antenna

Table of Contents

REFERENCES

[1]S. Shahparnia, and O. M. Ramahi, “ Electromagnetic Interference(EMI) Reduction From Printed Circuit Boards (PCB) Using Electromagnetic Bandgap Structures, ” IEEE Trans. Electromag. Compat., Vol.46, no. 4, pp.580-587, Nov. 2004.

[2]F.-R. Yang, K.-P. Ma, Y. Qian, and T. Itoh, “ A uniplanar compact photonic-bandgap(UC-PBG) structure and its application for microwave circuit. “ IEEE Trans. Microwave Theory., Vol.47,1509-1517, 1999.

[3]Fei-Ran Yang, Yongxi Qian, Itoh. T, “ A novel uniplanar compact PBG structure for filter and mixer applications, “ IEEE MTT-S International Microwave Symposium Digest, Vol. 3, pp.919-922, June 1999.

[4]Zhang, M.-S.; Li, Y.-S.; Jia, C.; Li, L.-P.; “ Signal Integrity Analysis of the Traces in Electromagnetic-Bandgap structure in High-Speed Printed Circuit Boards, ” IEEE Trans. Microwave Theory and Techniques, Vol.55, pp.1054-1062, May 2007.

[5]Yeo J.; Mittra, R.; “ Bandwidth enhancement of multiband antennas using frequency selective surfaces for ground planes, ” IEEE Trans. Antennas and Propagation, Vol. 4, pp.366-369, July 2004.

[6]Ukkonen, L.;Sydanheimo, L.;Kivikoski M.; “ Patch antenna with EBG ground plane and two-layer substrate for passive RFID of metallic objects, ” IEEE Trans. Antennas and Propagation Society International Symposium, Vol. 1, pp.93-96, June 2004.

[7]F. R. Yang, K.P. Ma, Y. Qian and T.Iton, “ A Uniplanar Compact Photonic-Bandgap (UC-PBG) Structure, and Its Applications for Microwave Circuits, ” IEEE Trans. Microwave Theory Tech., vol. 47, no. 8, pp. 1509-1514, Aug. 19*99.

[8]H. H. Ohta, K. C. Lang, R. Mittra, “ Design of Two-Screen Frequency Slective Surface for C.Ku-Band Satellite Communications, ” Antennas and Propagation Society International Symposium, Vol.21, pp. 357-360, 1983.

[9]B. A. Munk, “ Frequency Selective Surface ”, Wiley, John Wiley& Sons, 2000.

[10]D. J. Kern, D. H. Werner, A. Monorchio, L. Lanuzza and M. J.Wilhelm, “ The design synthesis of multiband artificial magnetic conductiors using high impedance frequency selective surfaces, ” IEEE Tran. Antennas and Propagation, Vol. 153, pp.487-493, Oct. 2006.
[11]M. A. Hiranandani, A. B. Yakovlev, A. A. Kishk, “ Artificial magnetic conductors realized by frequency-selective on a grounded dielectric slab for antenna applications, ” IEEE Trans. Antennas and Propagation, Vol. 153, pp.487-493, Oct. 2006.
[12]Sanyi Zhan; Weber, R.j.; Jiming Song; “ Effects of frequency Selective Surface(FSS) on Enhancing the Radiation Efficiency of Metal-surface Mounted Dipole Antennas, ” IEEE/MTT-S Microwave Symposium, pp.1659-1662, June 2007.
[13]簡嘉良, “ 頻率選擇面結構於電磁用之研究 ” 碩士論文,國立雲林科技大學,民國97年 [14]付云起;袁乃昌;溫熙森, “ 微坡光子晶體天線技術, ” 北京 國防工業出版社 2006.