Band-Pass Shielding Design for WLAN

鄭達鴻、邱政男

E-mail: 9419720@mail.dyu.edu.tw

ABSTRACT

In this paper, we use single-layered frequency selective surfaces to design band-pass frequency selective shielding design for WLAN. We use four kinds of loop type element: four-legged loaded element, hexagon element, square element and circular element. We ’ll find the advantage of each element and common design rules according to the simulation results. Use simulation software to design and calculate the shielding effectiveness and passband transmittance with simulation results. And we use 1.6mm FR4 to build above FSS elements and measure the S-parameters by network analyzer to verify the accuracy of simulation. This paper will also compare the results of simulation and measurement, and discuss the relationship between the perimeter of loop elements and wavelength at resonant frequency

Keywords : Frequency selective shielding design, Shielding ; effectiveness, Passband transmittance

Table of Contents

REFERENCES

[1]D. K. Cheng, Field and Wave Electromagnetics 2/e, Addison Wesley, 1996.

[2]B.A. Munk, Frequency Selective Surfaces Theory and Design, New York:Wiley,2000.

[3]A.D. Chuprin, E.A. Parker, and J.C. Batchelor, “ Resonant frequencies of open and closed loop frequency selective surface arrays, ” IEE Electron. Lett., Vol.36, No.19, pp.1601-1603, Sapt. 2000.

[4] T. k. Wu, “ Four-band frequency selective surface with double-square-loop patch elements, ” IEEE Trans. Antennas Propagat., Vol.42, NO. 12, pp. 1659-1662, Dec.1994.

[5]R. A. Hill, and B. A. Munk, “ The Effect of Perturbating a Frequency-Selective Surface and Its Relation to the Design of a Dual-Band Surface, ” IEE Trans. Antennas Propagat., Vol. 44, NO. 3, pp. 368-372, March 1996.

[6]B. Monacelli, J. B. Pryor, B. A. Munk, D. Kotter, and G. D. Boreman, ” Infrared frequency selective surface based on circuit-analog square loop design, ” IEE Trans. Antennas Propagat., Vol. 53, NO.2, pp. 745-752, Feb. 2005.

[7]R. J. Langley and E. A. Parker, “ Double-Square Frequency-Selective Surfaces and Their Equivalent Circuit, ” Electron. Lett., Vol. 19, NO.17, p.675, Aug 18, 1983