

## Triple Band Antenna for W-CDMA –Part 2–

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### 1 Introduction

The authors have proposed a triple band antenna for 830 MHz to 885 MHz, 1750MHz to 1880MHz, and 1920MHz to 2170MHz of W-CDMA [1-4]. The directive gain at the low frequency of the antenna in [4] is low. Here, the position of the feed point is changed to improve the directive gain. In the numerical analysis, the electromagnetic simulator WIPL-D based on the Method of Moments is used [5].

### 2 Antenna Structure

Figure 1 shows the offset fed inverted L antenna with planar element. The feed point is located near the center of the lower conducting plane.

### 3 Calculation Result

Figure 2 and 3 show  $S_{11}$  characteristics and the directive gain in the  $z$  direction of the proposed antenna and the antenna reported in [4]. The triple frequency bands of W-CDMA is shown in yellow color.  $S_{11}$  characteristic less than  $-5$  dB is satisfied at the triple frequency bands, and the directive gain at the low frequency band becomes more than 1 dBi.

### 4 Conclusion

The triple band antenna for W-CDMA is proposed and numerically analyzed. The feed point position of the antenna is changed to improve the directive gain at the low frequency band. The size of the antenna is 6 mm by 98 mm by 2 mm. The directive gain at the low frequency band becomes more than 1 dBi.

### References

- [1] T. Yamashita, M. Taguchi, Proc. of ISAP 2009, pp. 361 - 364, 2009.
- [2] M. Taguchi and K. Takata, Technical Report of ITE, vol. 39, no. 4, BCT2015-17, Jan. 2015 (*in Japanese*).
- [3] K. Takata, M. Taguchi, Technical Report of IEICE, EST2015-64, Sept. 2015.
- [4] K. Itose, M. Taguchi, Proc. on IEICE General Conf., B-1-153, March 2016 (*in Japanese*).
- [5] <http://www.wipl-d.com/>

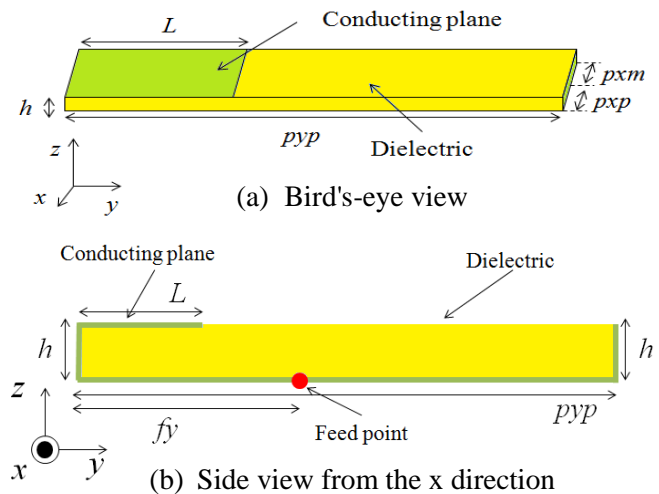


Fig. 1 Proposed antenna

$L = 20$  mm,  $f_y = 55$  mm,  $h = 3$  mm,  
 $p_{xm} = p_{xp} = 5$  mm,  $p_{yp} = 122$  mm.

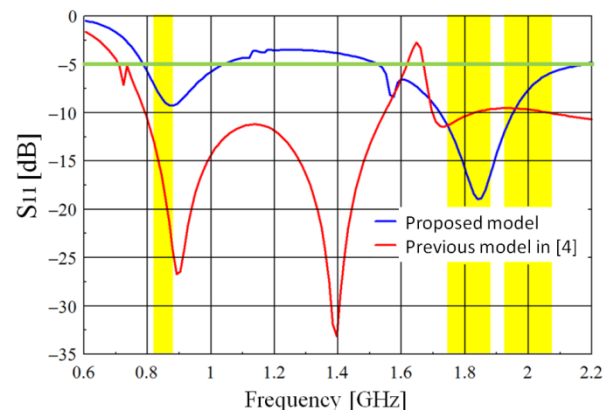


Fig. 2  $S_{11}$  characteristics of two antennas.

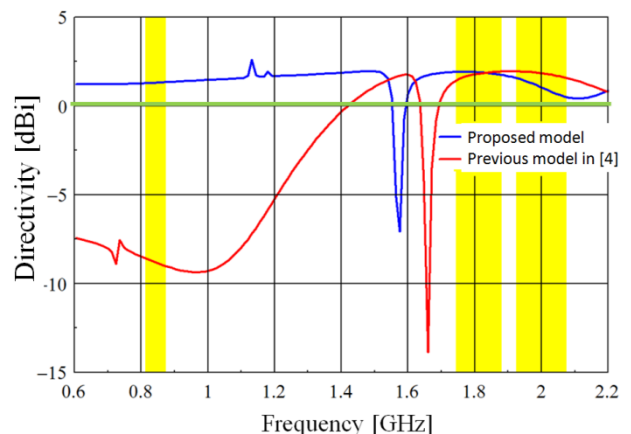


Fig. 3 Directive gain of two antennas in  $z$  direction