

# Dual Band Antenna for HSDPA USB Dongle

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## Abstract

Recently, High Speed Downlink Packet Access (HSDPA), which is a part of 3GPP release 5 of W-CDMA, is proposed to enhance the broadband multimedia mobile communication. It enables the wireless downlink peak rate up to 14Mbps. In this study, the small antenna shown in Fig. 1 in USB dongle with HSDPA capability is developed, which should involve the services from 2G to 3.5G. Two shunted meander lines are utilized to achieve the resonances at the respective bands. The high band is allocated on the top face. The low band antenna is wound around three lateral faces to increase the path length. The current distribution is simulated by the 3D EM software. The bandwidth is broadened by shaping the regions with high current density. The size of the Antenna Carrier is 15mm×21mm×7mm. Curve I and II in Fig. 2 are the return loss without and with notebook grounding effect, respectively. The return loss at high band 1700MHz~2200MHz and low band 824~960 MHz has -5 and -3dB, respectively. The radiations are also measured to verify the simulations. The radiation efficiency is larger than 65% to cover the DCS1800, PCS1900, and UMTS2100. As for the lower band GSM850 and EGSM900 the radiation

efficiency is  
at least larger than 54%. The return losses with and without note book  
effect are also  
studied and will be presented in the conference.

Keyword : Dual band Antenna, HSDPA, 3GPP