

## Body-Worn 67:1 Bandwidth Antenna Using 3 Overlapping Dipole Elements

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Body-worn wideband antennas are of interest in a variety of commercial and government applications. These can be integrated into existing uniforms to significantly improve quality of service.

In this paper, we adapt ultra wideband antenna design concepts to develop a novel tightly coupled dipole array (TCDA) that achieves 67:1 bandwidth (See Fig. 1). Its operation is from 30MHz to 2GHz. The design is extremely simple and consists of 3 overlapping dipoles fed at 3 different locations to ensure uniform current flow. Our TCDA occupies 1.4m x 0.09m. Therefore, it can be easily integrated along the arms of a human subject.

Miniature size, simplicity, and large bandwidth are among the unique features of the design. As such, this design brings forward a new class of body-worn antennas for high data rate, high-quality, and spread spectrum secure communications. As an example, the proposed antenna design can be integrated into various uniforms to cover several communication functions in VHF, UHF, UHF-Public Safety, and L bands. At the conference, we will show experimental results for: a) copper-based, and (b) fully-flexible, textile-based antenna prototypes.

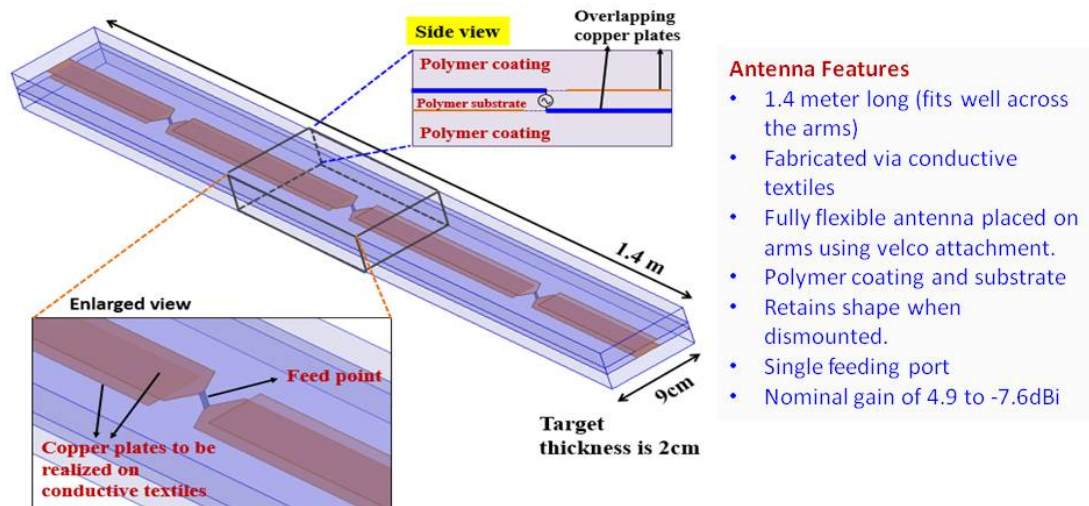


Figure 1: Antenna delivering 67:1 bandwidth using the tightly coupled dipole array (TCDA) concept.