Fabrication and Characterization of Textil-Based Antennas for Sport Applications

ROYA AGHADAVOUD MARNANI[1], EMANUEL GUNNARSSON[1], FERNANDO SEOANE[1,2], VINCENT NIERSTRASZ[1]

1-Textile Materials Technology, Department of Textile Technology, Faculty of Textiles, Engineering and Business, University of Boras, SE-501 90, Borås, Sweden
2-Department of Clinical Science, Intervention and Technology, Karolinska Institute, 17177 Stockholm, Sweden, Department of Clinical Physiology, Karolinska University Hospital, 17176 Stockholm, Sweden, Department of Medical Technology, Karolinska University Hospital, 17176 Stockholm, Sweden

1. INTRODUCTION

Textile antennas offer a lightweight, flexible, and seamlessly integrable solution for wireless communication in smart garments.

This work focuses on:

- Designing and printing textile antennas
- Evaluating their electrical performance
- Testing their communication functionality with a RFID kit.

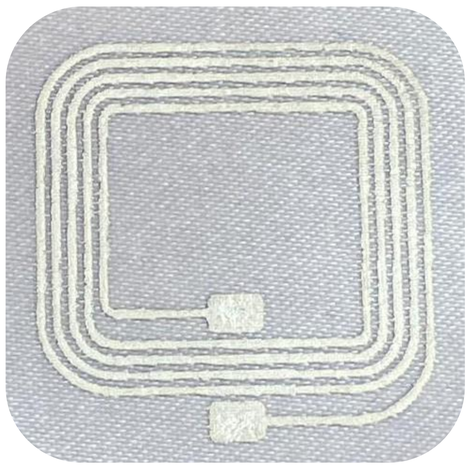


Fig 1. Square Antenna

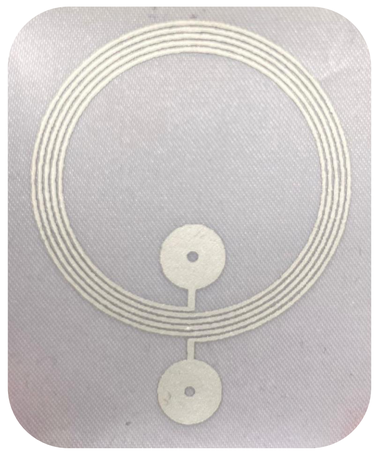
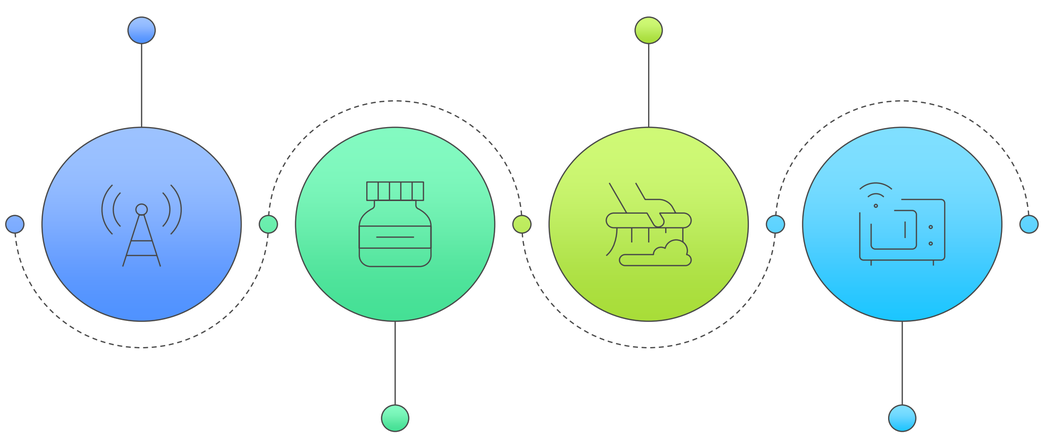


Fig 2. Circular Antenna

2. ANTENNA PRODUCTION

Design Antenna Patterns
Two patterns designed

Screen-Printing
Pattern deposit on fabric

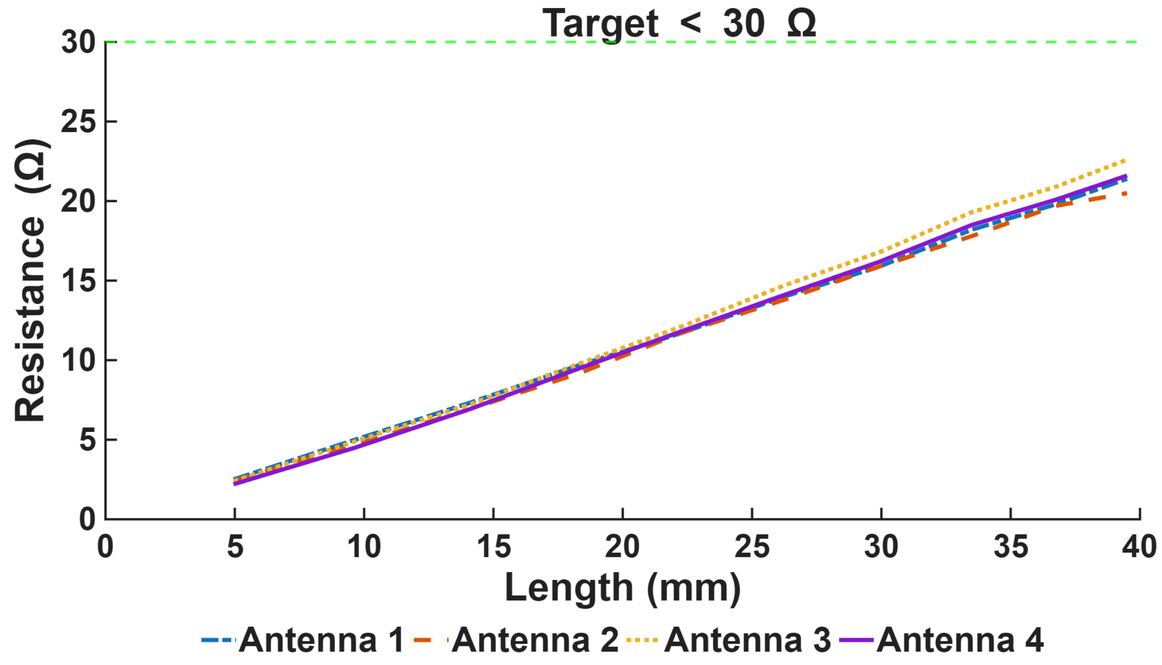


Paste Selection
Different Pastes tested

Cure Printed Antenna
At 120 °C for 15 minutes

3. ELECTRICAL CHARACTERIZATION

- Resistance lays within the targeted operational range
- Antenna resistance show linear behavior



4. FUNCTIONALITY TEST

RFID communication successfully established with development kit

Fig 3. Functional Communication Test

5. CURRENT/FUTURE WORK

RF Parameters Characterization:

- RLC
- S-Parameters
- Resonance frequency

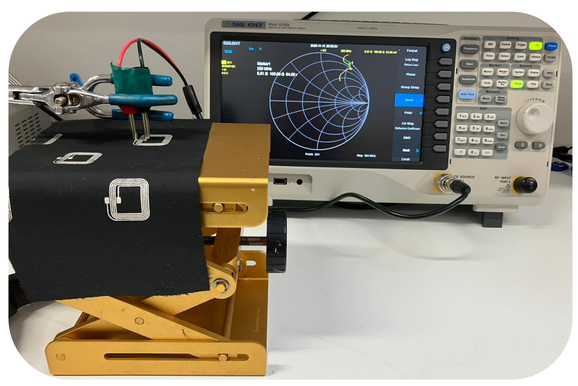


Fig4. RF Characterization Setup

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