



EM4124 44X20 ANTENNA REFERENCE DESIGN

Product Family: **UHF RAIN RFID**

Part Number: EM4124

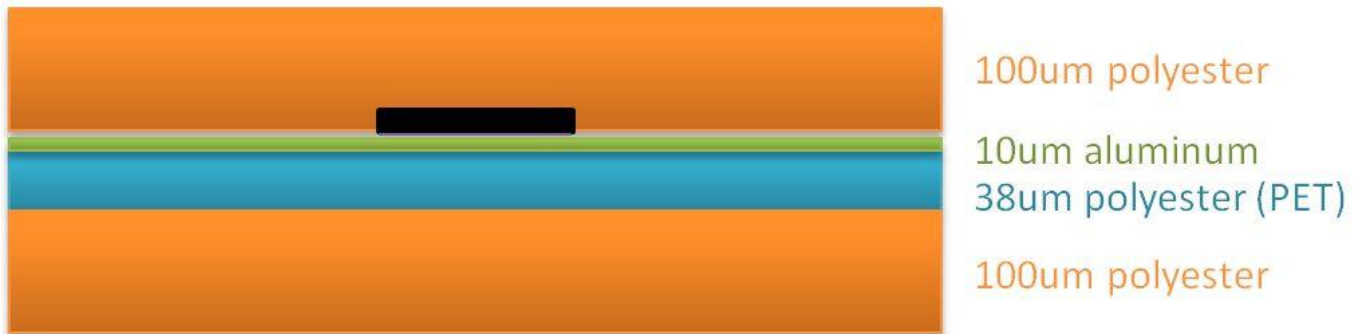
Keywords: UHF antenna, EPCGen2, Textile application.

1. INTRODUCTION

The following document describes the design of a reference antenna using the EM Microelectronic EM4124 IC. The antenna design might evolve in the future to optimize performance vs assembly capacitance variations in manufacturing processes.

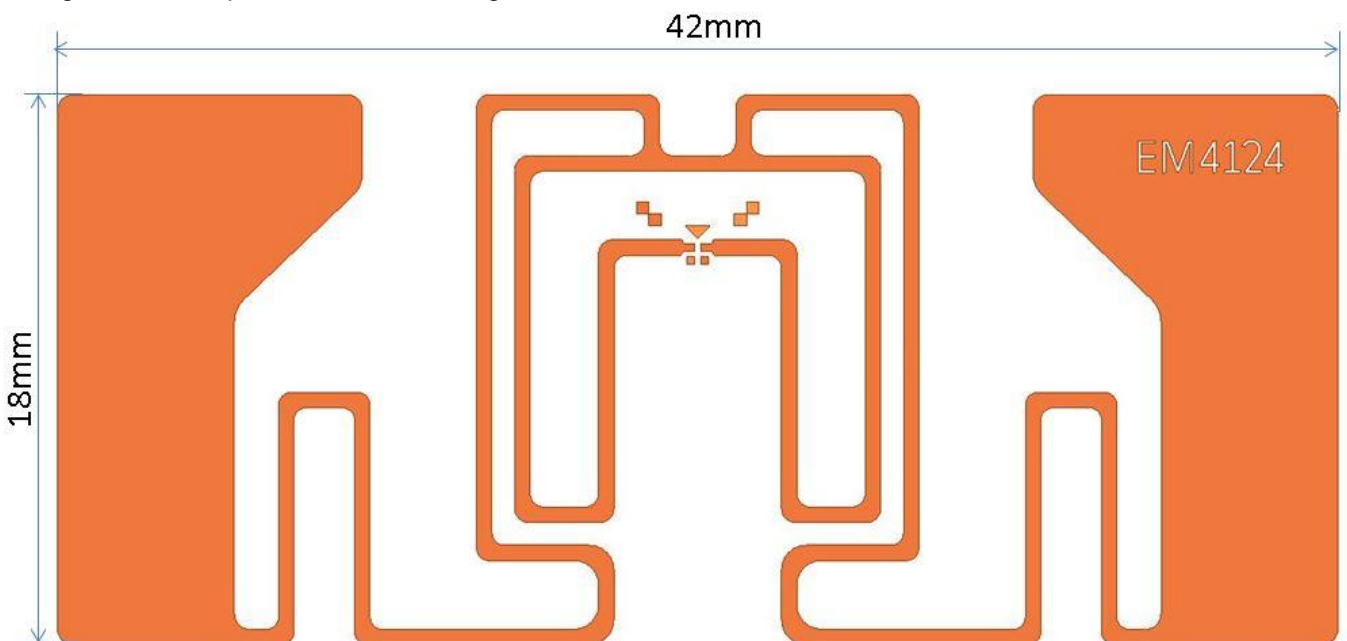
2. LABEL CONSTRUCTION

The inlay design assumes a similar material stack-up to that shown in the figure below. Antenna simulations are based on the following structure.



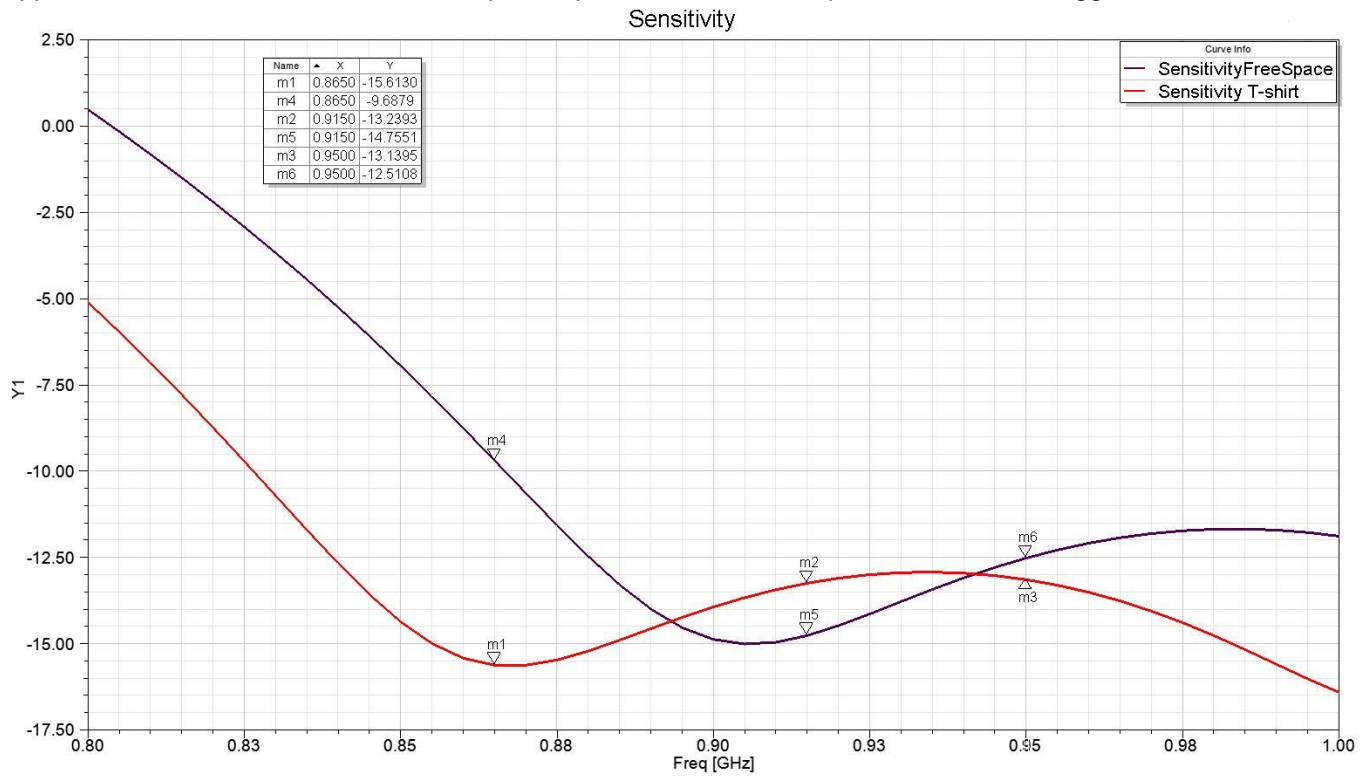
3. INLAY DESIGN

The figure below depicts the antenna design.



4. SIMULATED PERFORMANCE

The performance of this design was simulated using the HFSS software and is optimized for usage in apparel applications. The results below shows expected performance in free space and stack of bagged t-shirts conditions.



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