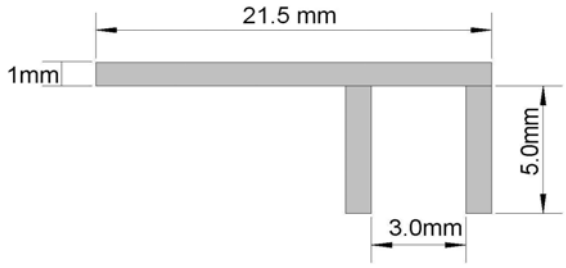
Activexpression (PRM-AE1-01) Antenna Design

The Activexpression operates in the 2.4GHz ISM band and uses a FHSS Transceiver employing an integral antenna etched onto the printed circuit board. The antenna is an “F” type and is based on the reference design as used on the development module for the ATR 2406 Low IF 2.4GHZ ISM Transceiver manufactured by ATMEL.

The maximum gain of this antenna across the 2.4GHz ISM band is 0 dBi and the ATMEL reference design has dimensions as detailed below:

F-Antenna mechanical dimensions

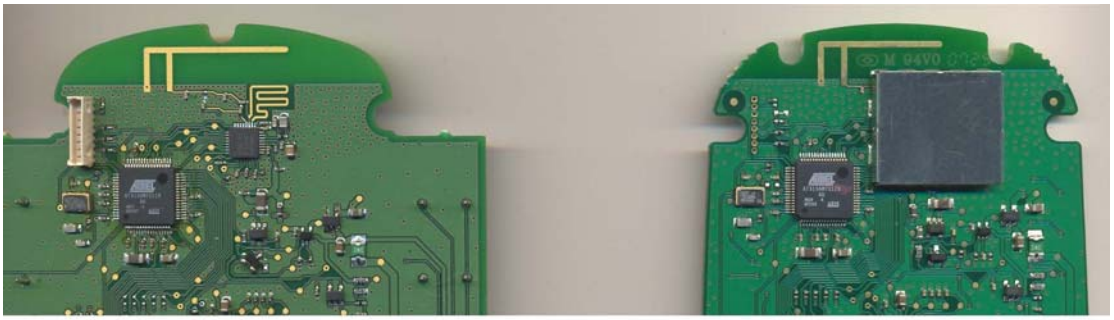
A prototype Activexpression was manufactured using this configuration which was then tuned for maximum EIRP and mismatch resulting in the following dimensions:



F-Antenna mechanical dimensions

The Activexpression layout of the F Antenna was then modified on the PCA to reflect the revised dimensions as detailed below:

Activexpression Prototype Sample Activexpression Production Sample

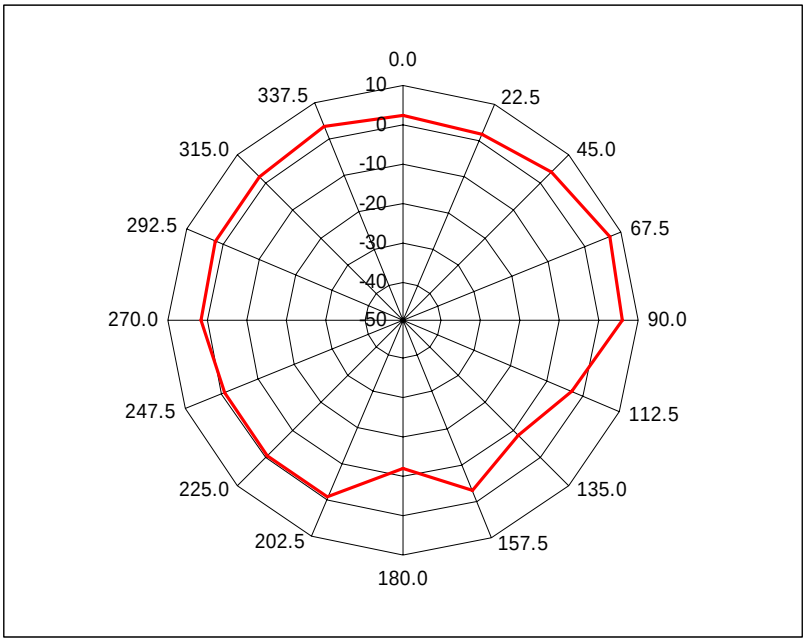


Utilising the services of a UKAS accredited test house both conducted and radiated EIRP measurements were performed on the fundamental carrier in accordance with EN 300 328 V1.6.1 (2004 -11) in order to verify that the Maximum Gain of the antenna was 0 dBi. Good correlation (within 2.2dB) was obtained between the

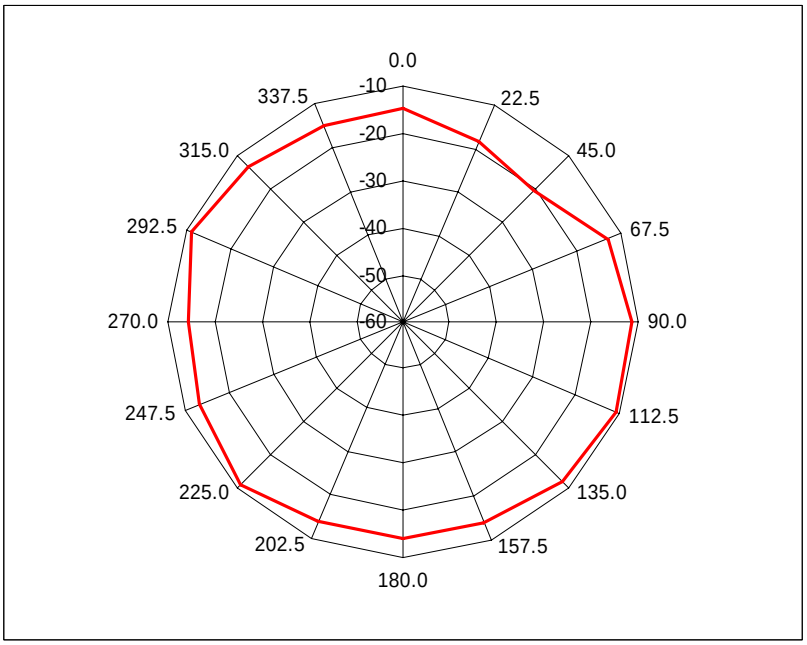
radiated and conducted measurements which were performed on the top, middle and bottom channels in the band 2.4 to 2.4835 GHz.

Antenna EIRP (dBm) Gain Diagrams

Horizontal Polarisation



Vertical Polarisation



Activexpression operating on 2402.3MHz