

Flexible microwave substrates are extensively used for variety of high end microwave circuit applications such as high power solid state amplifiers, patch antennas, missile guidance, mobile base stations etc. Currently the requirements of high frequency circuit boards are fully met through imports and world over only handful of industries are manufacturing these technologically and commercially important class of materials. More than 70% of the cost of any microwave device accounts for the base microwave circuit board and the availability of such circuit boards in the country are going to make phenomenal changes in the overall performance of microwave PCB industries. In order to develop novel high dielectric and economically viable microwave substrates to cater the national requirement, C-MET has taken up this project. Proprietary high dielectric microwave substrates have been developed for the first time, which are superior in properties compared to imported counterparts in terms of high dielectric constant (ϵ_r from 6.15 to 14.8), ultra low loss tangent ($\tan \delta = 0.0018$) and temperature stable microwave dielectric properties. One US and one Indian patent applications have been filed (US Patent application No. 14104002, 2013 and Indian Patent application No. 3815/DEL/2012) based on this innovation to protect the intellectual property right and the technology transfer of these niche products is in the final stages.



Fig.1: 8"x8" size Cu-cladded microwave substrates developed at C-MET through DST funding



Fig. 2 Miniaturized patch antenna fabricated using high dielectric MW substrates



Fig. 3 Band pass filter fabricated using indigenously developed MW substrates