From March 2005 *High Frequency Electronics*

Laminate is Designed for Microstrip Patch Antenna Applications

This new foam dielectric material is designed for low-cost, easy-to-assemble antenna applications in RFID, WLAN, WiMax, automotive radar and other wireless applications

Arlon has introduced a new product line, designated FoamCladR/F, a family of laminate composites manufactured under US Patent 6,703,114. This composite consists of a low permittivity microporous polymeric core bonded to an impermeable copper-clad polymer film overlay that provides a low composite dielectric constant.

FoamCladR/F material can be conveniently processed (print and etch) for the manufacture of low cost, lightweight printed circuit antennas. The low permittivity (e_r = 1.15 to 1.30) and low loss tangent (0.002 to 0.004) of this product make it suitable for applications exhibiting broadband properties capable of high-speed data transfer. Applications include products for the RFID reader and specialty tag market, Wi-Fi 802.11b/g, WiMax antennas, base station antennas and automotive radars. FoamClad also generates extremely low passive intermodulation (PIM). This allows it to be used at locations where multiple antennas are located as well as simultaneous transmit and receive.

Multiple thicknesses are available from 0.043 inch. to 0.250 inch. FoamCladR/F also offers a simple approach to mounting the antennas. Arlon not only provides double-sided copper laminates, it offers a single-sided copper laminate on which the non-copper side contains a release layer (film) that can be removed to expose a pressure sensitive adhesive. The laminate can then be secured to a metalized backplane. This peel-and-stick method is clean, quick and cost-effective.

Arlon's FoamCladR/F is available as double-sided laminate, or in single-sided copper with self-stick adhesive on the dielectric side for easy assembly to a backplane.

The dielectric constant (permittivity) plays a major role in the overall performance of a patch antenna. It affects the width, length and characteristic impedance of the structure. The radiation efficiency of the patch antenna depends largely on the permittivity of the dielectric. Ideally, a thick dielectric, low e_r and low insertion loss is preferred for broadband applications and increased efficiency. In contrast, the high dielectric constant of FR4 and other common materials requires that antennas either compromise performance or be mounted on standoffs, using an air space to reduce dielectric constant.

Arlon Microwave Materials
1100 Governor Lea Road
Bear, DE 19701
Tel: 800-635-9333; Fax: 302-834-2574
www.arlon-med.com
HFeLink 303