TECHNOLOGY TRANSFER

Interest Exploratory Note

DK65 Ceramic for Microwave Applications

DK65 ceramic is a type of dielectric ceramic with high relative permittivity or dielectric constant (εr ~65) and low dielectric loss (tanδ <10^{-}3) at microwave frequencies. VSSC has developed this ceramic technology through conventional solid state route. The ceramics can be fired to full density by firing below 1400°C in air atmosphere furnaces. The ceramic has been successfully tested as dielectric resonators and as patch antenna in L-bands. Since this ceramic possesses very small drift in dielectric constant with temperature, it is useful for applications like dielectric resonator filters, substrates for GPS, NAVIC patch antennas, dielectric resonator antennas etc., in UHF to C-band of microwave frequencies.

The nominal properties of DK65 ceramic are given below.

Bulk density (g/cc)	5.3 - 5.5
Dielectric constant (εr)	64 ± 2
Unloaded Quality factor (Qu @ 3 GHz)*	3200-3600
Loss factor (tanδ, 10^{-4}) @ 3 GHz	≤ 2.65
Temp. coeff. of frequency in 25-75°C (tf, ppm/K)*	0 ± 5

* Properties are obtained by testing in microwave frequency range by standard resonance method

Department of Space has authorised NSIL for Technology Transfer of DK65 Ceramic for Microwave Applications to suitable entrepreneurs/ Industry in India. Interested Parties may please fill the enclosed form and send by email to contact-nsil@isro.gov.in