

## Wireless Signal Propagation in Glass Windows

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**Abstract :** This paper presents theoretical transmission response analysis of RF/Microwave signals propagating through a single- and multi-layer float glass panels. These signals are GSM cellular/mobile, GPS, PCS, VHF/UHF and mobile broadband signals that lie in 0-2 GHz range. In theoretical analysis and the experiments conducted, significant transmission response with minimum attenuation was found in all the panels for those signals. Through detailed parametric study, it was further observed that these panels can be further optimized to transmit the desired frequency signals while blocking the others. Moreover, with number of practical investigations, it was also found that the pass-band ripples, cut-off frequency and in-band attenuation of different transmission bands can be determined by the number of panels used and the gap kept between those panels. This allows the designers to optimize the outdoor glass-window-panels to meet some specific wireless cellular and mobile communication needs. Presented here are the predicted and measured results of a single-, dual- and a triple-layer float glass panel with a detailed discussion on the propagation phenomenon of RF/Microwave signals for each of the three float glass-panel.

**Keywords :** cutt-off, energy-saving glass, frequency, microwave, pass-band, RF

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