RF Friendly Metallic Panels

Metallic coatings can reduce the negative effects of both hot and cold weather extremes on automobiles. In the summer, they can help keep the interior of a car cool, reducing the need for air conditioning. In the winter, they can de-ice and defrost windows. However, these coatings have the unintended consequence of preventing many radio frequency transmissions from entering the vehicle. This can prevent GPS, cell phones, satellite radio, and Bluetooth from functioning properly inside a vehicle with these coatings. However, Dr. Eric Walton of Ohio State has developed metallic panels that have the benefits of those with metallic coatings while still allowing RF transmissions. These panels reflect infrared light which reduces heat build-up on the inside of a vehicle. They also allow a consistent flow of electrons, which eliminates hot and cold spots on the vehicle for even de-icing and defrosting. These panels have an aperture which can be tuned to allow signals from different portions of the electromagnetic spectrum, unlike panels treated with traditional metallic coatings.

Inventor

Dr. Eric Walton earned his BS in 1966 from The University of Delaware, his MS in 1968 and his PhD in 1971, both from the University of Illinois. He has been with The Ohio State University ElectroScience Laboratory since 1977 where he is now a senior research scientist. His research interests include the development of innovative antennas, with more than 20 years of research in automotive conformal antennas. He also has interest in radio and radar signal analysis, radar target identification, compact range development and antenna design.

Intellectual Property

US6922175B2
“Radio transmission region in metallic panel”

Opportunity

Technology and communication systems have become an increasingly important part of the automobile. Today, many cars come equipped with a GPS navigation system, satellite radio, and a link to the consumer’s phone through Bluetooth. However, while all of these features make a more pleasant experience for the user, they prevent car manufacturers from taking full advantage of the benefits of metallic coatings because they have the unintended effect of blocking out many radio frequencies that these devices rely on. By using these innovative panels, auto manufacturers can enhance the user experience further by keeping the car from becoming excessively hot in summer months while parked, and lessening the burden of snow and ice removal in the winter.
Key Features and Benefits

- Panels can be tuned to allow specific frequency transmissions
- Panels allow for even de-icing and defrosting
- Panels can easily be added to manufacturing lines through laser ablation or sputtering
- Panels block infrared light, which helps keep the vehicle cool
- Works with vehicles of any shape

Market Opportunities

- The automotive HVAC market is projected to be worth $22.12 billion by 2020 (Grand View Research)
- The market for automotive infotainment systems is projected to reach $35.2 billion by 2020 (strategyr.com)
- The market for automotive coatings is expected to be $23.1 billion dollars in 2018 (BCC Research)