

Tolling Tag Issues

The TransCore logo is positioned on the right side of the slide. It features the word "TRANSCORE" in a white, serif, all-caps font. Above the letters "A", "N", "S", and "C" are thin, white, curved lines that sweep upwards and to the right, creating a sense of motion or a stylized wave. A registered trademark symbol (®) is located at the end of the word.

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General

- More than 2 million tolling tags in California
- Like most other wireless devices, tolling tags are greatly affected by reflective films.
 - Low-power, unlicensed devices
 - Line-of-sight ---- must pass through windshield
 - Violation occurs if no communication by certain point in the tolling zone
 - High vehicle speeds – little time to communicate
 - Accuracy & reliability are very important to the tolling agencies – these are financial transactions (Accuracy requirements vary from 99.95% to 99.995%)

Tests Have Shown.....

- Reflective films completely block tolling tag communications.
- Absorptive films vary in effect on tolling tags.
 - Film without any metallic content has little effect
 - Many ‘absorptive’ films do contain metallics – wide range of formulations leads to wide range of performance effects
 - For tolling, where systems count on consistent RF performance (to minimize violations), variable windshield characteristics create serious accuracy and reliability issues

Deletion Areas

- Some cars manufactured today incorporate films.
- Many of these cars provide a deletion area in upper center windshield area (behind mirror).
- These deletions are effective and tags work OK.
- Deletion areas must be in a consistent area and large enough to eliminate RF coupling.
 - 4” high x 6” wide is minimal for most tags
 - Proposed SAE (Society of Automotive Engineers) Regulation J2557 (2000) was rejected by SAE Glazing Committee (due only to cost)
 - Other SAE regulations, and UN Regulation 43, limit what can be done to windshields

Other Tolling Tag Solutions

- Vehicle with metallic film and no deletion area is fitted today with an External Transponder (2-3%)
- External devices are attached at front license plate location.
- There are significant problems with this solution:
 - Highly vulnerable and often damaged
 - Highly susceptible to theft
 - Variable RF performance (covered with mud, etc)
 - More expensive (must be very rugged)
 - Not aesthetically pleasing (rugged box in color that doesn't match the vehicle)

Conclusions

- Millions of California commuters will be affected by a Regulation that degrades tolltag performance.
- Although not explicitly stated, the current Regulation will require use of a reflective film.
 - Very destructive to tolling tag operations
- More testing should be done to fully characterize tolling tag performance issues.
 - Best accomplished by a cooperative Work Group
 - See following recommendations:

Recommendations

- It is strongly recommended that California ARB sponsor (or otherwise require) testing to assure that RF-based tolling tags are not fatally affected by the Regulation.
- If device performance is affected in the extreme, as is expected, it is strongly recommended that the adopted Regulation be changed to:
 - Require (rather than allow) use of a glazing solution that has no effect (or an acceptable effect) on electronic devices, or:
 - Require (rather than allow) provision of a suitable deletion area (proper size and placement and with no metallic residue)

Thank you

For additional information:

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