

RE: September 2, 4, 2009 GPS TEST RESULTS with GPS's from various manufacturers

Control: unshielded vehicle driving the same route at the same time of day had a mean TTFF = 42 seconds (TTFF = "time to first fix".)

Date: 9/2/09 Time: 2:30-4pm																													
<p><b>Durango- Metallic reflective film from CARB approved source</b></p> <p style="text-align: center;"><u>Units on metallic film covered windshield (clear other windows)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;"></th> <th style="text-align: center;"><u>TTFF (sec)</u></th> </tr> </thead> <tbody> <tr><td>Unit 1</td><td style="text-align: center;">360</td></tr> <tr><td>Unit 2</td><td style="text-align: center;">262</td></tr> <tr><td>Unit 3</td><td style="text-align: center;">100</td></tr> <tr><td>Unit 4</td><td style="text-align: center;">150</td></tr> <tr><td>Other:</td><td style="text-align: center;">N/A</td></tr> <tr> <td><b>Mean TTFF:</b></td> <td style="text-align: center;">                     218.0                      (5x delay vs. control vehicle)                 </td> </tr> </tbody> </table>		<u>TTFF (sec)</u>	Unit 1	360	Unit 2	262	Unit 3	100	Unit 4	150	Other:	N/A	<b>Mean TTFF:</b>	218.0 (5x delay vs. control vehicle)	<p><b>Mercedes with factory metallic reflective windshield</b></p> <p style="text-align: center;"><u>Units on Shielded windshield (No Deletion Window)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;"></th> <th style="text-align: center;"><u>TTFF (sec)</u></th> </tr> </thead> <tbody> <tr><td>Unit 1</td><td style="text-align: center;">65</td></tr> <tr><td>Unit 2</td><td style="text-align: center;">360</td></tr> <tr><td>Unit 3</td><td style="text-align: center;">780</td></tr> <tr><td>Unit 4</td><td style="text-align: center;">540</td></tr> <tr><td>Unit 5</td><td style="text-align: center;">600</td></tr> <tr> <td><b>Mean TTFF:</b></td> <td style="text-align: center;">                     436.3                      (10x delay vs. control vehicle)                 </td> </tr> </tbody> </table> <p style="text-align: right;">Unit 5 -No comparable unit in Durango.</p>		<u>TTFF (sec)</u>	Unit 1	65	Unit 2	360	Unit 3	780	Unit 4	540	Unit 5	600	<b>Mean TTFF:</b>	436.3 (10x delay vs. control vehicle)
	<u>TTFF (sec)</u>																												
Unit 1	360																												
Unit 2	262																												
Unit 3	100																												
Unit 4	150																												
Other:	N/A																												
<b>Mean TTFF:</b>	218.0 (5x delay vs. control vehicle)																												
	<u>TTFF (sec)</u>																												
Unit 1	65																												
Unit 2	360																												
Unit 3	780																												
Unit 4	540																												
Unit 5	600																												
<b>Mean TTFF:</b>	436.3 (10x delay vs. control vehicle)																												
TTFF = "time to first fix".																													

Date: 9/4/09 Time: 2:30-4pm																									
<p><b>Durango- Metallic reflective film from CARB approved source</b></p> <p style="text-align: center;"><u>Units on 2/3 film covered windshield (33% Deletion Window across bottom) (clear other windows)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;"></th> <th style="text-align: center;"><u>TTFF (sec)</u></th> </tr> </thead> <tbody> <tr><td>Unit 1</td><td style="text-align: center;">450</td></tr> <tr><td>Unit 2</td><td style="text-align: center;">N/A</td></tr> <tr><td>Unit 3</td><td style="text-align: center;">115</td></tr> <tr><td>Unit 4</td><td style="text-align: center;">30</td></tr> <tr> <td><b>Mean TTFF:</b></td> <td style="text-align: center;">                     198.33                      (4.7x delay vs. control vehicle)                 </td> </tr> </tbody> </table>		<u>TTFF (sec)</u>	Unit 1	450	Unit 2	N/A	Unit 3	115	Unit 4	30	<b>Mean TTFF:</b>	198.33 (4.7x delay vs. control vehicle)	<p><b>Mercedes with factory metallic reflective Windshield</b></p> <p style="text-align: center;"><u>Units on Shielded windshield (No Deletion Window)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;"></th> <th style="text-align: center;"><u>TTFF (sec)</u></th> </tr> </thead> <tbody> <tr><td>Unit 1</td><td style="text-align: center;">240</td></tr> <tr><td>Unit 2</td><td style="text-align: center;">60</td></tr> <tr><td>Unit 3</td><td style="text-align: center;">360</td></tr> <tr><td>Unit 4</td><td style="text-align: center;">180</td></tr> <tr> <td><b>Mean TTFF:</b></td> <td style="text-align: center;">                     260                      (6x delay vs. control vehicle)                 </td> </tr> </tbody> </table>		<u>TTFF (sec)</u>	Unit 1	240	Unit 2	60	Unit 3	360	Unit 4	180	<b>Mean TTFF:</b>	260 (6x delay vs. control vehicle)
	<u>TTFF (sec)</u>																								
Unit 1	450																								
Unit 2	N/A																								
Unit 3	115																								
Unit 4	30																								
<b>Mean TTFF:</b>	198.33 (4.7x delay vs. control vehicle)																								
	<u>TTFF (sec)</u>																								
Unit 1	240																								
Unit 2	60																								
Unit 3	360																								
Unit 4	180																								
<b>Mean TTFF:</b>	260 (6x delay vs. control vehicle)																								

Summary

- The "ARB recommended" Metallic Film caused significant RF signal attenuation – up to 15 dB
- The deletion window did little to alleviate RF attenuation. Delay was reduced to 4.7x from 5x.