

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-598-8

Relating to Exemptions Under Section 27156  
of the California Vehicle Code

Badillo Engineering  
Ford Racing TrackKey

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Section 39515 and Section 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the installation of the Ford Racing TrackKey, manufactured and marketed by Badillo Engineering, 6275 Stewart Lane, Ann Arbor, Michigan 48105, has been found not to reduce the effectiveness of the applicable vehicle pollution control systems and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for the 2012 model year 5.0L Ford Boss Mustangs with a manual transmission.

The Ford Racing TrackKey, consists of the following main components: An ECM reflash tool, replacement air filter cartridge, and a new ignition key. The Ford Racing TrackKey is designed to enhance the sound and feel of the 5.0L engine. No changes are made to the vehicle's stock maximum horsepower level, and there are no user adjustments.

This Executive Order is valid provided that the installation instructions for the Ford Racing TrackKey will not recommend tuning the vehicle to specifications different from those of the device manufacturer.

Changes made to the design or operating conditions of the Ford Racing TrackKey, as exempt by the Air Resources Board, which adversely affect the performance of the vehicle's pollution control system shall invalidate this Executive Order.

This Executive Order shall not apply to any Ford Racing TrackKey advertised, offered for sale, sold with, or installed on a new motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

This Executive Order does not constitute any opinion as to the effect the use of the Ford Racing TrackKey may have on any warranty either expressed or implied by the vehicle manufacturer.

This Executive Order is granted based on submitted emission test data generated on a 2012 model year 5.0L Boss Mustang modified with the Ford Racing TrackKey. Test results showed that emission levels, with the TrackKey calibration activated, met the applicable emission standards when tested using the Cold-Start CVS-75 Federal Test Procedure (FTP) and the Supplemental Federal Test Procedure (SFTP-US06) test cycles. Examination of the OBD II system showed that the TrackKey did not affect OBD II system operation. Results from emissions testing conducted at the Roush Emissions Laboratory, located in Livonia, Michigan, and confirmed at the Air Resources Board (ARB) laboratory in EL Monte, California are shown below (in grams per mile).

<b>(Roush Laboratory) 2012 Boss Mustang</b>	<b>CVS-75 FTP</b>				<b>SFTP US06</b>	
	<b>NMOG</b>	<b>CO</b>	<b>NOx</b>	<b>HCHO</b>	<b>NMHC+NOx</b>	<b>CO</b>
Standards*	0.070	2.1	0.04	0.011	0.14	8.0
Device Test 1	0.030	1.5	0.01	0.001	0.08	3.1
Device Test 2	0.027	1.6	0.01	0.001		
Average	0.029	1.6	0.01	0.001		
Average w/df	0.062	1.9	0.02	0.001		

<b>(ARB Laboratory) 2012 Boss Mustang</b>	<b>CVS-75 FTP</b>				<b>SFTP US06</b>	
	<b>NMOG</b>	<b>CO</b>	<b>NOx</b>	<b>HCHO</b>	<b>NMHC+NOx</b>	<b>CO</b>
Standards*	0.070	2.1	0.04	0.011	0.14	8.0
Device Test	0.025	1.6	0.01	0.001	0.09	2.2
Device w/df	0.058	1.9	0.02	0.001		

\*LEV II ULEV CVS-75 FTP Useful Life emissions standards.

The Air Resources Board reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted add-on or modified part continues to meet the standards and procedures of Title 13, California Code of Regulations, Section 2222, et seq.

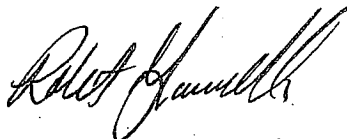
**THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF THE FORD RACING TRACKKEY.**

Marketing of the Ford Racing TrackKey using any identification other than that shown in this Executive Order or marketing of the Ford Racing TrackKey for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board.

No claim of any kind, such as "Approved by the Air Resources Board", may be made with respect to the action taken herein in any advertising or other oral or written communication.

Violation of any of the above conditions shall be grounds for revocation of this order. The order may be revoked only after a ten-day written notice of intention to revoke the order, in which period the holder of the order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request and the order may not be revoked until a determination is made after the hearing that grounds for revocation exist.

Executed at El Monte, California, this 5<sup>th</sup> day of October 2011.



*for* Annette Hebert, Chief  
Mobile Source Operations Division

## EVALUATION SUMMARY

Manufacturer Name: Badillo Engineering

Name of Device: Ford Racing TrackKey

Background:

Badillo Engineering, 6275 Stewart Lane, Ann Arbor, Michigan 48105, has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the Ford Racing TrackKey designed for 2012 model year 5.0L Ford Boss Mustangs equipped with a manual transmission.

Recommendation:

Grant exemption to Badillo Engineering as requested, and issue Executive Order D-598-8.

Device Description:

The Ford Racing TrackKey, consists of the following main components: An ECM reflash tool, replacement air filter cartridge, and a new ignition key. The Ford Racing TrackKey is designed to enhance the sound and feel of the 5.0L engine. No changes are made to the vehicle's stock maximum horsepower level, and there are no user adjustments.

Discussion/Basis for the Recommendation:

To demonstrate the emissions impact of the Ford Racing TrackKey, Badillo Engineering conducted emissions testing on a 2012 model year Ford Boss Mustang, engine test group CFMXV05.0VD5, certified to the low emission vehicle II ultra low emission vehicle (LEV II ULEV) emission standards. Emissions testing consisted of two Cold-Start CVS-75 Federal Test Procedure (FTP) test cycles and one Supplemental Federal Test Procedure (SFTP-US06) test cycle in the baseline (silver key) and modified (red key) configuration. Results from emissions testing conducted at the Roush Emissions Laboratory, located in Livonia, Michigan, are shown below (in grams per mile).

<b>TrackKey (Red Key)</b>	<b>CVS-75 FTP</b>				<b>SFTP US06</b>	
	NMOG	CO	NOx	HCHO	NMHC+NOx	CO
Standards	0.070	2.1	0.04	0.011	0.14	8.0
Device Test 1	0.030	1.5	0.01	0.001	0.08	3.1
Device Test 2	0.027	1.6	0.01	0.001		
Average	0.029	1.6	0.01	0.001		
Average w/df	0.062	1.9	0.02	0.001		

<b>Stock (Silver Key*)</b>	<b>CVS-75 FTP</b>				<b>SFTP US06</b>	
	NMOG	CO	NOx	HCHO	NMHC+NOx	CO
Standards*	0.070	2.1	0.04	0.011	0.14	8.0
Device Test 1	0.024	1.3	0.02	0.001	0.05	2.3
Device Test 2	0.024	1.2	0.01	0.001		
Average	0.024	1.3	0.02	0.001		
Average w/df	0.057	1.6	0.03	0.001		

\*TrackKey software installed but not activated with silver key, air filter cartridge installed.

Confirmatory emissions and OBD II testing at ARB's Haagen-Smit Laboratory. Results are shown below (in grams per mile).

<b>TrackKey (Red Key)</b>	<b>CVS-75 FTP</b>				<b>SFTP US06</b>	
	<b>NMOG</b>	<b>CO</b>	<b>NOx</b>	<b>HCHO</b>	<b>NMHC+NOx</b>	<b>CO</b>
Standards	0.070	2.1	0.04	0.011	0.14	8.0
Device Test	0.025	1.6	0.01	0.001	0.09	2.2
Device w/df	0.058	1.9	0.02	0.001		

<b>Stock (Silver Key*)</b>	<b>CVS-75 FTP</b>				<b>SFTP US06</b>	
	<b>NMOG</b>	<b>CO</b>	<b>NOx</b>	<b>HCHO</b>	<b>NMHC+NOx</b>	<b>CO</b>
Standards*	0.070	2.1	0.04	0.011	0.14	8.0
Device Test	0.027	1.2	0.01	0.001	0.05	1.2
Device w/df	0.060	1.9	0.02	0.001		

\*TrackKey software installed but not activated, air filter cartridge installed.

The emission test results in the modified configuration were below the applicable certification standards for all tests. Examination of the OBD II system showed the Ford Racing TrackKey did not affect OBD II system operation for all levels of operation.

Badillo Engineering's Ford Racing TrackKey meets the criteria for exempting general criteria parts for those vehicles listed in the Executive Order.

NMOG and HCHO were calculated using the following conversion factors: NMOG/NMHC=1.04 and HCHO/NMHC= 0.02. Useful Life additive deterioration factors (dfs) used were NMOG 0.0333, CO 0.300, NOx 0.011, and HCHO 0.0. Vehicle test weight and horsepower target coefficients were, 4000 lbs. and 46.42, 0.1767, 0.02461 respectively. .