

Attachment A

I. PROGRAM INTENT:

The Remote Keyless Entry (RKE) transmitter or key fob is a component in the RKE system. The RKE system includes one receiver and one or more transmitters. The transmitter is a handheld device that transmits the RF signal to the receiver to control several functions on the automobile: Lock, Unlock, Open trunk and Panic Alarm.

The RKE Transmitter herein is a new design and development by Visteon Automotive System, an Enterprise of Ford Motor Company, shall be used for RKE system applications on the automobile.

An Experimental License will permit Visteon to conduct the fleet test for the transmitters. The fleet test is a process to prove out the transmitter function and robustness in the automotive system. Visteon proposes to use this testing to verify the theoretical models used to develop this component in actual "real world" condition. Visteon's past experiences have shown that theoretical models alone are not enough to determine the effectiveness of a new or modified RKE technology and that actual experience can vary in a way that requires additional design work and testing. In this proposal, because the RKE system under consideration uses a modified method by which information is sent to the receiver, this real world testing is essential to establish the validity of theoretical models by which this system was designed.

In this fleet test, Visteon will provide about under 100 prototype transmitters to Visteon voluntary employees who have the vehicles that equipped with RKE systems at no charge to the employees and the transmitters will be retrieved after 6 months of testing. The volunteers will be asked to record data about their experiences with effective distance from the automobile, the effectiveness of the RKE in relation to a front, side or rear approach to the automobile and the effectiveness of individual functions. By conducting this test, Visteon will have information it needs to either implement this modified system or return to the laboratory for further refinement and modification.

II. FUNCTIONAL DESCRIPTION (NAAO Versions):

The transmitter assembly includes electrical part and mechanical part. The mechanical part includes housing, button keypad, button switches and key ring. The electrical part includes micro controller and subordinate circuit. The transmitter is operated by a 3V lithium battery.

There are 2 types of transmitters designed for North America (NAAO) applications: 4 button type (Part number FU3F-15K601-AA) and 3-button type (Part number YL8F-15K601-AA). Actually, 4-button and 3-button transmitters have same PWB, same electrical circuit, only switch button physically changed to meet functional application requirements:

- 4-Button type: Lock, Unlock, Trunk and Panic
- 3-Button type: Lock, Unlock and Panic

1. Mechanical part and functions:

- **Unlock driver door** - Pressing the "Unlock" button will unlock the driver's door and turn on the interior light.
- **Unlock all doors** - Pressing the "Unlock" button a second time within 5 seconds and the rest of the vehicle's doors will unlock.
- **Lock all Doors** - Pressing the "Lock" button will lock all of the vehicle's doors and turn off the interior lamps if they were on.
- **Open Trunk** - Pressing the "Trunk" button will open the trunk and turn the interior lamps.
- **Panic alarm** - Pressing the "Panic" button causes the horn to sound and the exterior lamps to flash (like an anti-theft alarm). This will continue for up to 3 minutes unless it is turned off either by another press of the "Panic" button from any transmitter or by switching the ignition key to RUN or ACCESSORY. The panic mode will also turn the interior lamps on for up to 25 seconds.

2. Electrical part and functions:

In normal condition, the micro and the other circuit stays in "STOP MODE" in order to minimize consumption current. This "STOP MODE" is defined as the status waiting for switch input command. When one of the switches is pressed while transmitter is in the "STOP MODE", RESET signal is generated in the micro and the micro starts the operation. The micro reads Transmitter individual "ID code" and "counter" for rolling code from built-in EEPROM. When the data transmission is completed, "Counter" will be stored at built-in EEPROM. Then Transmitter move to "STOP MODE".

The data is transmitted on a single channel containing digital information (4E) at the frequency of 315MHz +/-310KHz (4A). The field strength of the transmission at 3 meters distance is 88 dBuV/m maximum (4B) and 75 dBuV/m average (4C). The transmitter to be tested must meet the radiated emissions limits set out in Part 15 of the FCC rule 47C.F.R. Section 15.109. Those rules do not specify a radiated power limit. The transmitter signal is amplitude modulated with a bandwidth of 4KHZ (4G). This bandwidth contains 99% of the digital signal and has a 2K Baud rate (4F).