

Theory of Operation

The model year 2014 Ford Global Body Controller Module (GBCM) use Passive Entry Passive Start (PEPS) Systems which allows the vehicle user to automatically unlock and lock the vehicle doors by touching the any of the vehicles door handles, and start the engine just by pushing the Start Stop button without the need of taking the Key fob out of users pockets or hand bags...etc. In addition, the module is capable of doing LF polling for welcome lighting function, which will be activated on certain high end vehicles. The PEPS Systems consists of the following components

- 1- Vehicle mounted Ferrite core LF antennae
- 2- User Triggers:
 - a. Capacitive Sensors on Doors Handles used as Locking and Unlocking triggers
 - b. Start/Stop Push Button used as Vehicle Start Trigger
- 3- 315MHz Vehicle Mounted RF receiver (SEPARATE DEVICE)
- 4- GBCM which contain the LF Driver (125kHz)

The PEPS system works as follows:

- 1- Once system is triggered by any of the user inputs, an LF challenge is sent to the Key Fob by the LF driver. The LF challenge starts with key fob wake up and data (4Kbaud modulated data for approx. 24-33ms) followed by CW on each of the antennas for approx.2.7ms with 0.32ms time off in between each of the CW.
- 2- Once Key fob is in the presence of the LF field created by the LF antennae, it sends its response to the GBCM via the separte RF receiver. Key fob sends 315MHz data which is received by the external RF receiver. RF receiver sends the key fob data to the BCM via a K Line link.
- 3- If the Key Fob is authenticated, the GBCM will activate the outputs based on the user intention (trigger).

If the LF polling function is activated, the ECU will poll the Driver Door Handle and Trunk antennas Passenger Door handle antenna sequentially for 25ms every 600ms. Modulated Data (3.906KBaud / Carrier at 125KHz. Square Wave 50% duty Cycle) will be transmitted on each of the LF antennas when activated.