Description of operation for ION (GMX 357) Keyless Entry Systems (Keyfobs)

Description of the function:

The Remote Function Actuation (RFA) subsystem is a functional subsystem designed to allow the driver to perform certain vehicle functions (locking or unlocking the doors from a remote location) without physically contacting the normal controls for these functions. More specifically to ION IBCM, the RFA controls locking/unlocking doors, trunk release and panic.

Description of the system:

The RFA subsystem consists of two components, a vehicle mounted receiver, in the body controller module (BCM) and two customers carried transmitters (keyfobs attached to the car key)

The data link between transmitter and receiver is secure. A unique cryptographic key is used for each system. The data exchanged between transmitter and receiver are not only limited to door locking/unlocking but also they allow some diagnostic or after sale functions, such as cryptographic key code learning

Data link details:

The source of the data is the transmitter. The numerical data consists of an 18 byte message (checksum + ID + function + rolling counter + random byte + crypto keys). These data are manchester coded and then RF modulated with a carrier at 315 MHz

Different operation modes:

The keyfob module, when no button is pressed is in inactive low current sleep mode. The keyfob has 4 buttons which controls 4 functions (lock, unlock, trunk and panic). When one of these buttons is pressed the keyfob wakes from sleep and transmits the message described above. If received by the BCM the message will activate the appropriate functions on the vehicle.