

# User Manual

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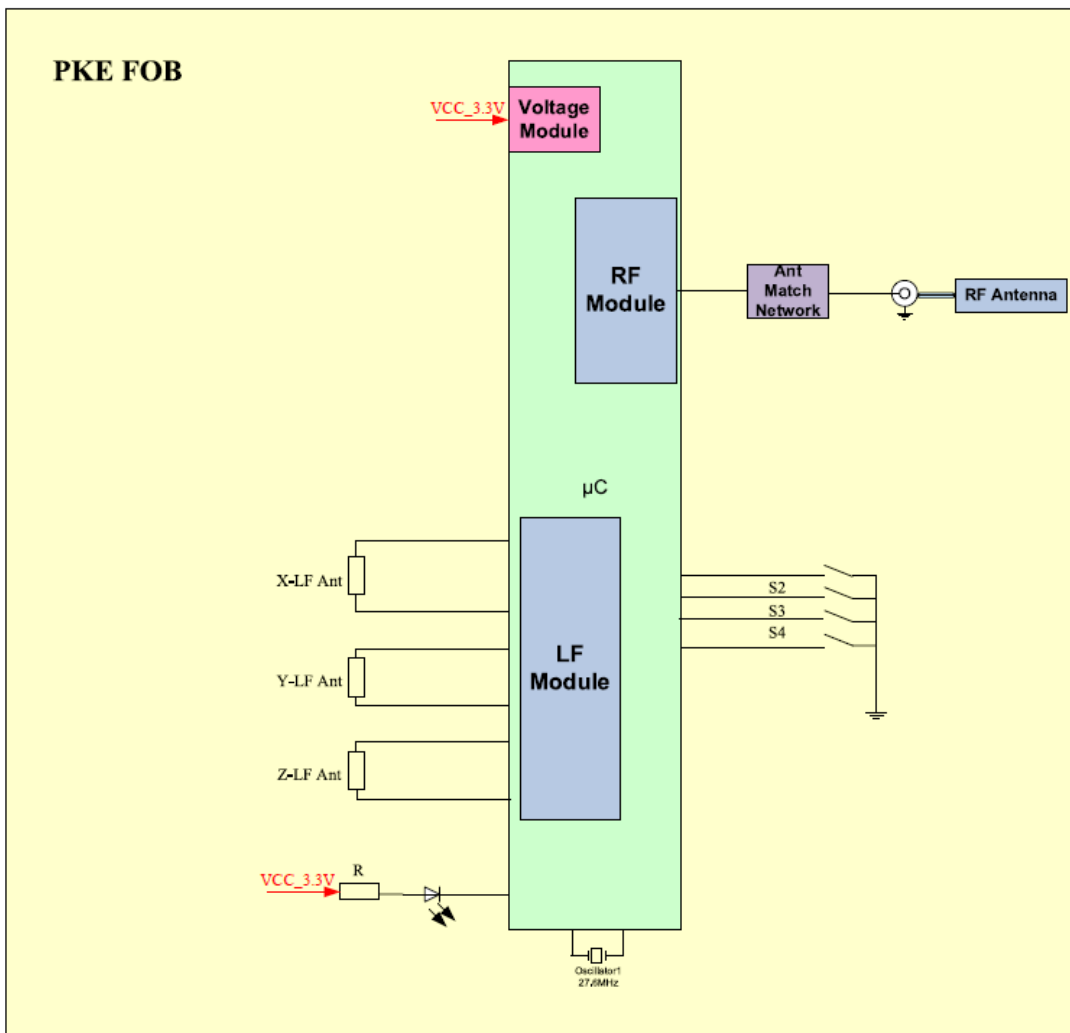
## 1 Introduction

This document defines requirements that apply to the GWM AB30 smart key. Requirements stated comprehensively in other existing documents will be referenced herein.

## 2 Product Overview

The smart key is a NXP NCF29A1 active tag IC based device that receives the 125kHz low frequency wireless signal from Immobilizer station and KBCM ECU, and transmits radio frequency wireless signals to the KBCM ECU receiver. The general functions as follows:

- 1) **Remote Keyless Entry** - door lock, door unlock, using wireless RF fob messages.
- 2) **Search** - turn on the audible siren using wireless RF fob messages.
- 3) **Passive Entry** – open the door without press the RKE button or use the mechanical key.
- 4) **Passive Start** –ignition the engine without use the mechanical key.
- 5) **Backup Start** –ignition the engine when the smart key exhausting the battery.



The diagram below shows the smart key schematic drawing.

### **3 Feature/Function Requirements**

#### **3.1 Feature/Function Requirements**

The GWM A/B30 KBCM system is designed to allow the driver to lock and unlock the vehicle door(s), and search the vehicle through RF channel, passive entry and passive start via the LF-RF channel. The system consists of PEPS, BCM, Smart Key and Immobilizer base station. The Smart Key shall perform the following functions:

- 1) Remote all doors unlock
- 2) Remote all doors lock
- 3) Remote search alarm
- 4) Passive Entry
- 5) Passive Lock
- 6) Passive Start
- 7) Backup Start
- 8) Emergent mechanical Key

##### **3.1.1 RKE Lock Key Fob Control**

The RKE Lock command shall command the RKE\_Lock\_Request through a RF message to lock all the vehicle doors, by pressing the Lock Button.

##### **3.1.2 RKE Unlock Key Fob Control**

The RKE Unlock command shall command the RKE\_Unlock\_Request through a RF message to unlock all the vehicle doors, by pressing the Unlock Button.

##### **3.1.3 RKE Searching vehicle Control**

The RKE Searching vehicle command shall command the RKE\_Search\_Request through a RF message to start panic or stop searching the vehicle, by pressing the searching Button.

##### **3.1.4 Passive Entry**

The driver wants to entry the vehicle to press the door handle switch, and the KBCM ECU will send an authorization command to Smart Key via LF channel. And the Smart Key will give a response via RF channel. If the authorization is passed, and the smart key is not inside the vehicle, the KBCM ECU will open the door.

##### **3.1.5 Passive Lock**

The driver wants to leave the vehicle to press the door handle switch, and the KBCM ECU will send an authorization command to Smart Key via LF channel. And the Smart Key will give a response via RF channel. If the authorization is passed, and the smart key is not inside the vehicle, the KBCM ECU will lock the door.

##### **3.1.6 Passive Start**

The driver wants to start the vehicle to press the SSB switch, and the KBCM ECU will send an authorization command to Smart Key via LF channel. And the Smart Key will give a response via RF channel. If the authorization is passed, and the smart key is inside the vehicle, the KBCM ECU will ask immobilizer base station to start engine.

### **3.1.7 Backup Start**

When the Smart Key exhausted the battery, the Passive Start function will be disabled. If the driver wants to start the vehicle, he shall take the smart Key close to the SSB to press the SSB. And the immobilizer transponder function of Smart Key will communicate with immobilizer base station to start the engine.

### **3.1.8 Emergent mechanical Key**

When the Smart Key exhausted the battery, the Passive Entry function will be disabled. If the driver wants to open the vehicle' door, he shall take out the Emergent mechanical Key from smart key housing to open the door.

## **3.2 Feature requirement**

The Smart Key shall meet the following feature requirement:

- 1) Switch long pressed protection
- 2) High Communication security
- 3) Unique wake up pattern
- 4) Battery reversed installation protection

### **3.2.1 Switch Long Pressed Protection**

In some case, the switch of the smart may be pressed for long time unintentionally. To avoid the battery was exhausted, the smart key will stop the RF signal transmission when the button has been pressed above 15s.

### **3.2.2 High Communication Security**

The different SKCs for immobilizer and RKE&PKE guarantee the high communication security.

The different encryption style for immobilizer and RKE&PKE increases the communication security also.

### **3.2.3 Unique Wake Up Pattern**

The unique wake up pattern for every vehicle decreases the battery consumption for smart key and vehicle.

Also the wake up pattern can increase the communication security.

### **3.2.4 Battery reversed installation protection**

The mechanical parts of smart key will protect the damaged for the reversed installation.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## FCC statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

- If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

## RF exposure warning

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

**NOTE:** Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.