1.1 General Definition of CMK

Once the user has accessed into the vehicle, with his CMK Fob he has the possibility to switch between terminals (OFF-ACC-KeyOn) and to start the engine.
The user has to carry with him the CMK Fob as a wireless authentication is performed when Start Stop Button inputs are triggered.

1.2 Scope of CMK SYSTEM

The System offers the following features:
- CMK start after interior detection of the CMK Fob
- Immobilizer backup antenna driver integrated into Start Stop Button (Limp-Home start)
- Man machine interface through a 1-stage button(SSB), for terminal switching and start,
- Control of external relays for ACC / KeyOn terminal switching, without use of mechanical ignition switch.
- Optional: electrical steering column locking with an ESCL device
- Indication of CMK functions status by mean of LED illuminations
- Authentication function by LF transponder communication between fob and TP base station (up to 2 different fobs can be learned and managed by the system).
- Redundant architecture for high system dependability
- Interface with High Speed CAN vehicle communication network with other Car body units.

1.2.1 CMK

The CMK unit reads the inputs (e.g. Start Stop Button,…), controls the outputs (e.g. exterior and interior antennas), and communicates via the CAN network as well as a single line interface to further devices of the car.
For communication with the SMART FOB, CMK generates a request (challenge) as an encoded and modulated signal (e.g. 125kHz) at the inductive antenna outputs and receives the SMART FOB's response via the external RF receiver.
The main functional blocks of the CMK are:
- 2 Microcontrollers with Flash Memory (1 Master uC + 1 Slave uC)
- High Speed CAN Communication interface
- Single Line Interface to ESCL
- Input/Output stages
- LF antenna driver

The LF antenna driver generates a sinusoidal carrier signal (e.g. 125kHz)
The signal is 100%-ASK modulated by switching on and off the carrier (the data is Manchester encoded). The power of the carrier shall be adjustable by software so that there is the possibility to adjust power level for each transmitted LF-telegram (it is recommended to have the power setting stored in EEPROM in such a way that it can be adjusted without software change).

1.2.2 SMART FOB

The system supports up to 2 SMART FOBs to be used per vehicle.
The main functions of the SMART FOB are:

- **CMK functionality**: receives LF-challenge and sends automatically RF response.
- **RKE function** by action on three push buttons (LOCK/UNLOCK/Lamp check)
- **Additional Mechanical key blade** in case of low fob battery or disturbed wireless communication.

The main functional blocks of the SMART FOB are:

- 3 LF-antennas for 3-dimensional reception
- ASIC including Microcontroller core and transponder emulation
- RF transmitter
- 1 RF antenna for transmission
- Push buttons

FCC/ISED NOTICE

[FCC]
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.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could avoid your authority to operate this equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
This transmitter must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC

[ISED]
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment.
This transmitter must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the ISED
Cet appareil est conforme aux limites d'exposition aux rayonnements de l'ISDE pour un environnement non contrôlé.
L'émetteur ne doit pas être colocalisé ni fonctionner conjointement avec à autre antenne ou autre émetteur, à moins d'y être autorise par l'ISDE.