

User Manual

of the Continental

Radio frequency transceiver

Model:

NCMF1_01

ABBREVIATION REGISTER

| Abbreviation | Description |
|--------------|----------------------------------|
| CW | Continuous Wave |
| FCC | Federal Communication Commission |
| LF | Low Frequency |
| RF | Radio Frequency |
| TPMS | Tire-Pressure Monitoring System |
| RKE | Remote Keyless Entry System |
| PASE | Passive Entry |

1 Purpose

This homologation report is written to describe the functions integrated into the NewCMF1 System to prepare homologation for complete system to answer LF regulation.

2 General Product Information

2.1 Applicant/Manufacturer

Continental Automotive GmbH
Siemensstrasse 12
93055 Regensburg, Germany

2.2 Brand

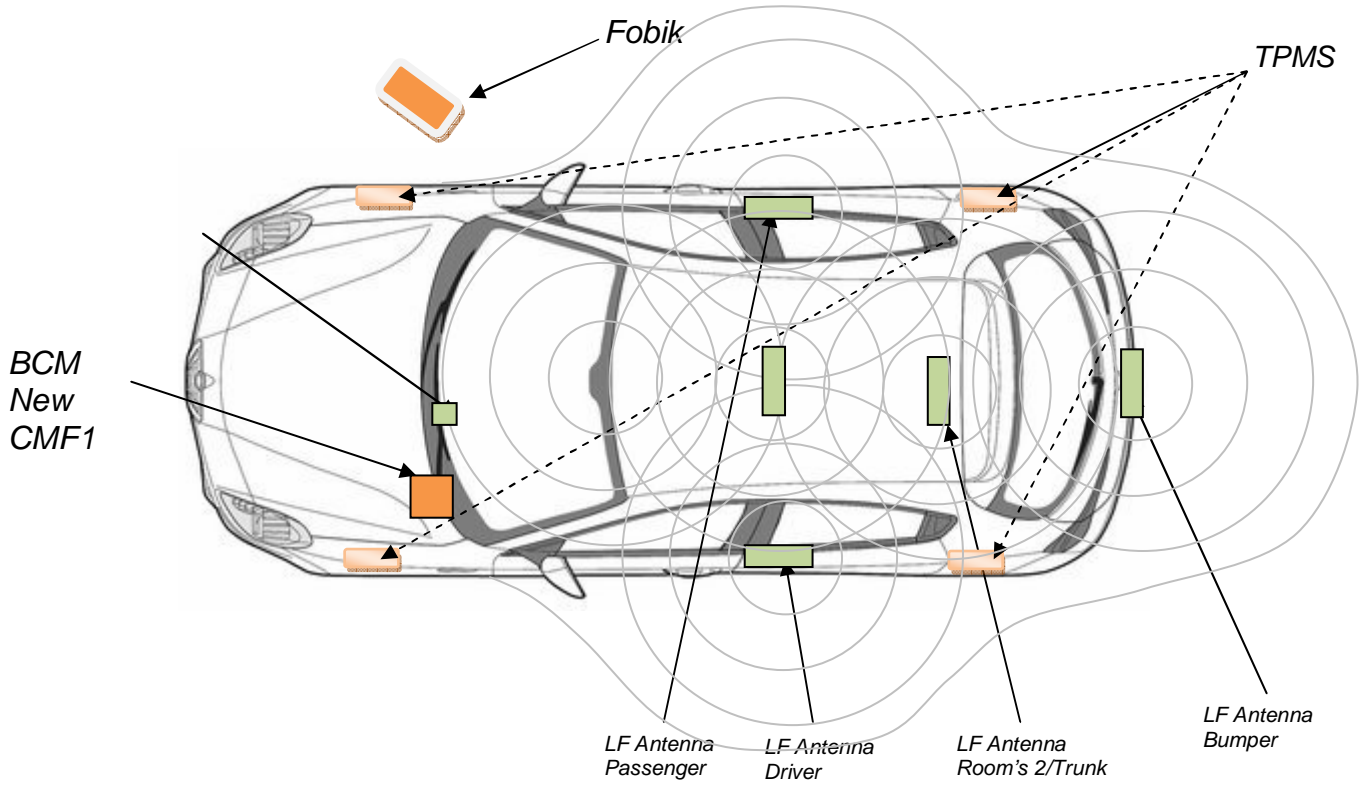
Continental

2.3 System Description

The **Body Control Module (BCM) NewCMF1** is an integrated transmitter-receiver (base station) in the vehicle that interfaces with the Remote Keyless Entry (RKE) FOB/K using RF and LF. The BCM NewCMF1 contains the controlling logic for the Passive Entry (pase) Keyless Go (PEKG) and Immobilizer (Immo).

The BCM New CMF1 communicates on the CAN vehicle communication bus. The BCM New CMF1 also interfaces with the vehicle's door handles, trunk/Liftgate (as equipped) and multiple LF antennae for purposes of providing PEKG functionality.

3 Systems Overview

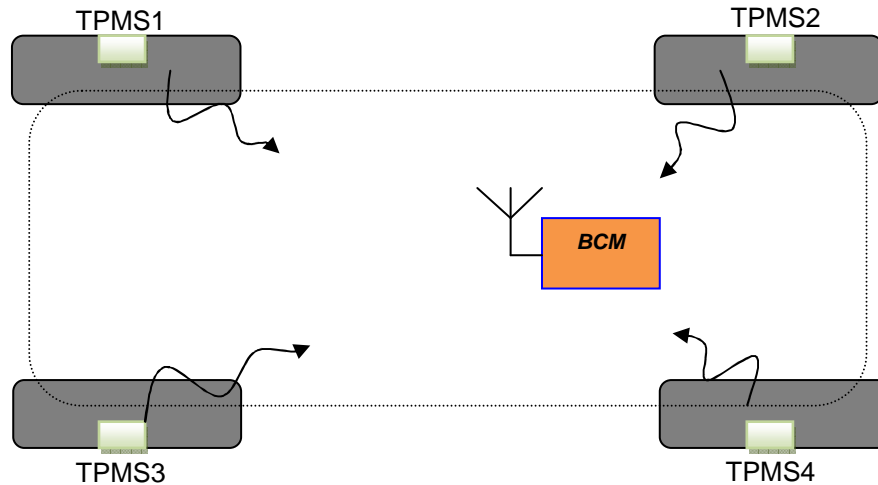


4 Functions Variants

a. TPMS

(Tire-Pressure Monitoring System)

i. System Explanation

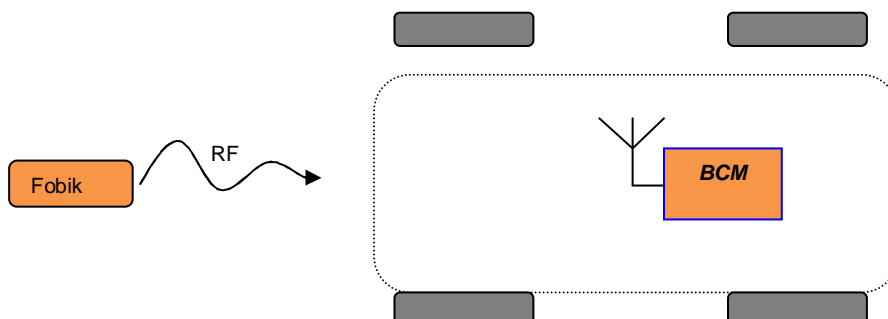


To control the pressure of vehicles wheels, the pressure captor (certificate done) transmit information to the BCM in RF. The BCM decode the signal (with RF Receiver) and transmit data on CSPI bus → No LF transmission

b. RKE

(Remote Keyless Entry System)

i. System Explanation



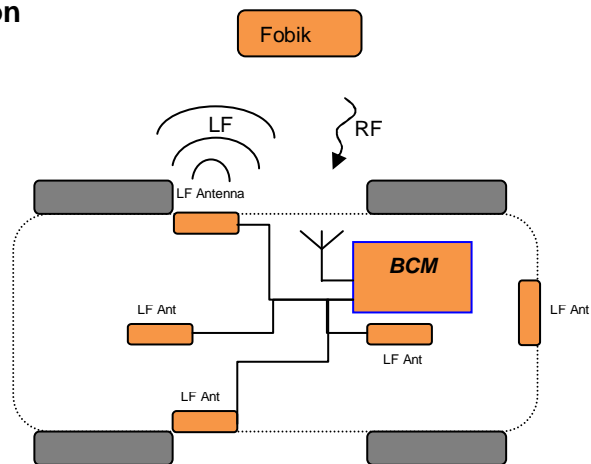
To lock and unlock the vehicle at distance a function is implemented in the system. The FOBIK transmit to the receiver an order. That it transmits on the CAN bus allows to achieve function → No LF transmission

c. PASE

(Passive Entry)

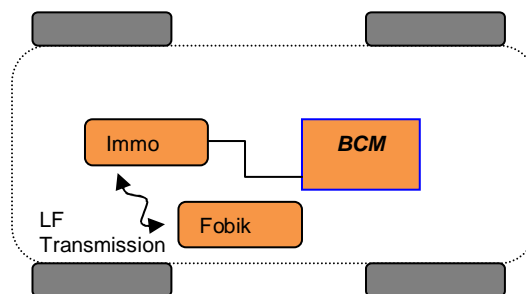
i. System Explanation

The system works by having a series of LF (low frequency 125 kHz) transmitting antennae both inside and outside the vehicle. The external antennae are located in the door handles. When the vehicle is triggered, either by pulling the handle or touching the handle, an LF signal is transmitted from the antennas to the key. The key becomes activated if it is sufficiently close and it transmits its ID back to the vehicle via RF to a receiver located in the vehicle. If the key has the correct ID, the PASE module unlocks the vehicle.



d. PASE

i. System Explanation



When the battery of Fobik is totally discharged, the BCM contains a function which pilots the antenna Room's 1. This antenna allows communicating at short distance with LF stage present on Fobik and to supply by field the Fobik to create a Carrier Wave signal. The LF coil which is used to communicate and authenticate Fobiks during Limp Home mode (125Khz).

5 Radio Frequency Parameters

Following are the RF receiver parameters of the BCM NewCMF1:

| | US | EU | JP | Units |
|--|-------------|-------------|-------------|-------|
| Frequency | 433,92 | 433,92 | 315 | MHz |
| Receiver Model | 40515519 | 40515519 | 40406556 | - |
| Frequency tolerance untrimmed Temperature range -40°C...+85°C | +/- 90 | | | ppm |
| Data rate | 9,6 ±10% | | | kbps |
| Receiver Bandwidth | 300 | | | kHz |
| Modulation | FSK | | | - |
| Conducted sensitivity (typ./min.) MER 10% | -106 / -103 | -106 / -103 | -106 / -103 | dBm |
| Operating Temperature | -40 / +85 | -40 / +85 | -40 / +85 | °C |
| Storage Temperature | -40 / +85 | -40 / +85 | -40 / +85 | °C |
| Nominal Supply Voltage | 5 | 5 | 5 | V |
| Run On supply current typ. Single Conversion Mode | 10,5 | 10,5 | 10,5 | mA |
| Run On supply current max. Single Conversion Mode | 14 | 14 | 14 | mA |

6 LF parameters

Below are the technical parameters of the NewCMF1 LF transmitter:

| | |
|------------------------|--|
| Carrier frequency: | 125 kHz |
| Frequency shift: | +/- 0.3 % |
| Number of channels: | 1 |
| Modulation type: | Amplitude Shift Keying (ASK) |
| Data rate: | 3900 bit/s |
| Field strength: | < 66 dBµA/m @ 10m |
| Supply voltage: | 12V lead acid vehicle battery |
| DC/DC converter range: | 9V to 40V |
| Voltage supply range: | 9V up to 16V |
| Antenna type: | Winded wire coil |
| Antenna Brand: | all Continental, except Kazashi Kazashi |
| Antenna Model: | REF SI581 03 113 00, 285E4 JK60A, 285E5 JK60A, 28E6 5RA0A Kazashi 350µH |
| Antenna gain: | REF SI581 03 113 00: 0 dBi 285E4 JK60A: 0 dBi 285E5 JK60A: 0 dBi 28E6 5RA0A : 0 dBi Kazashi 350µH: 0 dBi |

7 Variants and Model designation

| BCM NewCMF1 Model: | Reference Continental intern | LF System configuration |
|---------------------------|------------------------------|--------------------------------|
| NCMF1_01 | A2C12416900 | L42 (EUR) |
| | A2C12417300 | L42 (US) |
| | A2C11548900 | L42 (Full V4) |

8 LF system configurations for markets

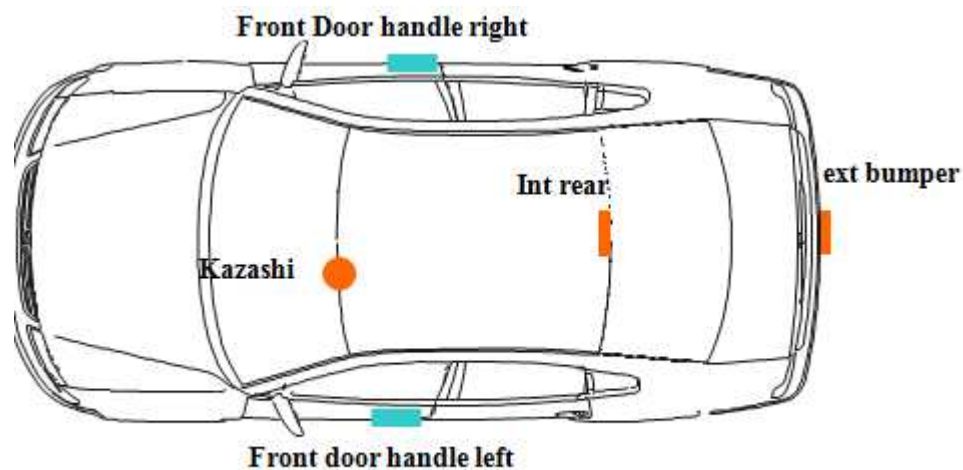
8.1 USA/Canada

LF System configuration used for USA/Canada markets are (see above table too):




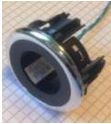
L42

9 LF system antenna configuration

9.1 L42 System LF



9.2 LF Antenna Type

| | | | | | | LF System |
|----------------------------|-----------------|-------------------|----------------------|-----------------------|--|-----------|
| | | | | | | L42 |
| References | Comments | Ferrite dimension | Inductance | Impedance | Pictures | 5 |
| REF SI581 03 113 00 | Door Handle | 60x10x3 mm3 | 145 μ H \pm 6% | 113 Ω \pm 6% |  | 2 |
| 285E4 JK60A or 285E5 JK60A | Bumper/Interior | 70x13x4 mm3 | 145 μ H \pm 6% | 113 Ω \pm 6% |  | 1 |
| 28E6 5RA0A | Interior | 100x13x4 mm3 | 145 μ H \pm 6% | 113 Ω \pm 6% |  | 1 |
| 350 μ H/7 Ohms | Kazashi | 32x3mm | 350 μ H \pm 6% | 7 Ω \pm 6% |  | 1 |

Label USA/ Canada

Continental
NCMF1_01

FCC ID:KR5NCMF101
IC:7812D-NCMF101

Owner Manual Canada

IC:7812D-NCMF101

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.

Le présent appareil est conforme aux CNR d'Industrie 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, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Owner Manual USA

FCC ID:KR5NCMF101

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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.