Deutsche Akkreditierungsstelle D-PL-12053-01-00

Annex acc. to FCC Title 47 CFR Part 15
relating to
Continental Automotive GmbH
A2C7469510

Annex no. 5
Functional Description

Title 47 - Telecommunication
Part 15 - Radio Frequency Devices
Subpart C – Intentional Radiators
Measurement Procedure: ANSI C63.4-2009

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Functional Description of the test equipment (EUT) - A2C7469510

Product information / User Manual

Continental

NFC Reader

A2C7469510

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1.Functional description

NFC Reader used NFC (Near Field Communication) technology to enable the communication between phones and cards with the vehicle, having user functions like:

- BT pairing
- Wi-Fi pairing
- Personalization
- Android beam
- …

All above functions are implemented at vehicle level only (transparent for the NFC Reader). The NFC Reader behaves like a gateway between NFC and CAN.
For making the above user function available for vehicle, the NFC Reader has the following functions supported:

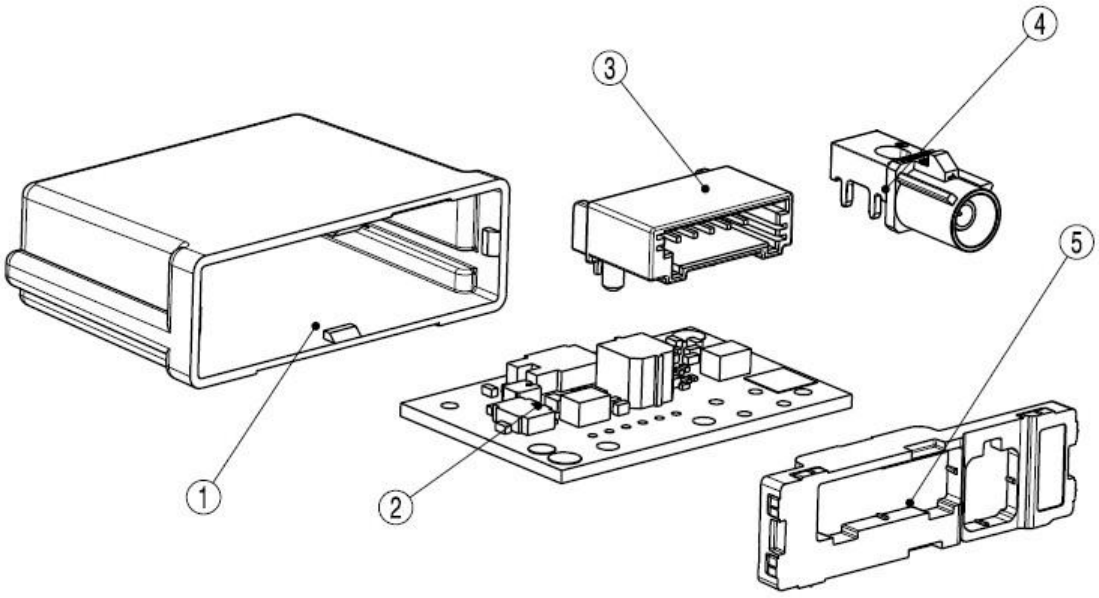
- Pear-to-Pear – in this move the Reader works in bi-directional way allowing any or both NFC parties to emit and/or modulate the field.
- Card emulation – in this mode the NFC Reader emulates a tag/card. In this mode the NFC Reader does not emit field but only modulates the field emitted by an external device (e.g. a phone)
- Read/Write. In this mode the NFC Reader reads and writes information on a NFC tag/card. In this mode the NFC Reader emits the field needed by the tag/card.

2.Device Information

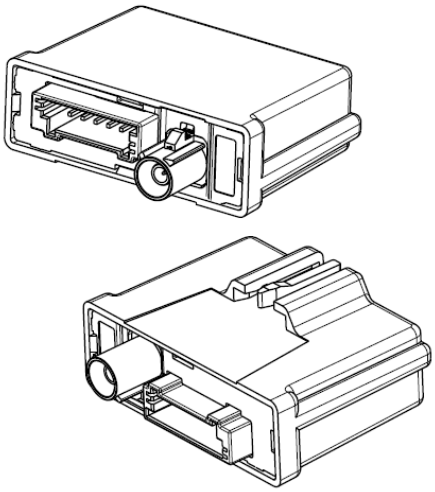
Continental NFC Reader is developed under part number: **A2C7469510**
The NFC Reader has only one variant.

3.Device assembly

3.1 NFC Reader



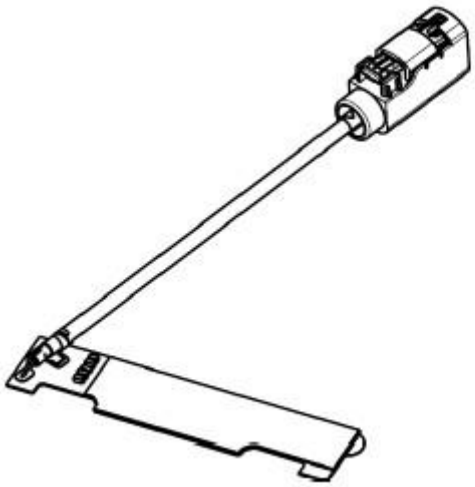
1	Housing
2	PCB
3	Connector – 6 pins
4	Fakra Connector
5	Cover



3.2 NFC Antenna

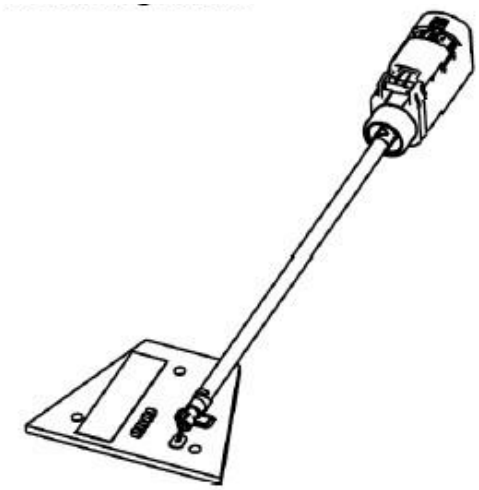
The different vehicles are fitted with different antennas.
All antennas are matched on 50Ohms. The NFC Reader must work with all NFC antennas variants.

3.2.1 G11 antenna



Has low range and low emission power.

3.2.2 G30 antenna



High range and high emission. This antenna has the most emission power and will be used for homologation.

5. Systemfunction

NFC reader uses the 13.56 MHz (+/- 7kHz) frequency, single channel, for bidirectional communication with another NFC device or NFC card.
The 13.56MHz frequency is amplitude modulated (by load modulation). The carrier frequency is consider at high level when is not modulated and at low level when modulation applies.
All NFC modulation type uses Amplitude Shift Keying (ASK).
RF baud rates: 106kb/s (ASK 100%), 212kb/s (NFC-F with ASK 10%), 424kb/s (NFC-F with ASK 10%).
During operation, the combination of two NFC Forum Devices (Polling Device and Listening Device) behaves like a transformer. An alternating current passes through a primary coil (Polling Device antenna) and creates an electromagnetic field, which induces a current in the secondary coil (Listening Device antenna). The Listening Device may use the electromagnetic field (or RF field) transmitted by the Polling Device to power itself. The configuration and tuning of both antennas determines the coupling efficiency from one device to the other.
The NFC antenna is designed to operate in close coupling for communication at distances below 10cm.
No antenna radiation pattern is required for far field radiation.

Field strength according ISO/IEC 14443-2 specification must be between 1.5 – 7.5A/m in operating volume.

NFC reader has field strength:
- < 3 A/m for G11 antenna
- < 4 A/m for G30 antennac

Label Information USA:

Continental
A2C7469510
FCC ID: KR5A2C7469510

Owner Manual:

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.

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