Operational Description of DualID II

1. The Full Name and Mailing Address of the Device Manufacturer and the Applicant

Applicant:

M-Tec Trackunit A/S

Industrivej 10
DK-9490 Pandrup

Manufacturer:

M-Tec Trackunit A/S

Industrivej 10
DK-9490 Pandrup

Contact Persons:

FCC approvals and none technical contact:

Martin Bang

M-Tec Trackunit A/S
Industrivej 10
DK-9490 Pandrup

mb@trackunit.com
Martin Bang   Tel.: +45 96 73 74 00
Lead designer

Technical contact:

Lind Mortensen

M-Tec Trackunit A/S
Industrivej 10
DK-9490 Pandrup

lmm@trackunit.com
Lind Mortensen   Tel.: +45 96 73 74 00
RF Engineering

2. Identifier

FCC ID: ZMF-DUALID-II

IC ID: 9746A-DUALIDII

3. Equipment Specifications

DualID II is a vehicles, machinery etc. access control accessory for a Trackunit tracking device with integrated RFID reader for card access control and a keyboard for PIN code access.

Frequency Range in MHz	Rated RF Power Output	Frequency Tolerance	System	Emission Designator
13.56 MHz	65.3 dBµV/m@3m 6.7 dBµA/m@10m	< ± 0.01%	RFID	A1D

The DualID II is a worldwide accessory using communication in the 13.56 MHz ISM band. The label indicates the supported approvals of the DualID II.

4. Types of Emission

RFID: Magnetic field ISO/IEC 14443A/MIFARE,
ASK modulation
BW 1.696 MHz in reflecting wave reading mode.

5. Frequency Range

RFID:

Transmit: 13.56 MHz
Receive: ± 848 kHz subcarriers

6. Operating Power or distance

The DualID RFID Typical operating distance in read/write mode for communication to a ISO/IEC 14443A/MIFARE card up to 12 cm, depending on the antenna size and tuning

7. Maximum Power Rating

The maximum output power given in the following table is the power for a class 1 RFID device.

Mode and Class	Maximum Peak Power Conducted	Maximum Peak Power Radiated
RFID class 1	7.5 A/m	7.5 A/m

8. DC Voltages and DC Currents

The DualID II device is powered by external power supply of 5V, range [4.0V - 5.4V] provided by the ME500-x or the ME501-x tracking device.

DC Current:

The DualID II standby current consumption is 20mA and the current consumption at a RFID card reading sequence is 60 mA.

9. Schematic Diagram and Circuitry Description

See separate attachments:

DualID II C.1.5 - Schematics.pdf
DualID - partslist 7500.3495_05.pdf

The DualID II contains a NXP RFID chip, a microprocessor, and all user interfaces handling of the unit from keypad entries, RFID access card communication is handled by the fleet management tracking device ME500-x or ME501-x.

The DualID II RFID interface is ISO/IEC 14443A/MIFARE compliant and supports 13.56 MHz RFID card variants: MIFARE^{TM} Classic and MIFARE^{TM} DESFire EV1 (ID read out).

The NXP RFID chipset contains no tune up procedure for the transmitting power. The transmission is determined by the matching and size of the magnetic coil classified according to ISO/IEC 14443A/MIFARE class 1 antenna. The PCB coil is not accessible by the user/integrator.

10. RF Exposure Information

See separate attachment of human exposure statement evaluation:

1-1106_16-01-01-RSS-102, Appendix C.pdf

It is attested that the radio communication apparatus meets the exemption from the routine evaluation limits in Section 2.5 of RSS-102 standard; that the Technical Brief was prepared and the information contained therein is correct; that the device evaluation was performed or supervised by CTC Advanced; that applicable measurement methods and evaluation methodologies have been followed; and that the device meets the SAR and/or RF field strength limits of RSS-102.

11. Operating Description of the EUT

See separate attachment: 7001_0084 Trackunit 501 DualID II User guide v1.1 EN.pdf

General

The DualID II is an accessory for the ME500-x and ME501-x Fleet Management tracking devices, intended to be mounted outside the vehicles, tractors, trucks, constructions machines etc. providing access control to operate the machinery.

Operation

The DualID II device creates a vehicles, machinery operational access control for the fleet management tracking devices ME500-x (2G) or the ME501-x (3G). Typically the tracking devices are connected to relays for interfacing with the machinery startup and operation.

The DualID II ensures that it is an appropriate operator that handles the vehicles, machinery etc. as shown in the installation example below in the access control configuration.

Installation example
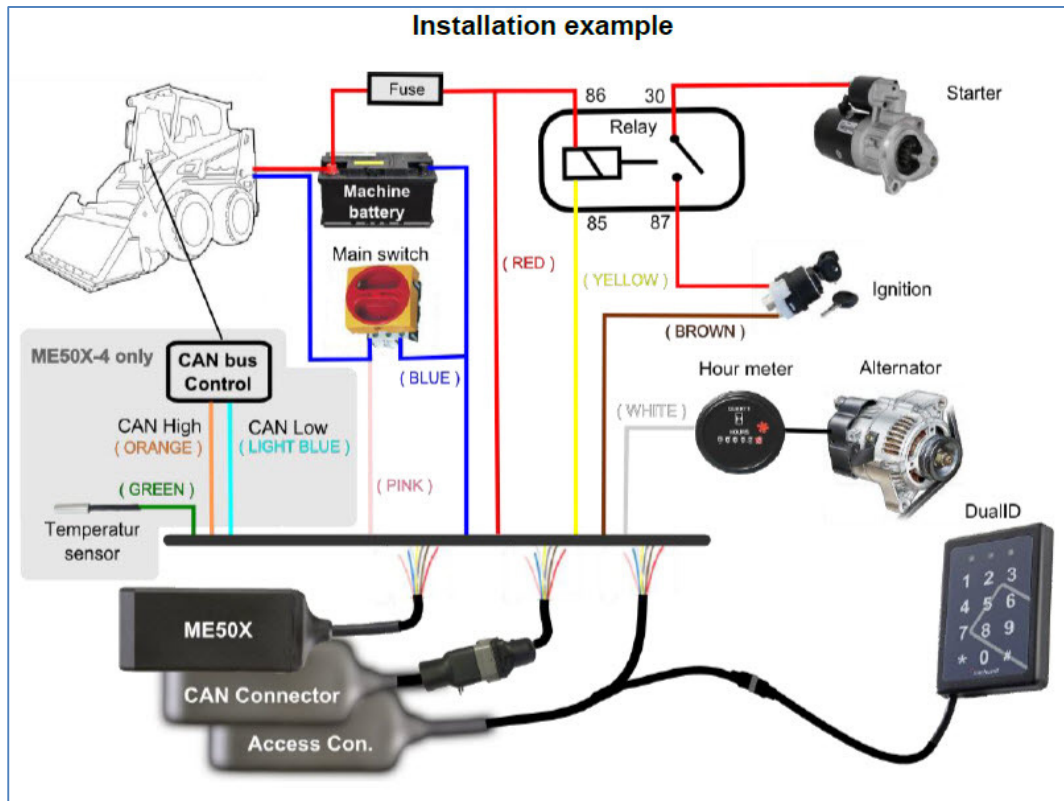
12. Antennas

The device has an internal PCB loop antenna at resonance at the RFID frequency of 13.56 MHz. The antenna transmits a magnetic field that when interfered by a RFID tag will be received as a reflected load modulated signal with the access code string of information.

It is not possible to exchange the antennas without destroying the PCB board.

The transmitting power range of the magnetic loop antenna is from 1.0 A/m to 7.5 A/m with an operational distance less than 12 cm

13. Emergency Call Capability According to FCC 22.921

The DualID II is an accessory for providing access and operational control to a vehicles, machinery, earth mover etc. in association with a fleet management device like M-Tec Trackunit ME500-x or ME501-x.

The DualID II does not support Emergency Call Capabilities due to the purpose of the device.

14. System Compatibility According to FCC 22.933

Because the DUALID II is an accessory to a fleet management device and that the DualID II does not contain any cell band technologies it becomes exempt from section 22.933.