

USER MANUAL

WMI

Wireless Mobile Interface

D-WMI2020B	A2C166292 A3C044298 A2C166291 A3C011064 A3C011153 A3C044297
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1. System Overview

Continental Wireless Power Charger is developed for automotive applications. "D-WMI2020B" model contains the WPC function only.

The WMI module and their implementation in different variants inside the vehicle is depicted in Fig. 1.



Fig. 1 : WMI module and WMI automotive implementation inside the vehicle

1.1 WPC

WPC feature of the WMI uses Qi standard of Wireless Power Consortium (WPC) for enabling wireless charging from a base station unit to mobile device. The power transfer method is based on near field magnetic induction between coils.

1.1.1 System Overview

The WMI wireless charger provides power transfer from the internal coil to the smartphones' battery. The power transfer technology is based on Qi standard operating with a fixed frequency of 127.7kHz $\pm$ 6kHz.

1.1.2 WPC modes

A simple operational description of wireless power transfer can be summarized in two operational modes. The first mode with a defined burst sequence allows the transmitter to detect the smartphone Qi compliant. Then, the second mode allows the power transfer from the WMI to the smartphone. Details of each operational mode are presented below:

1.1.2.1 Ping mode

In this operational mode, the WMI module transmits a short time carrier signal with a specific pattern to detect a smartphone. When a mobile device is placed on the WMI, the identification and the collection of configuration information is done. Based on that

information, the transmitter creates a power transfer contract containing the maximum power to be delivered to the load.

1.1.2.2 Charging mode

After “Ping mode”, the power transfer starts. In this operational mode, the transmitter sends the carrier at a given level defined in the power contract in the operational “Ping mode”. The WMI controls the power transferred to the smartphone, in response to the control data messages sent by the smartphone.

1.1.2.3 Transmitter to receiver communications

The WMI transmitter communicates to the mobile device using Frequency Shift Keying, in which the Transmitter modulates the Operating Frequency of the Power Signal.

1.1.3 WPC parameters

Bellow in table 1, the technical parameters of the WMI WPC feature are specified:

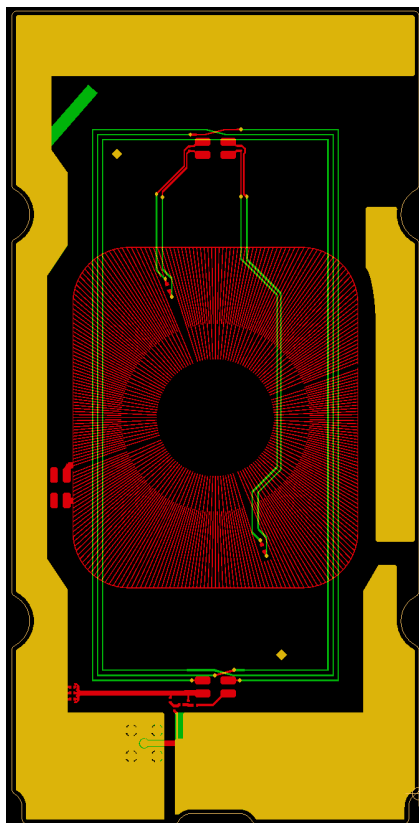
Parameters	Values
Carrier frequency	127.7 kHz
Frequency shift	+/- 6 kHz
Supply voltage	12V battery
Voltage supply range	9V < Vbat < 16V
Product operating temperature range	-40°C < Temp < 85°C
Smartphone operating temperature range	-20°C < Temp < 60°C
WPC chipset brand	IDT
WPC litz coil	Single coil MPA19 according to Qi standard
WPC litz coil gain @ 127.7kHz	-107.1 dBi
Max. output power	15W
Max. current consumption	3.5A (2A typ)
Vehicle fuse protection	7.5A
Product weight	270 g
Dimensions (X/Y/Z in mm)	170/90/33 mm

Table 1: WMI WPC technical parameters.

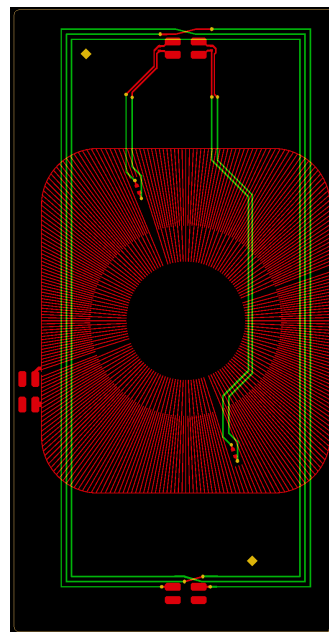
The rated output power from the WPC coil is Max. 15W transferred to the load. The receiver manages the wireless charger in order to guarantee stable 15W on the load.

1.1.3.1 NFC internal antenna:

Populated inside ECU, but function is not used for D-WMI2020B – NFC disabled.
Here below is shown the NFC antenna for High and Low WMI versions.



Large Antenna PCB: NFC internal antenna trace on antenna PCB is shown in green



Small Antenna PCB: NFC internal antenna trace on antenna PCB is shown in green

Fig. 4: NFC Internal antennas

2. Minimum distance from WMI to human body

Minimum distances from WMI to human body are described here bellow.

	Distances from WMI to Human body (in cm) – WPC						
	Sitting on	Knee	Leg	Body	Hand	Arm	Head
Middle Storage Armrest	Driver	46.6	19.8	14.7	18.6	16.7	70.7
	Co-driver	46.6	19.8	14.7	18.6	16.7	70.7
5 seater rear armrest	Rear	50.4	11.5	10.3	18.3	7.3	58.3
4 seater under armrest	Rear	35.4	10.8	18.4	12.4	12.9	69.3

3. Logos

- WEEE logo shall be printed in vehicle user manual.



- Safety mark shall be lasered on product label and printed in vehicle user manual.



4. Regulatory statements

- Safety statement shall be printed in vehicle user manual.

Operating conditions:

Please respect the operating temperature dependent on functional use case.

Product operating temperature range	-40°C < Temp < 85°C
Smartphone operating temperature range	-20°C < Temp < 60°C

NCC警語

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

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.

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 TO USERS

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