

DAIMLER

Abstract for devices WSU 3.5G and KCH

Version 1.2



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# 1 Version and copyright

This „Abstract for devices WSU 3.5G and KCH“ refers to the following devices:

1. WSU 3.5G ; A4539009002 (China); A4539005000 (Europa); A4539001501 (USA);  
WSU PN: 303530000006060, WSU PCB: 303530000005630, WSU Version: D1A03
2. KCH; A4539015000  
PCBA Revision 303530000000502
3. Harness; A4538201500 (SMART BR 453)

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## 4 Overview WSU and KCH



Image 1 WSU, Windshield Unit



Image 2 KCH, Key and Card Holder

WSU and KCH are telematics components for car sharing-, rental- and fleet vehicles. The components are connecting a vehicle with an EDP system. This allows the implementation of different management applications for mobility, fleet and logistic issues.

## 5 Safety instructions



### **WARNING**

Make no modifications at the wiring, electronically parts or the software. Work on electrical and electronic devices must always be done at a qualified specialist workshop. Service and maintenance work as well as repairing must be also done at a qualified specialist workshop.

If you do not let the specified service / maintenance work or necessary repairs carried out, it can cause malfunction or system failure.



### **WARNING**

At high ambient temperatures the module and the holder can be very hot. Do not open the holder in that case or make any modifications to the device before.

## 6 Declaration of conformity

### 6.1 Radio-based vehicle components

Subsequent advice is applicable to all radio-based components of the vehicle and the integrated in-vehicle information systems and communication devices:

The radio-based components of this vehicle are in compliance with the essential requirements and other relevant provisions of guideline 1999/5/EG. More information is available at any Mercedes-Benz service center.

### 6.2 Electromagnetic compatibility

The electromagnetic compatibility of the vehicle components in accordance with ECE-R 10, in the currently valid version, is tested and proven.

### 6.3 Normal use

If you remove warning stickers you or other people can't recognize hazards. Leave warning stickers in place.

If you use the vehicle, consider the following information:

- the safety instructions in this manual
- traffic rules and regulations
- motor vehicle laws and safety standards

## 7 WSU – Windshield unit

The WSU is a highly integrated telematics component for car sharing, rental and fleet applications. It provides the data communication between vehicle and EDP system and performs application-specific programs, which controls the vehicle-side business processes. In addition to that an EDP system can request different vehicle and environmental information and control vehicle functions via the WSU. Similarly, the WSU can send events to the EDP system for further processing.

With the display and the LEDs of the WSU the EDP system can provide information about business processes to the user. For example, the WSU can show whether the vehicle is available or already rented.

The WSU is installed inside the vehicle at the windshield, so that the display faces outward and can be read by users.

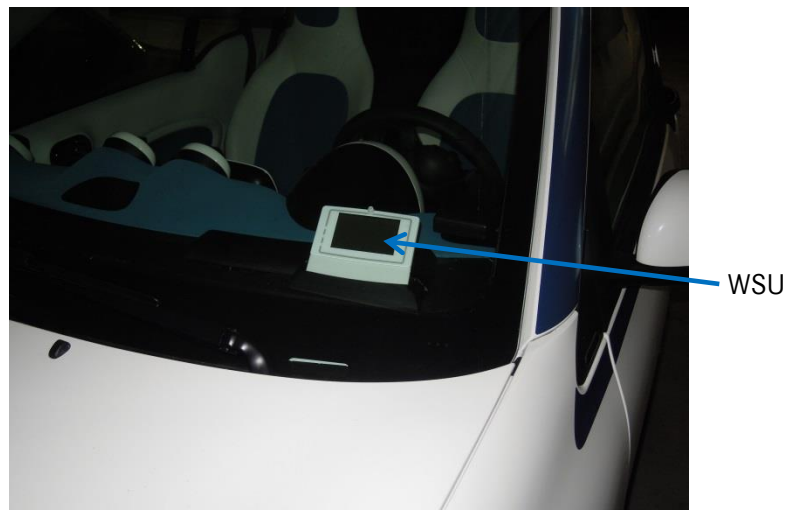


Image 3 WSU in the vehicle

In order to support as many applications and vehicle types as possible the WSU has several interfaces, sensors and display elements.

The installation of the WSU in a vehicle must either be done at the factory as vehicle accessories or by a specialist workshop.

The application software for the WSU is developed as part of an application project and is provided on a USB stick or an update server. The user interaction with the WSU and the vehicle is controlled by the application software.



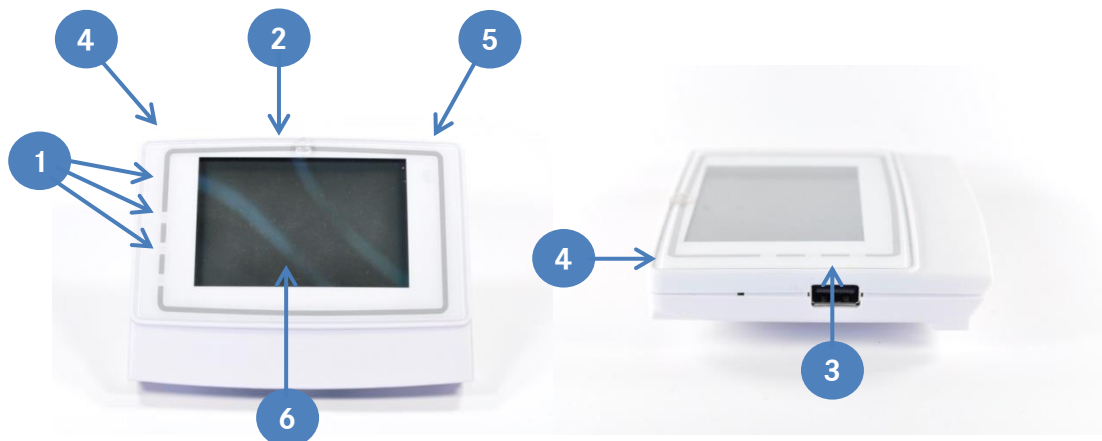


Image 4 WSU

1. LEDs (green, orange, red) showing the status
2. Monochrome ASTN-Display (240x128)
3. USB-User Device (Host- functionality)
4. GPS receiver module with internal antenna, for positioning
5. mobile service module with internal antenna, for data and voice communication
6. NFC-Transceiver, to communicate with NFC-enabled devices

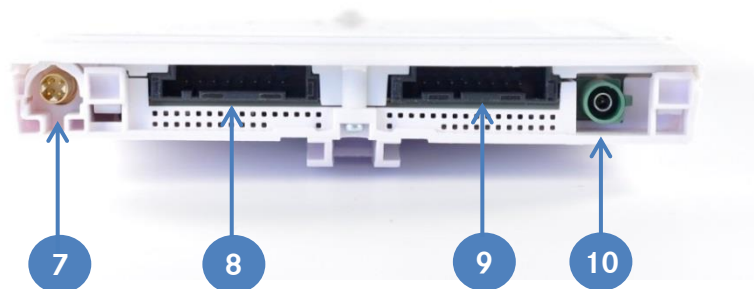


Image 5 WSU Konnektoren

7. Vehicle-USB via HSD-connector (USB-Device)
8. Vehicle interface, 8-pin MQS- connector
  - a. voltage supply (12V)
  - b. 2x CAN
  - c. LIN-Master
  - d. GPIO
9. Audio interface, 8-pin MQS- connector
  - a. LIN-Slave Interface
  - b. GPIO
  - c. Audio In/Out
10. FAKRA-interface for alternative external GSM-antenna

The WSU has the following sensors:

1. 3 axis acceleration sensor
2. Light sensor.
3. Temperature sensors

## 7.1 Technical data

Parameter	Minimum	Typical	Maximum
Dimensions	-	Width: 126mm, Height: 99mm, Depth: 24 mm	-
Operating voltage	7V	12V	18V
Average electricity demand in the standby - mobile service connected, - NFC pulsed 30s, - Display active without backlight, - One LED blinking, - LPC Power Down (Wakeup every 30s), - BaseBand at PowerDown,  - GPS off, - No USB device connected	2mA	6mA	10mA
Average electricity demand in application mode - mobile service - Display, LEDs, NFC off  - GPS on und active - Application active - LPC active - No USB device connected	70mA	150mA	250mA
Operating temperature range	-40°C	20°C	+ 85°C
Storage temperature range	-40°C	20°C	+ 85°C
Mobile service	Worldwide Quad-band UMTS 2100 (I), 1900 (II), 850 (V) including 800 (VI), 900 (VIII), 2G bands 850, 900, 1800, and 1900		
GPS time to first fix (Cold start)	30s	38s	90s
NFC frequency	-	13,56MHz	-
NFC-standards	ISO 14443, MiFare, Desfire		
NFC-cards	ISO 14443-1 PICC Class 1		
CAN transfer rate	-	-	1Mbit/s
LIN protocol		LIN 1.3	

## 7.2 Characteristics of electrical interfaces

<b>PIN</b>	<b>electrical strength:</b>
CAN H / CAN L	18 V
LIN Master / Slave	
GPIO	
Audio In / Out	
USB-Vehicle	

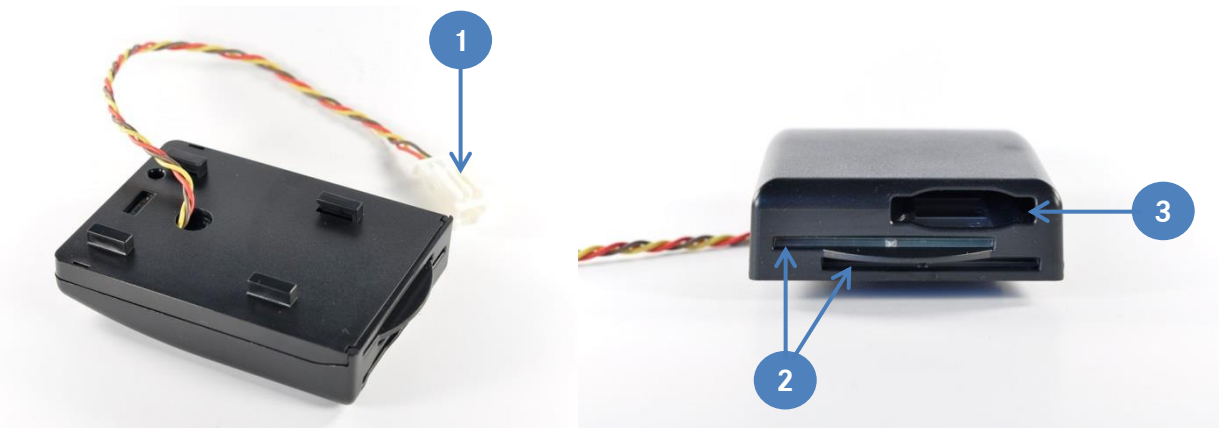
## 8 KCH - Key and Card Holder

The application processes of car2go provide that the vehicle key and the fuel and parking cards are deposited in the vehicle. The KCH one hand, serves as a repository for this inventory. On the other hand, the KCH check the completeness of the inventory. The cycles in which the inventory is checked controls the WSU.

The recognition of the inventory based on a RFID technology based on the ISO standard 14443.



Image 6 KCH



- 1) Connection to the vehicle (voltage supply 12V, LIN) via 4-pin MQS
- 2) Slots for cards
- 3) Slot for key fob

The KCH supports two NFC-enabled parking or fuel cards and NFC-enabled key fob corresponding to ISO/IEC 14443A/MIFARE. The communication between KCH and TCU follows the LIN 1.3 protocol.



Image 7 Parking and fuel cards and key fob

Following image shows exemplary mounting of the KCH in a vehicle.



Image 8 Mounting of KCH in a vehicle

The installation of the KCH in a vehicle must either be done at the factory as vehicle accessories or by a specialist workshop.

## 8.1 Technical data

Parameter	Minimal	Typical	Maximal
Dimensions:	-	Width:116mm, Height: 79mm, Depth: 30 mm	-
Operating voltage	7V	12V	18V
Average electricity demand in the standby - No LIN traffic - No NFC communication	200 $\mu$ A	240 $\mu$ A	270 $\mu$ A
Average electricity demand at operating state - LIN traffic - Communication with NFC cards	12mA	13,35mA	17mA
Operating temperature range	-40°C	20°C	+ 85°C
Storage temperature range	-40°C	20°C	+ 85°C
NFC frequency	-	13,56MHz	-
NFC-Standards	ISO 14443, MiFare, Desfire		
NFC cards	ISO 14443-1 PICC Class 1, AEG ID Intelligentidentification ®		
LIN protocol	LIN-Protokoll 1.3		

## 8.2 Characteristics of electrical interfaces

PIN	electrical strength::
LIN Slave	18 V

## 9 Harness

The vehicle integration of the WSU and KCH is done by using a prefabricated harness. Here, the power supply of the components, the private LIN-BUS between TCU and KCH, and the connection to the required CAN bus of the vehicle is realized.

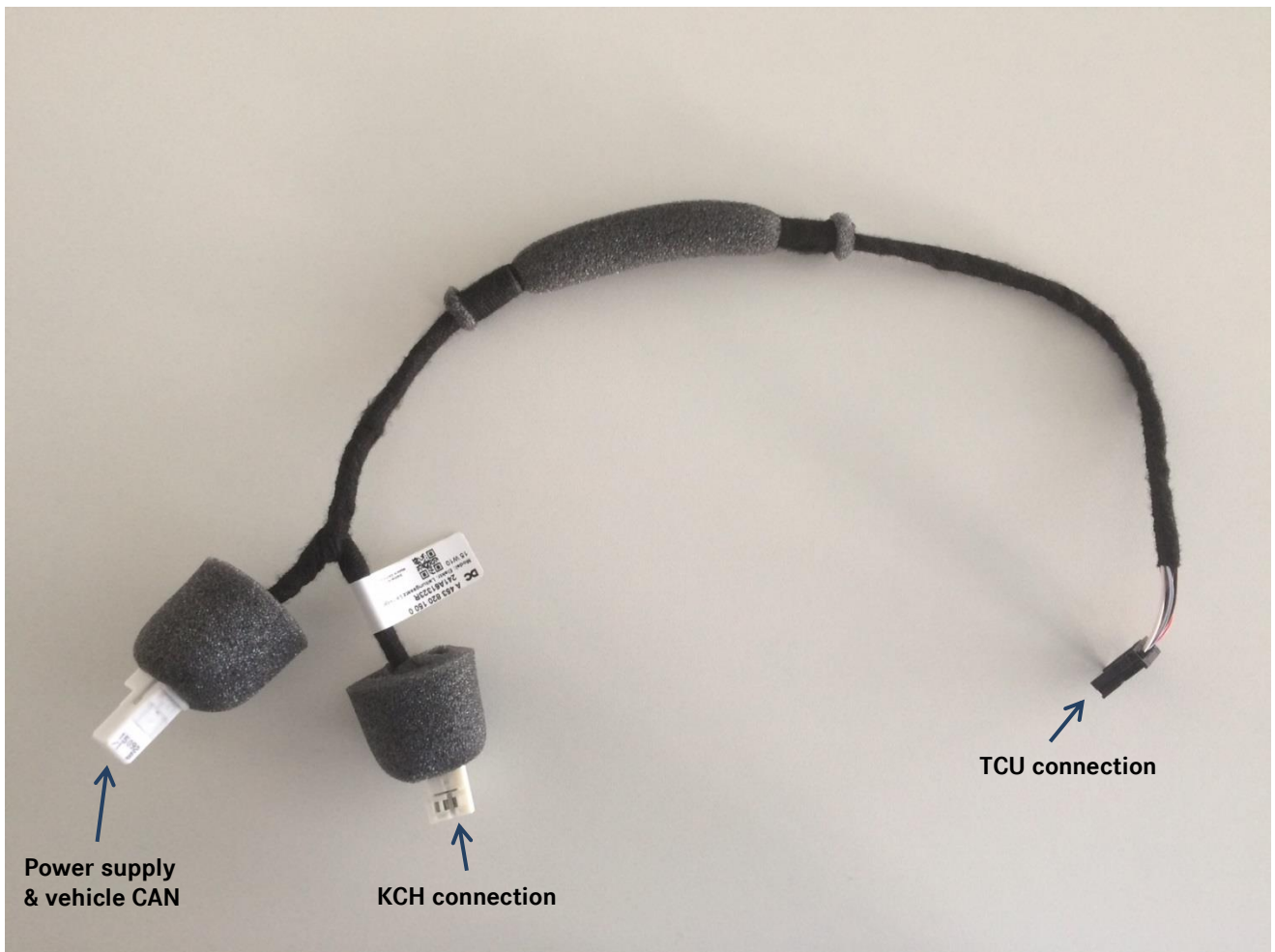


Image 9 Harness for vehicle integration WSU and KCH

The installation of the harness in a vehicle must either be done at the factory as vehicle accessories or by a specialist workshop.

## 10 List of abbreviations:

CAN	Controller Area Network
GPS	Global Positioning Service
GSM	Global System for Mobile Communication
KCH	Key and Card Holder
LIN	Local Interconnect Network
NFC	Near Field Communication
TCU	Telematic & Connectivity Unit
WSU	Windshield Unit



## 11 CE Compliance Statements WSU 3G

Česky [Czech]	<i>Daimler AG</i> tímto prohlašuje, že tento <b>WSU 3G</b> je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish]	Undertegnede <i>Daimler AG</i> erklærer herved, at følgende udstyr <b>WSU 3G</b> overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erkläre <i>Daimler AG</i> , dass sich das Gerät <b>WSU 3G</b> in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
Eesti [Estonian]	Käesolevaga kinnitab <i>Daimler AG</i> seadme <b>WSU 3G</b> vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, <i>Daimler AG</i> , declares that this <b>WSU 3G</b> is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]	Por medio de la presente <i>Daimler AG</i> declara que el <b>WSU 3G</b> cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ <i>Daimler AG</i> ΔΗΛΩΝΕΙ ΟΤΙ <b>WSU 3G</b> ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EK.
Français [French]	Par la présente <i>Daimler AG</i> déclare que l'appareil <b>WSU 3G</b> est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente <i>Daimler AG</i> dichiara che questo <b>WSU 3G</b> è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo <i>Daimler AG</i> deklarē, ka <b>WSU 3G</b> atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo <i>Daimler AG</i> deklaruoja, kad šis <b>WSU 3G</b> atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart <i>Daimler AG</i> dat het toestel <b>WSU 3G</b> in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, <i>Daimler AG</i> , jiddikjara li dan <b>WSU 3G</b> jikkonforma mal-ftiġġijiet essenzjali u ma provvedimenti oħrajn rilevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, <i>Daimler AG</i> nyilatkozom, hogy a <b>WSU 3G</b> megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
Polski [Polish]	Niniejszym <i>Daimler AG</i> oświadcza, że <b>WSU 3G</b> jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português [Portuguese]	<i>Daimler AG</i> declara que este <b>WSU 3G</b> está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	<i>Daimler AG</i> izjavlja, da je ta <b>WSU 3G</b> v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	<i>Daimler AG</i> týmto vyhlasuje, že <b>WSU 3G</b> spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	<i>Daimler AG</i> vakuuttaa täten että <b>WSU 3G</b> tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska [Swedish]	Härmed intygar <i>Daimler AG</i> att denna <b>WSU 3G</b> står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Íslenska [Icelandic]	Hér með lýsir <i>Daimler AG</i> yfir því að <b>WSU 3G</b> er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 1999/5/EC.
Norsk [Norwegian]	<i>Daimler AG</i> erklærer herved at utstyret <b>WSU 3G</b> er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF.

## 12 CE Compliance Statements KCH

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Dansk [Danish]	Undertegnede <i>Daimler AG</i> erklærer herved, at følgende udstyr <b>KCH</b> overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
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Italiano [Italian]	Con la presente <i>Daimler AG</i> dichiara che questo <b>KCH</b> è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo <i>Daimler AG</i> deklarē, ka <b>KCH</b> atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
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Magyar [Hungarian]	Alulírott, <i>Daimler AG</i> nyilatkozom, hogy a <b>KCH</b> megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
Polski [Polish]	Niniejszym <i>Daimler AG</i> oświadcza, że <b>KCH</b> jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português [Portuguese]	<i>Daimler AG</i> declara que este <b>KCH</b> está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	<i>Daimler AG</i> izjavlja, da je ta <b>KCH</b> v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	<i>Daimler AG</i> týmto vyhlasuje, že <b>KCH</b> spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	<i>Daimler AG</i> vakuuttaa täten että <b>KCH</b> tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
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Norsk [Norwegian]	<i>Daimler AG</i> erklærer herved at utstyret <b>KCH</b> er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF.

## 13 FCC & IC Compliance Statements KCH

English

Canada:

This device complies with part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s). 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.

USA:

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.

Français [French]

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.