Marketing Name	MQB37W
Equipment Product Code	BR20
FCC ID	2AAJCBR20
IC ID	24305-BR20
Customer	VW AG
Number of offer drawing	F005VS0326
Manufacturer	Robert Bosch GmbH Mittlerer Pfad 9 70499 Stuttgart Germany Tel. +49711811-0

Issue and Author:		**1**
Department:	Date:	Reviser:
AE-BE/PAN3	28.02.2019	Mario Heimann

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1. Regulations and Standards

The Model MQB37W meets the statutory requirements of the following Countries in Table 2.
New released standards will be analyzed and if necessary testing performed and Table 2 updated.
In regards to Europe differences between Table 2 and the DoC could be due to non-technical changes in revisions to the standards, which do not require further testing.

2.Table Standards applied for homologation release testing

Country	Applicable standard / regulation
USA / Canada	RF test according FCC Part 15.231/RSS-210: Short Range Device Band 434 MHz (3 channels, 2 modulations)
Japan	RF test according Ordinance regulating Radio Equipment (2005-08) Art.2 item 8 (Japan Test Band 315 MHz)
Europe	SAF Safety Test: IEC 62368-1 2014 + Corr.1 2015 / EN 62368-1 2014 + AC 2015 EMV test according ETSI EN 301 489-1/-3 V2.2.0 for radio Systems:, (Power supply by DC) RF measurements according EN 300 220-2 V3.1.1: SRD to 1 GHz (Receiver Class 2), 3 channel, 2 modulations RED- Ordinance 2014/53/EU
Korea	EMV test according KN 41 (Korea) Based on EMV ECE-R10

3. Environment mount position

The MQB BCM is a component, which is mounted in the car during car manufacturing.

Mounting position in the car

This part is not reachable by the user as it is a part of the chassis system, covered by the interiorsurface of the car. User manual is in this meaning not applicable for this product.

- Creating a user manual is the responsibility of the vehicle manufacturer.
  The OEM describes in the User Manual all important functions for the end customer for error-free operation of the BCM.
  Robert Bosch provides the OEM with technical information on request.
- The BCM Equipment cannot be operated stand-alone in its intended use.
- For intended use of the BCM Equipment a data connection to the host vehicle is required.
- The BCM equipment is not available to the end user.
  The equipment is manufactured by Bosch and sold to the relevant vehicle manufacturers.
- Damaged BCM's on a vehicle can only be replaced by the vehicle manufacturers authorized repair workshops as calibration and adjustment with dedicated tools is required after the replacement.
- The BCM is no retrofit device that is freely available and could be installed on the vehicle by the end-user after purchase.

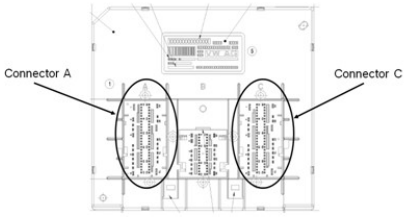
4. General Description

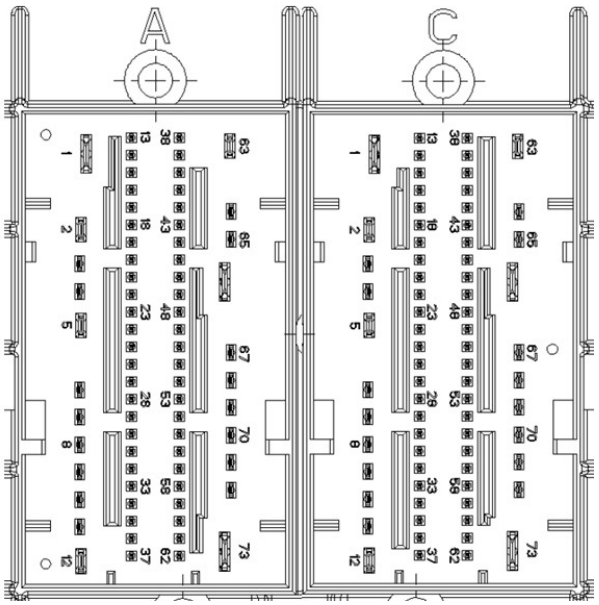
The radio frequency transceiver is part of a body computer ECU. The ECU incorporates several HW-inputs and HW-outputs, which monitor and control body computer functionalities in a car (e.g. light control and central door locking).
The ECU consists of a plastic housing, PCB, electronic components and connector pins.
The radio frequency transceiver functionality will be explained in more detail in the below documented sections.

5. HW Interface

The radio frequency transceiver is supplied via the specified connector pins.
The antenna of the radio frequency transceiver is a PCB-edge antenna, which is incorporated in the PCB of the ECU.

a. Connector Position on housing





6. Supply and GND pins:

Supply (+): Pin-No# A66, A73, C1, C73
GND (-) : Pin-No# A63, C63
LED+ Pin is connected to Pin A60 (test loom)

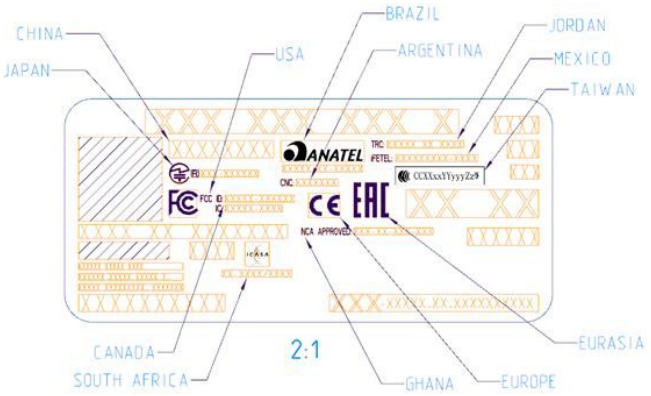
b. Technical features MQB37W

Supply Voltage: 9V to 16V, typ. 12V
Environment Temperature: -40°C to +80°C
Dimensions in mm: L 197, B 179, T 36
Weight: 378g

c. Label Info:

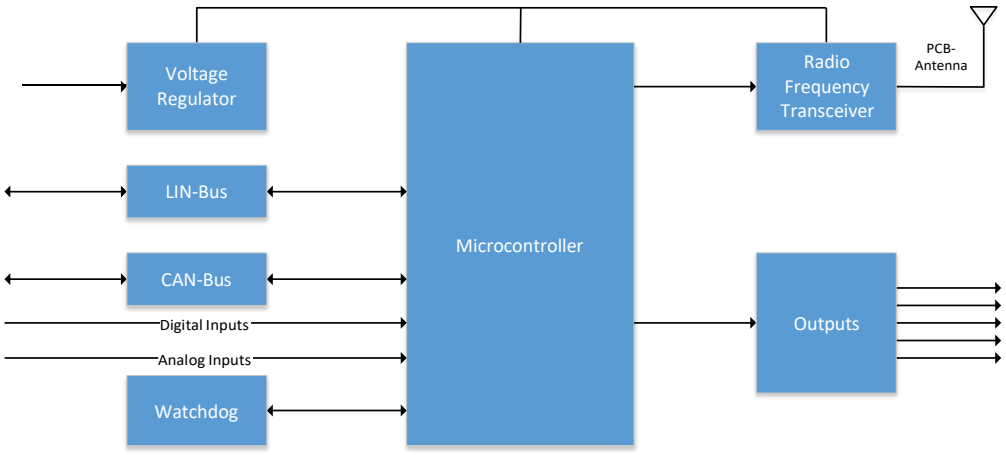
The homologation label is placed on the front side of the BCM housing see Picture 5.a

Fcc ID: 2AAJCBR20
IC ID: 24305-BR20



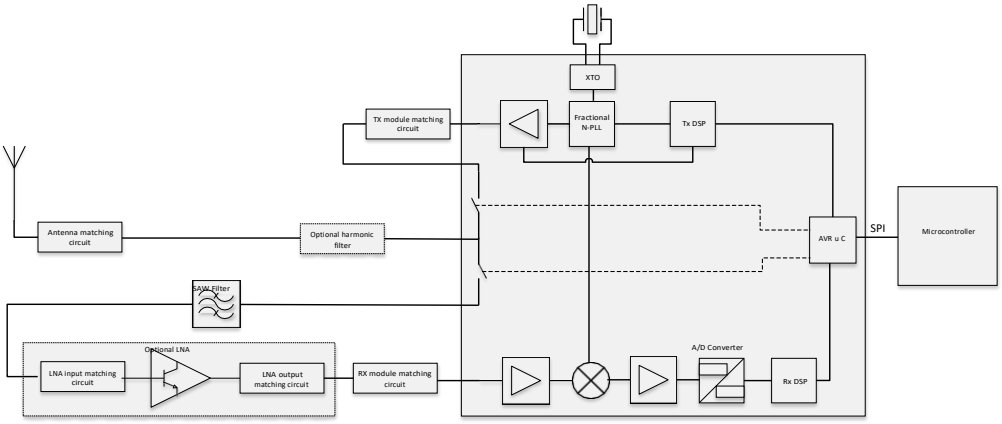
7. System Block Diagram MQB BCM

Below drawn block diagram of the MQB BCM shows the main function blocks of the ECU.



In section 4, the design of the radio frequency transceiver is outlined.

8. Block Diagram of inbuilt Radio Frequency Transceiver



9. Radio Frequency key data

The radio frequency transceiver has the following key data:

Mode	MQB37W			
Transmitter / Receiver	TX / RX			
Modulation	FSK (Manchester encoded)			
Hardware Version Target Market	Hardware 1 RdW and NAR			Hardware 1 Südkorea
Frequencies	Channel A 433,46 MHz	Channel B 433,92 MHz	Channel C 434,36 MHz	Channel B 433,92 MHz
Deviation FSK / Data Rate	FZV + Komfort: ±8kHz/ 7,81kBit/s	Kessy: ±20kHz/ 19,2kBit/s	FZV + Komfort: ±8kHz/ 7,81kBit/s Kessy: ±20kHz/ 19,2kBit/s	FZV + Komfort: ±8kHz/ 7,81kBit/s Kessy: ±20kHz/ 19,2kBit/s
Receiver Function	x	x	x	x
Transmitter Function		x	x	x

Mode	MQB37W		
Transmitter / Receiver	TX / RX		
Modulation	FSK (Manchester encoded)		
Hardware Version Target Market	Hardware 2 Japan		
Frequencies	Channel A 314,60 MHz	Channel B 314,60 MHz	Channel C 314,90 MHz
Deviation FSK / Data Rate	FZV + Komfort: ±8kHz/ 7,81kBit/s	Kessy: ±20kHz/ 19,2kBit/s	FZV + Komfort: ±8kHz/ 7,81kBit/s Kessy: ±20kHz/ 19,2kBit/s
Receiver Function	x	x	x
Transmitter Function		x	x

Mode	Legacy		
Transmitter / Receiver	RX		
Modulation	ASK (OOK, manchester encoded)		
Hardware Version Target Market	Hardware 1 RdW	Hardware 1 Südkorea	Hardware 2 NAR
Frequencies	434,42 MHz	433,92 MHz	315 MHz
Deviation FSK / Data Rate	FZV + Komfort: 1,7kBit/s	FZV + Komfort: 1,7kBit/s	FZV + Komfort: 1,7kBit/s
Receiver Function	x	x	x
Transmitter Function			

Effective radiated Power: <= -6dBm (Band 433MHz to 434MHz 10mW)

10. Functional description

The radio frequency transceiver is part of a remote keyless entry system of a vehicle central door locking system.

This vehicle central door locking system consist out of

- Remote control key with UHF transmitter (NOT part of the MQB BCM)
- Radio frequency transceiver with PCB-Antenna (part of the MQB BCM)
- Door ECU, which can drive the car door locks to lock or unlock the car (NOT part of the MQB BCM)
- Door locks for the central door locking functionality (NOT part of the MQB BCM)

The transceiver has a self-polling mode and is permanently scanning for valid key data, with matching characteristics.
(Note: This data are typically received, when a valid remote control key is in range and one of its push-buttons is pressed.)

When the data are matching the characteristics, the transceiver will hand over this data to the micro controller of the MQB BCM.
With the help of this micro controller, it is validated, whether this data have been transmitted from the authorized remote control key. When the validation was successful, the MQB BCM will send this information via a CAN-network to the door ECU.
This door ECU will drive the connected door lock according to the wish of the operator, who pressed the push button of the remote control key. Hence the doors will be locked or unlocked.

The MQB BCM needs to be programmed by the OEM, after installing the ECU into the car. Once programmed, the transceiver is operable directly after applying power to the connector pins.

11. EU Declaration of Conformity under RE-D (2014/53/EU)

Hereby, Robert Bosch GmbH declares that the radio equipment type MQB37W-BR20 is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following internet address: http://eu-doc.bosch.com
Please enter the Model as **BR20** to find the correct DoC in the database

12. User Manual Specific Statements USA/Canada Mandatory Country/Region

Registration Number

USA FCC ID: 2AAJCBR20
Canada IC ID : 24305-BR20

RF Exposure Information according 2.1091 / 2.1093 / KDB 447498 / RSS-102

Definitions:
Mobile device:
A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term ''fixed location'' means that the device is physically secured at one location and is not able to be easily moved to another location.

Portable device:
For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.

Text suggestion for User Manual (for orientation only)

1) For a mobile device which intended use is at least 20 cm between human body and antenna: (e.g. devices for use on desk, use on vehicles,…)

Radiofrequency radiation exposure Information:
This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of [*] cm between the radiator and your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de [*] cm de distance entre la source de rayonnement et votre corps.
Ce transmetteur ne doit pas etre place au meme endroit ou utilise simultanement avec un autre transmetteur ou antenne.

[*] Insert min distance where justified by measurement / calculation. Distances lower than 20cm are prohibited. Distances more than 20cm shall be justified by normal / intended use of the device

2) For a portable device where is not collocated with another transmitter and the radiated source based time averaged power is SAR exempted (e.g. Headset using Bluetooth technology,…)

Radiofrequency radiation exposure Information:
The radiated output power of the device is far below the FCC radio frequency exposure limits. Nevertheless, the device should be used in such a manner that the potential for human contact during normal operation is minimized.

3) For a portable device where routine evaluation is required and Body-worn use with a specific accessory

Radiofrequency radiation exposure Information:
For body worn operation, this phone has been tested and meets the FCC RF exposure guidelines when used with the (manufacturer name) accessories supplied or designated for this product. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

4) For a portable device where routine evaluation is required and Body-worn use without a specific accessory, but with a justified distance.

Radiofrequency radiation exposure Information:
For body worn operation, this phone has been tested and meets FCC RF exposure guidelines when used with an accessory that contains no metal and that positions the handset a minimum of (specified distance) from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

5) For a portable device where routine evaluation is required and Body-worn use with future manufacturer designed accessories: (e.g. Cellular phone, …)

Radiofrequency radiation exposure Information:
"For body worn operation, this phone has been tested and meets the FCC RF exposure guidelines when used with a (manufacturer name) accessory designated for this product or when used with an accessory that contains no metal and that positions the handset a minimum of (specified distance) from the body."

6) For a portable device where routine evaluation is required and Body-worn use has been tested touch to the phantom.
Radiofrequency radiation exposure Information:
"For body worn operation, this device has been tested touched to the phantom and meets FCC RF exposure guidelines. Nevertheless, the device should be used in such a manner that the potential for human contact during normal operation is minimized.

Manual Requirements according 15.19 / RSS-GEN

When

- the device is so small or for such use that it is not practicable to place the statement on it
- and the devices is subject to Part 15 of the Federal Rules / RSS-210 of Canadian Rules
- and the device is subject to certification procedure,

below text shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user.

Text for User Manual (blue cursive text)

NOTICE:
This device complies with Part 15 of the FCC Rules [and with Industry Canada licence-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.

[*] delete text in brackets if Canadian approval is not requested.

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'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This text is required only when Canadian approval is requested.

Manual Requirements according 15.21

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTICE:
Changes or modifications made to this equipment not expressly approved by (manufacturer name) may void the FCC authorization to operate this equipment.

Signature:

pki, BOSCH, DE, M, A, Mario.Heimann

Digital unterschrieben von pki, BOSCH, DE, M, A, Mario.Heimann
Datum: 2019.03.05 10:51:26 +01'00'

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