



Test report No.: 2380577R-RFUSV17S-A

# RF Exposure Report

Product Name	Multimedia device with Bluetooth and WLAN
Trademark	BOSCH
Model and /or type reference	CCS2SBXQ
FCC ID	2AUXS-CCS2SBXQ
Applicant's name / address	Robert Bosch GmbH Robert-Bosch-Strasse 200, 31139 Hildesheim, Germany
Manufacturer's name	Robert Bosch GmbH
Test method requested, standard	KDB 447498 D01 v06 <input checked="" type="checkbox"/> Minimum test separation distance $\geq 20$ cm <input type="checkbox"/> For low power devices
Verdict Summary	IN COMPLIANCE
Documented By (Supervisor / Jinn Chen)	<i>Jinn Chen</i>
Approved By (Senior Engineer / Alan Chen)	<i>Alan Chen</i>
Approved By (Manager / Tim Sung)	<i>Tim Sung</i>
Date of Receipt	2023/08/17
Date of Issue	2023/11/28
Report Version	V1.0

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## Competences and Guarantees

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DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

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The results presented in this Test Report apply only to the particular item under test established in this document.

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## General conditions

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1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

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## Revision History

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Report No.	Version	Description	Issued Date
2380577R-RFUSV17S-A	V1.0	Initial issue of report.	2023/11/28

## 1. General Information

### 1.1. EUT Description

Product Name	Multimedia device with Bluetooth and WLAN
Trademark	BOSCH
Model and /or type reference	CCS2SBXQ

Note: For more detailed information please refer to report No.: 2380577R-RFUSV01S-A, 2380577R-RFUSV01S-B, 2380577R-RFUSV01S-C and 2380577R-RFUSV03S-A.

The product includes two configurations with the following as below:

Model name	HW Version Identification Number (HVIN)	Description
CCS2SBXQ	NA1	Internal Antenna / External Antenna
	NA2	2x Internal Antenna

## 2. Test Facility

USA	FCC Registration Number: TW0033
Canada	CAB Identifier Number: TW3023 / Company Number: 26930

Site Description	Accredited by TAF
	Accredited Number: 3023

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
	Linkou Laboratory
Address	No.5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan, R.O.C
Performed Location	No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan, R.O.C.
Phone Number	+886-3-275-7255
Fax Number	+886-3-327-8031

### 3. RF Exposure Evaluation

#### 3.1. Standard Applicable

According to KDB 447498 D01 (7.1), A minimum test separation distance  $\geq 20$  cm is required between the antenna and radiating structures of the device and nearby persons to apply mobile device exposure limits.

#### 3.2. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

##### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/ Uncontrolled Exposures				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

R = distance between observation point and center of the radiator in cm

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is  $\leq 1.0$

## 3.3. Test Result of RF Exposure Evaluation

Product	Multimedia device with Bluetooth and WLAN
Test Item	RF Exposure Evaluation

**NA1**

Band	Conducted Output Power (dBm)	Antenna Gain (dBi)	E.I.R.P (dBm)	E.I.R.P (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
Bluetooth	1.55	1.60	3.150	2.065	0.0004	1
2.4 GHz WLAN	17.28	1.65	18.930	78.163	0.0155	1
5 GHz WLAN 5150~5250 MHz	11.47	4.34	15.810	38.107	0.0076	1
5 GHz WLAN 5725~5850 MHz	13.43	5.77	19.200	83.176	0.0165	1

**NA2**

Band	Conducted Output Power (dBm)	Antenna Gain (dBi)	E.I.R.P (dBm)	E.I.R.P (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
Bluetooth	1.55	1.60	3.150	2.065	0.0004	1
2.4 GHz WLAN	17.28	-0.30	16.980	49.888	0.0099	1
5 GHz WLAN 5150~5250 MHz	11.47	3.90	15.370	34.435	0.0069	1
5 GHz WLAN 5725~5850 MHz	13.43	3.40	16.830	48.195	0.0096	1

Note: The conducted output power is refer to report No.: 2380577R-RFUSV01S-A, 2380577R-RFUSV01S-B, 2380577R-RFUSV01S-C and 2380577R-RFUSV03S-A from the DEKRA.

3.4. Calculations for Multi-Transmitter

**NA1**

Mode	Ratios	result	Limit
Bluetooth	0.0004	0.0159	1
2.4 GHz WLAN	0.0155		

Mode	Ratios	result	Limit
Bluetooth	0.0004	0.0169	1
5 GHz WLAN	0.0165		

Mode	Ratios	result	Limit
2.4 GHz WLAN	0.0155	0.0320	1
5 GHz WLAN	0.0165		

Ratios = Power Density / Power Density Limit



**NA2**

Mode	Ratios	result	Limit
Bluetooth	0.0004	0.0103	1
2.4 GHz WLAN	0.0099		

Mode	Ratios	result	Limit
Bluetooth	0.0004	0.0100	1
5 GHz WLAN	0.0096		

Mode	Ratios	result	Limit
2.4 GHz WLAN	0.0099	0.0195	1
5 GHz WLAN	0.0096		

Ratios = Power Density / Power Density Limit

Results	PASS
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