

Report on the FCC and IC Testing of the EagleBurgmann Germany GmbH & Co. KG

Model: EB-SSS-BM

In accordance with FCC 47 CFR Part 1.1310,
Part 2.1093 and RSS-102

Prepared for: EagleBurgmann Germany GmbH & Co. KG
Äußere Sauerlacher Str. 6-10
82515 Wolfratshausen
Germany

FCC ID: ---
IC: 33904-EBSSSBM



Product Service

Choose certainty.
Add value.

COMMERCIAL-IN-CONFIDENCE

Date: 2025-10-14

Document Number: TR-713370655-02 | Revision 1

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Project Management	Alexander Deese	2025-10-14	 SIGN-ID 1080532
Authorised Signatory	Alex Fink	2025-10-14	 SIGN-ID 1080858

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 1.1310, Part 2.1093 and RSS 102 Issue 6 (December 2023).. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Alexander Deese	2025-10-14	 SIGN-ID 1080532

Laboratory Accreditation

DAkKS Reg. No. D-PL-11321-11-03

DAkKS Reg. No. D-PL-11321-11-04

Laboratory recognition

Registration No. BNetzA-CAB-16/21-15

ISED Canada test site registration

3050A-2

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 1.1310 : 2020 Part 2.1093 : 2021 and RSS 102 Issue 6 (December 2023)

DISCLAIMER AND COPYRIGHT



Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question. It does not imply a general statement regarding the quality of products from regular production. For further details please see Testing, Certification, Validation and Verification Regulations, chapter A-3.3.

© 2025 TÜV SÜD Product Service.

Trade Register Munich
HRB 85742
VAT ID No. DE129484267
Information pursuant to Section 2(1)
DL-InfoV (Germany) at
www.tuev-sued.com/im

Supervisory Board:
Holger Lindner (Chairman)
Board of Management:
Wolfgang Hübl (CEO)
Karl Meier
Patrick van Welij

Phone: +49 (0) 9421 55 22-0
Fax: +49 (0) 9421 55 22-199
www.tuev-sued.de

TÜV SÜD Product Service GmbH
Äußere Frühlingstraße 45
94315 Straubing
Germany



Product Service

Contents

1	Report Summary	2
1.1	Report Modification Record	2
1.2	Introduction	2
1.3	Brief Summary of Results.....	3
1.4	Product Information.....	4
1.5	Test Configuration.....	4
1.6	Modes of Operation.....	4
1.7	EUT Modification Record	5
1.8	Test Location	5
2	Test Details.....	6
1.1	RF Exposure Exemption	6
3	Photographs of Test Setups.....	11
4	Measurement Uncertainty	12



1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document. The current version replaces all previous versions.

Issue	Description of Change	Date of Issue
0	First Issue	2025-05-26
1	IC added.	2025-10-14

Table 1

1.2 Introduction

Applicant	EagleBurgmann Germany GmbH & Co. KG
Manufacturer	EagleBurgmann Germany GmbH & Co. KG
Model Number(s)	EB-SSS-BM
Serial Number(s)	d992660105e18000
Hardware Version(s)	0202
Software Version(s)	---
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 1.1310 : 2020 and Part 2.1093 : 2021 RSS 102 Issue 6 (December 2023)
Test Plan/Issue/Date	---
Order Number	4300107225
Date	2025-03-07
Date of Receipt of EUT	2025-04-30
Start of Test	2025-04-30
Finish of Test	2025-04-30
Name of Engineer(s)	Alexander Deese
Related Document(s)	447498 D04 Interim General RF Exposure Guidance v01 ANSI C63.10 (2013)



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 1.1310, Part 2.1093 and RSS-102 is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: Continuously Transmitting with modulation				
2.1	1.1310 2.5.1, 2.5.2, 3	RF Exposure Evaluation	Pass	KDB 447498 D01 v07

Table 2



1.4 Product Information

EB Smart Seal Sensor with Thread.

<i>Frequency Band:</i>	2400.0 MHz – 2483.5 MHz
<i>Supply Voltage:</i>	2.0 V – 3.3 V, Battery supplied
<i>Supply Frequency:</i>	DC
<i>Highest clock frequency (radio part):</i>	2480 MHz
<i>Highest clock frequency (non-radio part):</i>	---
<i>Antenna Gain:</i>	3.0 dBi (Molex, 146153)

1.5 Test Configuration

The EUT was 3V / DC battery supplied. The radio module was transmitting continuously. Radio frequency and power were configured via serial commands provided by the customer.

1.6 Modes of Operation

Mode 1:

Ch 11; 2405 MHz; BW 2 MHz; Power setting “Set_power 6”; Continuously modulated carrier

Mode 2:

Ch 18; 2440 MHz; BW 2 MHz; Power setting “Set_power 6”; Continuously modulated carrier

Mode 3:

Ch 26; 2480 MHz; BW 2 MHz; Power setting “Set_power 6”; Continuously modulated carrier



1.7 EUT Modification Record

The table below details modifications made to the EUT during the test programme.
The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3

1.8 Test Location

TÜV SÜD Product Service conducted the following tests at our Straubing Test Laboratory.

Test Name	Name of Engineer(s)
Configuration and Mode: Continuously Transmitting with modulation	
RF Exposure Evaluation	Alexander Deese

Table 4

Office Address:

Äußere Frühlingstraße 45
94315 Straubing
Germany



Product Service

2 Test Details

1.1 RF Exposure Exemption

1.1.1 Specification Reference

47 CFR, Part 1, § 1.1307(b)(3) : 2020
RSS-102, Issue 6 (2023)

1.1.2 Equipment under Test and Modification State

EB-SSS-BM; S/N d992660105e18000; Modification state 0

1.1.3 Date of Test

2025-04-30

1.1.4 Environmental Conditions

Ambient Temperature	21 °C
Relative Humidity	39 %



1.1.5 Specification Limits

47 CFR, Part 1, § 1.1307(b)(3)

- (i) For single RF sources (i.e. any single fixed RF source, mobile device, or portable device, as defined in paragraph(b)(2) of this section): A single RF source is exempt if:
- (A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);
 - (B) Or the available maximum time-averaged power or effective radiate power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by

$$P_{th}(\text{mW}) = \begin{cases} ERP_{20\text{cm}} (d/20 \text{ cm})^x, & d \leq 20 \text{ cm}; \\ ERP_{20\text{cm}}, & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20\text{cm}} \sqrt{f}} \right); f \text{ in GHz}$$

and

$$ERP_{20\text{cm}}(\text{mW}) = \begin{cases} 2040 f, & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060, & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the test separation distance (cm);

- (C) Or using the table below and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value described for that frequency. For the exemption in the table to apply, R must be at least $\lambda/2\pi$ where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

RF source frequency (MHz)	Threshold ERP (Watts)
0.3 – 1.34	$1920 R^2$
1.34 – 30	$3450 R^2 / f^2$
30 – 300	$3.83 R^2$
300 – 1500	$0.0128 R^2 f^2$
1500 – 100000	$19.2 R^2$

- (ii) For multiple RF sources: Multiple RF sources are exempt if:
- (A) The available maximum time-averaged power of each source is no more than 1 mW and there is a separation distance of 2 cm between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required). This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(i)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(i)(A).
 - (B) In case of fixed RF sources operating in the same time-averaging period, or of multiple or portable RF sources within a device in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation:

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{ExposureLimit_k} \leq 1$$



RSS-102, section 2.5.1

SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in the table below:

<i>f</i> (MHz)	<i>Exemption Limits (mW) at separation distance of</i>									
	<i>≤ 5 mm</i>	<i>10 mm</i>	<i>15 mm</i>	<i>20 mm</i>	<i>25 mm</i>	<i>30 mm</i>	<i>35 mm</i>	<i>40 mm</i>	<i>45 mm</i>	<i>≥ 50 mm</i>
≤ 300	71	101	132	162	193	223	254	284	315	345
450	52	70	88	106	123	141	159	177	195	213
835	17	30	42	55	67	80	92	105	117	130
1900	7	10	18	34	60	99	153	225	316	431
2450	4	7	15	30	52	83	123	173	235	309
3500	2	6	16	32	55	86	124	170	225	290
5800	1	6	15	27	41	56	71	85	97	106

Output power level shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power. For controlled use devices where the 8 W/kg for 1 gram of tissue applies, the exemption limits for route evaluation are multiplied by a factor of 5. For limb-worn devices where the 10 grams value applies, the exemption limits for routine evaluation are multiplied by a factor of 2.5.

If the operating frequency of the device is between two frequencies located, linear interpolation shall be applied for the applicable separation distance. For test separation distance less than 5 mm, the exemption limits for a separation distance of 5 mm can be applied to determine if a routine evaluation is required.

For medical implants devices, the exemption limit for routine evaluation is set at 1 mW. The output power of a medical implant device is defined as the higher of the conducted or e.i.r.p. to determine whether the device is exempt from the SAR evaluation.



1.1.6 Test Method

The RF Exposure is based on a SAR exemption calculation for a test separation distance of 5 mm.

1.1.7 Test Results

47 CFR

Evaluation according to 47 CFR, Part 1, § 1.1307(b)(3)(i)(B)

<i>Test case</i>	<i>Frequency [MHz]</i>	<i>Output Power [dBm]</i>	<i>Output Power [mW]</i>	<i>Limit [mW]</i>	<i>Margin</i>
1	2405	1.251	1.334	2.785	1.451
2	2440	0.2112	1.050	2.753	1.703
3	2480	-1.429	0.7196	2.717	1.997

No further evaluation necessary.

RSS-102

Evaluation according to RSS 102 section 2.5.1

<i>Test case</i>	<i>Frequency [MHz]</i>	<i>Output Power [dBm]</i>	<i>Output Power [mW]</i>	<i>Limit [mW]</i>	<i>Margin</i>
1	2405	1.251	1.334	3.245	1.911
2	2440	0.2112	1.050	3.045	1.995
3	2480	-1.429	0.7196	2.971	2.251

No further evaluation necessary.



Product Service

1.1.8 Test Location and Test Equipment

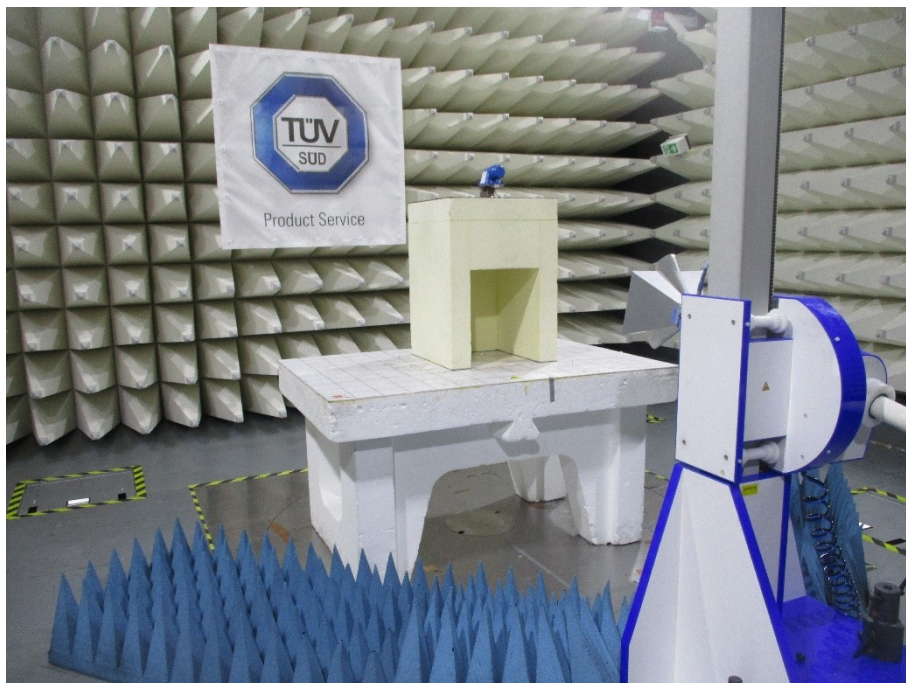
The test was carried out in semi anechoic chamber no. 11:

<i>Instrument</i>	<i>Manufacturer</i>	<i>Type No</i>	<i>TE No</i>	<i>Calibration Period (months)</i>	<i>Calibration Due</i>
EMI test receiver	Rohde & Schwarz	ESW44	39897	12	2026-03-31
Double ridged horn antenna	Rohde & Schwarz	HF907	40089	24	2026-11-30
Semi anechoic room	Frankonia	Cabin no. 11	42961	24	2026-09-30
EMC measurement software	Rohde & Schwarz	EMC32 Emission K11 – V11.50	42986	---	---
RF matrix cabin 11	TÜV SÜD	RF Matrix with filter	47622	---	---



Product Service

3 Photographs of Test Setups





4 Measurement Uncertainty

For a 95% confidence level. the measurement uncertainties for defined systems are:

Radio Testing			
Test Name	kp	Expanded Uncertainty	Note
Occupied Bandwidth	2.0	$\pm 1.14 \%$	2
RF-Frequency error	1.96	$\pm 1 \cdot 10^{-7}$	7
RF-Power. conducted carrier	2	$\pm 0.079 \text{ dB}$	2
RF-Power uncertainty for given BER	1.96	$+0.94 \text{ dB} / -1.05$	7
RF power. conducted. spurious emissions	1.96	$+1.4 \text{ dB} / -1.6 \text{ dB}$	7
RF power. radiated			
25 MHz – 4 GHz	1.96	$+3.6 \text{ dB} / -5.2 \text{ dB}$	8
1 GHz – 18 GHz	1.96	$+3.8 \text{ dB} / -5.6 \text{ dB}$	8
18 GHz – 26.5 GHz	1.96	$+3.4 \text{ dB} / -4.5 \text{ dB}$	8
40 GHz – 170 GHz	1.96	$+4.2 \text{ dB} / -7.1 \text{ dB}$	8
Spectral Power Density. conducted	2.0	$\pm 0.53 \text{ dB}$	2
Maximum frequency deviation			
300 Hz – 6 kHz	2	$\pm 2.89 \%$	2
6 kHz – 25 kHz	2	$\pm 0.2 \text{ dB}$	2
Maximum frequency deviation for FM	2	$\pm 2.89 \%$	2
Adjacent channel power 25 MHz – 1 GHz	2	$\pm 2.31 \%$	2
Temperature	2	$\pm 0.39 \text{ K}$	4
(Relative) Humidity	2	$\pm 2.28 \%$	2
DC- and low frequency AC voltage			
DC voltage	2	$\pm 0.01 \%$	2
AC voltage up to 1 kHz	2	$\pm 1.2 \%$	2
Time	2	$\pm 0.6 \%$	2

Table 5



Radio Interference Emission Testing			
Test Name	kp	Expanded Uncertainty	Note
Conducted Voltage Emission			
9 kHz to 150 kHz (50Ω/50μH AMN)	2	± 3.8 dB	1
150 kHz to 30 MHz (50Ω/50μH AMN)	2	± 3.4 dB	1
100 kHz to 200 MHz (50Ω/5μH AMN)	2	± 3.6 dB	1
Discontinuous Conducted Emission			
9 kHz to 150 kHz (50Ω/50μH AMN)	2	± 3.8 dB	1
150 kHz to 30 MHz (50Ω/50μH AMN)	2	± 3.4 dB	1
Conducted Current Emission			
9 kHz to 200 MHz	2	± 3.5 dB	1
Magnetic Fieldstrength			
9 kHz to 30 MHz (with loop antenna)	2	± 3.9 dB	1
9 kHz to 30 MHz (large-loop antenna 2 m)	2	± 3.5 dB	1
Radiated Emission			
Test distance 1 m (ALSE)			
9 kHz to 150 kHz	2	± 4.6 dB	1
150 kHz to 30 MHz	2	± 4.1 dB	1
30 MHz to 200 MHz	2	± 5.2 dB	1
200 MHz to 2 GHz	2	± 4.4 dB	1
2 GHz to 3 GHz	2	± 4.6 dB	1
Test distance 3 m			
30 MHz to 300 MHz	2	± 4.9 dB	1
300 MHz to 1 GHz	2	± 5.0 dB	1
1 GHz to 6 GHz	2	± 4.6 dB	1
Test distance 10 m			
30 MHz to 300 MHz	2	± 4.9 dB	1
300 MHz to 1 GHz	2	± 4.9 dB	1
Radio Interference Power			
30 MHz to 300 MHz	2	± 3.5 dB	1
Harmonic Current Emissions			4
Voltage Changes. Voltage Fluctuations and Flicker			4

Table 6



Immunity Testing			
Test Name	kp	Expanded Uncertainty	Note
Electrostatic Discharges			4
Radiated RF-Field			
Pre-calibrated field level	2	+32.2 / -24.3 %	5
Dynamic feedback field level	2.05	+21.2 / -17.5 %	3
Electrical Fast Transients (EFT) / Bursts			4
Surges			4
Conducted Disturbances. induced by RF-Fields			
via CDN	2	+15.1 / -13.1 %	6
via EM clamp	2	+42.6 / -29.9 %	6
via current clamp	2	+43.9 / -30.5 %	6
Power Frequency Magnetic Field	2	+20.7 / -17.1 %	2
Pulse Magnetic Field			4
Voltage Dips. Short Interruptions and Voltage Variations			4
Oscillatory Waves			4
Conducted Low Frequency Disturbances			
Voltage setting	2	± 0.9 %	2
Frequency setting	2	± 0.1 %	2
Electrical Transient Transmission in Road Vehicles			4

Table 7



Note 1:

The expanded uncertainty reported according to CISPR 16-4-2:2003-11 is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2$, providing a level of confidence of $p = 95.45\%$

Note 2:

The expanded uncertainty reported according to UKAS Lab 34 (Edition 1, 2002-08) is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2$, providing a level of confidence of $p = 95.45\%$

Note 3:

The expanded uncertainty reported according to UKAS Lab 34 (Edition 1, 2002-08) is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2.05$, providing a level of confidence of $p = 95.45\%$

Note 4:

It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence.

Note 5:

The expanded uncertainty reported according to IEC 61000-4-3 is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2$, providing a level of confidence of $p = 95.45\%$

Note 6:

The expanded uncertainty reported according to IEC 61000-4-6 is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2$, providing a level of confidence of $p = 95.45\%$

Note 7:

The expanded uncertainty reported according to ETSI TR 100 028 V1.4.1 (all parts) is based on a standard uncertainty multiplied by a coverage factor of $k_p = 1.96$, providing a level of confidence of $p = 95.45\%$

Note 8:

The expanded uncertainty reported according to ETSI TR 102 273 V1.2.1 (all parts) is based on a standard uncertainty multiplied by a coverage factor of $k_p = 1.96$, providing a level of confidence of $p = 95.45\%$

END OF TEST REPORT