Industrial Internet Innovation Center (Shanghai) Co.,Ltd.

EMC TEST REPORT

PRODUCT	tedee DOOR SENSOR
BRAND	Tedee
MODEL	TDSV1.0, TDSV1.0 A, TDSV1.0 B
APPLICANT	Tedee Sp. z o.o.
FCC ID	2BCK5TDSV10
ISSUE DATE	February 28, 2025
STANDARD(S)	FCC Part 15, Subpart B, ANSI C63.4-2014, ICES-003 Issue 7.

Prepared by: ***Li Liukai*** **Reviewed by:** ***Qin Yabin*** **Approved by:** ***Zhang Min***

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1 Summary of Test Report

1.1 Test Standard (s)

No.	Test Standard(s)	Title
1	FCC Part 15, Subpart B	Radio frequency devices
2	ANSI C63.4	Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
3	ICES-003	Information Technology Equipment (Including Digital Apparatus)-Limits and Methods of Measurement
NOTE: According to customer requirements, test and report using the latest version of the standard.		

1.2 Summary of Test Results

No.	Item(s)	FCC Standard(s)	IC Standard(s)	Verdicts for Single Item	Detailed Results
1	Radiated Emission	15.109(a)	3.2.2	Pass	See section 6.1
2	AC Conducted Emission	15.107(a)	3.2.1	N/A	See Note2 below

Note1:
The TDSV1.0, TDSV1.0 A, TDSV1.0 B, manufactured by Tedee Sp. z o.o. is a new product for testing.
Industrial Internet Innovation Center (Shanghai) Co., Ltd. only performed test cases which identified with Pass/Fail/Inc result in section 1.3.
Industrial Internet Innovation Center (Shanghai) Co., Ltd. has verified that the compliance of the tested device specified in section 4 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 1 of this test report.
Note2:
Because the EUT is battery powered, adapter-related tests cannot be performed. Therefore, Verdicts for Single Item is N/A.

2 General Information of The Laboratory

2.1 Testing Laboratory

Lab Name	Industrial Internet Innovation Center (Shanghai) Co.,Ltd.
Address	Building 4, No. 766, Jingang Road, Pudong, Shanghai, China
Telephone	021-68866880
FCC Registration No.	708870
FCC Designation No.	CN1364
IC designation No.	10766A
CAB identifier	CN0067

2.2 Laboratory Environmental Requirements

Temperature	15℃~35℃
Relative Humidity	25%RH~75%RH
Atmospheric Pressure	86kPa~106kPa
Supply Voltage	3V from Battery

2.3 Project Information

Project Manager	Wei Hanyu
Test Date	February 12, 2025 to February 17, 2025

3 General Information of The Customer

3.1 Applicant

Company	Tedee Sp. z o.o.
Address	Karola Bohdanowicza 21/57 Street
Telephone	+48 519 176 611

3.2 Manufacturer

Company	Tedee Sp. z o.o.
Address	Karola Bohdanowicza 21/57 Street
Telephone	+48 519 176 611

4 General Information of The Product

4.1 Product Description for Equipment under Test (EUT)

Product	tedee DOOR SENSOR
Model	TDSV1.0, TDSV1.0 A, TDSV1.0 B
Date of Receipt	February 12, 2025
EUT ID*	S06aa
SN/IMEI	N/A
Supported Radio Technology and Bands	BT 5 BLE 1M/2M
Hardware Version	P3
Software Version	ET100_0.2_017
Power Rating	DC 3V from battery
NOTE1: EUT ID is the internal identification code of the laboratory. NOTE2: Photographs of EUT are shown in ANNEX A of this test report. NOTE3: Samples in the test report are provided by the customer. The test results are only applicable to the samples received by the laboratory.	

4.2 Description for Auxiliary Equipment (AE)

AE ID*	Description	Model	SN/Remark
AE1	Battery	N/A	N/A
AE2	Mobile	ZTX	N/A
AE3	Software	nRF Connect	N/A
AE4	Magnet	N/A	N/A
NOTE: *AE ID is the internal identification code of the laboratory.			

5 Test Configuration Information

5.1 Laboratory Environmental Conditions

5.1.1 Permanent Facilities

Semi-anechoic chamber SAC3-1 (9 m*8m*6.2m) & SAC3-2 (9.8m*6.7m*6.7m)	
Shielding effectiveness	0.014MHz ~1MHz, >60dB; 1MHz~1000MHz, >90dB.
Electrical insulation	> 2MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ± 4 dB, 3m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (SVSWR)	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

Shielded room	
Shielding effectiveness	0.014MHz~1MHz, >60dB; 1MHz~1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω

5.2 Decision of final test mode

The EUT was tested in conjunction with the accessories in Section 4.2. We tested all of the following test modes and selected the worst mode from the test results and recorded them in the report.

The test configuration modes are as the following:

Test Item	Test setup and operating modes
Radiated emission	30MHz-18GHz frequency range: Mode 1: BLE mode+ AE

5.3 EUT System Operation

1. Connect the EUT with AE.
2. Setup the EUT according to the standard, connect the EUT and Phone with nRF connect APK.
3. Start testing and monitoring the function.

5.4 EUT Connection Diagram of Test System

<Figure 5.4-1> Mode 1

5.5 Test Equipment Utilized

No.	Name	Model	S/N	SW Version	HW Version	Manufacturer	Cal. Date	Cal. Interval
1	Test Receiver	ESR7	102399	1.4	00	R&S	2024-06-07	1 year
2	Test Receiver	FSW43	101943	1.12	00	R&S	2024-08-21	1 year
3	Trilog Antenna	VULB9162	00426	N/A	N/A	Schwarzbeck	2024-08-02	1 year
4	Double Ridged Guide Antenna	ETS-3117	00135885	N/A	N/A	ETS	2025-01-11	1 year
5	EMI Test Software	EMC32 V10.60.20	N/A	N/A	N/A	R&S	N/A	N/A
6	Preamplifier	SCU08F1	8320024	N/A	N/A	R&S	2024-10-09	1 year
7	Preamplifier	SCU18	10155	N/A	N/A	R&S	2024-10-09	1 year

No.	Name	Model	S/N	SW Version	HW Version	Manufacturer	Cal. Date	Cal. Interval
Test Cable: According to the quality management system of our laboratory, the measurement cables used for testing are calibrated every two years. The next calibration is scheduled for 2025-06-20.								

5.6 Measurement Uncertainty

Item (s)	Uncertainty
Radiated Emission 30MHz-1000MHz	4.92 dB
Radiated Emission 1000MHz-18000MHz	5.66 dB
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of *k*=2.	

6 Test Results

6.1 Radiated Emission

6.1.1 Method of Measurement

a. For 30MHz -1000MHz, the EUT was placed on the top of a rotating 0.8m table above the ground at a semi-anechoic chamber. The distance between the EUT and the received antenna was 3 meters. The table was rotated 360 degree and the received antenna mounted on a variable-height antenna tower was varied from 1m to 4m to find the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were set during the measurement.

b. For 1000MHz -18000MHz, the EUT was placed on the top of a 0.8m table above the ground at a 3m fully anechoic chamber. The maximal emission value was acquired by adjusting the antenna height, The table was rotated 360 degrees to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were set during the measurement

6.1.2 EUT Connection Diagram of Test System

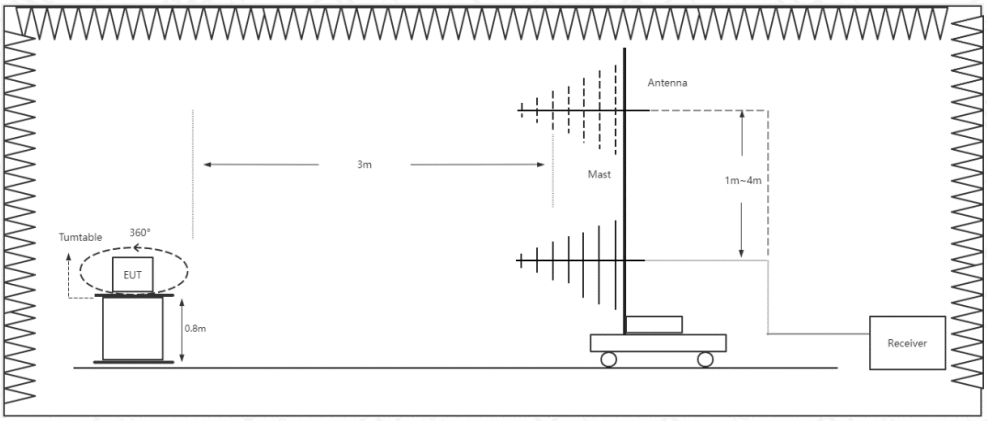

Figure 6.1.2-1 RE 30MHz-1GHz Connection Diagram

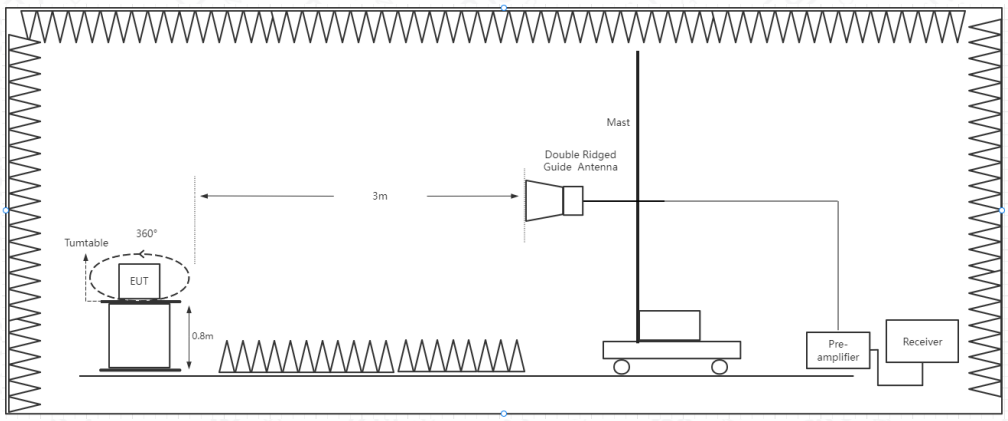

Figure 6.1.2-2 RE Above 1GHz Connection Diagram

6.1.3 Test Condition

Frequency Range (MHz)	RBW/VBW	Sweep Time (s)
30-1000	120kHz/300kHz	AUTO
1000-18000	1MHz/3MHz	AUTO

6.1.4 Limit/Criterion

Frequency Range (MHz)	Quasi-Peak (dBμV/m)	Peak (dBμV/m)	Average (dBμV/m)
30-88	40	N/A	N/A
88-216	43.5	N/A	N/A
216-960	46	N/A	N/A
Above 960	54	N/A	N/A
Above 1000	N/A	74	54

6.1.5 Test environmental conditions

Temperature	18.8℃
Relative Humidity	37.4%RH
Atmospheric Pressure	101.9 kPa

6.1.6 Test Results

Mode	Frequency (MHz)	Test Results	Verdicts
Mode 1: BLE mode+ AE	30-1000	See Annex A.1-1	Pass
Mode 1: BLE mode+ AE	1000-18000	See Annex A.1-2 & A.1-3	Pass
NOTE Abbreviations used in this clause: Pass—P; Fail—F; Not applicable—N/A			

Annex A: Measurement Data

A.1 Radiated Emission

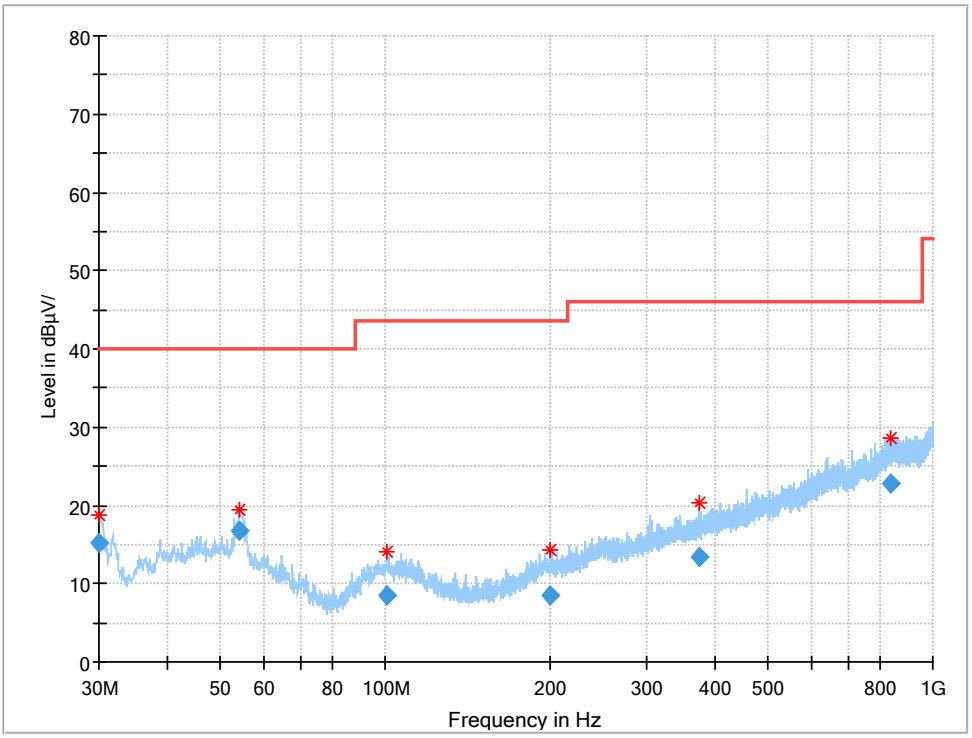

Figure A.1-1 Mode 1 (30M-1GHz)

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.095042	15.09	40.00	24.91	100.0	V	281.0	-16.1
54.253560	16.72	40.00	23.28	100.0	V	60.0	-11.9
100.420800	8.46	43.50	35.04	200.0	H	322.0	-13.2
199.424800	8.50	43.50	35.00	200.0	H	0.0	-12.6
375.184840	13.33	46.00	32.67	200.0	V	0.0	-7.8
838.869360	22.76	46.00	23.24	100.0	V	5.0	2.1

Note:

1.Horizontal and vertical polarity is all have been tested, the result of them is synthesized in the above data diagram.

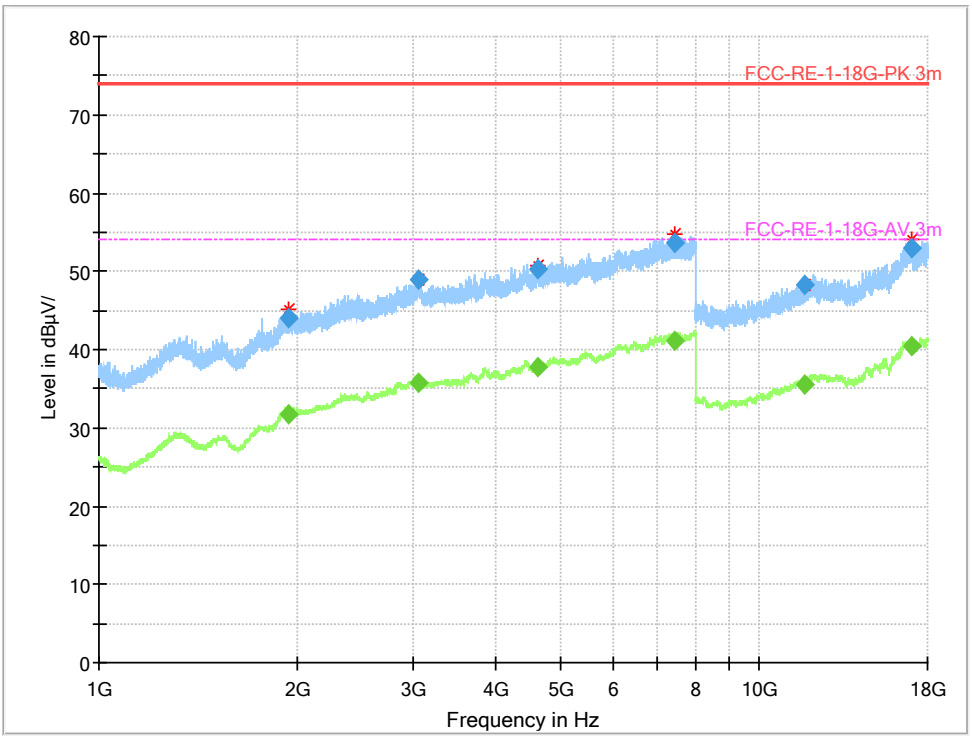

Figure A.1-2 Mode 1 (1GHz-18GHz)-H

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1938.506250	44.09	---	74.00	29.91	215.0	H	222.0	6.7
1938.506250	---	31.80	54.00	22.20	215.0	H	222.0	6.7
3039.683750	48.85	---	74.00	25.15	115.0	H	269.0	12.2
3039.683750	---	35.82	54.00	18.18	115.0	H	269.0	12.2
4619.593750	50.25	---	74.00	23.75	115.0	H	3.0	14.7
4619.593750	---	37.74	54.00	16.26	115.0	H	3.0	14.7
7440.091250	---	41.12	54.00	12.88	215.0	H	334.0	20.5
7440.091250	53.74	---	74.00	20.26	215.0	H	334.0	20.5
11721.901250	48.31	---	74.00	25.69	215.0	H	0.0	13.3
11721.901250	---	35.49	54.00	18.51	215.0	H	0.0	13.3
16984.163750	---	40.38	54.00	13.62	115.0	H	264.0	22.0
16984.163750	52.90	---	74.00	21.10	115.0	H	264.0	22.0

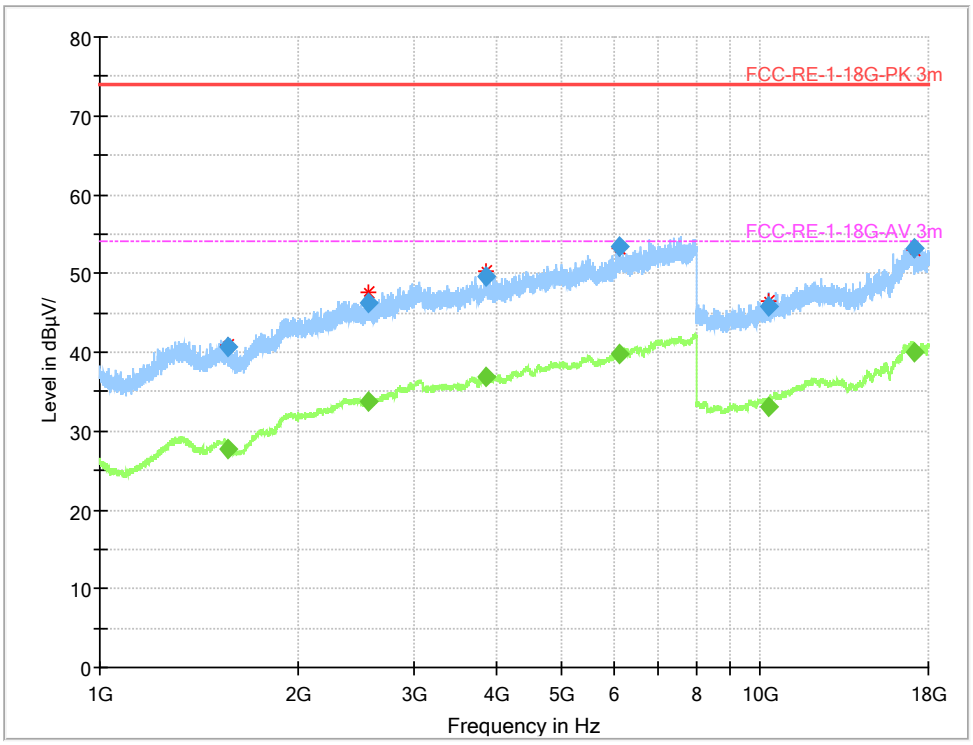

Figure A.1-3 Mode 1 (1GHz-18GHz)-V

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1565.500000	40.66	---	74.00	33.34	215.0	V	56.0	2.6
1565.500000	---	27.81	54.00	26.19	215.0	V	56.0	2.6
2545.773750	---	33.64	54.00	20.36	215.0	V	142.0	9.1
2545.773750	46.31	---	74.00	27.69	215.0	V	142.0	9.1
3857.155000	49.61	---	74.00	24.39	210.0	V	242.0	13.3
3857.155000	---	36.76	54.00	17.24	210.0	V	242.0	13.3
6110.033750	---	39.77	54.00	14.23	215.0	V	331.0	18.3
6110.033750	53.30	---	74.00	20.70	215.0	V	331.0	18.3
10280.253750	45.88	---	74.00	28.12	100.0	V	1.0	10.2
10280.253750	---	33.01	54.00	20.99	100.0	V	1.0	10.2
17103.723750	53.20	---	74.00	20.80	215.0	V	242.0	21.6
17103.723750	---	40.03	54.00	13.97	215.0	V	242.0	21.6

Annex B: Revised History

Version	Revised Content
V0	Initial

Annex C: Accreditation Certificate

Accredited Laboratory

A2LA has accredited

INDUSTRIAL INTERNET INNOVATION CENTER (SHANGHAI) CO., LTD.

Shanghai, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 20th day of September 2023.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3682.01
Valid to April 30, 2025
Revised February 24, 2025

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.