

## TEST REPORT

### Nr. R22007901

### Federal Communication Commission (FCC)

|                                                                                                                                                                                                            |                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| <b>Report Reference No.</b> .....                                                                                                                                                                          | R22007901                                                 |
| Date of issue: .....                                                                                                                                                                                       | 24.06.2022                                                |
| Total number pages: .....                                                                                                                                                                                  | 15                                                        |
| <b>Customer name</b> .....                                                                                                                                                                                 | Microgate S.r.l.                                          |
| Address .....                                                                                                                                                                                              | Via Waltraud Gebert Deeg, 3e – 39100 Bolzano (BZ) – Italy |
| <b>Test specification:</b>                                                                                                                                                                                 |                                                           |
| Standards .....                                                                                                                                                                                            | KDB 447498 D01 General RF Exposure Guidance v06           |
| Non-standard test method .....                                                                                                                                                                             | N/A                                                       |
| <b>Test Report Form No.</b> .....                                                                                                                                                                          | 15-247_HoppingCMC                                         |
| Test Report Form(s) Originator ..                                                                                                                                                                          | CMC Centro Misure Compatibilità S.r.l.                    |
| Master TRF .....                                                                                                                                                                                           | 2022-06                                                   |
| <b>General disclaimer:</b>                                                                                                                                                                                 |                                                           |
| The test results presented in this report relate only to the object tested.<br>This report shall not be reproduced, except in full, without the written approval of CMC Centro Misure Compatibilità S.r.l. |                                                           |
| <b>(*) Test item description</b> .....                                                                                                                                                                     | WITTYPRO SEM – Traffic Light                              |
| (*) Trademark .....                                                                                                                                                                                        | Microgate                                                 |
| (*) Manufacturer .....                                                                                                                                                                                     | Microgate S.r.l.                                          |
| (*) Model / Type reference .....                                                                                                                                                                           | WIT205                                                    |
| (*) FCC ID .....                                                                                                                                                                                           | 2ADEOWIT205                                               |
| (*) Rating(s) .....                                                                                                                                                                                        | 3,7 Vdc from battery                                      |
| <b>Report</b>                                                                                                                                                                                              |                                                           |
| Tested by (name + signature) .....                                                                                                                                                                         | M. Segalla                                                |
| Approved by (name + signature) .....                                                                                                                                                                       | F. Marenda                                                |

(\*) information provided by the customer

|          |                                           |    |
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| <b>2 Reference standard</b>                                                                                                                        |                                                                                             |
| KDB 447498 D01 General RF Exposure Guidance v06                                                                                                    | RF exposure procedures and equipment authorization policies for mobile and portable devices |
| <b>3 List of attachments</b>                                                                                                                       |                                                                                             |
| Attachment 1: Instruments list, measurement uncertainty, judgement of compliance and quality manual references                                     |                                                                                             |
| <b>4 Deviation(s) from test specification</b>                                                                                                      |                                                                                             |
| None                                                                                                                                               |                                                                                             |
| <b>5 Testing location</b>                                                                                                                          |                                                                                             |
| CMC Centro Misura Compatibilità S.r.l.<br>Via della Fisica, 20 – 36016 Thiene (VI) – Italy<br>Test site facility's FCC registration number: 182474 |                                                                                             |

| <b>Revision index</b> | <b>Date</b> | <b>Change history</b> |
|-----------------------|-------------|-----------------------|
| 1.0                   | 24.06.2022  | --                    |

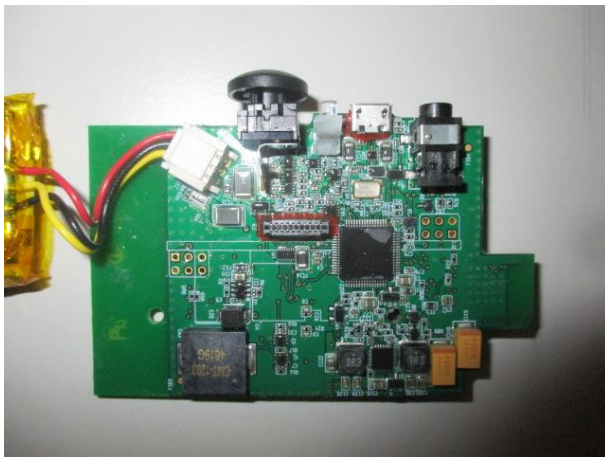
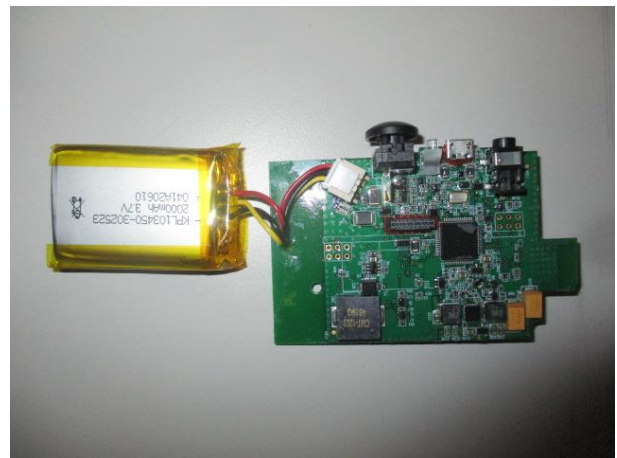
|                                                                                                                                                                                                                                                                                                                                      |                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| <b>Testing and sampling:</b>                                                                                                                                                                                                                                                                                                         |                                                          |
| Date of receipt of test item.....                                                                                                                                                                                                                                                                                                    | 12.01.2022                                               |
| Testing start date .....                                                                                                                                                                                                                                                                                                             | 24.06.2022                                               |
| Testing end date .....                                                                                                                                                                                                                                                                                                               | 24.06.2022                                               |
| Sampling procedure.....                                                                                                                                                                                                                                                                                                              | Equipment used for testing was picked up by the customer |
| Internal identification .....                                                                                                                                                                                                                                                                                                        | Adhesive label with the product number P220029           |
| <b>General remarks:</b>                                                                                                                                                                                                                                                                                                              |                                                          |
| <p>This report shall not be reproduced, except in full, without the written approval of CMC.</p> <p>The test results presented in this report relate only to the object tested.</p> <p>“(see appended table)”: refers to a table appended to the report.</p> <p>Throughout this report a comma is used as the decimal separator.</p> |                                                          |
| <b>Possible test case verdicts:</b>                                                                                                                                                                                                                                                                                                  |                                                          |
| Test case does not apply to the test object:                                                                                                                                                                                                                                                                                         | N/A (Not Applicable)                                     |
| Test object does meet the requirement:                                                                                                                                                                                                                                                                                               | P (Pass)                                                 |
| Test object does not meet the requirement:                                                                                                                                                                                                                                                                                           | F (Fail)                                                 |
| Test object does not performed:                                                                                                                                                                                                                                                                                                      | N/E (Not Executed)                                       |
| <b>Definition of symbols used in this test report:</b>                                                                                                                                                                                                                                                                               |                                                          |
| <input checked="" type="checkbox"/> Indicates that the listed condition, standard or equipment is applicable for this report.<br><input type="checkbox"/> Indicates that the listed condition, standard or equipment is not applicable for this report.                                                                              |                                                          |

## 6 General description of test item(s)

|                                |                                                                                                           |                                                 |                          |                                              |                             |                          |                          |
|--------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------|--------------------------|----------------------------------------------|-----------------------------|--------------------------|--------------------------|
| Description .....              | WITTYPRO SEM – Traffic Light                                                                              |                                                 |                          |                                              |                             |                          |                          |
| Model Number .....             | WIT205                                                                                                    |                                                 |                          |                                              |                             |                          |                          |
| FCC ID .....                   | 2ADEOWIT205                                                                                               |                                                 |                          |                                              |                             |                          |                          |
| Serial Number .....            | 000004                                                                                                    |                                                 |                          |                                              |                             |                          |                          |
| Brand name .....               | Microgate                                                                                                 |                                                 |                          |                                              |                             |                          |                          |
| Nominal frequency .....        | F <sub>L</sub> : 433,31 MHz                                                                               |                                                 |                          |                                              | F <sub>H</sub> : 434,71 MHz |                          |                          |
| Rated power supply .....       |                                                                                                           | Voltage and Frequency                           | Reference poles          |                                              |                             |                          |                          |
|                                |                                                                                                           |                                                 | N                        | L1                                           | L2                          | L3                       | PE                       |
|                                | <input type="checkbox"/>                                                                                  | AC:                                             | <input type="checkbox"/> | <input type="checkbox"/>                     | <input type="checkbox"/>    | <input type="checkbox"/> | <input type="checkbox"/> |
|                                | <input type="checkbox"/>                                                                                  | AC:                                             | <input type="checkbox"/> | <input type="checkbox"/>                     | <input type="checkbox"/>    | <input type="checkbox"/> | <input type="checkbox"/> |
|                                | <input checked="" type="checkbox"/>                                                                       | DC: 3,7 V from battery                          |                          |                                              |                             |                          | <input type="checkbox"/> |
| Type of equipment .....        | <input checked="" type="checkbox"/> Transmitter unit<br><input checked="" type="checkbox"/> Receiver unit |                                                 |                          |                                              |                             |                          |                          |
| Type of station .....          | <input type="checkbox"/> Portable station<br><input checked="" type="checkbox"/> Mobile station           |                                                 |                          |                                              |                             |                          |                          |
| Software version .....         | Bootloader Version 2.0.3<br>Application Version 2.1.14                                                    |                                                 |                          |                                              |                             |                          |                          |
| Test arrangements of EUT ..... | <i>Intended operational arrangement(s) of EUT</i>                                                         |                                                 |                          | <i>Test arrangement (see basic standard)</i> |                             |                          |                          |
|                                | <input type="checkbox"/> Table-top only                                                                   |                                                 |                          | Table-top                                    |                             |                          |                          |
|                                | <input type="checkbox"/> Floor-standing only                                                              |                                                 |                          | Floor-standing                               |                             |                          |                          |
|                                | <input type="checkbox"/> Can be floor-standing or table-top                                               |                                                 |                          | Table-top                                    |                             |                          |                          |
|                                | <input type="checkbox"/> Rack mounted                                                                     |                                                 |                          | In rack or table-top                         |                             |                          |                          |
|                                | <input checked="" type="checkbox"/> Other, for example wall mounted, ceiling mounted, handheld, body worn |                                                 |                          | Table-top                                    |                             |                          |                          |
| Operating modes .....          | No.                                                                                                       | Operating mode of test item                     |                          |                                              |                             |                          |                          |
|                                | 1                                                                                                         | EUT in continuous transmission at maximum power |                          |                                              |                             |                          |                          |

## 6.1 Photos of the test item





**7 Verdict summary section**

| KDB 447498 D01 General RF Exposure Guidance v06 |                         |                |          |
|-------------------------------------------------|-------------------------|----------------|----------|
| Clause                                          | Requirement – Test case | Basic standard | Verdict  |
| 7.1                                             | RF Exposure Analysis    | --             | <b>P</b> |

| Normative references                            |                                                                                             |
|-------------------------------------------------|---------------------------------------------------------------------------------------------|
| Reference no.                                   | Description                                                                                 |
| KDB 447498 D01 General RF Exposure Guidance v06 | RF exposure procedures and equipment authorization policies for mobile and portable devices |

## 8 Test conditions

### 8.1 General

|                                          |                                                                                                                                                          |                 |                             |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| Environmental reference conditions.....: | The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment.        |                 |                             |
|                                          | The climatic conditions during the tests were within the following limits:                                                                               |                 |                             |
|                                          | <b>Temperature</b>                                                                                                                                       | <b>Humidity</b> | <b>Atmospheric pressure</b> |
|                                          | 15 °C – 35 °C                                                                                                                                            | 30 % - 60 %     | 800 hPa – 1060 hPa          |
|                                          | If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report. |                 |                             |
| Measurement uncertainties .....          | Attachment 1                                                                                                                                             |                 |                             |

## 9 Test results

### 9.1 RF Exposure Analysis

|                                |                                     |
|--------------------------------|-------------------------------------|
| Tested by .....                | M. Segalla                          |
| Test date .....                | 24.06.2022                          |
| Test location (stand) .....    | Laboratory                          |
| Reference standards .....      | KDB 447498 D01 cl. 4<br>ANSI C63.10 |
| Supplementary information..... | --                                  |

#### Acceptance limits

1 mW/cm<sup>2</sup> max at 20 cm of distance

#### Results

| Transmission channel<br>(MHz) | Measured level<br>(dBμV/m) | Peak Output Power<br>(mW) | Power Density at 20<br>cm (mW/cm <sup>2</sup> ) | Power Density Limit<br>(mW/cm <sup>2</sup> ) |
|-------------------------------|----------------------------|---------------------------|-------------------------------------------------|----------------------------------------------|
| 433,31                        | 79,33                      | 0,286                     | 0,00002                                         | 0,289                                        |
| 434,71                        | 79,91                      | 0,326                     | 0,00002                                         | 0,290                                        |

#### Remarks

$$P = (E \times d)^2 / (30 \times G) \times 1000$$

Where:

E = the measured maximum fundamental field strength in V/m

G = the numeric gain of the transmitting antenna: 0,339 (-4,70 dBi)

d = the distance in meters from which the field strength was measured (3 m)

P = the power in mW

$$\text{Power Density} = (P \times G) / (4\pi R^2)$$

**Attachment 1**

**Instruments list**

| <i><b>Id. number</b></i> | <i><b>Manufacturer</b></i> | <i><b>Model</b></i> | <i><b>Description</b></i>         | <i><b>Serial number</b></i> | <i><b>Last calibration</b></i> | <i><b>Due date calibration</b></i> |
|--------------------------|----------------------------|---------------------|-----------------------------------|-----------------------------|--------------------------------|------------------------------------|
| CMC S353                 | Rohde & Schwarz            | ESW26               | Emi Test Receiver 1 Hz - 26.5 GHz | 101492                      | September '20                  | September '22                      |

## Attachment 1

### Measurement uncertainty

| Test                                                      | Test Setup | Expanded uncertainty     | Note |
|-----------------------------------------------------------|------------|--------------------------|------|
| Conducted emission CISPR 16<br>LISN 50uH 0,009-0,0150 MHz | PE001_01   | 3,4 dB                   | 1    |
| Conducted emission CISPR 16<br>LISN 50uH 0,150-30,0 MHz   | PE001_01   | 3,0 dB                   | 1    |
| Conducted emission CISPR 16<br>Voltage Probe 0,15-30 MHz  | PE001_02   | 2,3 dB                   | 1    |
| Conducted emission CISPR 16<br>Current Probe 0,15-30 MHz  | PE001_03   | 2,6 dB                   | 1    |
| Conducted emission CISPR 16<br>ISN 0,15-30 MHz            | PE001_04   | 4,7 dB                   | 1    |
| Clic CISPR 16<br>LISN 50uH 0,150-30,0 MHz                 | PE001_05   | 2,9 dB                   | 1    |
| Radiated Emission CDNE<br>30-300 MHz                      | PE001_06   | 3,3 dB                   | 1    |
| Disturbance Power<br>30-300 MHz                           | PE002_01   | 3,8 dB                   | 1    |
| Radiated Emission LAS<br>0,15-30 MHz                      | PE003_01   | 2,0 dB                   | 1    |
| Radiated Emission CISPR 16<br>Loop Ant. 0,15-30 MHz       | PE004_01   | 4,1 dB                   | 1    |
| Radiated Emission CISPR 16<br>Bicon. Ant. 30-300 MHz      | PE004_02   | 4,7 dB                   | 1    |
| Radiated Emission CISPR 16<br>LogP. Ant. 300-1000 MHz     | PE004_03   | 4,6 dB                   | 1    |
| Radiated Emission CISPR 16<br>Horn Ant. 1-18 GHz          | PE004_04   | 4,7 dB                   | 1    |
| Human Exposure to electromagnetic fields                  | PE005_01   | 16,7 %                   | 1    |
| Harmonics                                                 | PE006_01   | 10 mA + 2,9 %            | 1    |
| Flicker                                                   | PE007_01   | 4,15 %                   | 1    |
| Radiated Immunity<br>80 MHz - 6 GHz                       | PE102_XX   | 2,20 dB 0,86 V/m a 3V/m  | 1    |
| Conducted Immunity<br>0,15 - 230 MHz                      | PE105_XX   | 1,20 dB 0,44 V a 3V      | 1    |
| AC Magnetic field                                         | PE106_01   | 1,55 % 0,15 A/m a 10A/m  | 1    |
| Pulse Magnetic field                                      | PE107_01   | 6,23 % 18,7 A/m a 300A/m | 1    |
| Dumped Magnetic field                                     | PE108_01   | 6,23 % 1,87 A/m a 30A/m  | 1    |
| Common mode conducted immunity                            | PE112_01   | 2,16 % 0,22 V a 10V      | 1    |

## Attachment 1

| Test                                       | Test Setup  | Expanded uncertainty | Note |
|--------------------------------------------|-------------|----------------------|------|
| Power/Spurious<br>9kHz-30MHz               | PR001_01    | 4,1 dB               | 1    |
| Power/Spurious ERP<br>30-1000MHz d=10m     | PR001_02+03 | 4,7 dB               | 1    |
| Misura della potenza EIRP<br>1-18GHz d=3m  | PR001_04+05 | 4,7 dB               | 1    |
| Misura della potenza EIRP<br>18-40GHz d=3m | PR001_06    | 5,4 dB               | 1    |
| Frequency error                            | PR002_01+02 | $< 1 \times 10^{-7}$ | 1    |
| Timing zero span (1001pts.)                | PR002_01+02 | 0,2 % SWT            | 1    |
| Modulation bandwidth                       | PR002_01+02 | $< 1 \times 10^{-7}$ | 1    |
| Conducted RF power and spurious emission   | PR002_01+02 | 1,1 dB               | 1    |
| Adjacent channel power                     | PR002_01+02 | 1,1 dB               | 1    |
| Blocking                                   | PR002_01+02 | 1,1 dB               | 1    |

| Test                                             | Test Setup | Expanded uncertainty | Note |
|--------------------------------------------------|------------|----------------------|------|
| Electrostatic discharge immunity test            | PE101_0X   |                      | 2    |
| Electrical fast transients / burst immunity test | PE103_0X   |                      | 2    |
| Surge immunity test                              | PE104_0X   |                      | 2    |
| Short interruption immunity test                 | PE109_01   |                      | 2    |
| Ring Wave immunity test                          | PE110_01   |                      | 2    |
| Low frequency immunity test                      | PE111_01   |                      | 2    |
| Dumped Oscillatory immunity test                 | PE113_01   |                      | 2    |
| Rev. 22_01 date 31/01/2022                       |            |                      |      |

### Note 1:

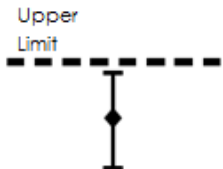
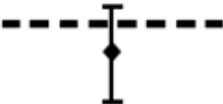
The expanded uncertainty reported according to the document EA-4-02 is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of  $p = 95\%$

### Note 2:

It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence, covering factor  $k=2$

## Attachment 1

### Judgement of compliance

| Case 1                                                                                                                                                                                                                                                       | Case 2                                                                                                                                                                                                                                                                                              | Case 3                                                                                                                                                                                                                                                                                                  | Case 4                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>The sample complies with the requirements.</p> <p>The measurement results is within the specification limit when the measurement uncertainty is taken into account.</p> |  <p>The sample complies with the requirements.</p> <p>It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty although the measurement result is below the limit.</p> |  <p>The sample does not comply with the requirements.</p> <p>It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty also the measurement result is upper the limit.</p> |  <p>The sample does not comply with the requirements.</p> <p>The measurement results is outside the specification limit when the measurement uncertainty is taken into account.</p> |

In agreement with ILAC-G8:09/2019 cl.4.2.1 Guidelines on Decision Rules and Statements of Conformity

### Quality manual references – Internal procedure

|                                                          |                                     |
|----------------------------------------------------------|-------------------------------------|
| Internal Procedure PM001 rev. 3.1 (Quality Manual) ..... | Measure procedure                   |
| Internal Procedure INC_M rev. 9.7 (Quality Manual) ..... | Measurement uncertainty calculation |