



Certificate Number: 5055.02

# TEST REPORT

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Report No.: SRTC2023-9003(F)-0044  
Product Name: Wireless Data Terminal  
Model Name: H651-62M2  
Applicant: SoftBank Robotics Corp.  
Manufacturer: Shenzhen United Time Technology Co.,LTD  
Specification: FCC Part15B (Certification)  
(2023 edition)  
ANSI C63.4-2014  
FCC ID 2ATI9-H65162M2

The State Radio\_monitoring\_center Testing Center (SRTC)  
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## 1. General information

### 1.1 Notes of the test report

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The test results relate only to individual items of the samples which have been tested.

### 1.2 Information about the testing laboratory

Company: The State Radio\_monitoring\_center Testing Center (SRTC)  
Test Site 1: 15th Building, No.30 Shixing Street, Shijingshan District  
Test Site 2: No.80, Zhaojiachang, Beizang, Daxing District  
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Country or Region: P.R.China  
Contacted person: Liu Jia  
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Email: liuji@src.org.cn  
Designation Number: CN1267  
Registration number: 239125

### 1.3 Applicant's details

Company: SoftBank Robotics Corp.  
Address: 7-1, Kaigan 1-chome, Minato-ku, Tokyo, Japan  
City: Tokyo  
Country or Region: Japan  
Contacted person: Winston Wu  
Tel: 8033168044  
Email: wenhsiang.wu@softbankrobotics.com

### 1.4 Manufacturer's details

Company: Shenzhen United Time Technology Co.,LTD  
Address: F2.64D-403,Tianzhan Building,Tian'an Cyber Park,Futian District,Shenzhen  
City: Shenzhen  
Country or Region: China  
Contacted person: Dasiy  
Tel: 17771641469  
Email: tyuan@utimemobile.com

### 1.5 Application details

Date of reception of test sample: 20<sup>th</sup> November 2023

Date of test: 25<sup>th</sup> November 2023 to 18<sup>th</sup> December 2023

## 1.6 Reference specification

FCC Part 15B, 2022 (Certification)  
ANSI C63.4-2014

## 1.7 Information of EUT

### 1.7.1 General information

|                          |  |
|--------------------------|--|
| Model Name of EUT        | H651-62M2  |
| Frequency Range          | WCDMA: FDD II/ FDD IV / FDD V<br>LTE: FDD 2/ FDD 4/ FDD 5/FDD 7/<br>FDD 8/ FDD 12/ FDD 17/<br>TDD 38 |
| Input Rated Voltage      | 3.85VDC, 1.5A  |
| Extreme Temperature      | Lowest: 0°C Highest: +45°C   |
| Extreme Voltage(Battery) | Minimum:3.4V, Maximum:4.4V   |
| HW Version               | G11R   |
| SW Version               | H651-62M2_V1.12_20231030   |
| IMEI                     | 353092150000115;<br>353092150000123  |

### 1.7.2 EUT details

| No.  | Model Name |
|------|------------|
| EUT1 | H651-62M2  |

### 1.7.3 Auxiliary equipment details

AE (Auxiliary Equipment) 1#: Battery

|                                 |   |
|---------------------------------|---|
| Trademark/ Manufacturer         | Shenzhen Huatiantong Technology Co., Ltd. |
| Model Number                    | UT651LI01                                 |
| Li-ion Polymer Battery Capacity | 4250mAh, 16.36Wh                          |

AE (Auxiliary Equipment) 2#: Adapter

|              |               |
|--------------|---------------|
| Equipment    | Adapter Power |
| Manufacturer | Saierkang     |
| Model Number | A2940         |

Note: Adapter supply by the lab which was only cooperated with this test.

#### 1.7.4 Test mode

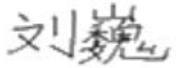

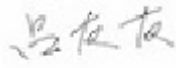
| Mode No. | Description of test mode |
|----------|--------------------------|
| Mode 1:  | Charging mode            |
| Mode 2:  | Standby                  |

Note1: As the information described, the relevant tests have been performed in order to verify in which mode would have the worst features ,so all the tests shown in this test report are performed when the EUT working on Mode 1.

## 2. Test information

### 2.1 Summary of the test results

| No. | Test case           | FCC reference | Verdict |
|-----|---------------------|---------------|---------|
| 1   | Conducted emissions | 15.107        | Pass    |
| 2   | Radiated emissions  | 15.109        | Pass    |

|   |  |
|---|--|
| Approved By: Mr.LiuWei<br>Director of the test department<br> | Checked By: Mr.Guoyu<br>Vice director of the test department<br> |
| Tested By:<br>Mr. Lv Youyou<br>                              | Issued date:<br>2024.01.03   |

## 2.2 Test result

### 2.2.1 Conducted Emissions-FCC Part15.107

Ambient condition:

| Temperature | Relative humidity | Pressure |
|-------------|-------------------|----------|
| 24.6°C      | 38.7%             | 100.9kPa |

Test Setup with charger:

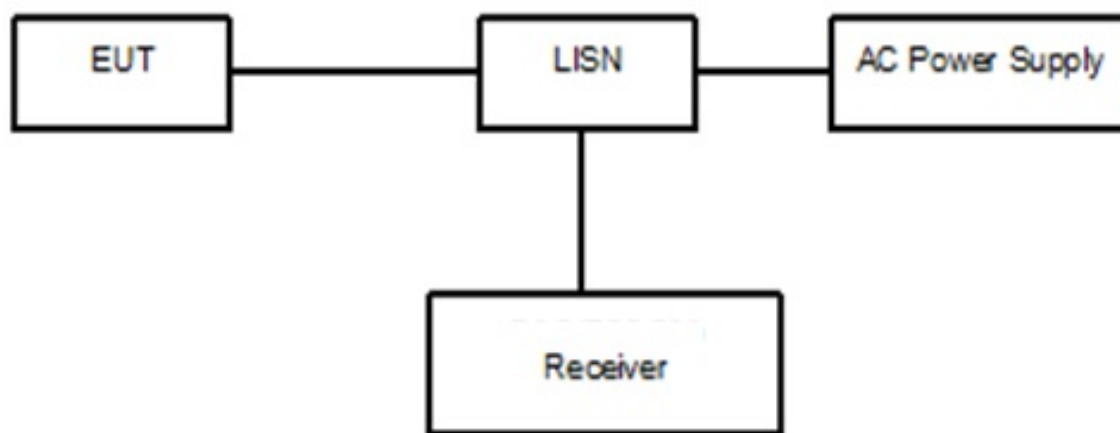


Figure 1

Test Procedure:

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The EUT is connected with LISN via the charger. The LISN is connected to the reference ground. The accessories of the EUT are connected with the EUT.

The test set-up and the test methods are performed according to ANSI C63.4:2014.

Then start the test software EMC32. Sweep the whole frequency band through the range from 150 KHz to 30 MHz with RBW 9kHz, VBW 30kHz. The measurement should be done for both L line and N line. During pre-test, the receiver uses both peak detector and average detector. And the final test, the receiver uses both average detector and Quasi-peak detector.

The data of cable loss has been calibrated in full testing frequency range before the testing.

A “reference path loss” Corr.(dB) is established and the  $L_{cable}+ATT+VDF$  is the attenuation of “reference path loss”, and including the cable loss, the attenuation of the attenuator, the voltage division factor of AMN.

The measurement results are obtained as described below:

$$P_{result}=P_{mea}+Corr.(dB)$$

Limit:

| Frequency of Emission(MHz) | Limits(dB $\mu$ V) |           |
|----------------------------|--------------------|-----------|
|                            | Quasi-peak         | Average   |
| 0.15~0.5                   | 66 to 56*          | 56 to 46* |
| 0.5~5                      | 56                 | 46        |
| 5~30                       | 60                 | 50        |

Note: \* Decreases with the logarithm of the frequency

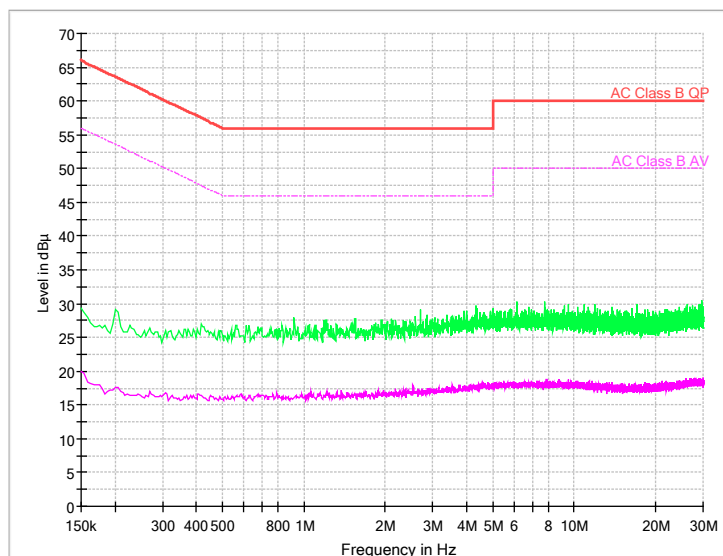
Uncertainty

Quasi-peak: 3.92dB

Average: 3.92dB

Test result:

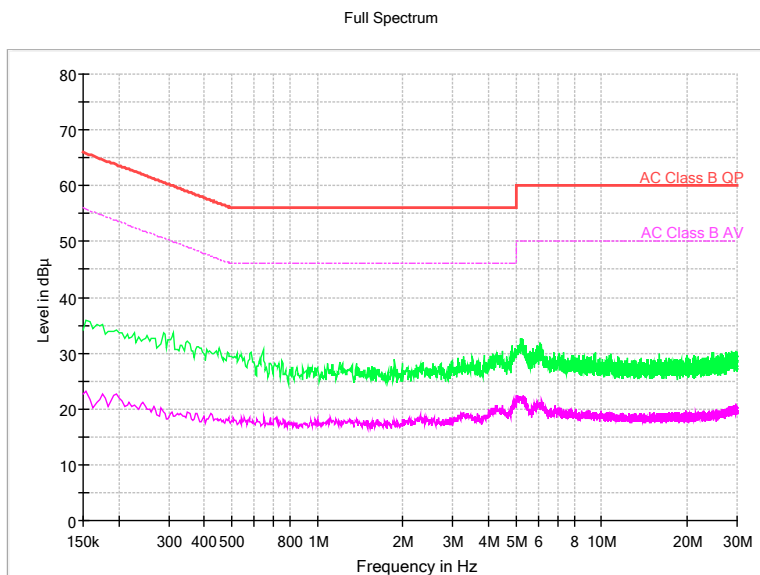
### Noise Level of the Measuring Instrument



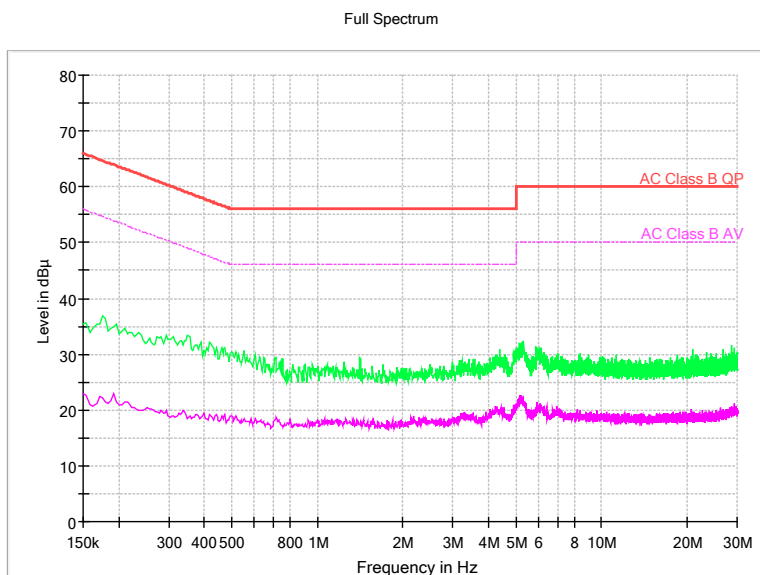
Pic1. Conducted emission L and N Line



EUT1:



Pic2. Conducted emission L&N Line 120V AC



Pic3. Conducted emission L&N Line 240V AC

## 2.2.2 Radiated Emissions-FCC Part15.109

Ambient condition:

| Temperature | Relative humidity | Pressure |
|-------------|-------------------|----------|
| 24.6°C      | 38.7%             | 100.9kPa |

Test Setup:

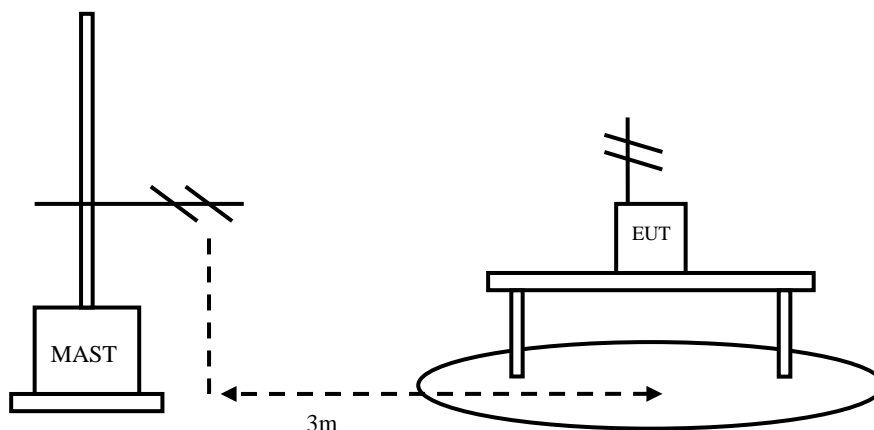


Figure 2

Test Procedure:

EUT+Charger:

The EUT should be placed on a non-metallic table 80cm above the ground plane. The receive antennas shall be moved from 1 to 4 meters. The distance between EUT and receive antenna should be 3 meters.

The accessories of the EUT are connected with the EUT. The EUT should work in idle mode. Open the following functions of EUT: Alarm clock. The test set-up and the test methods are performed according to ANSI C63.4:2014.

Then start the test software EMC32. Sweep the whole frequency band through the range from 30MHz to 1GHz, using receive log period antenna VULB 9163.

During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The EUT is laid in two modes as follow: 1. put the EUT in horizontal direction; 2. put the EUT in vertical direction.

The data of cable loss and antenna factor have been calibrated in full testing frequency range before the testing. All test results are performed with max hold at the horizontal and vertical polarity.

RBW=120kHz, VBW=300kHz, when the test frequency: 30MHz<f<1GHz

RBW=1MHz, VBW=3MHz, when the test frequency: f>1GHz

A “reference path loss” is established and the  $A_{Rpl}$  is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{mea}} + A_{Rpl}$$

Sample calculation:  $(27.92 \text{ dB}\mu\text{V/m}) = (46.52 \text{ dB}\mu\text{V}) + (-18.6\text{dB/m})$ , the corresponding frequency is 39.942500MHz.

Limit:

| Frequency of Emission(MHz)  | Limits     |                     |
|---|------------|---------------------|
|   | Detector   | Unit (dB $\mu$ V/m) |
| 30~88   | Quasi-peak | 40                  |
| 88~216  | Quasi-peak | 43.5                |
| 216~960   | Quasi-peak | 46                  |
| 960~1000  | Quasi-peak | 54                  |
| 1000~5th harmonic of the highest frequency or 40GHz, whichever is lower | Average    | 54                  |
|   | Peak       | 74                  |

Uncertainty

30MHz~1000MHz 4.73dB

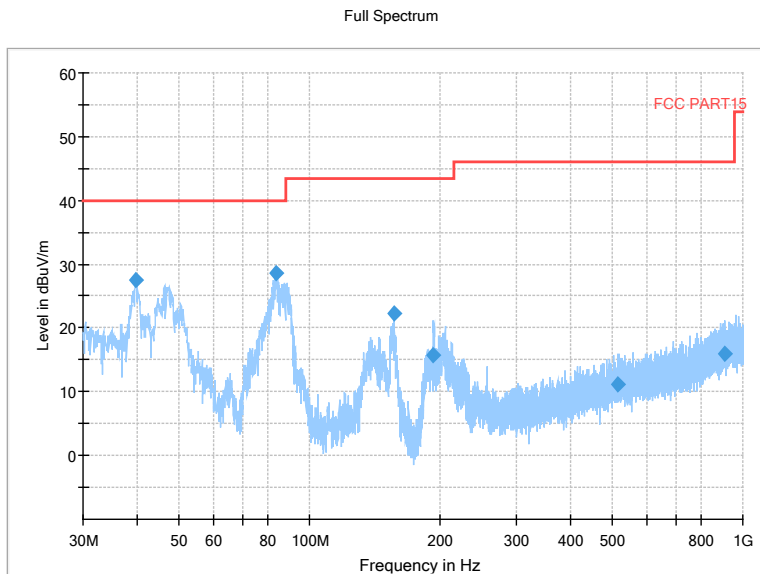
1000MHz~26000MHz 4.58dB

Test result:

EUT1:

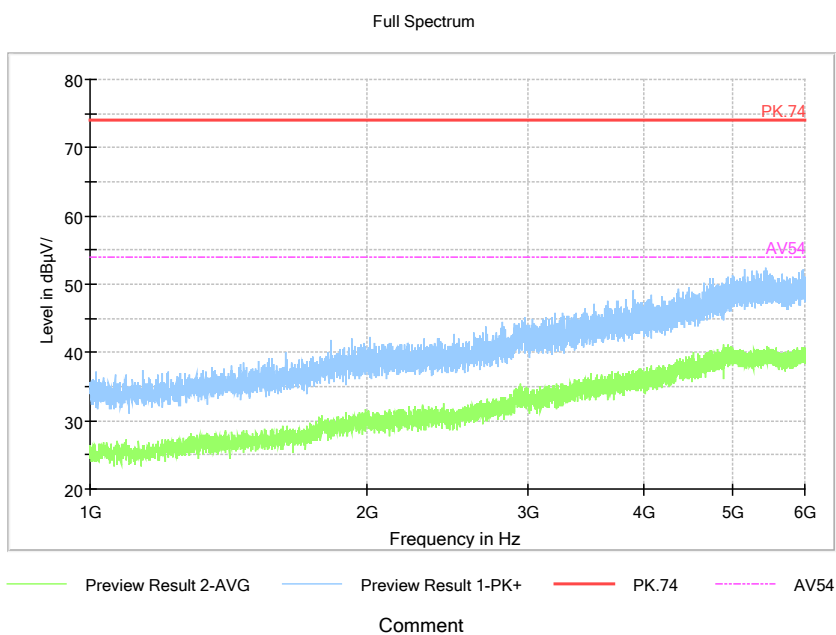
| Frequency (MHz) | Result (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | ARpl (dB/m) | Pmea (dB $\mu$ V) | Polarity |
|-----------------|-----------------------|----------------------|-------------|-------------|-------------------|----------|
| 39.942500       | 27.92                 | 40.00                | 12.08       | -18.6       | 46.52             | V        |
| 83.495500       | 28.86                 | 40.00                | 11.14       | -20.7       | 49.56             | V        |
| 157.506500      | 20.41                 | 43.50                | 23.09       | -21.4       | 41.81             | V        |
| 193.833000      | 22.24                 | 43.50                | 21.26       | -19.2       | 41.44             | V        |
| 490.895500      | 10.24                 | 46.00                | 35.76       | -10.8       | 21.04             | V        |
| 883.357500      | 15.25                 | 46.00                | 30.75       | -3.6        | 18.85             | V        |

EUT1: refer to Pic3 to Pic6



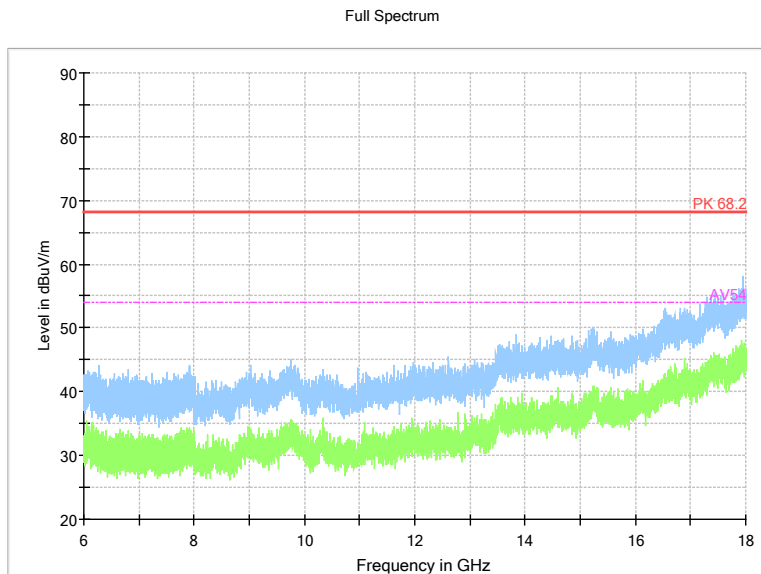
Pic4. Radiated emission (30MHz – 1GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical



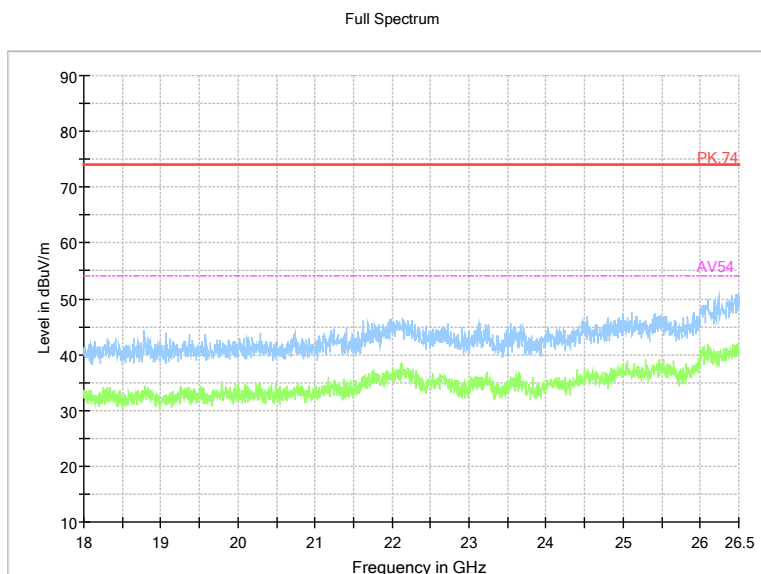
Pic5. Radiated emission (1GHz –6GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic6. Radiated emission (6GHz –18GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic7. Radiated emission (18GHz –26GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

### 2.3. List of test equipments

| No. | Name/Model                                  | Manufacturer | S/N    | Calibration Due Date | Calibration Date |
|-----|---|--------------|--------|----------------------|------------------|
| 1   | 23.18m×16.88m×9.60m Semi-Anechoic Chamber   | FRANKONIA    | -----  | 2028.09.05           | 2023.09.05       |
| 2   | ESW EMI test receiver                       | R&S          | 101574 | 2024.03.06           | 2023.03.06       |
| 3   | ESR3 EMI test receiver                      | R&S          | 102361 | 2024.03.06           | 2023.03.06       |
| 4   | 9.080m×5.255m×3.525m Shielding room         | FRANKONIA    | -----  | 2027.03.25           | 2022.03.25       |
| 5   | VULB 9163 Ultra log test antenna            | schwarzbeck  | 727    | 2025.05.28           | 2023.05.28       |
| 6   | HF 907 Double-Ridged Waveguide Horn Antenna | R&S          | 100512 | 2025.07.20           | 2023.07.20       |
| 7   | SAS-574 Horn Antenna                        | schwarzbeck  | 535    | 2025.05.12           | 2023.05.12       |
| 8   | ENV216 AMN                                  | R&S          | 101881 | 2024.06.21           | 2023.06.21       |
| 9   | EMC32EMI test software                      | R&S          | V10    | -----                | -----            |

-----The end-----