
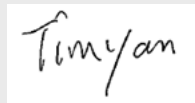


Test report No:
 4352494.50-EMC

TEST REPORT

Electromagnetic Compatibility (EMC)

| | |
|---|--|
| Identification of item tested | Plug-in adaptors with surge protective device |
| Trademark | APC by Schneider Electric |
| Model and /or type reference | PME1W-XX, PME1WB-XX, PME1WU2-XX, PME1WU2B-XX Remarks: XX means for different markets like GR for Germany, RS for Russia,---- etc. |
| Features | N/A |
| Derived model(s) | N/A |
| Applicant's name / address | American Power Conversion Holdings Inc. 3F, No. 205, Sec. 3, Beixin Rd., Xindian Dist., 231, New Taipei City, Taiwan |
| Test method requested, standard | EN 61000-6-1:2007; EN 61000-6-3:2007+A1:2011; EN 61000-3-2:2014; EN 61000-3-3:2013 |
| Verdict Summary | COMPLIANCE |
| Tested by (name / position & signature) | Kenny Liang Project Manager  |
| Approved by (name / position & signature) | Tim Yan Project Manager  |
| Date of issue | 2019-05-07 |
| Report template No | TRF_EMCC 2017-01 |

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COMPETENCES AND GUARANTEES

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.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

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

1. This report is only referred to the item that has undergone the test.
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4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.
5. This report will not be used for social proof function in China market.

UNCERTAINTY

For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in EN 55016-4-2 (CISPR 16-4-2), EN/IEC 61000-4 series or a product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards.

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%. Refer to the Annex 1 for further information.

ENVIRONMENTAL 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:

| | |
|-----------------------|------------------|
| Ambient temperature | 15 °C – 35 °C |
| Relative Humidity air | 30% - 60% |
| Atmospheric pressure | 86 kPa – 106 kPa |

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

| | |
|---|-----------------|
| Test case does not apply to test object | N/A |
| Test object does meet requirement | P (Pass) / PASS |
| Test object does not meet requirement | F (Fail) / FAIL |
| Not measured | N/M |

DEFINITION OF SYMBOLS USED IN THIS TEST REPORT

| | | | |
|---------------------------------------|--|-----------|------------------------------------|
| <input checked="" type="checkbox"/> | Indicates that the listed condition, standard or equipment is applicable for this report/test/EUT. | | |
| <input type="checkbox"/> | Indicates that the listed condition, standard or equipment is not applicable for this report/test/EUT. | | |
| Decimal separator used in this report | <input checked="" type="checkbox"/> | Comma (,) | <input type="checkbox"/> Point (.) |

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

| | |
|-------|-----------------------------------|
| EUT | : Equipment Under Test |
| QP | : Quasi-Peak |
| CAV | : CISPR Average |
| AV | : Average |
| CDN | : Coupling Decoupling Network |
| SAC | : Semi-Anechoic Chamber |
| OATS | : Open Area Test Site |
| BW | : Bandwidth |
| AM | : Amplitude Modulation |
| PM | : Pulse Modulation |
| HCP | : Horizontal Coupling Plane |
| VCP | : Vertical Coupling Plane |
| U_N | : Nominal voltage |
| T_x | : Transmitter |
| R_x | : Receiver |
| N/A | : Not Applicable |
| N/M | : Not Measured |
| TEM | : Transverse Electromagnetic Mode |

DOCUMENT HISTORY

| Report no. | Date | Description |
|------------|------------|----------------|
| 4352494.50 | 2019-05-07 | First release. |
| | | |
| | | |
| | | |

REMARKS AND COMMENTS

The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

| | |
|-------------------------------|--|
| Description of the item | Plug-in adaptors with surge protective device |
| Model / Type number..... | PME1W-XX, PME1WB-XX, PME1WU2-XX, PME1WU2B-XX Remarks: XX means for different markets like GR for Germany, RS for Russia,---- etc. |
| Serial number | N/A |
| Trademark..... | APC by Schneider Electric |
| Manufacturer..... | Dongguan Quan Sheng Electric Co., Ltd. 2 nd Industrial Zone, Ju-tang, Housha Road, Houjie Town, 523963, Dongguan Guangdong, China |
| Factory | Same as manufacturer |

| Rated power supply | Voltage and Frequency | | Reference poles | | | | |
|----------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| | | | L1 | L2 | L3 | N | PE |
| | <input checked="" type="checkbox"/> | AC: 220-250 V, 50/60 Hz for input | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" 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: 5 V 2,4A for USB charger output | | | | | |
| | <input type="checkbox"/> | Battery: | | | | | |
| Rated Power | 12W for USB charger | | | | | | |
| Clock frequencies | Less than 108 MHz | | | | | | |
| Other parameters..... | N/A | | | | | | |
| Software version | Not provided | | | | | | |
| Hardware version..... | Not provided | | | | | | |
| Dimensions in cm (W x H x D).... | N/A | | | | | | |
| Mounting position..... | <input checked="" type="checkbox"/> | Table top equipment | | | | | |
| | <input type="checkbox"/> | Wall/Ceiling mounted equipment | | | | | |
| | <input type="checkbox"/> | Floor standing equipment | | | | | |
| | <input type="checkbox"/> | Hand-held equipment | | | | | |
| | <input type="checkbox"/> | Other: | | | | | |

Intended use of the Equipment Under Test (EUT)

The apparatus as supplied for the test is Plug-in adaptors with surge protective device intended for residential use and the product contains electronic control circuitry and earth connection.

Base on client's declaration, the detail information of all models see below table.

| Model no. | product type | housing/color | outlet q'ty | surge protection | USB charger(5V/2.4A) |
|-------------|--------------|-----------------------------------|-------------|------------------|----------------------|
| PME1W-XX | adaptor | top: white, bottom: light grey | 1 | yes | no |
| PME1WB-XX | adaptor | top: black, bottom: dark grey | 1 | yes | no |
| PME1WU2-XX | adaptor | top: white, bottom: light grey | 1 | yes | yes |
| PME1WU2B-XX | adaptor | top: black, bottom: dark grey | 1 | yes | yes |

Remarks: in the model name XX means for different markets like GR for Germany, RS for Russia,---- etc.

Hence, model PME1WU2-XX was chosen for full test, model PME1WB-XX was chosen for Electrostatic discharge immunity and Radio-frequency electromagnetic fields immunity test as per client's requirement, and the corresponding data is representative of the other models as well.

| No | Module/parts of test item | Type | Manufacturer |
|----|---------------------------|------|--------------|
| | | | |
| | | | |
| | | | |

| No | Documents as provided by the applicant - Description | File name | Issue date |
|----|--|-----------|------------|
| | | | |
| | | | |

| | | | | |
|---|-------------------------------------|-----|--------------------------|--|
| Modifications to the test item during testing | <input checked="" type="checkbox"/> | N/A | <input type="checkbox"/> | |
|---|-------------------------------------|-----|--------------------------|--|

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Not provided

1.2 The environment(s) in which the EUT is intended to be used

The equipment under test (EUT) is intended to be used in the following environment(s):

| | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Residential (domestic) environment. |
| <input checked="" type="checkbox"/> | Commercial and light-industrial environment. |
| <input type="checkbox"/> | Industrial environment. |

1.3 Test data

| | |
|-----------------|--|
| Test Location 1 | DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch Building A3, No.3 Qiyun Road, Science City, Guangzhou Hi-Tech Industrial Development Zone, Guangzhou, P.R. China |
| Test Location 2 | Guangzhou Vkan Certification & Testing Co.,Ltd. No. 3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, 510663, P. R. China |
| Date (start) | 2019-02-28 |
| Date (finish) | 2019-03-15 |

Test Location 2: for Radio-frequency electromagnetic fields immunity test.

Test Location 1: for other rest tests.

2 DESCRIPTION OF TEST SETUP

2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

| Operating mode | Operating mode description | Used for testing | |
|----------------------------------|----------------------------|-------------------------------------|-------------------------------------|
| | | Emission | Immunity |
| 1 | Full load | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2 | Half load | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3 | Empty load | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4 | | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 | | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 | | <input type="checkbox"/> | <input type="checkbox"/> |
| <u>Supplemental information:</u> | | | |

2.2 Port(s) of the EUT

| Port name and description | Connected to / Termination | Cable | | |
|----------------------------------|----------------------------|-----------------------------|-------------------------------------|--------------------------|
| | | Length used during test [m] | Attached during test | Shielded |
| AC mains power input | AC mains | 0,8m | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> |
| <u>Supplemental information:</u> | | | | |

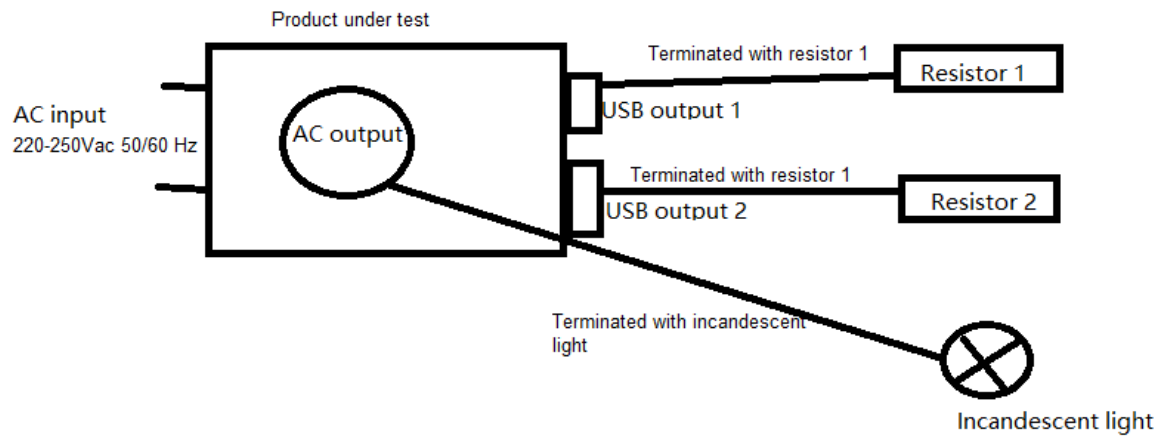
2.3 Support / Auxiliary equipment / unit / software for the EUT

The EUT has been tested with the following auxiliary equipment / unit / software:

| Auxiliary equipment / unit / software | Type / Version | Manufacturer | Supplied by |
|---------------------------------------|----------------|--------------|-------------|
| Resistor | - | - | DEKRA |
| USB cable | 0,8 m length | - | DEKRA |
| | | | |
| | | | |
| <u>Supplemental information:</u> | | | |

2.4 Test Configuration / Block diagram used for tests

The following test setup / configuration / block diagram has been used during the tests:



3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

| Standard | Year | Description |
|----------------------------|----------------------|---|
| EN 61000-6-3 +A1 | 2007 2011 | Generic standards - Emission standard for industrial environments |
| EN 55016-2-1 | 2014 | Methods of measurement of disturbances and immunity - Conducted disturbance measurements. |
| EN 55016-2-3 +A1 +A2 | 2010 2010 2014 | Methods of measurement of disturbances and immunity - Radiated disturbance measurements. |
| EN 55022 +AC | 2010 2010 | Emission – Information technology equipment (ITE) |
| EN 55014-1 +A1 +A2 | 2006 2009 2011 | Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission. |
| EN 61000-3-2 | 2014 | Limits for harmonic current emissions (equipment input current ≤ 16 A per phase). |
| EN 61000-3-3 | 2013 | Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection. |
| EN 61000-3-12 | 2011 | Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase. |
| EN 61000-3-11 | 2000 | Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems - Equipment with rated current ≤ 75 A and subject to conditional connection. |
| EN 61000-6-1 | 2007 | Generic standards - Immunity for residential, commercial and light-industrial environments. |
| EN 61000-4-2 | 2009 | Electrostatic discharge immunity test. |
| EN 61000-4-3 +A1 +A2 | 2006 2008 2010 | Radiated, radio-frequency, electromagnetic field immunity test. |
| EN 61000-4-4 | 2012 | Electrical fast transient/burst immunity test. |
| EN 61000-4-5 | 2006 | Surge immunity test. |
| EN 61000-4-6 | 2009 | Immunity to conducted disturbances, induced by radio-frequency fields. |
| EN 61000-4-8 | 2010 | Power frequency magnetic field immunity test. |
| EN 61000-4-11 | 2004 | Voltage dips, short interruptions and voltage variations immunity tests. |
| EN 61000-4-20 | 2010 | Emission and immunity testing in transverse electromagnetic (TEM) waveguides. |

3.2 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards: N/A.

3.3 Overview of results

| EMISSION TESTS – EN 61000-6-3 | | | |
|--|------------------------|---------|--------|
| Requirement – Test case | Basic standard(s) | Verdict | Remark |
| Conducted disturbance voltage at AC power port(s) | EN 55016-2-1 | PASS | --- |
| Conducted disturbance voltage at DC power port(s) | EN 55016-2-1 | N/A | See 1) |
| Conducted disturbance voltage at Telecommunications / network port(s) | EN 55022, EN 55016-2-1 | N/A | See 2) |
| Radiated electromagnetic disturbances (30 MHz to 1000 MHz) | EN 55016-2-3 | PASS | --- |
| Radiated electromagnetic disturbances (above 1 GHz) | EN 55016-2-3 | N/A | See 4) |
| Discontinuous disturbance (clicks) on AC power leads | EN 55014-1 | N/A | See 5) |
| Control principle shall be allowed for the application according to the clause 6.1 | EN 61000-3-2 | PASS | --- |
| Harmonic current emissions | EN 61000-3-2 | N/A | See 3) |
| Voltage changes, voltage fluctuations and flicker | EN 61000-3-3 | PASS | --- |
| Supplementary information: 1) The EUT does not have a DC power port. 2) The EUT does not have a telecommunications network port. 3) Since the rated power of the EUT is less than 75 Watts harmonics test is not applicable. 4) The highest internal frequency of the EUT is less than 108 MHz. 5) Exemptions from click measurements applicable (clause 4.2.3). | | | |

| IMMUNITY TESTS – EN 61000-6-1 | | | |
|--|-------------------|---------|--------|
| Requirement – Test case | Basic standard(s) | Verdict | Remark |
| Electrostatic discharge | EN 61000-4-2 | PASS | |
| Radio-frequency electromagnetic fields | EN 61000-4-3 | PASS | |
| Fast transients | EN 61000-4-4 | PASS | |
| Surge transient | EN 61000-4-5 | PASS | |
| Injected currents (radio-frequency common mode) | EN 61000-4-6 | PASS | |
| Power frequency magnetic fields | EN 61000-4-8 | N/A | See 1) |
| Voltage dips and short interruptions | EN 61000-4-11 | PASS | |
| Supplementary information: 1) The test is not applicable as the apparatus does not contain any components susceptible to this low-frequency magnetic fields. | | | |

The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to calculate the uncertainty associated with the measurement result, unless the specification, standard or customer have special requirements

4 EMISSION TEST RESULTS

| | |
|--|---------------|
| 4.1 Conducted disturbance voltage – AC power port(s) | VERDICT: PASS |
|--|---------------|

| | |
|-------------------|--------------|
| Standard | EN 61000-6-3 |
| Basic standard(s) | EN 55016-2-1 |

Limits

| Frequency range [MHz] | Limit: QP [dB(μV) ¹⁾ | Limit: AV [dB(μV) ¹⁾ | IF BW | Detector(s) |
|-----------------------|---------------------------------|---------------------------------|-------|-------------|
| 0,15 - 0,50 | 66 – 56 ²⁾ | 56 - 46 ²⁾ | 9 KHz | QP, AV |
| 0,50 - 5,0 | 56 | 46 | 9 KHz | QP, AV |
| 5,0 - 30 | 60 | 50 | 9 KHz | QP, AV |

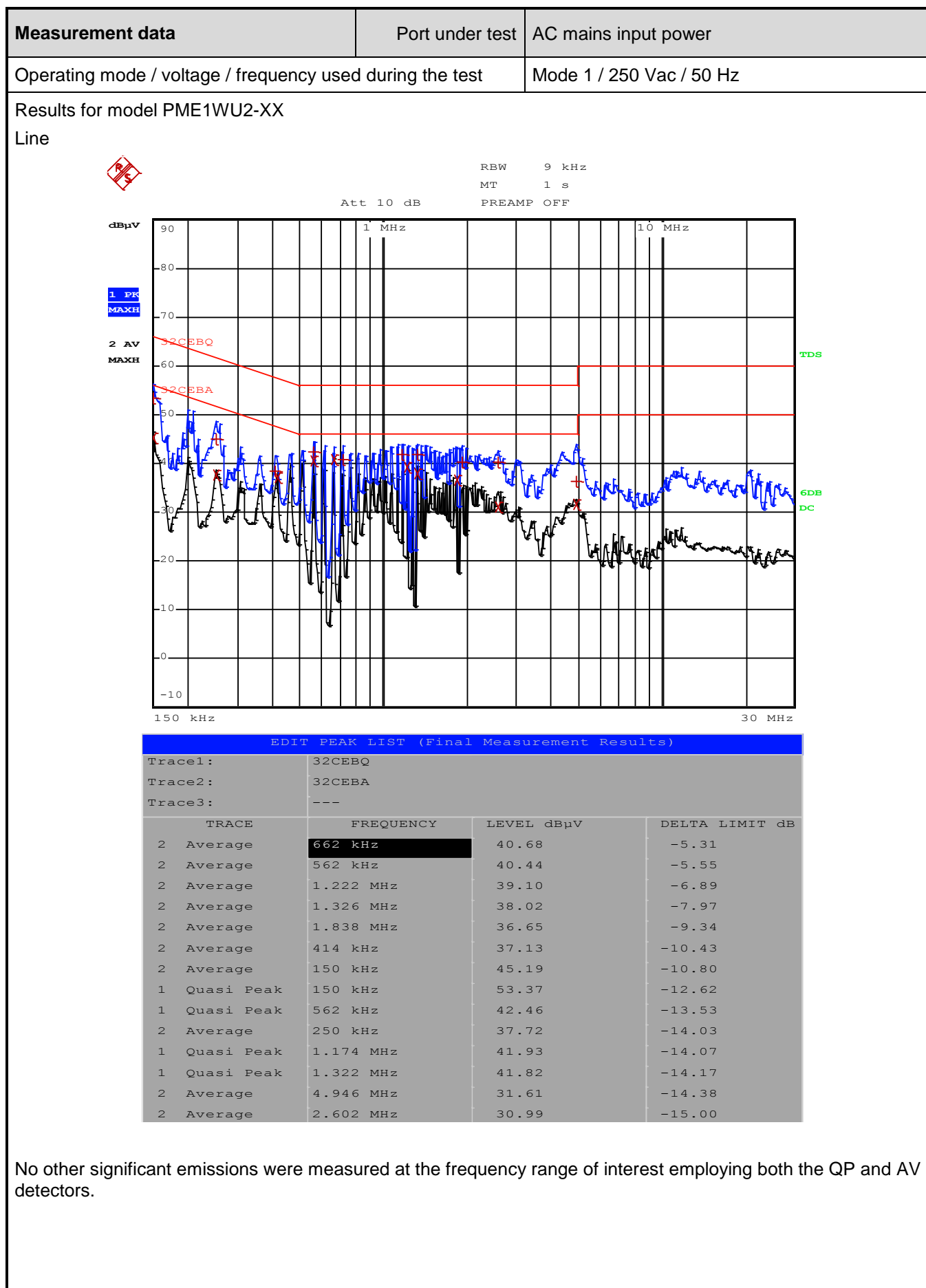
¹⁾ At the transition frequency, the lower limit applies.

²⁾ The limit decreases linearly with the logarithm of the frequency.

Performed measurements

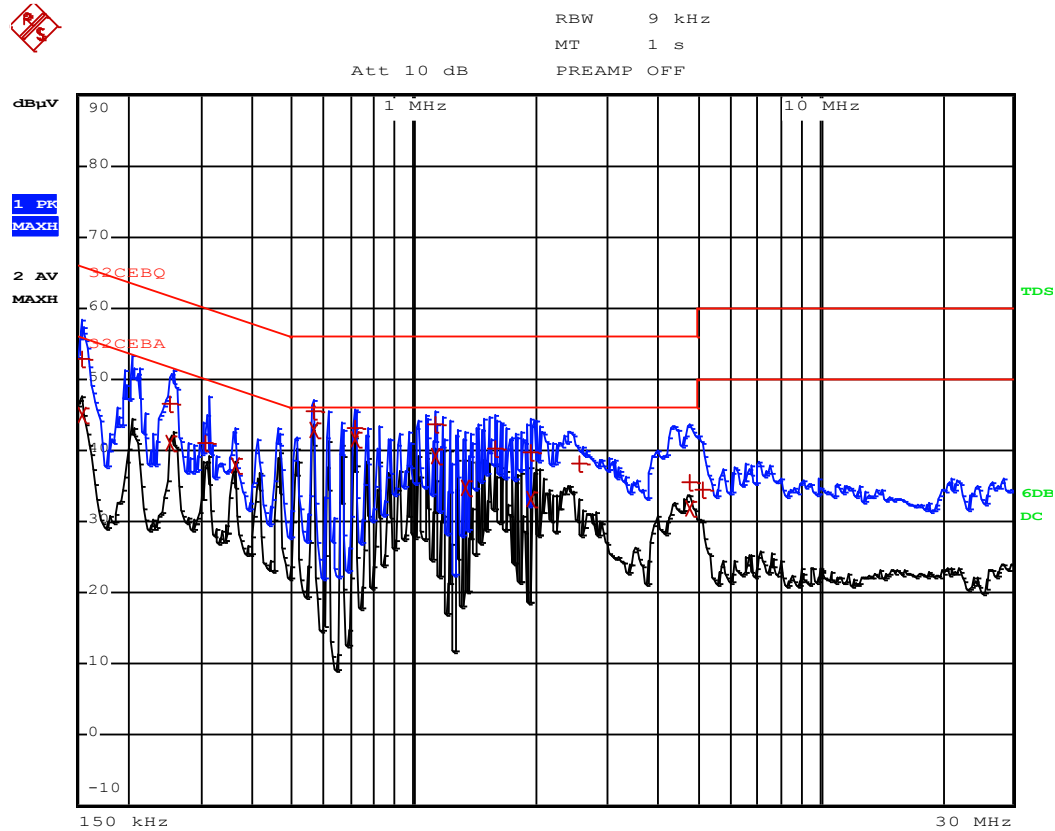
| Port under test | | Terminal | | | | | | | |
|-------------------------------------|----------------------|---|--------------------------|-------------------------------------|-------------------------|--------------------------|----|--------------------------|----|
| <input checked="" type="checkbox"/> | AC mains input power | <input checked="" type="checkbox"/> | N | <input checked="" type="checkbox"/> | L1 | <input type="checkbox"/> | L2 | <input type="checkbox"/> | L3 |
| <input type="checkbox"/> | Other: | <input type="checkbox"/> | N | <input type="checkbox"/> | L1 | <input type="checkbox"/> | L2 | <input type="checkbox"/> | L3 |
| | | | | | | | | | |
| Voltage – Mains [V] | | 250 V | | | | | | | |
| Frequency – Mains [Hz] | | 50 Hz | | | | | | | |
| | | | | | | | | | |
| Test method applied | | <input checked="" type="checkbox"/> | Artificial mains network | | | | | | |
| | | <input type="checkbox"/> | Voltage probe | | | | | | |
| Test setup | | <input checked="" type="checkbox"/> | Table top | <input type="checkbox"/> | Artificial hand applied | | | | |
| | | <input type="checkbox"/> | Floor standing | <input type="checkbox"/> | Other: | | | | |
| | | Refer to the Annex 3 for test setup photo(s). | | | | | | | |
| | | | | | | | | | |
| Operating mode(s) used | | Mode 1 (worst case) | | | | | | | |
| Remark | | --- | | | | | | | |

See next page.



Measurement data Port under test AC mains input power

Neutral



| EDIT PEAK LIST (Final Measurement Results) | | | |
|--|-----------|------------|----------------|
| Trace1: | 32CEBQ | | |
| Trace2: | 32CEBA | | |
| Trace3: | --- | | |
| TRACE | FREQUENCY | LEVEL dBµV | DELTA LIMIT dB |
| 2 Average | 566 kHz | 42.76 | -3.23 |
| 2 Average | 714 kHz | 41.66 | -4.33 |
| 2 Average | 1.13 MHz | 39.32 | -6.67 |
| 1 Quasi Peak | 566 kHz | 45.40 | -10.59 |
| 2 Average | 254 kHz | 40.94 | -10.68 |
| 2 Average | 362 kHz | 37.84 | -10.83 |
| 2 Average | 154 kHz | 44.90 | -10.87 |
| 2 Average | 1.334 MHz | 34.80 | -11.19 |
| 1 Quasi Peak | 1.13 MHz | 43.69 | -12.30 |
| 2 Average | 1.95 MHz | 33.15 | -12.84 |
| 1 Quasi Peak | 154 kHz | 52.93 | -12.85 |
| 1 Quasi Peak | 718 kHz | 43.11 | -12.88 |
| 2 Average | 4.77 MHz | 31.83 | -14.16 |

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark

| | |
|---|---------------------|
| 4.2 Conducted disturbance voltage – DC power port(s) | VERDICT: N/A |
|---|---------------------|

| | |
|-------------------|--------------|
| Standard | EN 61000-6-3 |
| Basic standard(s) | EN 55016-2-1 |

Limits

| Frequency range [MHz] | Limit: QP [dB(μV) ¹⁾ | Limit: AV [dB(μV) ¹⁾ | IF BW | Detector(s) |
|-----------------------|---------------------------------|---------------------------------|-------|-------------|
| 0,15 - 0,50 | 79 | 66 | 9 KHz | QP, AV |
| 0,50 - 30 | 73 | 60 | 9 KHz | QP, AV |

¹⁾ At the transition frequency, the lower limit applies.

²⁾ Applicable only to ports intended for connection to a local DC power network, or a local battery by a connecting cable exceeding a length of 30 m.

Performed measurements

| Port under test | | Terminal | |
|---|---|--|--|
| <input type="checkbox"/> DC input power | | <input type="checkbox"/> Positive (+) | <input type="checkbox"/> Negative (-) |
| <input type="checkbox"/> Other: | | <input type="checkbox"/> Positive (+) | <input type="checkbox"/> Negative (-) |
| Voltage – Input [V _{DC}] | | | |
| Voltage – Output [V _{DC}] | | | |
| Test method applied | <input type="checkbox"/> | Artificial mains network as specified EN 55016-1-2 | |
| | <input type="checkbox"/> | Artificial Network (AN) as specified in CISPR 25 Annex D | |
| Test setup | <input type="checkbox"/> | Table top | <input type="checkbox"/> Artificial hand applied |
| | <input type="checkbox"/> | Floor standing | <input type="checkbox"/> Other: |
| | Refer to the Annex 3 for test setup photo(s). | | |
| Operating mode(s) used | | | |
| Remark | | --- | |

| | | |
|------------|--|---------------------|
| 4.3 | Conducted disturbance voltage – Telecommunications network port | VERDICT: N/A |
|------------|--|---------------------|

| | |
|-------------------|------------------------|
| Standard | EN 61000-6-3 |
| Basic standard(s) | EN 55022, EN 55016-2-1 |

Limits – Class B

| Frequency range [MHz] | Limit: QP [dB(μV) ¹⁾ | Limit: AV [dB(μV) ¹⁾ | IF BW | Detector(s) |
|-----------------------|---------------------------------|---------------------------------|-------|-------------|
| 0,15 - 0,50 | 84 – 74 ²⁾ | 74 – 64 ²⁾ | 9 KHz | QP, AV |
| 0,50 - 30 | 74 | 64 | 9 KHz | QP, AV |

¹⁾ At the transition frequency, the lower limit applies.

²⁾ The limit decreases linearly with the logarithm of the frequency.

Performed measurements

| | | | |
|--------------------------|---|---------------------------------------|--|
| Port under test | | | |
| <input type="checkbox"/> | LAN / Ethernet | <input type="checkbox"/> | Other: |
| <input type="checkbox"/> | Other: | <input type="checkbox"/> | Other: |
| Voltage – Mains [V] | | | |
| Frequency – Mains [Hz] | | | |
| Test method applied | <input type="checkbox"/> | ISN – Impedance Stabilisation Network | |
| | <input type="checkbox"/> | CDN according to EN / IEC 61000-4-6 | |
| | <input type="checkbox"/> | Voltage probe | |
| | <input type="checkbox"/> | Current probe | |
| | <input type="checkbox"/> | Artificial mains network | |
| | <input type="checkbox"/> | Other: | |
| Test setup | <input type="checkbox"/> | Table top | <input type="checkbox"/> Artificial hand applied |
| | <input type="checkbox"/> | Floor standing | <input type="checkbox"/> Other: |
| | Refer to the Annex 3 for test setup photo(s). | | |
| Operating mode(s) used | | | |
| Remark | | --- | |

| | |
|--|----------------------|
| 4.4 Radiated electromagnetic disturbances (30 – 1000 MHz) | VERDICT: PASS |
|--|----------------------|

| | |
|-----------------------------------|--|
| Standard | EN 61000-6-3 |
| Basic standard(s) | EN 55016-2-3 |
| Test method | Antenna method according to EN 55016-2-3 standard. |
| <u>Supplementary information:</u> | |

Limits

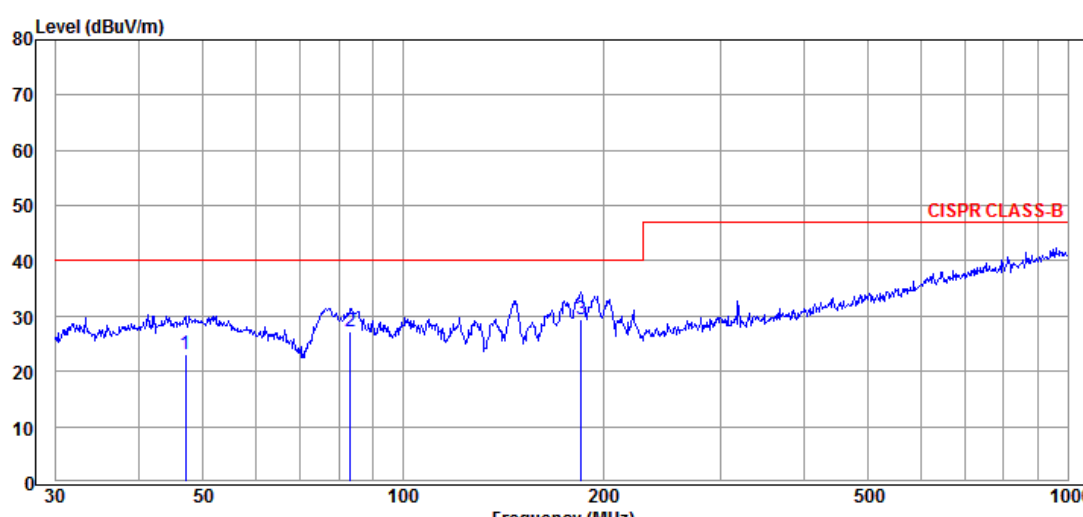
| Frequency [MHz] | Limit: QP [dB(μV/m) ¹⁾] | | | IF BW | Detector |
|--------------------|-------------------------------------|-------|--------|---------|----------|
| | @3 m. | @5 m. | @10 m. | | |
| 30 - 230 | 40 | 36 | 30 | 120 KHz | QP |
| 230 - 1000 | 47 | 43 | 37 | 120 KHz | QP |

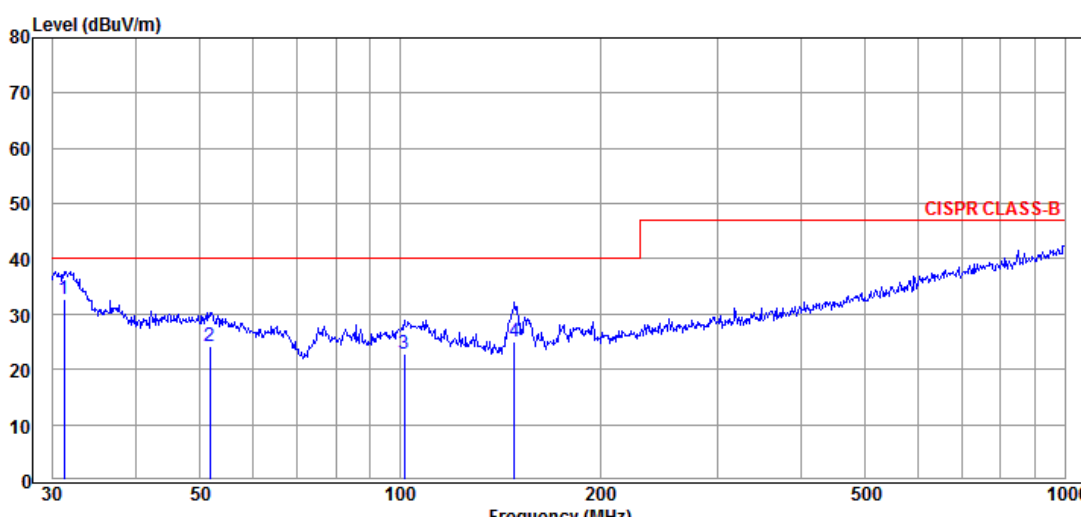
¹⁾ At the transition frequency, the lower limit applies.

Performed measurements

| | | |
|------------------------|---|--|
| Port under test | Enclosure | |
| Voltage – Mains [V] | 250 V | |
| Frequency – Mains [Hz] | 50 Hz | |
| Test method applied | <input checked="" type="checkbox"/> | SAC with measurement distance [m]: 3 m. |
| | <input type="checkbox"/> | OATS or SAC with measurement distance [m]: 5 m. |
| | <input type="checkbox"/> | OATS or SAC with measurement distance [m]: 10 m. |
| Test setup | <input checked="" type="checkbox"/> | Equipment on a table of 80 cm height |
| | <input type="checkbox"/> | Equipment on the floor (insulated from ground plane) |
| | <input type="checkbox"/> | Other: |
| | Refer to the Annex 3 for test setup photo(s). | |
| Operating mode(s) used | Mode 2 (worst case) | |
| Remark | --- | |

See next page.

| Measurement data | | <input checked="" type="checkbox"/> | Horizontal | <input checked="" type="checkbox"/> | Vertical | |
|--|---------|-------------------------------------|--------------------------|-------------------------------------|----------|--------|
| Operating mode / voltage / frequency used during the test | | | Mode 2 / 250 Vac / 50 Hz | | | |
| Result for model PME1WU2-XX | | | | | | |
| Horizontal | | | | | | |
|  | | | | | | |
| Freq | Reading | C.F | Result | Limit | Margin | Remark |
| MHz | dBuV | dB | dBuV/m | dBuV/m | dB | |
| 47.00 | 7.48 | 15.49 | 22.97 | 40.00 | 17.03 | QP |
| 83.23 | 17.22 | 10.05 | 27.27 | 40.00 | 12.73 | QP |
| 185.14 | 17.60 | 11.82 | 29.42 | 40.00 | 10.58 | QP |
| Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain | | | | | | |
| No other significant emissions were measured at the frequency range of interest employing the QP detector. | | | | | | |

| Measurement data | <input checked="" type="checkbox"/> | Horizontal | <input checked="" type="checkbox"/> | Vertical | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------------------------------|--------------------------|-------------------------------------|-----------------|--------------|-----------------|-----------|------------------|-----------------|--------------|--------|-------|-------|-------|-------|-------|------|----|-------|------|-------|-------|-------|-------|----|--------|------|-------|-------|-------|-------|----|--------|-------|-------|-------|-------|-------|----|
| Operating mode / voltage / frequency used during the test | | Mode 2 / 250 Vac / 50 Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Vertical</p>  <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th>Freq MHz</th> <th>Reading dBuV</th> <th>C.F dB</th> <th>Result dBuV/m</th> <th>Limit dBuV/m</th> <th>Margin dB</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>31.18</td> <td>20.30</td> <td>12.50</td> <td>32.80</td> <td>40.00</td> <td>7.20</td> <td>QP</td> </tr> <tr> <td>51.66</td> <td>8.46</td> <td>15.74</td> <td>24.20</td> <td>40.00</td> <td>15.80</td> <td>QP</td> </tr> <tr> <td>101.29</td> <td>9.80</td> <td>13.06</td> <td>22.86</td> <td>40.00</td> <td>17.14</td> <td>QP</td> </tr> <tr> <td>148.44</td> <td>15.02</td> <td>10.02</td> <td>25.04</td> <td>40.00</td> <td>14.96</td> <td>QP</td> </tr> </tbody> </table> <p>Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain</p> <p>No other significant emissions were measured at the frequency range of interest employing the QP detector.</p> | | | | | Freq MHz | Reading dBuV | C.F dB | Result dBuV/m | Limit dBuV/m | Margin dB | Remark | 31.18 | 20.30 | 12.50 | 32.80 | 40.00 | 7.20 | QP | 51.66 | 8.46 | 15.74 | 24.20 | 40.00 | 15.80 | QP | 101.29 | 9.80 | 13.06 | 22.86 | 40.00 | 17.14 | QP | 148.44 | 15.02 | 10.02 | 25.04 | 40.00 | 14.96 | QP |
| Freq MHz | Reading dBuV | C.F dB | Result dBuV/m | Limit dBuV/m | Margin dB | Remark | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31.18 | 20.30 | 12.50 | 32.80 | 40.00 | 7.20 | QP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 51.66 | 8.46 | 15.74 | 24.20 | 40.00 | 15.80 | QP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 101.29 | 9.80 | 13.06 | 22.86 | 40.00 | 17.14 | QP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 148.44 | 15.02 | 10.02 | 25.04 | 40.00 | 14.96 | QP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Remark | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|--|---------------------|
| 4.5 Radiated electromagnetic disturbances (above 1 GHz) | VERDICT: N/A |
|--|---------------------|

| | | | |
|---|------------------------------------|--|--|
| Standard | | EN 61000-6-3 | |
| Basic standard(s) | | EN 55016-2-3 | |
| Test method | | Antenna method according to EN 55016-2-3 standard. | |
| Required highest frequency for radiated measurement | | | |
| Highest internal frequency [f _x] | | Highest measured frequency | |
| <input checked="" type="checkbox"/> | f _x ≤ 108 MHz | 1 GHz | |
| <input type="checkbox"/> | 108 MHz < f _x ≤ 500 MHz | 2 GHz | |
| <input type="checkbox"/> | 500 MHz < f _x ≤ 1 GHz | 5 GHz | |
| <input type="checkbox"/> | f _x ≥ 1 GHz | 5x f _x or up to 6 GHz | |

Limits

| Frequency [GHz] | Limit: PK@3m.[dB($\mu\text{V/m}$) ¹⁾] | Limit: AV@3m.[dB($\mu\text{V/m}$) ¹⁾] | IF BW | Detector |
|-----------------|---|---|-------|----------|
| 1 - 3 | 70 | 50 | 1 MHz | PK, AV |
| 3 - 6 | 74 | 54 | 1 MHz | PK, AV |

¹⁾ At the transition frequency, the lower limit applies.

Performed measurements

| | | |
|------------------------|---|--|
| Port under test | Enclosure | |
| Voltage – Mains [V] | | |
| Frequency – Mains [Hz] | | |
| Test method applied | <input type="checkbox"/> | Absorber-lined OATS or SAC with measurement distance [m]: 3 m. |
| | <input type="checkbox"/> | Absorber-lined OATS or SAC with measurement distance [m]: 1 m. |
| Test setup | <input type="checkbox"/> | Equipment on a table of 80 cm height |
| | <input type="checkbox"/> | Equipment on the floor (insulated from ground plane) |
| | <input type="checkbox"/> | Other: |
| | Refer to the Annex 3 for test setup photo(s). | |
| Operating mode(s) used | | |
| Remark | --- | |

| | | | |
|-----|---|-----------------|------------|
| 4.6 | Discontinuous disturbance (clicks) on AC power leads | VERDICT: | N/A |
|-----|---|-----------------|------------|

| Standard | EN 55014-1 | | |
|-----------------|--------------------|-------|-----------------|
| Frequency [MHz] | Limit: QP [dB(μV)] | IF BW | Detector |
| 0,15 | 66 | 9 KHz | Quasi-Peak (QP) |
| 0,50 | 56 | 9 KHz | Quasi-Peak (QP) |
| 1,40 | 56 | 9 KHz | Quasi-Peak (QP) |
| 30,0 | 60 | 9 KHz | Quasi-Peak (QP) |

Performed measurements

| | | | | | | |
|-------------------------------|---|---------------------------|--------------------------|---------------------------|--------------------------|-----------------|
| Scan range (0,9 - 1,1 U_N) | <input type="checkbox"/> | 198 – 264 V _{AC} | <input type="checkbox"/> | 207 – 253 V _{AC} | <input type="checkbox"/> | V _{AC} |
| Voltage – Mains [V] | | | | | | |
| Frequency – Mains [Hz] | | | | | | |
| Test method applied | <input type="checkbox"/> | Artificial mains network | | | | |
| | <input type="checkbox"/> | Voltage probe | | | | |
| Test setup | <input type="checkbox"/> | Table top | <input type="checkbox"/> | Floor standing | | |
| | <input type="checkbox"/> | Other: | | | | |
| | Refer to the Annex 3 for test setup photo(s). | | | | | |
| Operating mode(s) used | | | | | | |
| Remark | --- | | | | | |

| | | | | | | | | |
|------------------------------------|--|---|--|--------------------------|--------------------------|----------------|--------------------------|-----------------------|
| Reason for not performing the test | <input type="checkbox"/> | The amplitudes of the observed disturbances were all below the limit for continuous disturbance, these are not considered to be clicks. | | | | | | |
| Measurement results | <input type="checkbox"/> | Neutral | <input type="checkbox"/> | Line 1 | <input type="checkbox"/> | Line 2 | <input type="checkbox"/> | Line 3 |
| Frequency (MHz) | First Measurement: Determination of the limit L_q – Quasi-peak | | | | | | | |
| | Limit L (dBμV) | Number of short clicks | Number of long clicks | Number of clicks – N_1 | Time of meas. (min.) | Click rate N | Increased limit (dB) | Increased Limit L_q |
| 0,15 | 66 | | | | | | | |
| 0,5 | 56 | | | | | | | |
| 1,4 | 56 | | | | | | | |
| 30 | 60 | | | | | | | |
| <input type="checkbox"/> | The calculated click rate N is not more than 5 times per minute and all the clicks are classified as short ($t \leq 10$ ms). Thus, the EUT is deemed to comply with the limits without any further measurement at an increased limit. | | | | | | | |
| Frequency (MHz) | Second measurement with Limit = L_q (Upper quartile method): | | | | | | | |
| | Limit L_q (dBμV) | Number of clicks – N_2 | Number of authorized clicks $N_2 \leq N_1/4$ | | | | Verdict | |
| 0,15 | | | | | | | | |
| 0,5 | | | | | | | | |
| 1,4 | | | | | | | | |
| 30 | | | | | | | | |
| Supplementary information: --- | | | | | | | | |

| | |
|---------------------------------------|---------------------|
| 4.7 Harmonic current emissions | VERDICT: N/A |
|---------------------------------------|---------------------|

| | | | |
|--|-------------------------------------|--|--|
| Standard | EN 61000-6-3 | | |
| Basic standard | EN 61000-3-2 | | |
| Exclusions (For these categories of equipment, limits are not specified in the EN 61000-3-2 standard) | <input type="checkbox"/> | Arc welding equipment intended for professional use. | |
| | <input type="checkbox"/> | System(s) with nominal voltage(s) less than 220 V _{AC} (line-to-neutral). | |
| | <input checked="" type="checkbox"/> | Equipment with rated power of ≤ 75 W (other than lighting equipment). | |
| | <input type="checkbox"/> | Professional equipment with total rated power > 1 kW. | |
| | <input type="checkbox"/> | Symmetrically controlled heating elements with a rated power ≥ 200 W. | |
| | <input type="checkbox"/> | Independent dimmers for incandescent lamps with rated power ≤ 1 kW. | |

| Classification | | |
|-------------------------------------|---------|--|
| <input checked="" type="checkbox"/> | Class A | All apparatus not classified as Class B, C or D |
| <input type="checkbox"/> | Class B | Portable tools |
| <input type="checkbox"/> | Class C | <input type="checkbox"/> Lighting equipment with active input power > 25 W |
| | | <input type="checkbox"/> Lighting equipment with active input power ≤ 25 W (First requirement, Table 3 column 2) |
| | | <input type="checkbox"/> Lighting equipment with active input power ≤ 25 W (Second requirement) |
| <input type="checkbox"/> | Class D | Personal computers, television receivers |

Performed measurements

| | | | | | | |
|--|--------------------------|--|--------------------------|----------|--------------------------|--------|
| Port under test | AC mains power input | | | | | |
| Voltage – Mains [V] | | | | | | |
| Frequency – Mains [Hz] | | | | | | |
| | | | | | | |
| Observation peroid | <input type="checkbox"/> | 6.5 min. | <input type="checkbox"/> | 2.5 min. | <input type="checkbox"/> | Other: |
| Version of measurement instrument standard used EN / IEC61000-4-7 (Cl. 7) | <input type="checkbox"/> | EN 61000-4-7:2002 + AM1:2009 (IEC 61000-4-7:2002+AM1:2008) | | | | |
| | <input type="checkbox"/> | EN 61000-4-7:1991 | | | | |
| Control principle used in the EUT | <input type="checkbox"/> | Comply with the requirements of the Clause 6.1 (EN / IEC 61000-3-2). | | | | |
| | <input type="checkbox"/> | Not comply with the requirements of the Clause 6.1 (EN / IEC 61000-3-2). | | | | |
| | | | | | | |
| Operating mode(s) used | | | | | | |
| Remark | --- | | | | | |

| | |
|--|----------------------|
| 4.8 Voltage changes, voltage fluctuations and flicker | VERDICT: PASS |
|--|----------------------|

| | |
|----------------|--------------|
| Standard | EN 61000-6-3 |
| Basic standard | EN 61000-3-3 |

Limits

| | | | | |
|--|-------------------------------------|--------|-------------------------------------|----------------|
| P _{ST} (Short term flicker) | <input checked="" type="checkbox"/> | ≤ 1 | <input type="checkbox"/> | Not Applicable |
| P _{LT} (Long term flicker) | <input type="checkbox"/> | ≤ 0,65 | <input checked="" type="checkbox"/> | Not Applicable |
| d _C (Relative Voltage change) | <input checked="" type="checkbox"/> | ≤ 3,3% | <input type="checkbox"/> | Not Applicable |
| d _{MAX} (Max. voltage change) | <input checked="" type="checkbox"/> | ≤ 4% | <input type="checkbox"/> | 6% |
| | <input type="checkbox"/> | 7% | <input type="checkbox"/> | Not Applicable |
| <u>Supplemental information:</u> | | | | |

Performed measurements for model PME1WU2-XX

| | | | | | | |
|--|-------------------------------------|--|--------------------------|----------|--------------------------|--------|
| Reason for not performing the measurement(s) | <input checked="" type="checkbox"/> | Tests are not necessary because the EUT is unlikely to produce significant voltage fluctuations or flicker (clause 6.1). | | | | |
| | | | | | | |
| Port under test | AC Mains power input | | | | | |
| Voltage – Mains [V] | | | | | | |
| Frequency – Mains [Hz] | | | | | | |
| | | | | | | |
| Test method | <input type="checkbox"/> | Flickermeter according EN / IEC 61000-4-15:2011 | | | | |
| | <input type="checkbox"/> | Simulation (Clause 4.2.3 of EN / IEC 61000-3-3) | | | | |
| | <input type="checkbox"/> | Analytical method (Clause 4.2.4 of EN / IEC 61000-3-3) | | | | |
| | <input type="checkbox"/> | Use of $P_{st} = 1$ curve (Clause 4.2.5 of EN / IEC 61000-3-3) | | | | |
| | | | | | | |
| Observation peroid | <input type="checkbox"/> | 10 min. | <input type="checkbox"/> | 120 min. | <input type="checkbox"/> | Other: |
| | <input type="checkbox"/> | 24 times switching according to Annex B | | | | |
| | | | | | | |
| Operating mode(s) used | | | | | | |
| Remark | --- | | | | | |

5 IMMUNITY TEST RESULTS

5.1 Performance (Compliance) criteria

[Source: EN/IEC 61000-6-1]

Performance criterion A: The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criterion C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

5.1.1 Performance criteria related to immunity tests

| Immunity test | Performance criteria |
|---|----------------------|
| Electrostatic discharge | B |
| Radio-frequency electromagnetic fields | A |
| Fast transients | B |
| Surge transient | B |
| Injected currents (radio-frequency common mode) | A |
| Power frequency magnetic field immunity | A |
| Voltage dips and short interruptions | B, C |

5.1.2 Manufacturer defined performance criteria

Not provided.

5.2 Monitored – Checked Functions / Parameters

During the immunity tests the following functions of the EUT has/have been monitored/checked.

| | | | |
|-------------------------------------|------------------------|-------------------------------------|------------------------------|
| <input type="checkbox"/> | Motor speed | <input type="checkbox"/> | Display data |
| <input type="checkbox"/> | Switching | <input type="checkbox"/> | Data storage |
| <input type="checkbox"/> | Standby mode | <input type="checkbox"/> | Sensor functions |
| <input type="checkbox"/> | Temperature | <input type="checkbox"/> | Audible signals |
| <input type="checkbox"/> | Power consumption | <input checked="" type="checkbox"/> | Others : current output/LEDs |
| <input checked="" type="checkbox"/> | AC mains input current | <input type="checkbox"/> | Others : |
| <input type="checkbox"/> | Timing | <input type="checkbox"/> | Others : |
| <input type="checkbox"/> | Illumination | <input type="checkbox"/> | Others : |
| <u>Supplementary information :</u> | | | |

| Immunity test | Monitored - Checked function(s)/parameter(s) during / after the test | Method |
|---|--|-------------------------|
| Electrostatic discharge | Mode 1 | Visual / Output current |
| Radio-frequency electromagnetic fields | Mode 1 | Visual / Output current |
| Fast transients | Mode 1 | Visual / Output current |
| Surge transient | Mode 1 | Visual / Output current |
| Injected currents (radio-frequency common mode) | Mode 1 | Visual / Output current |
| Power frequency magnetic field immunity | N/A | N/A |
| Voltage dips and short interruptions | Mode 1 | Visual / Output current |
| <u>Supplementary information :</u> | | |

5.3 Electrostatic discharge immunity

VERDICT: PASS

Electrostatic discharges (ESD) are the result of persons or objects that accumulate static electricity due to for instance walking on synthetic carpets. The ESD can influence the operation of equipment or damage its electronics, either by a direct discharge or indirectly by coupling or radiation. Both effects are simulated during the tests.

Requirements

| | | | | | | | | |
|-----------------------|--|-------|-------------------------------------|-------|-------------------------------------|-------|--------------------------|----|
| Standard | EN 61000-6-1 | | | | | | | |
| Basic standard | EN 61000-4-2 | | | | | | | |
| Port under test | Enclosure | | | | | | | |
| Air discharges | <input checked="" type="checkbox"/> | ±2 kV | <input checked="" type="checkbox"/> | ±4 kV | <input checked="" type="checkbox"/> | ±8 kV | <input type="checkbox"/> | kV |
| Contact discharges | <input type="checkbox"/> | ±2 kV | <input checked="" type="checkbox"/> | ±4 kV | <input type="checkbox"/> | ±8 kV | <input type="checkbox"/> | kV |
| Number of discharges | ≥ 10 per polarity with ≥ 1 sec interval. | | | | | | | |
| Performance criterion | B; During the test degradation is allowed. No change of operating state or stored data is allowed. Refer to the chapter 5.1 for details. | | | | | | | |

Performed tests for models PME1WU2-XX, PME1WB-XX

| | | | | | |
|--------------------------|-------------------------------------|-----------|---------------------------|----------------|------|
| Set-up | <input checked="" type="checkbox"/> | Table-top | <input type="checkbox"/> | Floor standing | |
| Ambient temperature [°C] | 23,5 | | Relative Humidity air [%] | | 53,1 |
| Atmospheric pressure | 101 kPa | | | | |
| | | | | | |
| Voltage – Mains [V] | 230 Vac | | | | |
| Frequency – Mains [Hz] | 50 Hz | | | | |
| | | | | | |
| Operating mode(s) used | Mode 1 | | | | |

| Test Point (Location of discharge, see also photo) | | Test Voltage [kV] & Polarity | Coupling type | # of applied discharges / polarity | Discharge interval [s] |
|---|---|---------------------------------|------------------|---------------------------------------|---------------------------|
| <input checked="" type="checkbox"/> | Points on conductive surface as indicated in the picture below. | ±4 / ±8 | Contact | 10 | 1 |
| <input checked="" type="checkbox"/> | Points on non-conductive surface as indicated in the picture below. | ±2 / ±4 / ±8 / ±15 | Air | 10 | 1 |
| <input checked="" type="checkbox"/> | HCP top side. | ±4 / ±8 | Contact | 10 | 1 |
| <input checked="" type="checkbox"/> | HCP bottom side. | ±4 / ±8 | Contact | 10 | 1 |
| <input checked="" type="checkbox"/> | VCP right side. | ±4 / ±8 | Contact | 10 | 1 |
| <input checked="" type="checkbox"/> | VCP left side. | ±4 / ±8 | Contact | 10 | 1 |
| <input checked="" type="checkbox"/> | VCP front side. | ±4 / ±8 | Contact | 10 | 1 |
| <input checked="" type="checkbox"/> | VCP rear side. | ±4 / ±8 | Contact | 10 | 1 |

Observation(s) During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.

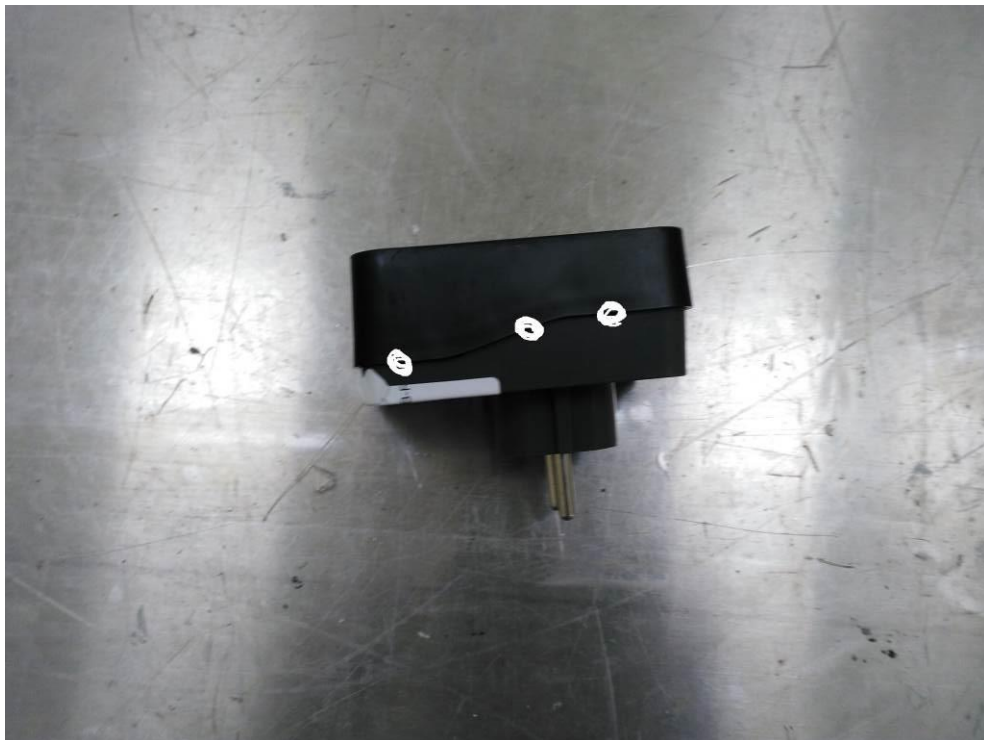
Supplementary information: The ±8 Contact discharges & ±15 Air discharges are required by client.

Photo of selected test points for model PME1WU2-XX



Supplementary information: Black points show the discharge points.

Photo of selected test points for model PME1WB-XX



Supplementary information: white points show the discharge points.

| | |
|--|----------------------|
| 5.4 Radio-frequency electromagnetic fields immunity | VERDICT: PASS |
|--|----------------------|

During the test it is verified if the equipment under test (EUT) has sufficient immunity against radiated electromagnetic fields. Industrial electromagnetic sources, walkie-talkies, radio transmitters, television transmitters and telecommunication equipment including cellular telephones and other emitting devices can generate these fields.

Requirements

| Standard | EN 61000-6-1 | | | |
|----------------------------|--------------|---------------|------------|-----------|
| Basic standard | EN 61000-4-3 | | | |
| Port under test | Enclosure | | | |
| Frequency range | Test level | Modulation | Dwell time | Step size |
| 80 – 1000 MHz | 3 V/m | 80% AM (1kHz) | ≥ 0,5 s | ≤ 1% |
| 1400 – 2000 MHz | 3 V/m | 80% AM (1kHz) | ≥ 0,5 s | ≤ 1% |
| 2000 – 2700 MHz | 1 V/m | 80% AM (1kHz) | ≥ 0,5 s | ≤ 1% |
| Supplementary information: | | | | |

Performed tests for models PME1WU2-XX, PME1WB-XX

| | | | | | | |
|-----------------------------------|---|--|-------------------------------------|----------------------|-------------------------------------|--------|
| Test method | <input checked="" type="checkbox"/> | EN 61000-4-3 | <input type="checkbox"/> | EN 61000-4-20 | | |
| Test set-up | <input checked="" type="checkbox"/> | Equipment on the table (0,8 m height) | | | | |
| (see annex 3 for photo) | <input type="checkbox"/> | Equipment standing on floor (0,05 – 0,15 m height) | | | | |
| | | | | | | |
| Voltage – Mains [V] | 230 Vac | | Frequency – Mains [Hz] | | 50 Hz | |
| Operating mode(s) used | Mode 1 | | | | | |
| Frequency range (applied) | Antenna Polarization | Test level (applied) | Modulation (applied) | Dwell time (applied) | Remark | |
| 80 – 1000 MHz (step size 1%) | H | 3 V/m | 80% AM (1kHz) | 2 s | | |
| | V | 3 V/m | 80% AM (1kHz) | 2 s | | |
| 1400 – 2000 MHz (step size 1%) | H | 3 V/m | 80% AM (1kHz) | 2 s | | |
| | V | 3 V/m | 80% AM (1kHz) | 2 s | | |
| 2000 – 2700 MHz (step size 1%) | H | 1 V/m | 80% AM (1kHz) | 2 s | | |
| | V | 1 V/m | 80% AM (1kHz) | 2 s | | |
| | | | | | | |
| Exposed side of the EUT | <input checked="" type="checkbox"/> | Front (0°) | <input checked="" type="checkbox"/> | Right (90°) | <input checked="" type="checkbox"/> | Top |
| | <input checked="" type="checkbox"/> | Rear (180°) | <input checked="" type="checkbox"/> | Left (270°) | <input checked="" type="checkbox"/> | Bottom |
| | | | | | | |
| Observation(s) | During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed. | | | | | |
| <u>Supplementary information:</u> | | | | | | |

| | | |
|------------|--|----------------------|
| 5.5 | Electrical Fast Transients immunity | VERDICT: PASS |
|------------|--|----------------------|

The EFT immunity test simulates disturbances by bursts of very short transients caused for example by switching off loads such as an AC motor or bouncing relay contacts. The transients are likely to disturb electronics but less likely to cause damage.

Requirements

| | | | | |
|---|------------------------------|--------------|----------------------|--------------------|
| Standard | | EN 61000-6-1 | | |
| Basic standard | | EN 61000-4-4 | | |
| Pulse characteristics | | 5/50 ns | | |
| Port under test | | Test level | Repetition frequency | Duration |
| <input checked="" type="checkbox"/> | AC input-output power | ± 1000 V | 5 KHz | ≥1 min. / polarity |
| <input type="checkbox"/> | DC input power ²⁾ | ± 500 V | 5 KHz | ≥1 min. / polarity |
| <input type="checkbox"/> | Signal ports ¹⁾ | ± 500 V | 5 KHz | ≥1 min. / polarity |
| ¹⁾ Only applicable to ports interfacing with cables whose total length may exceed 3 m. | | | | |
| ²⁾ Not applicable to input ports intended for connection to a battery or a rechargeable battery which must be removed or disconnected from the apparatus for recharging. Apparatus with a DC power input port intended for use with an AC–DC power adaptor shall be tested on the AC power input of the AC- DC power adaptor specified by the manufacturer or, where none is so specified, using a typical AC–DC power adaptor. The test is applicable to DC power input ports intended to be connected permanently to cables longer than 3 m. | | | | |

Performed tests for model PME1WU2-XX

| | | | |
|--|-------------------------------------|--|---------------------------------|
| Voltage – Mains [V] | 230 Vac | | |
| Frequency – Mains [Hz] | 50 Hz | | |
| Operating mode(s) used | Mode 1 | | |
| Test Set-up (see annex 3 for photo) | <input checked="" type="checkbox"/> | Equipment standing on floor at (0,1 ± 0,01) m above ground plane | |
| | <input type="checkbox"/> | Equipment on the table (0,1 ± 0,01) m above ground plane | |
| | <input type="checkbox"/> | Artificial hand applied. Location refer to chapter 9. | |
| Coupling | <input checked="" type="checkbox"/> | Common mode | <input type="checkbox"/> Other: |

| Port under test | Test Voltage &Polarity | Repetition Frequency | Test duration / polarity | Injection method | | | |
|----------------------------|---|----------------------|--------------------------|-------------------------------------|-----|--------------------------|-------|
| AC / DC mains power input | ± 1000 V | 5 KHz | 2 min. / polarity | <input checked="" type="checkbox"/> | CDN | <input type="checkbox"/> | Clamp |
| | | | | <input type="checkbox"/> | CDN | <input type="checkbox"/> | Clamp |
| | | | | <input type="checkbox"/> | CDN | <input type="checkbox"/> | Clamp |
| | | | | <input type="checkbox"/> | CDN | <input type="checkbox"/> | Clamp |
| | | | | | | | |
| Observation(s) | During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed. | | | | | | |
| Supplementary information: | | | | | | | |

| | | |
|------------|---------------------------------|----------------------|
| 5.6 | Surge transient immunity | VERDICT: PASS |
|------------|---------------------------------|----------------------|

The surge transient immunity test simulates the surges that are caused by over-voltages due to indirect (induced) lightning transients. The pulse is a slow transient with high-energy contents and due to its long duration may cause damage to an unprotected EUT.

Requirements

| Standard | EN 61000-6-1 | | | |
|--|--|----------------------------------|-----------------------------|--------------------|
| Basic standard | EN 61000-4-5 | | | |
| Pulse characteristics | 1,2/50µs Voltage; 8/20µs Current | | | |
| Repetition rate | ≥ 60 secs. (for each test level and phase angle) | | | |
| Number of pulses | 5 pulses (at each polarity and phase angle) | | | |
| Port | | Test level & Polarity & Coupling | | Phase angle [°] |
| | | Line to Line ¹⁾ | Line to Earth ¹⁾ | |
| <input checked="" type="checkbox"/> | AC input-output power | ± 1 kV | ± 2 kV | 0, 90, 180, 270 |
| <input type="checkbox"/> | DC input power ²⁾ | ± 0,5 kV | ± 0,5 kV | --- |
| ¹⁾ In addition to the specified test level, all lower test levels as detailed in EN 61000-4-5 should also be satisfied. ²⁾ Not applicable to input ports intended for connection to a battery or a rechargeable battery which must be removed or disconnected from the apparatus for recharging. Apparatus with a DC power input port intended for use with an AC-DC power adaptor shall be tested on the AC power input of the AC-DC power adaptor specified by the manufacturer or, where none is so specified, using a typical AC-DC power adaptor. DC ports, which are not intended to be connected to a DC distribution network are treated as signal ports. | | | | |

Performed tests for model PME1WU2-XX

| | |
|------------------------|--|
| Voltage – Mains [V] | 230 Vac |
| Frequency – Mains [Hz] | 50 Hz |
| Operating mode(s) used | Mode 1 |
| Repetition rate | 60 secs. (for each test level and phase angle) |
| Number of pulses | 5 pulses (at each polarity and phase angle) |

| Port under test | | Coupling | Test level & Polarity | Phase angle [°] | Remark |
|-------------------------------------|----------------------|---|-----------------------|--------------------|--------|
| <input checked="" type="checkbox"/> | AC mains input power | Line to Neutral | ±1 kV | 0, 90, 180, 270 | |
| <input checked="" type="checkbox"/> | AC mains input power | Line to Earth | ±2 kV | 0, 90, 180, 270 | |
| <input checked="" type="checkbox"/> | AC mains input power | Neutral to Earth | ±2 kV | 0, 90, 180, 270 | |
| Observation(s) | | During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed. | | | |
| Supplementary information: | | | | | |

| | | |
|------------|--|----------------------|
| 5.7 | Injected currents (RF common mode) immunity | VERDICT: PASS |
|------------|--|----------------------|

During this test the immunity of the equipment for induced or conducted electromagnetic fields is checked. Fields generated by radio and other transmitters cause RF voltages in long cables like the mains network. This test reproduces these induced disturbing voltages by injecting them to the EUT via the cabling.

Requirements

| | | | | | |
|--|-------------------------------------|-------------------|---------------|-----------|------------|
| Standard | | EN 61000-6-1 | | | |
| Basic standard | | EN 61000-4-6 | | | |
| Frequency range | | 0,15 – 80 MHz | | | |
| Port under test | | Test level, U_0 | Modulation | Step size | Dwell time |
| <input checked="" type="checkbox"/> | AC input-output power | 3 V | 80% AM (1kHz) | ≤ 1% | ≥ 0,5 s |
| <input type="checkbox"/> | DC input-output power ¹⁾ | 3 V | 80% AM (1kHz) | ≤ 1% | ≥ 0,5 s |
| <input type="checkbox"/> | Signal port ¹⁾ | 3 V | 80% AM (1kHz) | ≤ 1% | ≥ 0,5 s |
| ¹⁾ Only applicable to ports interfacing with cables whose total length, may exceed 3 m. | | | | | |

Performed tests for model PME1WU2-XX

| | | | | |
|--|---|---|----------------------|--------|
| Test method (applied) | Frequency range (applied) | Modulation (applied) | Step size (applied) | |
| EN 61000-4-6 | 0,15 – 80 MHz | 80% AM (1kHz) | 1% | |
| Voltage – Mains [V] | 230 Vac | Frequency – Mains [Hz] | 50 Hz | |
| Operating mode(s) used | Mode 1 | | | |
| Test set-up (see annex 3 for photo) | <input checked="" type="checkbox"/> | Equipment standing on floor at (0,1 ± 0,01) m above ground plane. | | |
| | <input type="checkbox"/> | Equipment on the table (0,1 ± 0,01) m above ground plane. | | |
| | <input type="checkbox"/> | Artificial hand applied. Location refer to Annex 3. | | |
| Port under test | Test Level (applied) | Injection method | Dwell time (applied) | Remark |
| AC mains input power | 3V | CDN-M3 | 3s | |
| | | | | |
| | | | | |
| Observation(s) | During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed. | | | |
| <u>Supplementary information:</u> | | | | |

| | | | |
|------------|--|-----------------|------------|
| 5.8 | Power frequency magnetic field immunity | VERDICT: | N/A |
|------------|--|-----------------|------------|

Magnetic fields caused by for example nearby mains frequency transformers may disturb equipment with sensitivity for these type of disturbances such as CRT monitors.

Requirements

| | |
|--|--------------|
| Standard | EN 61000-6-1 |
| Basic standard | EN 61000-4-8 |
| Port under test | Enclosure |
| Field strength | 3 A/m |
| Test Frequency | 50 / 60 Hz |
| Notes: Applicable only to apparatus containing devices susceptible to magnetic fields. | |

Performed tests for model PME1WU2-XX

| | | |
|--|---|--|
| Reason for not performing the test | <input checked="" type="checkbox"/> | The test is not applicable as the apparatus does not contain any components susceptible to this low-frequency magnetic fields. |
| Voltage – Mains [V] | (Please write the voltage/voltages used for testing) | |
| Frequency – Mains [Hz] | (Please write the frequency/frequencies used for testing) | |
| Operating mode(s) used | (Please write operating mode(s) used for testing) | |
| Test set-up (see annex 3 for photo) | <input type="checkbox"/> | Single Coil. Dimensions: 1 m x 1 m |
| | <input type="checkbox"/> | Single Coil. Dimensions: 2 m x 2 m |
| | <input type="checkbox"/> | Homogeneous field (Helmholtz coil). Dimensions: 1 m x 1 m |
| | <input type="checkbox"/> | 0,1 m above metal surface |

| Axis under test | | Tested Field strength | Test Frequency | Test Duration | Remark |
|-----------------------------------|--------|---|----------------|---------------|--------|
| <input type="checkbox"/> | X-axis | 3 A/m | 50 / 60 Hz | | --- |
| <input type="checkbox"/> | Y-axis | 3 A/m | 50 / 60 Hz | | --- |
| <input type="checkbox"/> | Z-axis | 3 A/m | 50 / 60 Hz | | --- |
| | | | | | |
| Observation(s) | | During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed. | | | |
| <u>Supplementary information:</u> | | | | | |

5.9 Power supply interruptions and dips immunity

VERDICT: PASS

The purpose of the test is to verify the immunity of the equipment against voltage dips and voltage interruptions. It helps to ensure that the equipment functions properly (as expected and safely) with power supply fluctuations. Voltage dips and interruptions are caused by faults in the LV, MV, HV networks (short-circuit or ground faults).

Requirements

| Standard | EN 61000-6-1 | | | |
|--|--|-----------------|-------|--|
| Basic standard | EN 61000-4-11 | | | |
| # of dips & interruptions | 3 dips / interruptions for each test level and phase angle | | | |
| Interval between events | ≥ 10 seconds | | | |
| Port under test | Test level ¹⁾ | Period (Cycles) | | Performance Criterion |
| | | 50 Hz | 60 Hz | |
| AC input power port | $U_{NOM} - \geq 95\%$ | 0,5 | 0,5 | B; Refer to the chapter 5.1 for details. |
| AC input power port | $U_{NOM} - \geq 95\%$ | 1 | 1 | C; Refer to the chapter 5.1 for details. |
| AC input power port | $U_{NOM} - 30\%$ | 25 | 30 | C; Refer to the chapter 5.1 for details. |
| AC input power port | $U_{NOM} - \geq 95\%$ | 250 | 300 | C; Refer to the chapter 5.1 for details. |
| ¹⁾ Changes to the voltage level shall occur at a zero crossing point in the a.c. voltage waveform. NOTE: Where the equipment has a rated voltage range the following shall apply: <ul style="list-style-type: none"> - If the voltage range does not exceed 20% of the lower voltage specified for the rated voltage range. A single voltage within that range may be selected for testing. - In all other cases, the test procedure shall be applied for both the lowest and highest voltages declared in the voltage range. | | | | |

Performed tests for model PME1WU2-XX

| U _{NOM} [V _{AC}] | Terminal | Test level [% U _{NOM}] | Duration [cycles] | | Repetition rate [s] | Number of dips per test | Phase angle [°] |
|-------------------------------------|----------|---|-------------------|-------|------------------------|----------------------------|--------------------|
| | | | 50 Hz | 60 Hz | | | |
| 230 | L-N | 0 | 0,5 | 0,5 | 10 | 3 | 0, 180 |
| 230 | L-N | 0 | 1 | 1 | 10 | 3 | 0, 180 |
| 230 | L-N | 70 | 25 | 30 | 10 | 3 | 0, 180 |
| 230 | L-N | 0 | 250 | 300 | 10 | 3 | 0, 180 |
| | | | | | | | |
| Operating mode(s) used | | Mode 1 | | | | | |
| Observation(s) | | During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed. | | | | | |
| <u>Supplementary information:</u> | | | | | | | |

6 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

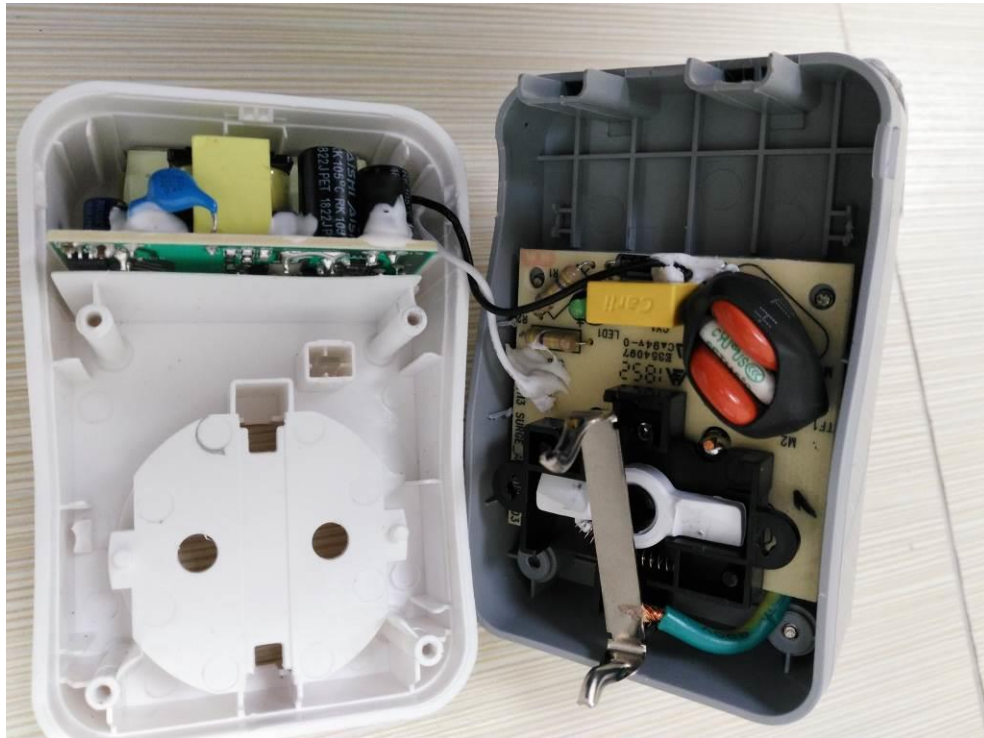
The photographs show the tested device.



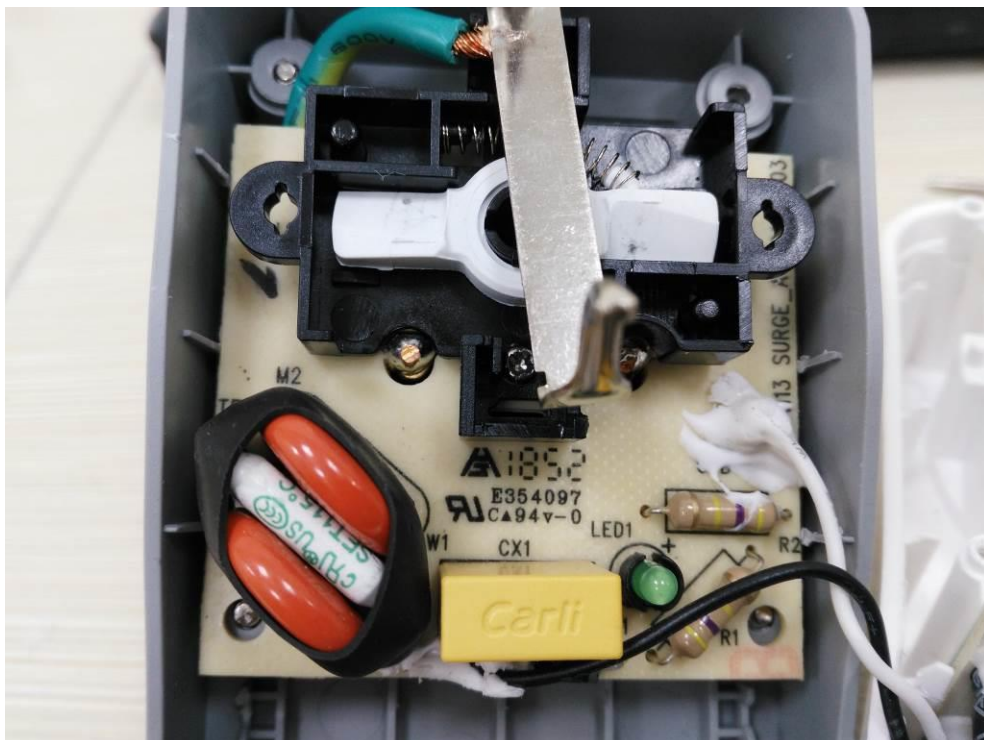
Overview of model PME1WU2-XX



Overview of model PME1WB-XX



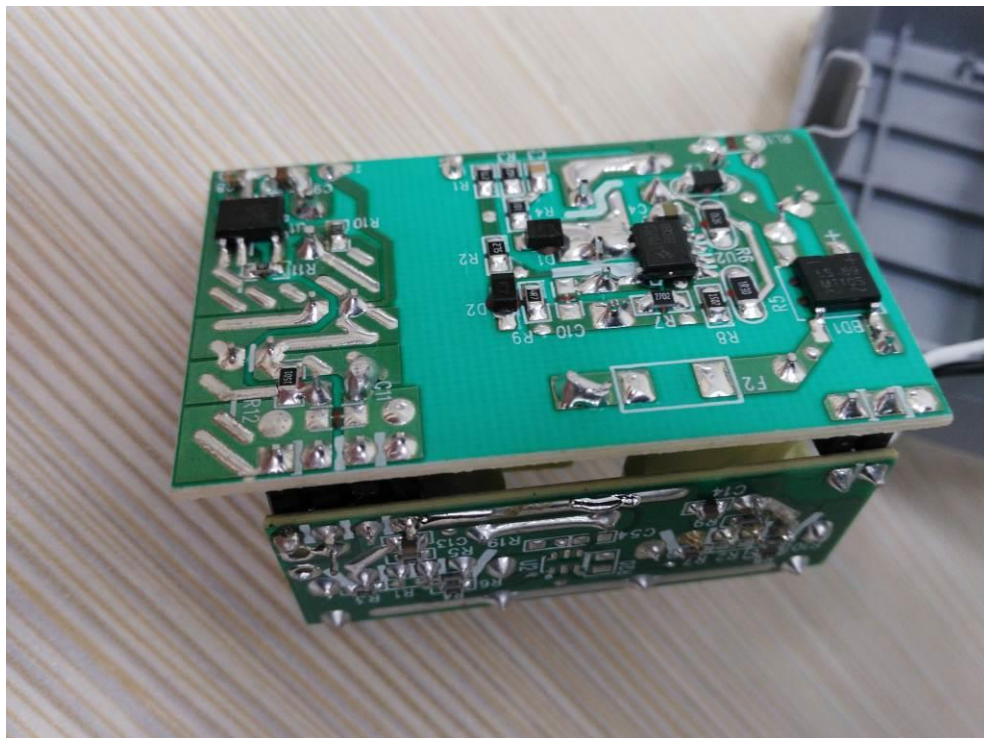
Internal view of PME1WU2-XX



Surge protection of PME1WU2-XX



USB PCB of PME1WU2-XX



USB PCB of PME1WU2-XX

7 ANNEX 1 - MEASUREMENT UNCERTAINTIES

The table(s) below show(s) measurement uncertainties of the EMC test set-ups. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

| Measurement | | Uncertainty |
|---------------------------|---------------------|-------------|
| Mains disturbance voltage | (9 kHz –150 kHz) | 2,18 dB |
| | (150 kHz –30MHz) | 2,82 dB |
| Radiated disturbance | (30MHz– 300MHz) | 4,72 dB |
| | (300 MHz– 1000 MHz) | 4,88 dB |

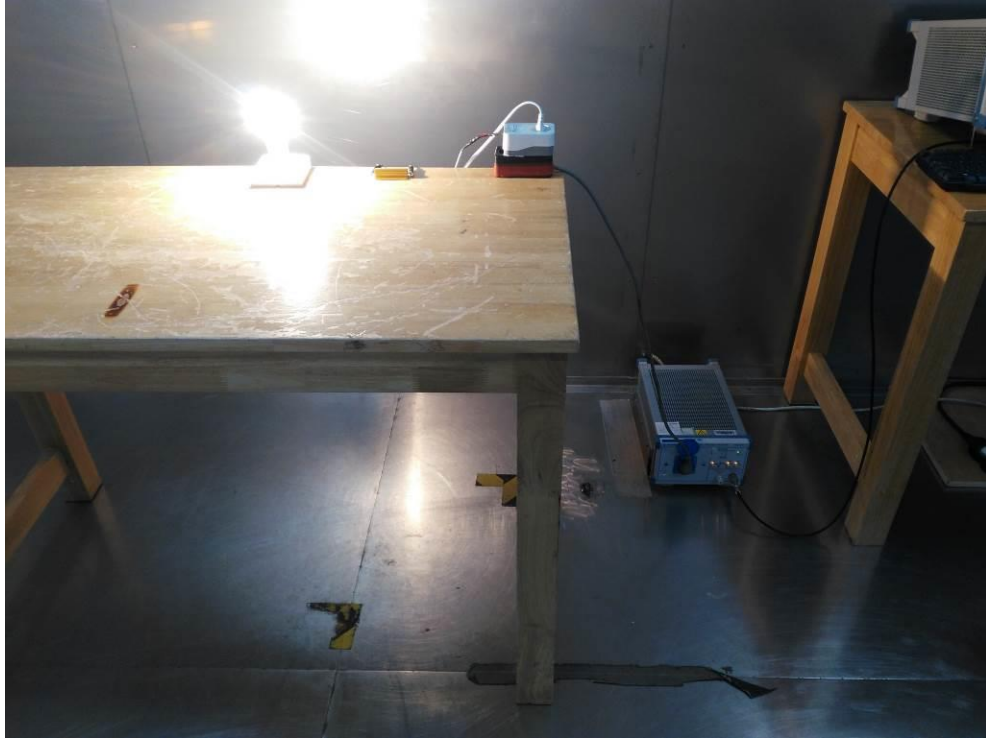
8 ANNEX 2 – USED EQUIPMENT

| DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch | | | | | |
|--|-----------------|-----------|------------|-----------|---------------|
| Instrumentation | Manufacturer | Model No. | Serial No. | Dekra No. | Cal. due date |
| EMI Receiver | R&S | ESCI | 101206 | G/L858 | 2019-11-28 |
| LISN | R&S | ENV216 | 101336 | G/L859 | 2019-11-28 |
| Shielding Room | Changzhou Feite | / | / | G/L861 | 2019-07-06 |
| EMI receiver | R&S | ESCI | 101205 | G/L857 | 2019-11-28 |
| Antenna (30MHz-3GHz) | SCHWARZBECK | VULB9163 | 506 | G/L864 | 2019-11-28 |
| Chamber | ETS | / | / | G/L856 | 2019-07-06 |
| ESD Generator | TESEQ | NSG435 | 6513 | G/L867 | 2019-11-30 |
| Signal Generator | TESEQ | NSG3040 | 1821 | G/L868 | 2020-04-27 |
| STEPTRANSFORMER | TESEQ | INA6501 | / | G/L868 | 2020-04-27 |
| Signal Generator | TESEQ | NSG4070 | 31446 | G/L870 | 2020-01-25 |
| CDN | TESEQ | M016 | 31564 | G/L870 | 2020-01-25 |
| EM-Koppelzange | TESEQ | KEMZ801 | 31493 | G/L870 | 2020-01-25 |
| 6dB | TESEQ | ATN6075 | 30789 | G/L870 | 2020-01-25 |

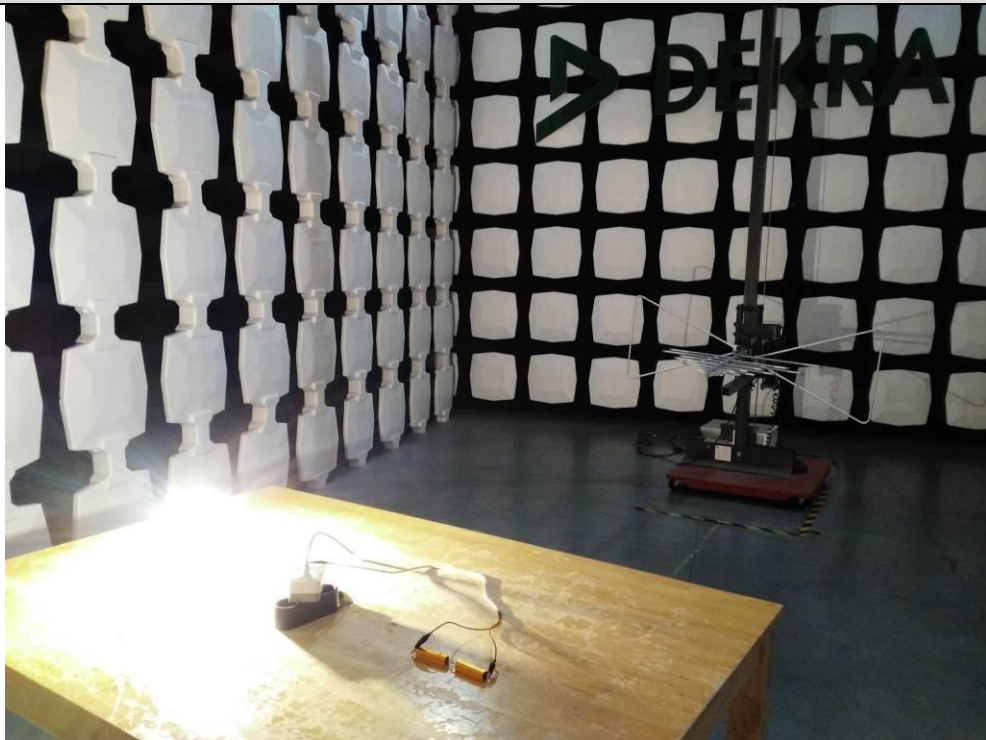
| Guangzhou Vkan Certification & Testing Co.,Ltd. | | | | | |
|---|--------------|-----------------|-------------|-------------|---------------|
| Instrumentation | Manufacturer | Model No. | Serial No. | .NO. | Cal. due date |
| Immunity Test System | TESEQ | NSG3060/CDN3063 | EM-000337 | EM-000337 | 2019-05-12 |
| Conducted Immunity Test System | TESEQ | CDN8014 | EM-000337-4 | EM-000337-4 | 2020-01-18 |

9 ANNEX 3 - TEST PHOTOS

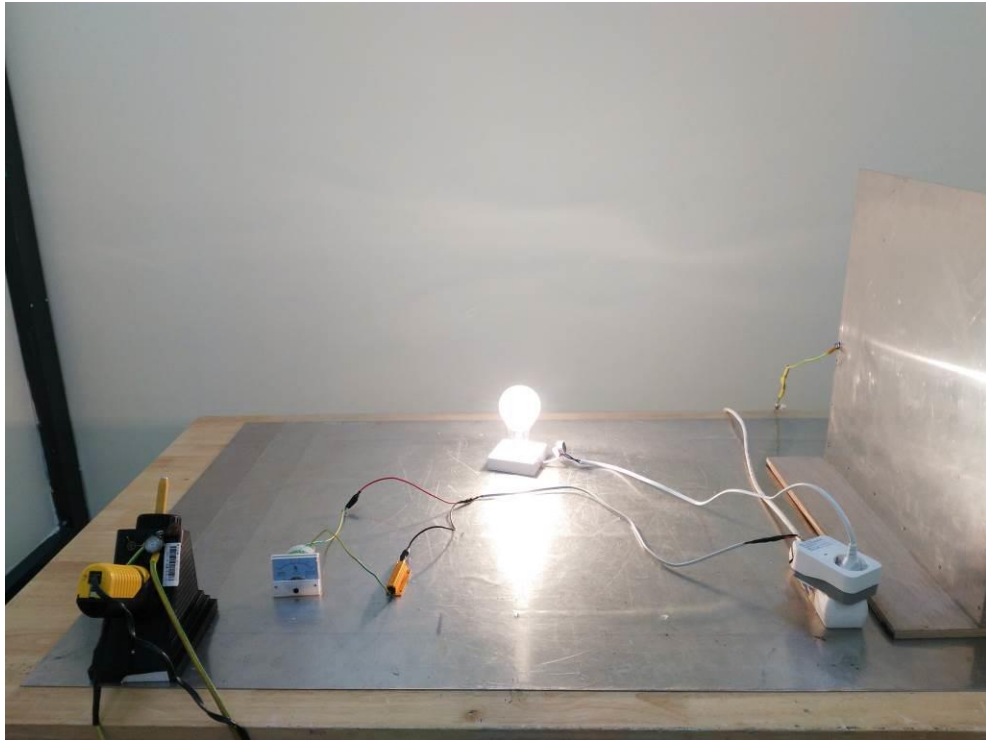
Conducted disturbance voltage at mains terminals



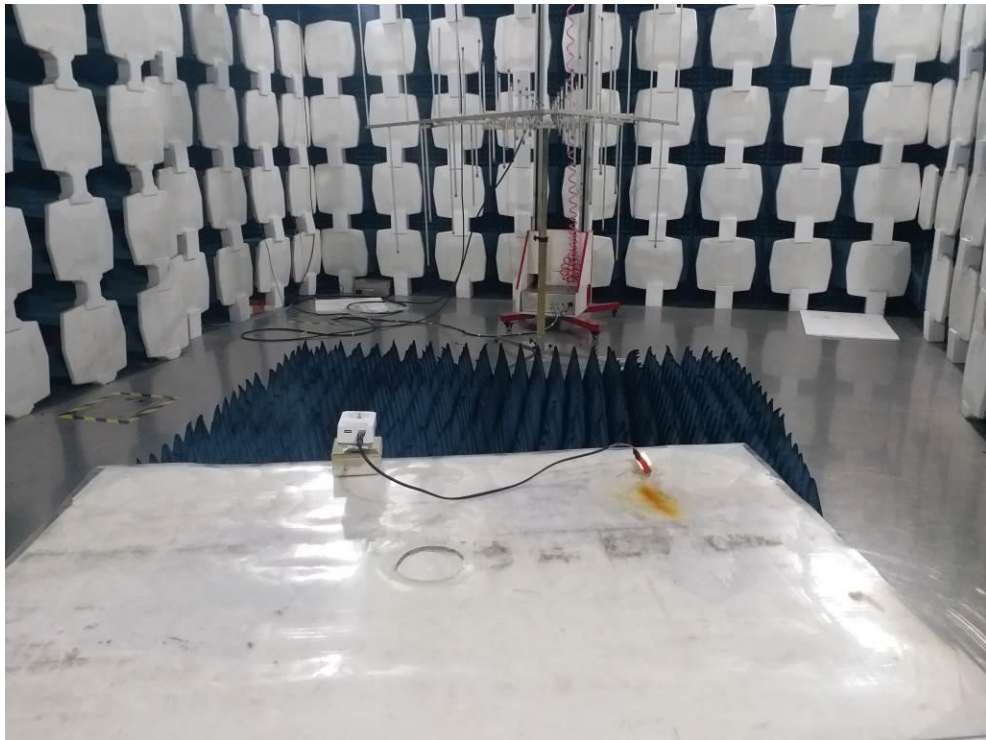
Radiated electromagnetic disturbances (30 MHz to 1000 MHz)



Electrostatic discharge immunity



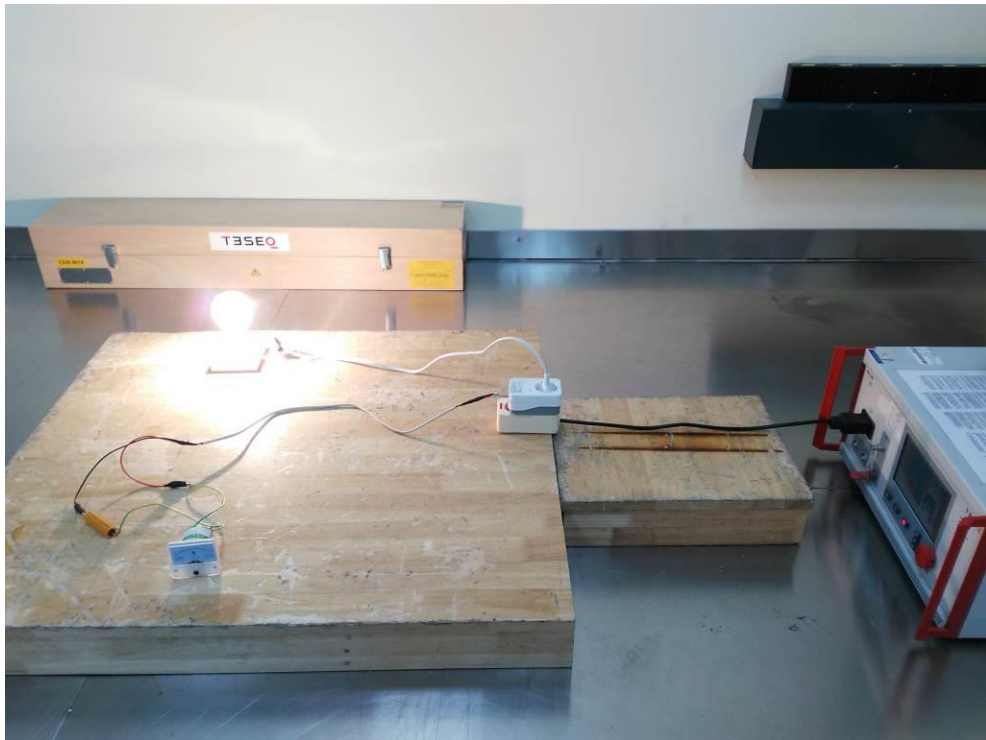
Radiated EM Field Immunity



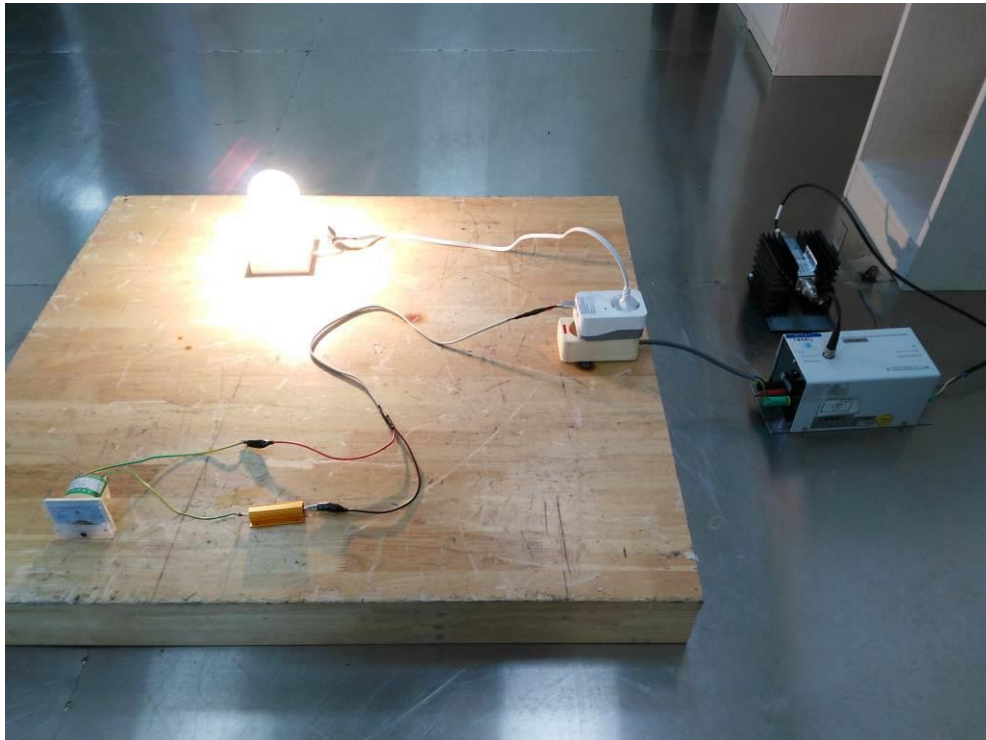
Electrical fast transient (EFT) / Burst transients immunity



Surge transients immunity



Conducted RF disturbances immunity



Power supply voltage interruptions & dips immunity



---end---