

## Risk Assessment and Analysis for Rearview Cameras under General Product Safety Regulation (GPSR)

Product: Rearview cameras for installation at the rear of cars, vans, or trucks (operating voltage: 12 or 24 volts)

Manufacturer: Ampire Electronics GmbH & Co.KG

Address: Langwadener Straße 60, 41516 Grevenbroich, Germany

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### 1. Identification and Evaluation of Potential Hazards

#### Mechanical Hazards

- Possible Risks:
  - Improper attachment of the camera could cause it to fall off, posing a danger to other road users.
  - Damage caused by external factors (e.g., vibrations, impacts, moisture).
- Recommended Measures:
  - Robust casing (e.g., shockproof, splash-resistant according to IP67/IP68).
  - High-quality mounting elements and a detailed installation manual with clear instructions.
  - Compliance with ISO 16750 (Road Vehicles – Environmental Tests).

#### Electrical Hazards

- Possible Risks:
  - Short circuits due to faulty wiring.
  - Overheating or fire risks under overload conditions.
- Recommended Measures:
  - Integration of fuses and overload protection.
  - Compliance with the Low Voltage Directive (2014/35/EU).
  - Ensuring the product resists voltage spikes per ISO 7637-2.

#### Chemical Hazards

- Possible Risks:
  - Release of harmful substances (e.g., plasticizers, flame retardants) from plastic components.
- Recommended Measures:
  - Use certified materials that meet REACH and RoHS requirements.
  - Conduct regular tests on material composition.

#### Thermal Hazards

- Possible Risks:
    - Overheating during continuous use or direct sunlight exposure.
  - Recommended Measures:
    - Use heat-resistant materials and components.
    - Conduct thermal stress tests (DIN EN 60068-2).
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## 2. Analysis of Potential Risks Related to Intended and Foreseeable Use

- Intended Use:
    - Assisting in reversing and parking by improving rear visibility.
  - Foreseeable Misuse:
    - Mounting in unsuitable positions (e.g., obstructed views).
    - Using the camera as the sole navigation aid.
    - Careless installation leading to faulty electrical connections.
  - Recommended Measures:
    - Provide clear and comprehensive instructions for proper installation and usage.
    - Include warnings regarding the camera's limitations (e.g., not a substitute for mirrors).
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## 3. Requirements and Standards under GPSR

### Labeling Requirements

The product must be clearly and permanently labeled with:

- Product name and model number.
- Name and address of the manufacturer (Ampire Electronics GmbH & Co.KG).
- Safe usage instructions.
- CE marking.

### Traceability

- Implement a traceability system ensuring that every batch or serial number is trackable.
- Maintain production, test, and distribution data throughout the product's lifecycle.

### Safety Documentation

Provide technical documentation including:

- Risk assessments and safety analyses.
- Test reports compliant with relevant standards (e.g., EN 50498 for vehicle electronics).

- EU Declaration of Conformity (per Low Voltage and EMC Directives).
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#### 4. Assessment of Compliance with EU Harmonization Directives

- Low Voltage Directive (2014/35/EU):
    - The camera must operate safely within the specified operating voltages (12/24 volts).
  - EMC Directive (2014/30/EU):
    - The product must not emit or be affected by electromagnetic interference.
    - Tests per EN 55025 and EN 50498 are required.
  - RoHS Directive:
    - The product must not contain hazardous substances such as lead or mercury.
  - REACH Regulation:
    - Ensure materials do not contain prohibited substances.
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#### 5. Measures to Minimize Risks and Ensure Product Safety

##### Design and Manufacturing

- Use robust materials that withstand mechanical and thermal stresses.
- Ensure electrical components resist voltage spikes and short circuits.

##### Testing and Quality Controls

- Conduct regular product testing, including:
  - Mechanical stress tests (shocks, vibrations).
  - Electrical safety tests (voltage and short circuit resistance).
  - Weather resistance tests (rain, UV radiation, temperature).

##### Labeling and Documentation

- Provide clear user instructions and safety warnings.
- Prepare a detailed EU Declaration of Conformity.

##### Customer Support and Feedback

- Implement a system for collecting customer feedback and reporting safety issues.
  - Develop an effective recall system for identified risks.
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#### 6. Recommendations for Compliance with GPSR

- Pre-Sales Product Testing: Conduct independent testing by accredited laboratories.

- Consumer Education: Provide clear installation and safety instructions.
  - Traceability: Use digital systems to document and track production batches.
  - Market Surveillance: Proactively analyze consumer complaints and market tests to identify and address safety issues.
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## Conclusion

By implementing the recommended measures, the safety of rearview cameras can be ensured, and compliance with the new GPSR requirements achieved. Ampire Electronics GmbH & Co.KG should continuously conduct quality controls and market analyses to maintain high safety standards and foster consumer trust.