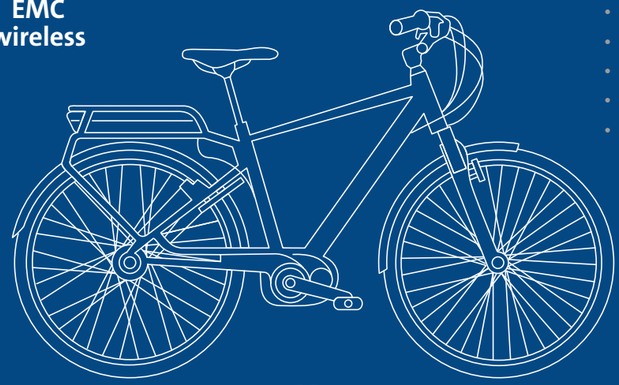
Guide to personal e-transportation

Standards for Europe and United States

Empowering Trust™

The e-mobility transformation

An incredible transformation of personal electrified transportation technology has taken place around the globe and shows no sign of slowing. More and more, light electric vehicles (LEVs) and personal transportation devices are populating worldwide markets.
The increasing demands put on e-transportation electrical systems and the associated safety challenges must be proactively addressed. In order to support this rapid market evolution, we have launched a platform of e-mobility certification solutions.



A comprehensive solution

On top of our dedicated testing and certification solutions for e-mobility devices, we also help manufacturers with a range of other tests, including:

- Safety
- EMC wireless
- Radio performance
- Battery safety
- Global market access
- Functional safety

US Standards

UL 2272 Electrical Systems of Personal E-Mobility Devices

The standard covers consumer mobility devices intended for a single rider with a rechargeable electric drive train that balances and propels the rider, and which may be provided with a handle for grasping while riding. This device may or may not be self-balancing.

- UL 2272 is an U.S. and Canadian bi-national standard.
- On top of this, from 1 Jan 2021, only UL 2272 certified electric scooters will be allowed in Singapore.

UL 2849 Electric Bicycles, Electrically Power Assisted Cycles (EPAC Bicycles), Electric Scooters, and Electric Motorcycles

The standard covers electric bicycles, electric scooters and electric motorcycles. It covers only electrical systems, not road-worthiness.

"Electric scooters and electric motorcycles" refers to vehicles that are intended for use over the road. A new issue of the outline covers requirements for battery packs and chargers, including the correlation of the charger and battery combination.

UL 3030 Unmanned Aerial Vehicles (UAV)

The unmanned aerial system (UAS) regulations have varied from country to country, but with a primary focus on UAS operations. UL 3030 focuses on the safety of the UAV's electrical system for UAVs used in commercial applications. UL 3030 covers UAVs under 55 lbs. (25 kg) with an operating voltage not greater than 100 V dc that are intended to be operated outdoors by trained pilots.

We suggest the following standards to cover other aspects of e-mobility devices:

- FCC Rules for Radio performance and EMC requirements
- UL 2271 for light electric vehicles (LEV) batteries
- UN38.3 for batteries

EU Standards

E-bikes

- EN 15194 for e-bikes is the only specific standard that has been published at this time. Specific standards for other devices are under development.

E-kick scooters

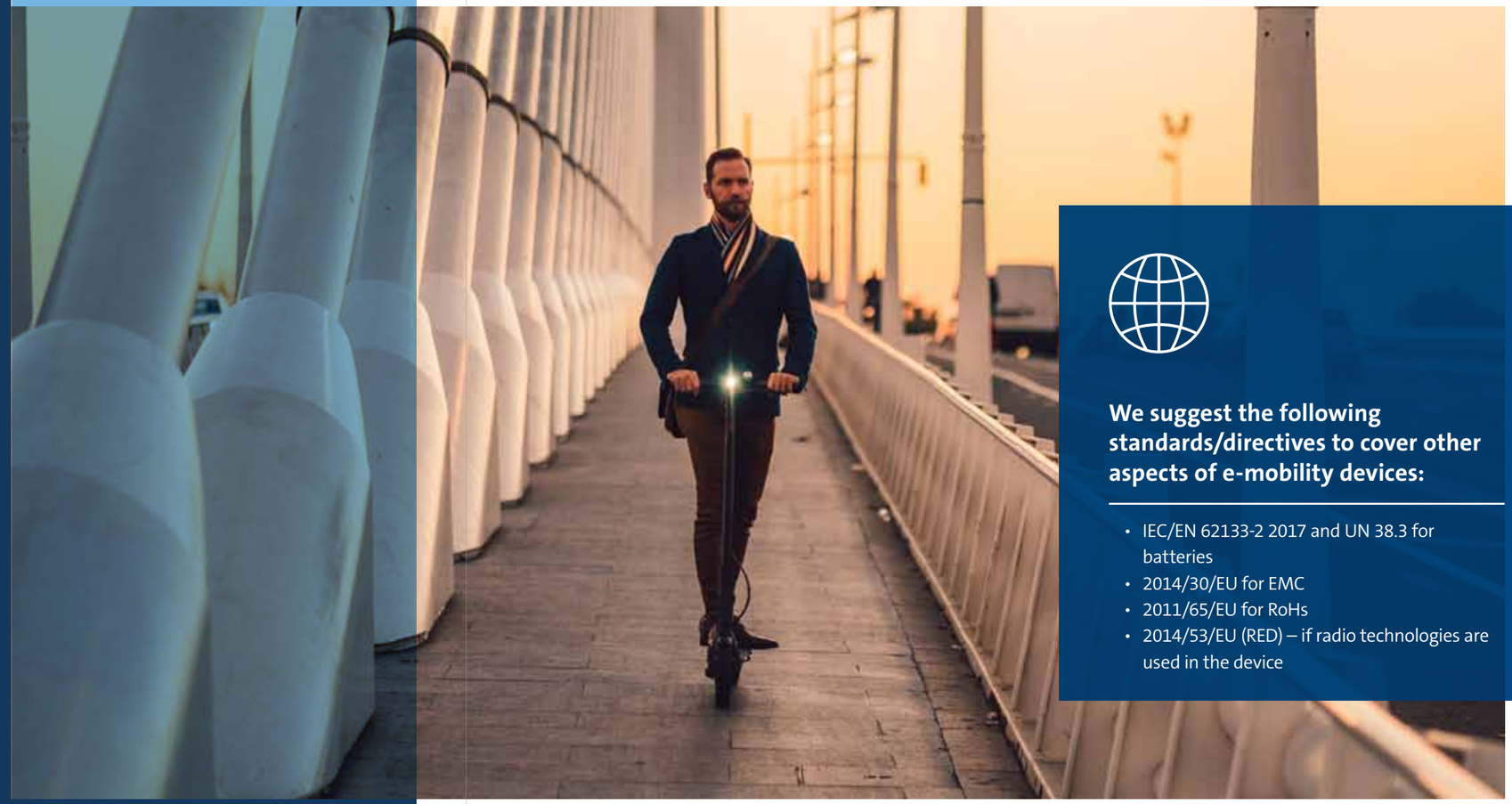
- EN 14619-1 and EN 60335-1 are commonly used for electric kick scooters.

Hoverboards

- EN 60335-1 is a generic standard commonly used for hoverboards

Safety

- From safety perspective, Machinery Directive 2006/42/EC is applicable and should be followed.



We suggest the following standards/directives to cover other aspects of e-mobility devices:

- IEC/EN 62133-2 2017 and UN 38.3 for batteries
- 2014/30/EU for EMC
- 2011/65/EU for RoHs
- 2014/53/EU (RED) – if radio technologies are used in the device

How we can help

We deliver solutions for both the U.S. and EU.

We test safety, functional safety and radio/EMC aspects.

We provide technical advisory and continuous updates on the latest global regulatory landscape.

We provide combined evaluations of batteries and end products.

We help you navigate complex global market access.

Why UL

Expertise
We play a key role in the development of new standards through active leadership in the industry all around the global.

Unparalleled experience
We draw on more than 100 years of research and development experience in consumer technology.

Knowledge
We support manufacturers and regulators with webinars and dedicated training sessions on regulations worldwide.

Trusted leadership
We are highly regarded experts on e-mobility worldwide and stay on top of the latest developments.

"We at UL know how crucial a rapid market launch is today.

With early testing and bundled certification programs we can significantly accelerate your go-to-market process."

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