

# Enabling trustworthy automotive interoperability experiences

**A great user experience in connected cars requires seamless communication between devices and vehicles**

At UL, we've been testing the connectivity, interoperability and user experience of mobile technology used in automotive ecosystems since Bluetooth® was first introduced into vehicles. Our long-standing relationships with major automakers, mobile phone manufacturers and cellular service providers offer you access to pre-production, post-production and maintenance testing expertise that's not found anywhere else.

Our engineers test factory installed and aftermarket connected products to validate that users will get the experience they are promised. Test scopes include:

- Performance
- Real-time Bluetooth, Wi-Fi and projection connectivity
- Compatibility verification with mobile devices and systems

## Providing you the widest breadth of testing services

We have a close working relationship with all mobile phone manufacturers in the U.S. market. We also work closely with a variety of Bluetooth and Wi-Fi chipset vendors and infotainment system suppliers. We can validate your marketing claim that your mobile devices connect seamlessly in the vehicle and beyond.

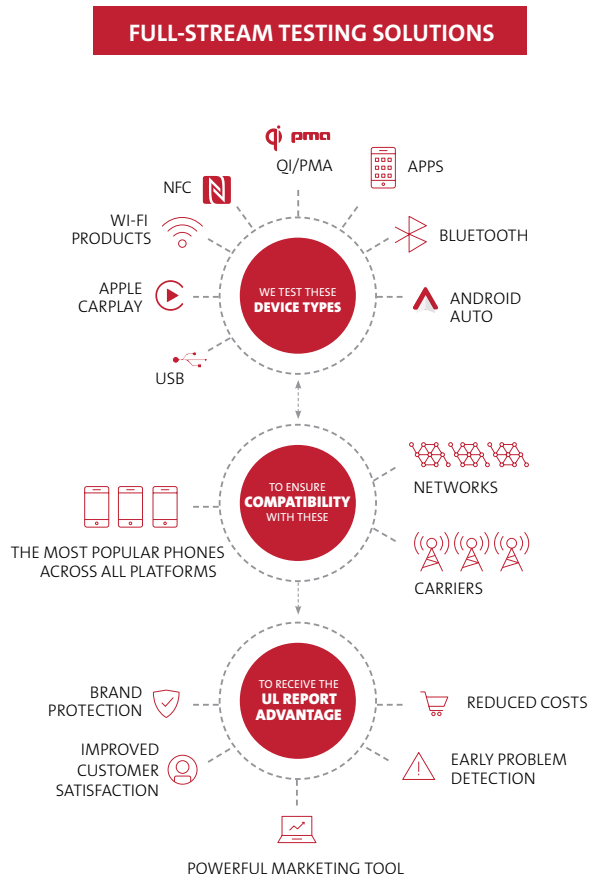
These trusted relationships offer access to:

- 100% of U.S. mobile phone market
- Global facilities with large device libraries to support your global needs
- Extensive inventory of older phones to help extend the life of infotainment compatibility
- Pre-release device testing for future planning
- Pre-release and pre-update for major mobile operating systems
- Forward- and backward-compatibility testing
- Mobile app user experience and validation
- Infotainment system app user experience and validation

## Protect your brand's reputation

We thoroughly review your product's features and technology specifications with real-world test scenarios that accurately replicate the consumer experience. This helps us identify problems prior to product launch before a poor user experience can potentially damage your brand with recalls and negative reviews.

We also test that the products and apps that connect to your device or automobile perform as expected so your reputation isn't damaged by poor interoperability of an auxiliary device or software. You can help protect your brand by using suppliers whose products have been UL tested for interoperability.





Customers trust  
third-party claims  
more than brand claims

**58%**

of adults need proof to believe marketing messages from brands

**59%**

of shoppers view reviews from strangers as trustworthy as from friends

**42%**

claimed to distrust brands

UP TO **40%**

of potential customers can be driven away by a negative review

**69%**

distrusted brands' advertising

UP TO **84%**

of millennials don't trust traditional advertising

MORE THAN

**60%**

of Fortune 500 and Global 500 companies work with UL

**TENS of BILLIONS**

of products globally have the UL Mark

\*Source: Trinity Mirror, ReportLinker, Label Insight report, Forbes

## Testing helps build customer trust

No matter the manufacturing phase of your product, we offer a variety of testing approaches to help validate connectivity and interoperability performance. We can utilize your test plans, or you can take advantage of our vast library of industry-authenticated test plans. We can even combine both for a customized test solution specifically suited for your product.

## Product design advisory services

Save time, money and resources with pre-production testing during the development stages of innovation. We offer a deep dive into interoperability testing to identify issues, validate performance and recommend solutions early to avoid costly trial-and-error prototyping. By testing early in your design process, you can spot and fix problems in the design before you get too far down the development pipeline. This can reduce the risk of expensive redesigns in production or post production.

## Maintenance testing

The technologies to which your product connects can evolve rapidly, requiring additional testing to maintain a good user experience. We can help you confirm your product's user experience doesn't suffer when connecting with a recently upgraded operating system or a new mobile device introduced to the marketplace.

Our testing helps maintain user experience though your product's life cycle.

We also test against:

- User manuals
- Quick start guides
- Marketing claims
- Users' frequently asked questions

Our testing results are presented to you in a comprehensive format that offers a grading system based on pass/fail outcomes. For auto manufacturers, data sheets are available for easy upload to your website to promote approved devices.

## Root cause analysis by connectivity experts

When there are failures in testing, we can help you understand why. We go beyond simple user experience testing by providing comprehensive root cause analysis. We have some of the most tenured connectivity industry experts working on site and have helped create and develop connectivity protocols, including Bluetooth.

Our experts can help:

- Diagnose interoperability issues
- Identify the sources of problems
- Collect protocol traces
- Define efficient resolution plans
- Recommend approaches to testing

Are you ready to build trustworthy automotive interoperability?  
Learn more at [www.ul.com/IOP](http://www.ul.com/IOP) or contact us at [inquiry.iop@ul.com](mailto:inquiry.iop@ul.com).



**Empowering Trust<sup>®</sup>**

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