

**Anritsu**  
Advancing beyond

# Automotive Test Solutions



# Test solutions to support the development of safe, secure and comfortable mobility

Thanks to innovations in electronics, vehicles are evolving from merely being convenient and practical means of transport to safe and comfortable spaces in which to travel. This evolution of mobility is made possible by the increased sophistication of data communications, safety controls, electrification, and infotainment.

Anritsu contributes to accelerating the pace of this innovation by providing test solutions for wireless and wired communications, high-speed digital and electronics.

## Automotive Test Solutions

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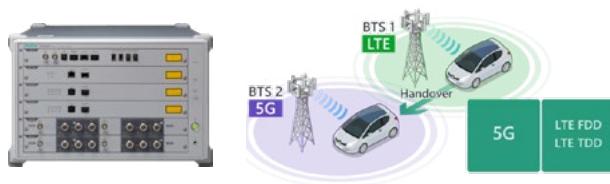


# Connected Car/eCall

Vehicles are nowadays connected to the Internet via mobile networks to enhance services such as navigation, advanced driver assistance systems, emergency call systems (eCall), and entertainment, thus making the connected car a reality.

It is essential for the connected car to have a reliable communication link, stable communication capabilities, and accurate sensing and control. This will ensure that eCall operates accurately in the event of an emergency, such as an incident occurs. Evaluating the level of performance in a vehicle in a real environment is complex and requires considerable effort. So, setting up a test lab with a pseudo-testing solution would save both time and money.

## > [5G Connectivity Testing Solutions site](#)



## > [eCall/NG-eCall Testing Solutions site](#)



Simulates various wireless environments and the communication conditions in mobile networks required to evaluate automated driving systems such as TCUs, navigation, servers, etc.

- Capable of testing the quasi-normal and abnormal systems of mobile networks, which is difficult to achieve with real networks
- Easily creates complex test environments with wireless power fluctuations in driving environments
- Mobile network environments from around the world can be built in the lab for operational verification
- Easy-to-use GUI that requires no knowledge of mobile protocols
- PSAP\* simulator for evaluation of eCall certification tests for each country's laws and regulations and type approval

\* PSAP: Public Safety Answering Point (emergency call center)

> **Product** Radio Communication Test Station  
MT8000A

> **Product** Signaling Tester  
(Base Station Simulator) MD8475B





## AD/ADAS/C-V2X

Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (AD) are being introduced into society to prevent collisions and ensure safe and comfortable driving.

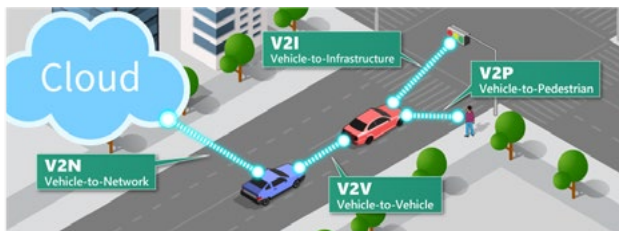
Monitoring by multiple sensors, including cameras and radar, enables driving assistance such as collision warning and automatic braking, as well as autonomous driving through remote monitoring and remote control. Furthermore, C-V2X, which shares real-time information through vehicle-to-vehicle and vehicle-to-road communications, enhances traffic efficiency and safety.

Rigorous testing solutions are essential to ensure the correct operation and reliability of these technologies. Anritsu test solutions create a measurement environment that reproduces the real vehicle environment, enabling the highly accurate evaluation of the performance and reliability of AD/ADAS and C-V2X systems.

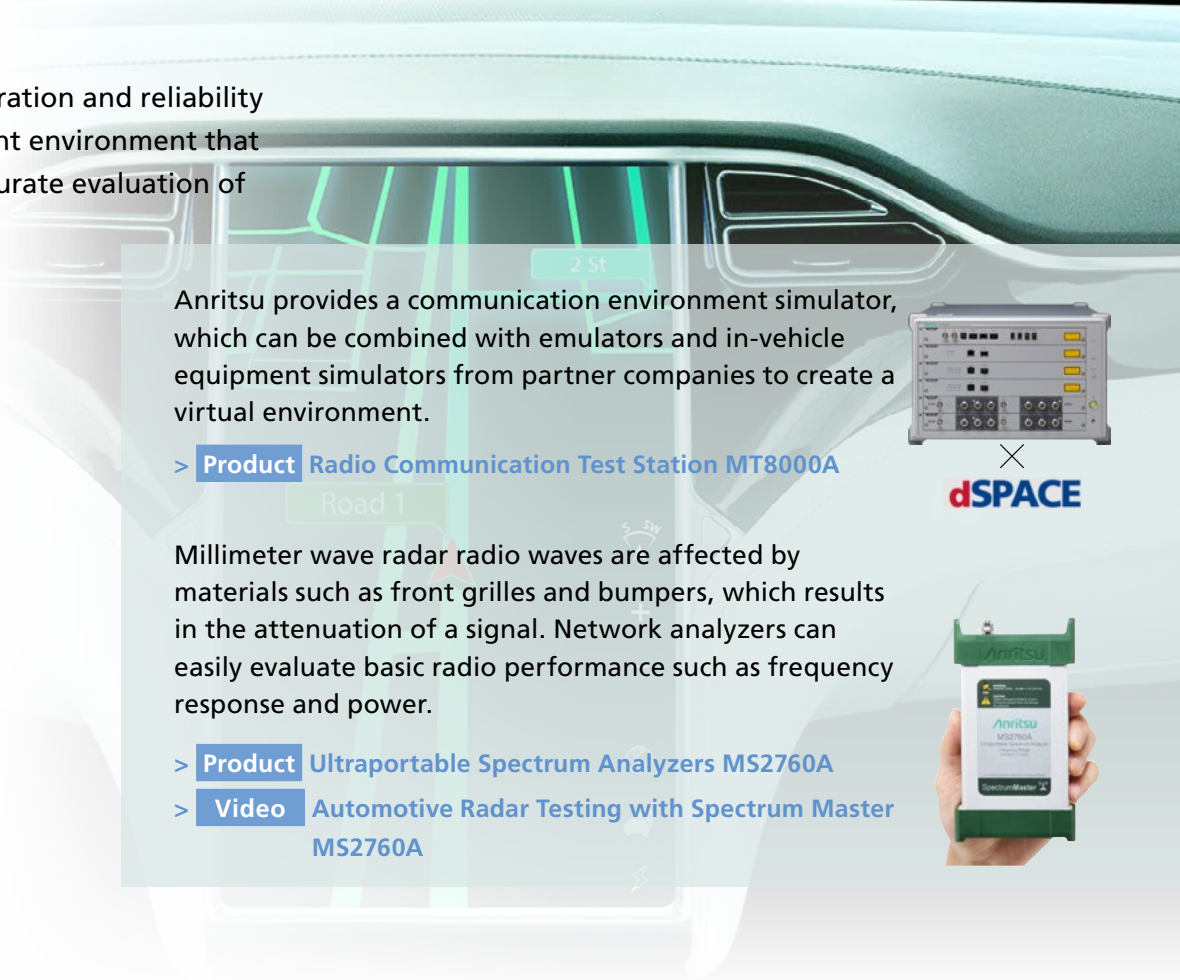
### > [AD/ADAS Test Solutions site](#)



### > [Cellular V2X & DSRC Test Solutions site](#)



direction: passing



Anritsu provides a communication environment simulator, which can be combined with emulators and in-vehicle equipment simulators from partner companies to create a virtual environment.

> **Product** [Radio Communication Test Station MT8000A](#)



×  
dSPACE

Millimeter wave radar radio waves are affected by materials such as front grilles and bumpers, which results in the attenuation of a signal. Network analyzers can easily evaluate basic radio performance such as frequency response and power.

> **Product** [Ultraportable Spectrum Analyzers MS2760A](#)

> **Video** [Automotive Radar Testing with Spectrum Master MS2760A](#)

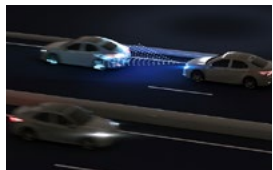




## In-Cabin Sensing

Millimeter-wave radar is attracting attention as an in-cabin sensing technology. It is being considered for a wide range of vehicle-related applications, such as Child Presence Detection (CPD), determining the presence and seating positions of occupants, and monitoring vital information such as the driver's breathing and heart rate. This is made possible by technology's ability to detect the presence and movement of objects without contact and with high accuracy. These sensing functions contribute to improved safety, comfort, and convenience. The ability to accurately measure high frequencies and wide bandwidths is essential for developing and verifying increasingly sophisticated and diverse millimeter-wave radar technologies. Anritsu supports the evolution of an in-cabin sensing technology by providing a measurement environment compatible with the millimeter-wave bandwidth.

### > [Millimeter Wave Test Solutions site](#)



Automotive millimeter radar



Child presence detection



Vital sensor



Radio telescope

### > [Video Measurement Method Using a Signal Analyzer and External Mixer](#)



The combination of Signal Analyzer and an external mixer achieves a maximum bandwidth of 7.5 GHz without an image.

The high IF frequency and patented PS function eliminate images, providing a broadband measurement solution for waveform evaluation, OBW, frequency deviation, and transmit power.

> [Product Introduction Extended Frequency Measurement Solution](#)  
(PDF: 1.6 MB)

> [Product Signal Analyzer MS2840A](#)





# Infotainment

The applications provided by car infotainment systems use a variety of wireless communications. The Global Navigation Satellite System (GNSS) is used for in-car navigation systems, *Bluetooth*® technology for hands-free calling and music playback, and mobile communications and wireless LANs for Internet access and streaming.

In a small interior space of vehicle, problems such as radio interference and tough reception may occur. To provide reliable infotainment, each communication device must be able to support an acceptable level of radio quality. Anritsu provides the Testing Solutions needed to verify the wireless communication functionality and quality of infotainment devices.

\* The Bluetooth® word mark and logo are registered trademarks owned by Bluetooth SIG, Inc. and Anritsu's use of these marks is under license. All other trademarks and trade names are the property of their respective owners.

## > [Infotainment site](#)



Supports the measurement of various wireless communication standards, such as wireless LAN and Bluetooth technology, and can streamline the mass production process of communication devices and modules.

- Supports 5G NR, IEEE 802.11be/ax/ac/n/a/g/b/p (V2X), Bluetooth, GPS/GLONASS/BeiDou/Galileo standards

## > [Product Universal Wireless Test Set MT8870A](#)



Supports RF testing and connection testing of Bluetooth® modules and devices.

## > [Product Bluetooth Test Set MT8852B](#)

RF transmit/receive performance can be measured by using network mode (WLAN signaling) to easily establish a connection with WLAN-equipped devices.

## > [Product WLAN Tester MT8862A](#)





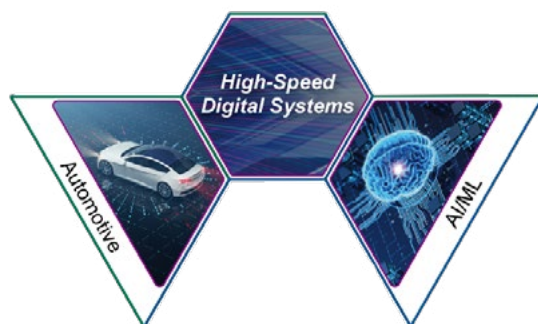
# In-vehicle Network

The practical application of autonomous driving is realized by the combination of on-board radar/LiDAR/high-definition cameras and image recognition.

The volume of data communications in vehicles is increasing dramatically, requiring high-speed data buses such as PCIe. In response to the integration of in-vehicle network (IVN) and to reduce the weight of the vehicle, the use of in-vehicle Ethernet, with its high-capacity, high-speed and low-latency communication, is becoming increasingly more commonplace in in-vehicle networks. For safety reasons, in-vehicle networking equipment must ensure reliable data transmission even in harsh operating environments. Anritsu test solutions are ideal for testing based on vehicle standards and compliance test specifications.

> [High-Speed Digital Systems](#)

> [PCI Express \(PCIe\) Measurement Solutions](#)



PCI-SIG®, PCIe® and PCI Express® are registered trademarks of PCI-SIG.

It is capable of testing electrical measurement evaluation MDI return loss and MDI mode conversion loss as specified by IEEE 802.3 and OPEN Alliance TC8.

> **Product** [Vector Network Analyzer \(VNA\)](#)

> **Video** [ShockLine VNA Automotive Applications](#)



Transmitter/receiver testing is possible when the unit is combined with a real-time oscilloscope (RTO). It is possible to verify that the Link Training and Status State Machine (LTSSM) transitions normally through protocol testing.

> **Solution** [Signal Quality Analyzer-R MP1900A](#)

> **Video** [PCIe® Technology in Advanced Automotive Designs](#)





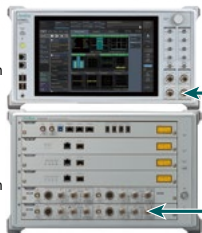
## Antenna/EMC/Wireless Environment

Vehicles are equipped with a variety of wireless communications, including communication with external networks, infotainment, GNSS and radio. Wireless is also used for intelligent functions such as keyless entry and subnormal tire pressure monitoring.

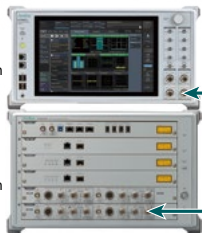
Vehicles are equipped with many wireless communication functions, but communication quality may deteriorate due to mutual interference between each communication device and radio wave attenuation caused by obstructions within the vehicle. With all functions implemented, radio quality evaluation and noise verification must be performed.

### > [5G Connectivity Testing Solutions site](#)

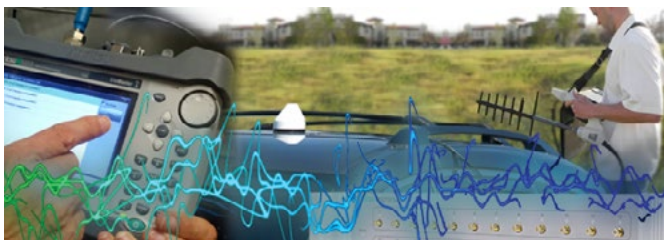
**MT8821C**  
Radio  
Communication  
Analyzer



**MT8000A**  
Radio  
Communication  
Test Station



### > [Interference Hunting](#)



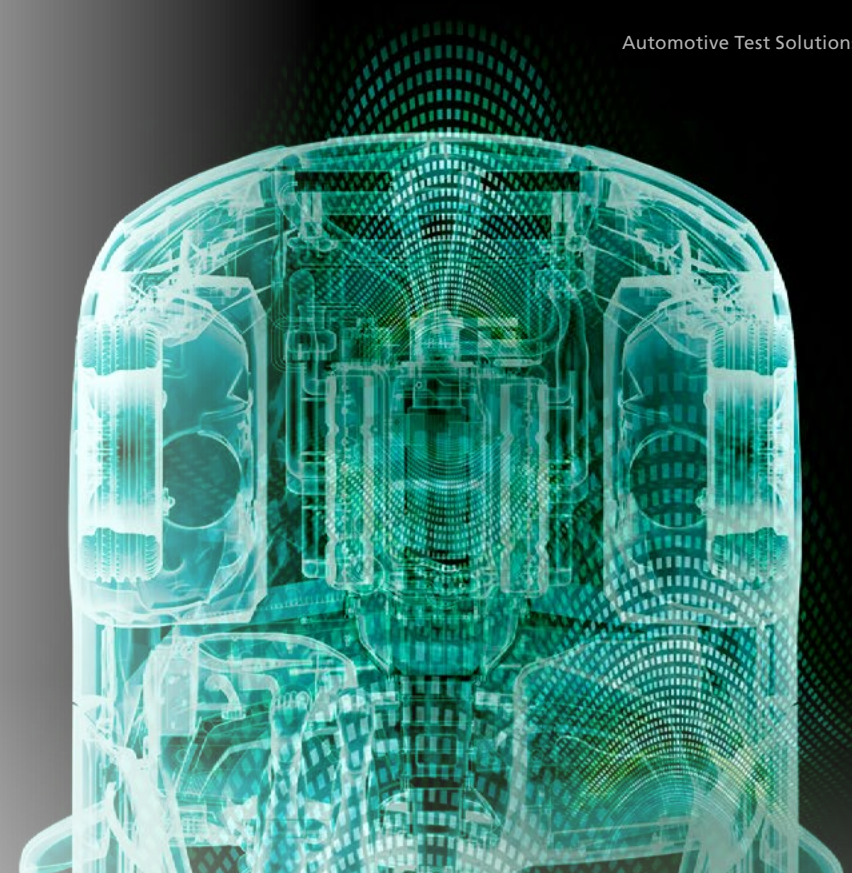
Field Master Pro's wide frequency coverage and 110-MHz bandwidth real-time spectrum analysis functionality allows it to be used for a wide range of applications, from radio environment surveys to interference source detection.

#### > [Product](#) [Field Master Pro MS2090A](#)



The Signal Analyzer function, which is applied to the waveform observation of keyless entry (RKE) and tire pressure monitoring system (TPMS) instantaneous signals, noise, etc., can streamline the development and mass production process of wireless devices.

#### > [Product](#) [Spectrum Analyzer/ Signal Analyzer MS2830A](#)



## Wireless Connectivity & Infotainment



Radio Communication Test Station MT8000A  
5G RF/Protocol



Signalling Tester MD8475B  
eCall/HO/Data Throughput



Radio Communication Analyzer MT8821C  
RF/OTA with signalling



Universal Wireless Test Set MT8870A  
RF without signalling



Bluetooth Test Set MT8852B  
RF/Audio



Wireless Connectivity Test set MT8862A  
WLAN with signalling



Signal Analyzer MS2830A  
RF without signalling

## ADAS



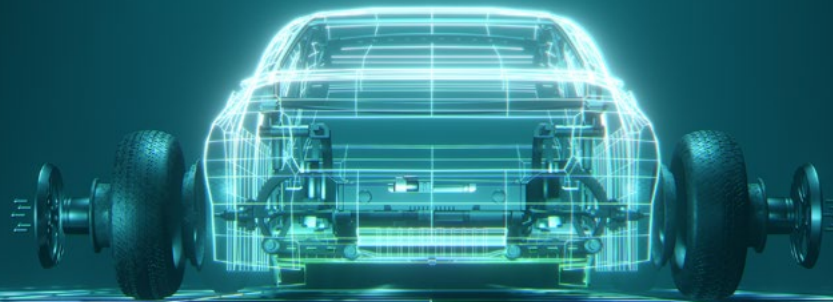
Spectrum Master MS2760A  
RF/HW



Radio Communication Test Stations MT8000A  
5G RF/Protocol

## Automotive Test Solutions Product Lineup 1

We provide the best measurement instruments for the quality evaluation of data communication, infotainment, safety control, and in-vehicle networks, which support the evolution of mobility.



## ITS/V2X



Universal Wireless Test Set MT8870A  
LTE-V2X RF Test



V2X 802.11p Measurement and Analysis Software MX727000A

## EMC/Field Monitoring



Field Master Pro™ MS2090A



Field Master™ MS2080A

## RKE/TPMS/ETC



Signal Analyzer MS2830A/MS2840A



Vector Signal Generator MG3710E

## In-Vehicle Networks



Signal Quality Analyzer-R MP1900A  
PCIe Test

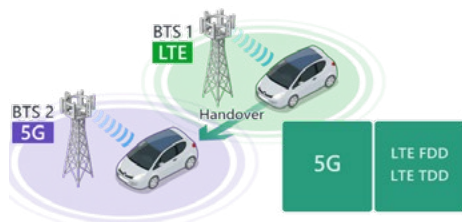


Site Master MS2085A



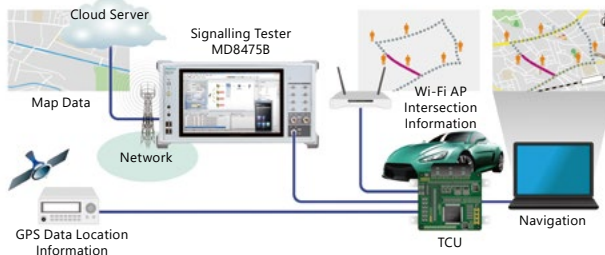
Compact USB Vector Network Analyzer MS46122B

### TCU Performance



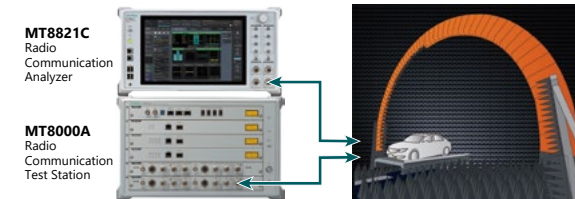
[TCU Functional Test Solutions \(Video\)](#)

### E2E Connected Service Application



[Simulations of TCU Operation \(PDF: 289 kB\)](#)

### Antenna Performance



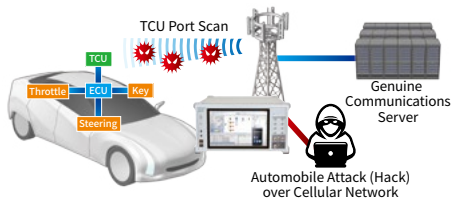
[OTA Testing of In-vehicle Radio Performance \(PDF: 1.2 MB\)](#)

### eCall Regulatory



[Simulations of eCall Operation \(PDF: 699 kB\)](#)

### Cybersecurity Regulatory



[Cyber Security Vulnerability Assessment \(PDF: 1.2 MB\)](#)

## Automotive Test Solutions

# Product Lineup 2

We provide system solutions for testing advanced communication functions for vehicles. Focusing on ease of use, Anritsu's solution provides not just a measuring instrument, but an intuitive and efficient testing environment.

### Acoustics



[Acoustics Evaluation Solutions \(PDF: 630 kB\)](#)

### Infotainment UX



[WLAN and Bluetooth Solutions \(PDF: 2.1 MB\)](#)

### ADAS/Autonomous 5G enabled



Automated Valet Parking  
Vulnerable Road User  
Vehicle to Cloud

Hardware-in-the Loop Simulator  
Connected Autonomous Simulations

[Communication Quality Test Solutions \(Video\)](#)

### C-V2X



[C-V2X PC5 Communication Test Solutions \(PDF: 654 kB\)](#)

### Latency



Network Master Pro MT1000A  
Network Monitoring Latency Test  
[End-to-end Latency Measurement Solutions \(PDF: 1.5 MB\)](#)

