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Large Anechoic Chamber for Evaluating Communication Performance of a Whole Vehicle with 5G Equipment

To achieve autonomous driving and connected cars in the 5G world

Osaka, Japan—Panasonic Corporation has announced today that it has built one of Japan's largest anechoic chambers*1 in Yokohama City, Kanagawa Pref. to evaluate the communication performance of a whole vehicle through omni-direction while autonomous and connected cars are expected to rapidly become equipped with 5G equipment.

Radio equipment and antennas for 5G communication, which achieves broadband communication by using multiple antennas (MIMO*2, beamforming*3), may not provide their actual or discrete performance when they are incorporated into vehicles owing to the reflection of radio waves on the body and electromagnetic noise from other electronic devices. In this anechoic chamber, the communication performance of a whole vehicle can be efficiently evaluated.

The chamber also contributes to determining the optimum positioning of 5G radio equipment and antennas that satisfy both the vehicle design concept and communication performance in the early stage of vehicle design with an automobile manufacturer.

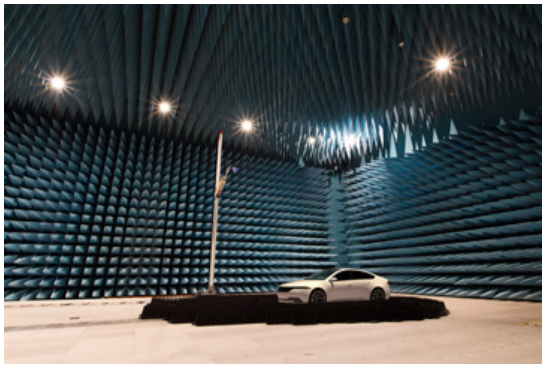
The evaluation system in this anechoic chamber has the following features:

1. Efficient omnidirectional evaluation
2. Evaluation of MIMO antenna communication performance
3. Evaluation of beamforming performance

While rotating the turntable on which a vehicle is placed through a full 360 degrees, the system can conduct omnidirectional evaluation by moving the simulated base station tower along an arc and changing the distance between the tower and the vehicle. The system can simultaneously evaluate data at up to 200 frequencies and achieves high measurement efficiency. Furthermore, Panasonic's antenna engineers analyze measured data from each antenna and provide communication performance evaluation results of complicated MIMO antennas and beamforming.

[Specifications of the radio evaluation system for vehicles]

Chamber dimensions	:29 m(D)×21 m(W)×9 m(H)
Tower height	:8 m
Evaluation radius	:0–7 m
Frequency	:700 MHz–9 GHz and 28 GHz band *Frequencies other than the above can be used.
Simultaneous evaluation	:200 frequencies
Polarization	:Vertical and horizontal polarization
Evaluation angle	:Horizontal angle:0–359° in steps of 1° Elevation angle:0–90° in steps of 1°



*1) The chamber is owned by Panasonic System Networks Evaluation Technology Co., Ltd.

*2) MIMO, an abbreviation for Multiple Input Multiple Output, is a technique that increases transfer rate by sending／receiving signals using multiple antennas.

*3) Beamforming is a technique that improves communication quality by focusing signals in a specific direction.

About Panasonic

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