# 법규 및 시험평가 및 성능 연구

# 유럽 법규 No.159 MOIS 대응을 위한 시험평가 방법

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# UN Regulation No. 159 MOIS Actual Vehicle Test Evaluation Method

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**Key Words :** UN Regulation(유럽법규), MOIS(Moving Off Information System), Proving Ground Test(PG시험), ADAS(첨단운전자보조장치), ADS(자율주행), Actual Vehicle Test(실차시험)

## ABSTRACT

The UN Regulation No.159 MOIS(Moving Off Information System) has come into effect on June 10, 2021, and will be mandatory for M2, M3, N2, N3 new models on July 6, 2022, and be enforced to for they new registration on July 7, 2024. New regulations on safety functions are being added to commercial vehicles due to the high probability of fatal accidents in collisions with pedestrians. This function provides a collision risk warning to the driver about VRUs(adult, child, cyclist, etc.) in the blind spot in front of the vehicle. Although this regulations has not yet been applied in Korea, it is highly likely that it will be introduced in Korea as UN regulations are strengthened. This study introduces a method and evaluation processor for performing actual vehicle testing according to MOIS. In this regulation, there is an evaluation of the stationary and moving state of the vehicle under test. In the stationary state evaluation, the pedestrian crosses lateral direction to the warning area, and in the moving state evaluation, the vehicle and target are synchronized. To perform the evaluation scenario, equipment used in UN regulations was used and a path to the target system was created. We developed an automated tool that can check the validity of test conditions, and through the results, we developed a scenario creation and evaluation processor that can evaluate MOIS.

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# ABS 차량의 마찰계수 연구

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# A Study on the Friction Factor of ABS Vehicle

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**Key Words :** Coefficient of friction(마찰계수), ABS(Anti-lock Brake System; 잠김방지 제동 장치), Tire(타이어)

## ABSTRACT

In a traffic accident, the friction coefficient determines whether it is possible to stop by braking. Due to recent technological advances, ABS has been installed in vehicles, resulting in shorter braking distances than non-ABS vehicles, and ABS has been compulsory, especially for all vehicles released after 2012. As the vehicle friction coefficient changes due to systems such as mandatory ABS installation, it is necessary to study the friction coefficient suitable for reality. Therefore, in this study, the friction coefficient was updated by referring to the Korea Transportation Safety Corporation's KNCAP data and past papers on friction coefficients, and the latest friction coefficients for each type of vehicle were derived and compared and verified through actual experiments. Through the results of this study, it is expected to contribute to improving the accuracy and reliability of traffic accident interpretation, such as analyzing the stopping distance of the accident vehicle.

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# 상용차의 고장상태에서 조향장치 능력확인을 위한 법규시험 방법에 관한 연구

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# Research on Regulation Testing Methods to Check Steering System Capabilities in Failure of Commercial Vehicles

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## ABSTRACT

This paper studies deviations in the legal testing of steering control of commercial vehicles and presents a method to perform this efficiently.Unlike passenger vehicles, commercial vehicles have a low application rate of full power steering systems. Therefore, when a real breakdown occurs, steering effort is even more important. However, the legal standard value for steering effort is a physically large value, and in practice, if a test is performed assuming a breakdown in the vehicle, large deviations occur due to various conditions. Additionally, differences in perspectives on the methods restricted by law cause greater deviations. Factors that cause deviations in the steering effort of commercial vehicles were experimentally confirmed, and deviations according to the test method were confirmed. Through this, it was confirmed that when legal testing is performed from a time perspective, deviations are reduced.

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# 먼지 필터 재현을 통한 라이다 센서의 성능 저하 도출을 위한 실험적 연구

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# An Experimental Study for Deriving Performance Degradation of LiDAR Sensor Due to Blockage Filter

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**Key Words :** Blockage(시야방해물질), LiDAR(라이다), LiDAR Cleaning(라이다 세척), Cloud Point(클라우드 포인트), Intensity(인텐시티), Dust Filter(먼지필터)

## ABSTRACT

In autonomous vehicles, Blockage can cause LiDAR sensor malfunctions and recognition/judgment errors, leading to a decline in sensor performance. Recognizing such degradation in the performance of autonomous vehicle sensors and solving the problem is extremely important in ensuring driving safety.

Among the Blockage that are generated when autonomous vehicles are running, dust pollution in particular frequently occurs during driving.

In this study, in order to derive the level of performance deterioration of the LiDAR sensor due to Blockage, we simulated a situation where the LiDAR sensor was contaminated by dust while driving, and tried to derive the limit point of the LiDAR sensor performance. We developed dust filters with different dust contamination concentrations, applied them to LiDAR, experimented, and confirmed the performance degradation of LiDAR using raw data such as cloud point and intensity information of LiDAR.

Experimental Results Applying the dust filter Blockage reproduction method to derive the performance degradation of LiDAR sensors, we derived an experimental method for each laboratory, and found that the performance of LiDAR sensors tends to decrease as the concentration of the dust filter increases.

Based on the results of this research, it is determined that this research will serve as basic material for developing experimental methods and optimal cleaning systems to ensure LiDAR performance.

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# 자동차 리콜시정률 향상 방안 연구

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# A Study on the Improvement of Car Recall Corrective Rate

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**Key Words :** Recall(리콜), Corrective rate(시정률)

## ABSTRACT

In the era of 25 million cars registered, Korea has implemented a car recall system for more than 20 years. As the automobile market expands and technology develops, consumers want safer cars than before, and accordingly, manufacturers are increasing the number of car recalls every year. The manufacturer is trying to fix the shortcomings that arise after selling cars through a car recall. However, despite the manufacturer's many efforts, there are many difficulties in proceeding with all the car recall targets.

Therefore, the purpose of the study is to prepare a plan to improve the corrective rate of car recalls based on data from the past 10 years of car recalls to make safe cars desired by consumers.

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