

CREATING A GLOBAL MARKET FOR VEHICLE SAFETY

Activities of New Car Assessment Programmes and how they operate in different countries and regions





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INTRODUCTION

We are living in an era of remarkable progress in car safety. It is now conceivable for some car models to be virtually free from the risk of fatal injury in a typical road crash. Fifty years of engineering innovation stimulated by regulation and consumer awareness has made passenger cars safer than ever before. Hundreds of thousands of lives have been saved and independent safety rating carried out by New Car Assessment Programmes (NCAPs) has contributed significantly to this success.

Every day, however, over 3,500 people lose their lives in road crashes. The global vehicle fleet of 1 billion is likely to double over the next fifteen years with most of this growth occurring in low and middle income countries where the risk of road injury is the highest. So further improvement in automobile safety will be necessary to avoid a growing global burden of road injury especially in rapidly motorising regions.

Around the world NCAPs are playing a major role to democratise safety by using consumer information to empower all car buyers to choose the safest vehicles they can afford. There are now ten NCAP or similar organisations working around the world running programmes that

combine testing and evaluation in both crashworthiness and crash avoidance. The first NCAP was launched in 1978 in the United States by the National Highway Traffic Safety Administration. This was followed by the creation of Australasian NCAP in 1993, Japan NCAP in 1995, Euro NCAP in 1997, Korean NCAP in 1999, China NCAP in 2006, Latin NCAP in 2010, Global NCAP in 2011 and ASEAN NCAP in 2012. In parallel the Insurance Institute for Highway Safety, founded in 1959, began its crashworthiness ratings in 1995. In the following NCAP profiles you can read more about their life saving work.

All NCAPs are united in the shared goal to build a market for safer vehicles and the widest possible use of best available safety technologies. For it is only by advancing progress in automotive safety across all countries that we can mitigate the risks of rapid motorisation and promote the vision of zero fatalities on the world's roads.

DAVID WARD Secretary General

Global New Car Assessment Programme

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GLOBAL NCAP

The Global New Car Assessment Programme (Global NCAP) was established in 2011 to serve as an international platform for cooperation amongst NCAPs and to promote their development worldwide. In this role, Global NCAP has given financial and technical support to new NCAPs in the emerging markets of South East Asia and Latin America and supported a 'Safer Cars in India' project. Global NCAP was pleased to be presented in 2016 with the Premier Award of the Prince Michael International Road Safety Awards in recognition of its work promoting vehicle safety.

In India, Latin America and South East Asia major manufacturers are still producing some new cars that would fail minimum UN crash test standards and score zero stars in NCAP tests. Zero star cars often suffer from weak body shell strength, lack of airbags and non-fitment of the life-saving anti-skid device, electronic stability control (ESC). In response, Global NCAP issued its 'Democratising Car Safety: Road Map for Safe Cars 2020' report and launched the #nozerostarcars campaign. The report includes a recommended timetable for the application of improved vehicle safety regulations. The Road Map proposes universal application of the UN's front, side, and pedestrian crash tests and for mandatory ESC in all new passenger cars by 2020. Global NCAP has also encouraged the major car manufacturers to make a voluntary commitment to ensure that all their production exceeds these standards.

Global NCAP is also leading the Stop the Crash Partnership, a multi-stakeholder initiative promoting the most important crash avoidance systems including ESC, autonomous emergency braking, and motorcycle anti-lock brakes. Each year the Partnership hosts a series of technology demonstration events in major emerging markets to promote public awareness of these life-saving systems. To encourage workplace safety, Global NCAP has also issued a Fleet Safety and Safer Car Purchasing Guide which recommends that fleet managers purchase NCAP rated five star models wherever possible but not less than 4 stars and that they never buy vehicles that fail the UN's most important safety regulations.

Global NCAP has Consultative Status with the UN (ECOSOC) and strongly supports the current UN Decade of Action for Road Safety and the Sustainable Development Goals' target to halve road deaths and injuries by 2020. Global NCAP regularly participates in meetings of the UN World Forum for Harmonisation of Vehicle Regulations and the UN Road Safety Collaboration.

Global NCAP is a UK registered charity governed by a Board of Trustees. Each year Global NCAP holds an Annual Meeting for all its associated NCAP partners to encourage exchange of best practice in vehicle rating and consumer information and guide the organisation's future activities. Global NCAP is pleased to acknowledge major grant support from the Bloomberg Philanthropies and the FIA Foundation. Global NCAP's Technical Partner is the ADAC Technik Zentrum in Landsberg, Germany.





ANCAP

Australasian New Car Assessment Program (ANCAP) is Australasia's leading independent vehicle safety advocate.

VISION

To eliminate road trauma through the testing and promotion of safer vehicles.

PURPOSE

ANCAP is the leading independent vehicle safety advocate representing the Australian and New Zealand new car markets. It provides consumers with independent, transparent advice and comparative information on the level of occupant and pedestrian protection provided by different vehicle models in the most common types of crashes, as well as their ability – through technology – to avoid a crash.

ANCAP is committed to:

- Working cooperatively with and supporting member organisations to help them promote safer vehicles.
- Working cooperatively with vehicle brands to raise the bar on safety whilst remaining independent.
- Working cooperatively with other stakeholders to promote safer vehicles through the 'Safe Systems' approach.
- Working cooperatively with Euro NCAP and testing laboratories to develop and implement a common test protocol in 2018.
- Testing and interpreting data to assess the crash avoidance and crash protection safety of new motor vehicles to compare their performance and publish the results.
- Educating consumers on new vehicle safety features and safer vehicle choices.
- Educating and influencing decision-makers to advocate for improved vehicle safety.

introduced

- Maintaining strong links with other NCAPs and international advocates to lift and align safety standards around the world.
- Maintaining and improving support for the organisation leveraging existing and exploring new support streams.

ANCAP is supported by 23 member organisations, working in partnership with the Australian and New Zealand automobile clubs, Australian Federal, State and Territory governments, the New Zealand Government, the Victorian Transport Accident Commission, Insurance Australia Group and the FIA Foundation (UK).

BACKGROUND

Since its formation in 1992, ANCAP has published safety ratings for more than 600 passenger and light commercial vehicles sold in Australia and New Zealand. To encourage the early introduction of new vehicle safety features and advanced safety technologies – promoting continuous improvement in vehicle safety – ANCAP has progressively raised the bar.

FUTURE FOCUS

From 2018, ANCAP will adopt common test and assessment protocols with Euro NCAP. This will see existing tests, assessment and calculation methods updated; new physical crash tests and performance testing of safety assist systems introduced; and for the first time, an assessment of child occupant protection included in the overall star rating.

First NCAP to introduce Alignment with frontal offset test (60km/h): **ESC** mandatory Star ratings introduced: Whiplash test introduced Euro NCAP Pole test introduced First test results published MoU with Euro NCAP for 5 stars 1999 2003 2008 2012 2018 1993 1992 2001 2004 2015-2017 1995 2011 ANCAP founded Frontal offset test speed Min. scores for Annual increases **Transition Period:** Min. scores for increased to 64km/h frontal offset & head protection commence for all New tests & side impact; in pole test star rating levels performance Pedestrian test assessments





ASEAN NCAP

The New Car Assessment Programme for Southeast Asian Countries (ASEAN NCAP) was formed under the ambit of the Malaysian Institute of Road Safety Research (MIROS). It was manifested from Activity No. 2 of Safer Vehicle pillar under the Decade of Action for Road Safety with joint initiative from Global NCAP. To support ASEAN NCAP in its technical work, a Steering and Technical Committees were set up comprising automobile associations from each of the ASEAN country and technical experts from TGGS, UOP, ITB, Australasian NCAP, Euro NCAP and Japan NCAP.

ASEAN NCAP began its crash test programme in 2012 with two types of rating; Adult Occupant Protection (AOP) and Child Occupant Protection (COP), which applied until 2016. It provides consumer with information on the safety level of the tested vehicle with separate rating for AOP and COP. However, as more improvement can be made in the rating system, in addition to the safety benefits the new technologies are offering, ASEAN NCAP has revised its earlier crashworthiness programme. This will give vehicle consumers the added advantage of obtaining a safer car that can prevent a crash from even happening.

CURRENT CRASHWORTHINESS PROGRAMS (2017–2020)

Starting from 2017 until 2020, ASEAN NCAP introduces a single rating system comprising three main domains in which AOP contributes 50% of the overall rating, COP with 25% and Safety Assist Technologies (SATs) at 25%. The test protocol remains the same except for the inclusion of Q dummy, which provides better biofidelic reponse. The side impact test has improved considerably from a legislation test and it is also included in the COP assessment. The following are the criteria of ASEAN NCAP assessment for 2017–2020.

AOP

- 1. Offset Frontal Test
- 2. Side Impact Test
- 3. Head Protection Technology (HPT) Evaluation COP
- 1. Dynamic Assessment
- 2. CRS Installation Assessment
- 3. Vehicle Based Assessment

SAT

- 1. Effective Braking & Avoidance (EBA)
- 2. Seatbelt Reminders (SBR)
- 3. Blind Spot Technology (BST)
- 4. Advanced Safety Assist Technologies

FITMENT RATING SYSTEM

ASEAN NCAP works have changed the landscape of automotive safety in the region. Apart from the increasing number of vehicles with higher ASEAN NCAP ratings, the demand for those vehicles among the consumers is gaining as well. Nevertheless, the positive impact is still imbalance as the safety features of specific models sold are not necessarily similar among the countries in the region and sometimes can be adversely different. Thus, ASEAN NCAP has formulated a Fitment Rating System (FRS) in order to minimize the substandard treatment.

The system applies to the technologies that are part of ASEAN NCAP assessment; HPT, EBA, SBR and BST. For Fitment Rating System, ASEAN NCAP has developed a formula for car technology fitment score (CTFS). The formula and details of the system for the abovementioned technologies can be referred in ASEAN NCAP Rating Road Map 2017–2020 brochure.

FUTURE PLANS

Beginning 2017, ASEAN NCAP will be focusing on technologies that can save motorcyclists. As road traffic deaths involving motorcyclists make up close to 51% in South-east Asia region, implementation of such technologies in passenger vehicles will bring greater impact in preventing the accident from occurring. ASEAN NCAP will also stress more on collision avoidance technologies or preventive measures to improve crashworthiness of the vehicles. Efforts have already begun in 2013 in which variants that are not installed with Electronic Stability Control (ESC) and Seatbelt Reminder System (SBR) will be relegated to 4-Star rating. Nevertheless, in the current assessment, the technologies are part of the point accumulation to obtain the single star rating. ASEAN NCAP is also starting to look into incorporating pedestrian safety in our future assessment as part of the initiatives to save vulnerable road users. Overall, ASEAN NCAP's main objective is to make cars safer across the region by taking into consideration the affordability to own such cars.





C-NCAP

C-NCAP (China New Car Assessment Program) is a test program and star rating rule established by CATARC (China Automotive Technology and Research Center). It was founded based on in-depth study and analysis on foreign NCAP, consideration of existing auto standards and regulations, automakers' actual situations, road traffic conditions and consumers' driving habits in China, as well as extensive exchanges with automakers and NCAP implementation institutions home and abroad. Since officially launching in 2006, C-NCAP has attracted great attention of automakers and the public.



All the test vehicles are purchased from the market by C-NCAP Management Center of CATARC. The test vehicles are evaluated in accordance with requirements more stringent than those specified in corresponding Chinese national standards. And the comprehensive rating comes from assessment of injury data obtained from head, chest, legs and other parts of dummy.

Since its introduction, C-NCAP has proved to be major reference for research and development for automakers, playing a magnificent role in directing and promoting safety technology level of China's auto products. Assessment results have shown that the scores of test vehicles have been increasing year by year. Meanwhile, the installation rate of safety devices such as Seat Belt Reminder, ESC and side airbag increase as well. Nowadays, the C-NCAP star rating has become an important channel for consumers to know auto safety performance. C-NCAP assessment has attached wide concerns of the press and the public and has become one of the major factors which influence consumers' purchase behavior.

CURRENT CRASHWORTHINESS PROGRAMS

- Frontal impact test against a rigid barrier with 100% overlapping
- Frontal impact test against a deformable barrier with 40% overlapping
- Side impact test against a mobile deformable barrier
- Whiplash test

FUTURE PLANS

The auto safety technology develops rapidly, and C-NCAP will never stop improving and upgrading itself, so as to make the assessment reflect the real auto safety performance and stimulate further improvement in auto safety technology.

In 2018, C-NCAP will evaluate the performance of AEB, as well as the assessment of vehicle-to-pedestrian protection performance and electric vehicle safety. And current technical requirements and rating system will be adjusted accordingly. In future, C-NCAP will continue to conduct research on occupant protection performance, crash avoidance performance etc., and make appropriate adjustment for assessment system based on the results of relevant researches.





EURO NCAP

The European New Car Assessment
Programme provides consumers with
a realistic and independent assessment
of the safety performance of some
of the most popular cars sold in
Europe. The organization has had an
important influence on vehicle designs,
leading to fewer traffic deaths on
European roads.

Established in 1997, Euro NCAP is a non-profit international association, independent of the automotive industry. It is backed by seven European governments (France, Germany, Sweden, the Netherlands, the United Kingdom, Luxembourg, and the Catalonia region of Spain); consumer groups through International Consumer Research and Testing; European motoring clubs through the Fédération Internationale de l'Automobile (FIA), ADAC and the Automobile Club d'Italia (ACI); and insurers through Thatcham in the UK.

To date, Euro NCAP has tested more than 600 vehicle models and has released an overall rating with a maximum of 5 stars for each of these since 2009. This star rating is comprised of scores in four distinct areas.

CURRENT CRASHWORTHINESS PROGRAMS

At present, consumer crashworthiness tests include full-scale frontal offset and full-width crash tests and side-impact pole and barrier tests. The vehicle score reflects the vehicle's ability to protect adult (mid- and small sized) driver and front passenger, as well as adults and children seated in the rear. In addition, Euro NCAP carries out subsystem tests: front-end component impacts for pedestrian protection and sled tests on car seats for whiplash prevention during rear-end crashes. Euro NCAP offers rewards for vehicle manufacturers that offer intelligent seat belt reminders as standard on all seating positions in the car.

THE SAFEST CRASH IS NO CRASH

Euro NCAP has steadily been shifting the emphasis from crashworthiness to emerging crash avoidance and driver assist technology. Installation of Intelligent Speed Assistance and Lane Support systems contribute to the Safety Assist score of a vehicle. From 2014, Euro NCAP has been rewarding Autonomous Emergency Braking (AEB) systems that use radar, LIDAR and/or cameras to detect when the car is likely to hit another car or obstacle. Euro NCAP has extended the AEB tests in 2016 by including systems that also recognise and mitigate potential crashes with pedestrians.

HIGH-TECH, LOW-TECH

Despite the huge advances made in vehicle safety technology, some vehicle segments still offer only the most rudimentary safety to their occupants. L6 and L7 category vehicles, known as Quadricycles, do not need to pass any crash test requirements before they can be sold. Some quadricycles in the L7 category can reach speeds of up to 100km/h. Euro NCAP testing has revealed fundamental safety failings in this category of vehicles and has called repeatedly on legislators and quadricycle manufacturers to put safety at the top of their agendas.

FUTURE PLANS

In the short term, Euro NCAP plans to further update its rating scheme, addressing injuries in far-side crashes, single vehicle crashes due to unintended road departure and crashes that involve cyclists. It is also formulating plans for the period from 2020 onwards, that are set to include improved crash testing, more tests on advanced driver assistance systems, and the assessment of automated driving functions.





IIHS-HLDI

The Insurance Institute for Highway Safety is an independent, nonprofit scientific and educational organization dedicated to reducing the losses — deaths, injuries, and property damage — from motor vehicle crashes. The Highway Loss Data Institute shares and supports this mission through studies of insurance data. Both organizations are wholly supported by U.S. and Canadian insurers.

The Institute's Vehicle Research Center (VRC) was dedicated in 1992 and underwent a major expansion in 2015. Today it includes a 22,000-square-foot crash hall and 15 acres of outdoor track — part of which is covered by a steel and fabric roof to allow for testing in all kinds of weather.



SAFETY AWARDS

IIHS has two safety awards — *TOP SAFETY PICK* and *TOP SAFETY PICK+*. Both awards are based on crashworthiness and crash avoidance ratings. The criteria change from year to year, continually raising the bar for safety.

CRASHWORTHINESS PROGRAMS

IIHS currently conducts five crashworthiness evaluations. These include three types of crash tests — small overlap front, based on a 25 percent overlap; moderate overlap front, based on a 40 percent overlap; and side. The Institute also rates seats and head restraints for their ability to prevent neck injury. Finally, vehicles are tested for roof strength to protect occupants in a rollover crash.

CRASH AVOIDANCE PROGRAMS

For several years, IIHS has been conducting track tests of vehicles equipped with automatic braking systems as part of its front crash prevention ratings. In 2016, the Institute launched headlight ratings, based on nighttime track tests that measure the amount of usable light provided by headlights as a vehicle travels straight and on different types of curves.

LATCH EASE-OF-USE RATINGS

Vehicles that come through the VRC for testing are also evaluated for LATCH ease of use. LATCH, which stands for Lower Anchors and Tethers for Children, is the U.S. system of child restraint attachment hardware.

FUTURE PLANS

IIHS is continually looking for new ways to drive further improvement in vehicle safety. This year a new test program will begin evaluating small overlap protection for front passengers. The program comes after Institute researchers found that, in many cases, improvements for small overlap front crash protection have been applied to the driver side only. IIHS is researching real-world and laboratory performance of rear automatic emergency braking systems and front crash automatic braking systems that respond to pedestrians and also conducting on-road evaluations of partial autonomous driving systems. This work will lead to new rating systems in the coming years.



CONNECT

nasva.go.jp/mamoru



JNCAP

In 2015, the number of deaths in traffic accidents rose to 4,117 - the first increase in fifteen years - which indicates the need for enhancing traffic safety measures. As a counter measurement to this situation, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and the National Agency for Automotive Safety & Victims' Aid (NASVA) have introduced preventive safety performance evaluation and have been increasing evaluation items in the "Japan New Car Assessment Program (JNCAP)" which started in 1995.

2015-2016 ANATHY DIA ANAD PROCERT ファイブスター賞 The objective of JNCAP is to promote the use of safer cars by creating the environment in which automobile users can easily select such vehicles and by encouraging automobile manufacturers to develop safer vehicles. More specifically, while all vehicles conform to the safety regulations of the Road Transport Vehicles Act, safety performance in avoiding accidents varies among different models. As such, comparative tests are conducted on each model's safety performance and the results are made public.

JNCAP also carries out the "Child Restraint System Assessment" which compares the safety performance of various child restraint systems (frontal collision evaluation and usability evaluation).



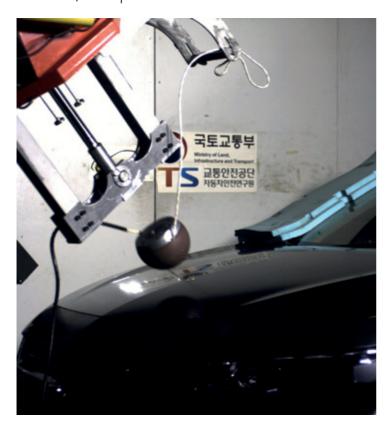


KNCAP

The Korean New Car Assessment Program(KNCAP) has been assessing the safety level of motor vehicles by conducting various tests, so that consumers are informed of the safety ratings and manufacturers are encouraged to build safer vehicles.

Since the Ministry of Land, Infrastructure and Transport (MOLIT) launched the program in 1999, 147 models of passenger cars and 2 models of small-sized trucks have been tested and the results have been made public(as of 2016).

In 2017, 11 passenger cars including 4 imported models are testing for 10 assessment items i.e. full-width frontal impact crashworthiness, frontal offset impact crashworthiness, side impact crashworthiness, pole side impact, child occupant protection, whiplash, pedestrian protection, rollover resistance, brake performance and crash avoidance.



Crash avoidance has been newly introduced in 2013 in order to assess state-of-the-art active safety systems and encourage the manufacturers to install active safety systems for avoiding accidents.

The overall rating is composed of scores achieved in the all assessment items. Based on the final result, KNCAP present an award for the safest car of the year.

KNCAP will continue sharing the safety information with consumers and improving the scheme for the safer life and advanced automotive industry.

CURRENT CRASHWORTHINESS ACTIVITIES

The KNCAP crash test area includes the following tests: full-width frontal impact test frontal offset impact test side impact test pole side impact test child occupant protection seat tests for whiplash prevention pedestrian protection

CURRENT CRASH AVOIDANCE ACTIVITIES

For active safety, rollover resistance and brake performance are measured.

Crash avoidances include such as,
Forward Collision Warning System(FCWS)
Lane Departure Warning System(LDWS)
Automatic Emergency Braking System(AEBS)
Adaptive Cruise Control(ACC)
Lane Keep Assistance System(LKAS)
Seat Belt Reminder(SBR)
Speed Limit Device(SLD)
Blind Spot Detection(BSD)
Intelligent Speed Assistant(ISA)
Rear Cross Traffic Alert(RCTA)

FUTURE PLANS

Advanced Air Bag

In 2018, an whiplash prevention assessment for the rear seats will be added. KNCAP will set up a roadmap 2019-2023 for the development of the program in 2017.





LATIN NCAP

The New Car Assessment Programme for Latin America and the Caribbean (Latin NCAP) offers to consumers independent and transparent information about the safety levels that the different car models offer in the market. Latin NCAP started in 2010 as a joint initiative and in 2014 was established as a legal entity.



Latin NCAP tests are based in international renown methodologies, with vehicles awarded with a safety rating between zero and five stars, indicating the protection the cars offer to adult and child occupants. Latin NCAP provides safety ratings based on the assessment of adult occupant protection (passive/secondary safety), child occupant protection (passive/secondary safety) and primary/active safety offered by the car model. Latin NCAP always tests the most basic safety version of a car model available in the market.

LATIN NCAP AIMS TO

- Provide consumers across the Latin American & Caribbean region with independent and impartial safety assessment of new cars
- Encourage manufacturers to improve the safety performance of the vehicles they offer for sale in the Latin American & Caribbean region
- Encourage governments across the Latin American & Caribbean region to apply UN vehicle crash test regulations to passenger cars





NHTSA/U.S.NCAP

The United States New Car Assessment Program (U.S. NCAP) is fast approaching its 40th year of providing the American public with important information about the safety of new passenger vehicles. Established in 1978 by the U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA), U.S. NCAP first provided consumers with information about the frontal crash safety performance of new vehicles based on full frontal impact tests. Following various refinements and upgrades, U.S. NCAP today uses a 5-star system (with 5 stars as the top rating) to rate vehicles for frontal and side crash protection and rollover resistance. It also provides consumers with a single rating that reflects how well a vehicle performs overall (i.e., an Overall Vehicle Score).

To keep pace with rapidly evolving technological advances in vehicle safety, U.S. NCAP has developed performance criteria for advanced crash avoidance technologies with demonstrated potential to enhance vehicle safety, specifically Forward Collision Warning, Lane Departure Warning, Dynamic Brake Support, and Crash Imminent Braking. Any vehicles equipped with these technologies and meet U.S. NCAP's performance criteria are recommended to consumers.

Since its inception and evolution, U.S. NCAP has contributed significantly to achieving NHTSA's mission of saving lives and preventing injuries on U.S. roads. Achieving high U.S. NCAP ratings requires vehicle manufacturers to

exceed minimum Federal Motor Vehicle Safety Standards, which results in increasing levels of safety in the new vehicle marketplace.

PROGRAM DETAILS

U.S. NCAP consists of the following:

- A full-frontal impact test that assesses a vehicle's frontal crash protection performance
- Two types of side impact tests that rate a vehicle's side crash protection performance
 - One that simulates a vehicle-to-vehicle collision
 - One that simulates a vehicle-to-pole collision
- Crashworthiness tests utilizing both 50th percentile male and 5th percentile female dummies with ratings based on a wide range of injury criteria
- Rollover resistance ratings based on a vehicle's static properties and results of a dynamic test designed to challenge a vehicle's ability to resist rolling over
- An overall vehicle score combining the frontal and side crashworthiness ratings and the rollover resistance rating into a single rating (up to 5 stars) that enables consumers to easily compare vehicles
- Crash avoidance program that recommends certain technologies that meet U.S. NCAP performance criteria, currently: Forward Collision Warning, Lane Departure Warning, Dynamic Brake Support, and Crash Imminent Braking

Separately, U.S. NCAP provides child restraint usability ratings to help consumers make informed decisions when purchasing car seats.

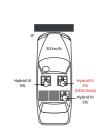
CONSUMER ACCESS TO U.S. NCAP RATINGS

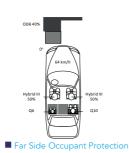
Consumers may access U.S. NCAP ratings online at www. nhtsa.gov. Once at the site, consumers can enter the year, make and model of their vehicle and quickly see the vehicle's ratings for frontal crashworthiness, side crashworthiness, rollover resistance, and the vehicle's overall vehicle score. Consumers can also quickly compare the ratings of several vehicles. The site shows consumers which technologies are available on the vehicle(s) as standard or optional equipment and that meet NCAP performance criteria. In addition, U.S. NCAP safety ratings are required to be displayed on the window stickers of all new vehicles. This ensures that consumers have easy access to U.S. NCAP safety ratings at the point of purchase for any new vehicle.

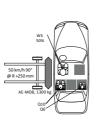
TEST

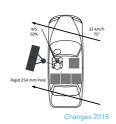
Euro NCAP

CONFIGURATIONS







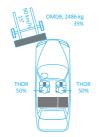


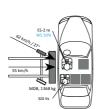
- Pedestrian protection tests
- Whiplash mitigation tests
- Child occupant protection
- Assistence systems:SAS, SBR, LSS, AEB

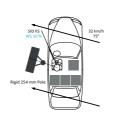
- AEB VRU Pedestrian, VRU Cyclist
 Single star rating (1-5) based on all results
 Euro NCAP Advanced awards for innovative driver assistance technologies

SafetyWissen by Carhs







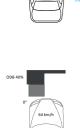


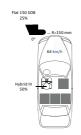
- Rollover resistance testing
- Pedestrian Protection: Flex PLI, Upper Legform, Headforms AEB Pedestrian, Rear Automatic Braking
- Advanced Crash Avoidance Technologies: FCW, LDW, Rear View Cameras, AEB (CIB, DBS), Blind Spot Detection, Lower Beam Headlight Performance, Semi-Automatic Headlamp Beam Switching, Amber Rear Turn Signal Lamps
- Single star rating (1-5) based on all results except Advanced Crash Avoidance Technologies

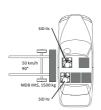
SafetyWissen by Carhs.

- Whiplash mitigation tests
- Vehicle rating scale:
- good, acceptable, marginal, poor
 AEB / FCW
- Headlights
- LATCH
- Booster evaluation
- Semi-trailer underride evaluation
- TOP SAFETY PICK 2017 awarded to models that are rated good in all crash tests, at least advanced rating for AEB / FCW, and Headlights (only TSP+)

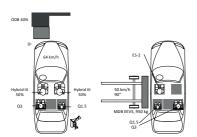
SafetyWissen by Carhs



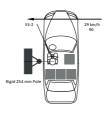










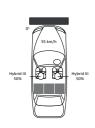


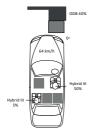
- Child occupant protection
- 2 star ratings (1-5) for adult and child protection
- Prerequiste for star rating for adult protection 3 stars: ABS, SBR 4 stars: 3 stars + ESC

5 stars: 4 stars + Pole Side Impact

SafetyWissen by Carhs.

- Pedestrian protection tests
- Child seat assessment
- Whiplash mitigation tests
- Credit for seat belt reminder
- Seat belt usability
- Advanced safety vehicle award:
- LDW, AEB, Rear-View Monitor, AEB Pedestrian Daytime / at Nighttime, LKA/LDP, Adaptive
- Single star rating (1-5) based on all results except brakes, seat belt usability, advanced safety award

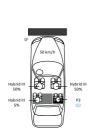


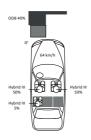


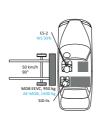
SafetyWissen by Carhs

CREATING A GLOBAL MARKET FOR VEHICLE SAFETY



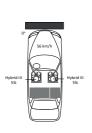


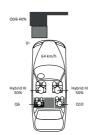


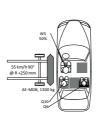


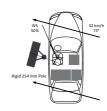
- Whiplash mitigation tests
- Child seat assessment
- Credit for ISOFIX, curtain airbag, seat belt reminder, ESC
- Single star rating (1-5+) based on all results

SafetyWissen by Carhs.









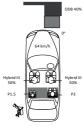
- Pedestrian protection tests

- Pedestrian protection tests
 Whiplash mitigation tests
 Rollover resistance testing
 Brake evaluations
 Child Safety
 Active Safety Systems SBR, LDWS, FCWS, AEBS Inter-Urban, AEBS City, AEBS Pedestrian, SLD, ASCC, LKAS, BSD, RCTA, ISA, Advanced Airbag
 Single star rating (1-5) based on all results

SafetyWissen by Carhs.

ASEAN NCAP

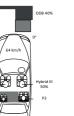


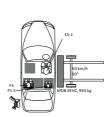


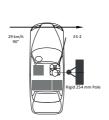
8 8

Hybrid III 50%

Q1.5



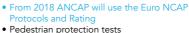




- Child occupant protectionHead protection technologySafety Assist

- Effective braking & avoidance, seat belt reminder, blind spot technology, advanced SATs
- Single Star Rating based on all results

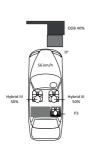
SafetyWissen by Carhs.

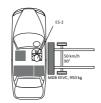


- Pedestrian protection tests
- Whiplash mitigation tests
 Credit for Safety Assist Technologies
- Child occupant protection
 Single star rating (1-5) based on all results except child protection

SafetyWissen by Carhs.







- Single star rating (0-4) based on the ODB Test
- SafetyWissen by Carhs



• Credits for rear impact test, ABS, SBR, ESC, EBD, head restraint fitment, child lock functionality check



