

IVASA

ASEAN NCAP Intelligent Vehicle Advanced Safety Assessment Program

Evaluation Protocol for Basic Driving Assistance

Contents

1 Scope	1
2 Assessment Methods	1
2.1 Overview	1
2.2 Car-to-Vehicle Test Scoring	1
2.3 Car-to-VRU Test Scoring	2
2.4 Car-to-Obstacle Test Scoring	2
2.5 Car-to-Road-Infrastructure Test Scoring	3
2.6 Overall Assessment	3

IVASA Evaluation Protocol for Basic Driving Assistance

1 Scope

This document specifies the assessment methods for the basic driving assistance component of IVASA under the ASEAN NCAP Intelligent Vehicle Advanced Safety Assessment Program.

2 Assessment Methods

2.1 Overview

Basic Driving Assistance shall be assessed through proving-ground testing. The mandatory items carry a total maximum score of 100 points and comprise Car-to-Vehicle, Car-to-VRU, Car-to-Obstacle, and Car-to-Road-Infrastructure tests. The maximum scores for these four categories are 42, 46, 6, and 6 points, respectively. Additional bonus items are provided, with a maximum total bonus of 4 points. Bonus points shall be included in the overall score; however, the final overall score shall not exceed 100 points.

2.2 Car-to-Vehicle Test Scoring

The car-to-vehicle test has a maximum score of 42 points and comprises 7 test scenarios. The scoring method is specified in Table 1.

Table 1 Scoring matrix for car-to-vehicle test scenarios

No.	Test scenario	VUT speed (km/h)	VT speed (km/h)	Assessment criterion	Points
1	Stationary passenger car ahead on a straight road	60	0	Collision avoided	6
2	Stationary passenger car ahead on a curve	50	0	Collision avoided	4
		70	0	Collision avoided	2
3	Stationary heavy truck ahead in rain	45	0	Collision avoided	4
		60	0	Collision avoided	2
4	Moving light truck ahead on a straight road at night	60	20	Collision avoided	6
5	Passenger car cutting in at night	40	20	Collision avoided	4
		70	40	Collision avoided	2
6	Passenger car crossing	30	30	Collision avoided	6

7	VUT travelling straight with an oncoming passenger car turning right	30	15	Collision avoided	4
		40	15	Collision avoided	2

2.3 Car-to-VRU Test Scoring

The car-to-VRU test has a maximum score of 46 points and comprises 8 test scenarios. The scoring method is specified in Table 2.

Table 2 Scoring matrix for car-to-VRU test scenarios

No.	Test scenario	VUT speed (km/h)	Target speed (km/h)	Assessment criterion	Points
1	Stationary motorcycle carrying a child ahead in rain	40	0	Collision avoided	4
		60	0	Collision avoided	2
2	Moving motorcycle carrying a child ahead	40	20	Collision avoided	4
		60	40	Collision avoided	2
3	Motorcycle carrying a child cutting in ahead at night	40	20	Collision avoided	4
		60	40	Collision avoided	2
4	Motorcycle carrying a child crossing ahead	20	15	Collision avoided	4
		40	15	Collision avoided	2
5	Motorcycle crossing ahead (obstructed)	30	30	Collision avoided	2
		50	30	Collision avoided	2
6	Pedestrian crossing	40	5	Collision avoided	6
7	Pedestrian walking longitudinally at night	30	5	Collision avoided	4
		50	5	Collision avoided	2
8	Secondary target vehicle (motorcycle)	45	0	Collision avoided	4
		60	0	Collision avoided	2

2.4 Car-to-Obstacle Test Scoring

The mandatory car-to-obstacle test includes only the secondary collision scenario, with a maximum score of 6 points. The cow crossing and wild boar crossing scenarios are bonus items, with a combined maximum bonus of 2 points. The scoring method is specified in Table 3..

Table 3 Scoring matrix for car-to-obstacle test scenarios

No.	Test scenario	VUT speed (km/h)	Target speed (km/h)	Assessment criterion	Points
1	Secondary collision	50	0	Collision avoided	4
		80	0	Collision avoided	2
2	Cow crossing	80	3	Collision avoided	1
3	Wild boar crossing	80	10	Collision avoided	1

2.5 Car-to-Road-Infrastructure Test Scoring

The mandatory car-to-road-infrastructure test includes only the construction-zone passage scenario, with a maximum score of 6 points. Traffic-light recognition and stop-sign recognition are bonus items, with a combined maximum bonus of 2 points. The scoring method is specified in Table 4.

Table 4 Scoring matrix for car-to-road-infrastructure test scenarios

No.	Test scenario	VUT speed (km/h)	Road Configuration	Assessment criterion	Points
1	Roadworks-zone navigation	50	Traffic Cone	Collision avoided	4
		80	Traffic Cone	Collision avoided	2
2	Traffic-signal recognition	60	Red Traffic Light	The system shall accurately recognise traffic signal information.	1
3	Stop-sign recognition	60	Locally Applicable Stop-sign	The system shall accurately recognise the stop-sign.	1

2.6 Overall Assessment

The overall score for basic driving assistance shall be the sum of the scores for the mandatory items and the bonus items, subject to a maximum of 100 points. The basic driving assistance percentage score shall be calculated by dividing the overall score by 100. The overall basic driving assistance assessment comprises five ratings: Good (G), Adequate (A), Marginal (M), Weak (W), and Poor (P). The assessment criteria are specified in Table 5.

- a) The overall rating is Good (G) when the basic driving assistance percentage score is at least 80%;
- b) The overall rating is Adequate (A) when the basic driving assistance percentage score is at least 70% but less than 80%;
- c) The overall rating is Marginal (M) when the basic driving assistance percentage score is at least 60% but less than 70%;
- d) The overall rating is Weak (W) when the basic driving assistance percentage score is at least 50% but less than 60%;
- e) The overall rating is Poor (P) when the basic driving assistance percentage score is less than 50%.

Table 5 Overall basic driving assistance assessment

Overall rating	Percentage Score
Good(G)	Percentage score $\geq 80\%$
Adequate(A)	$70\% \leq \text{Percentage score} < 80\%$
Marginal(M)	$60\% \leq \text{Percentage score} < 70\%$
Weak(W)	$50\% \leq \text{Percentage score} < 60\%$
Poor(P)	Percentage score $< 50\%$