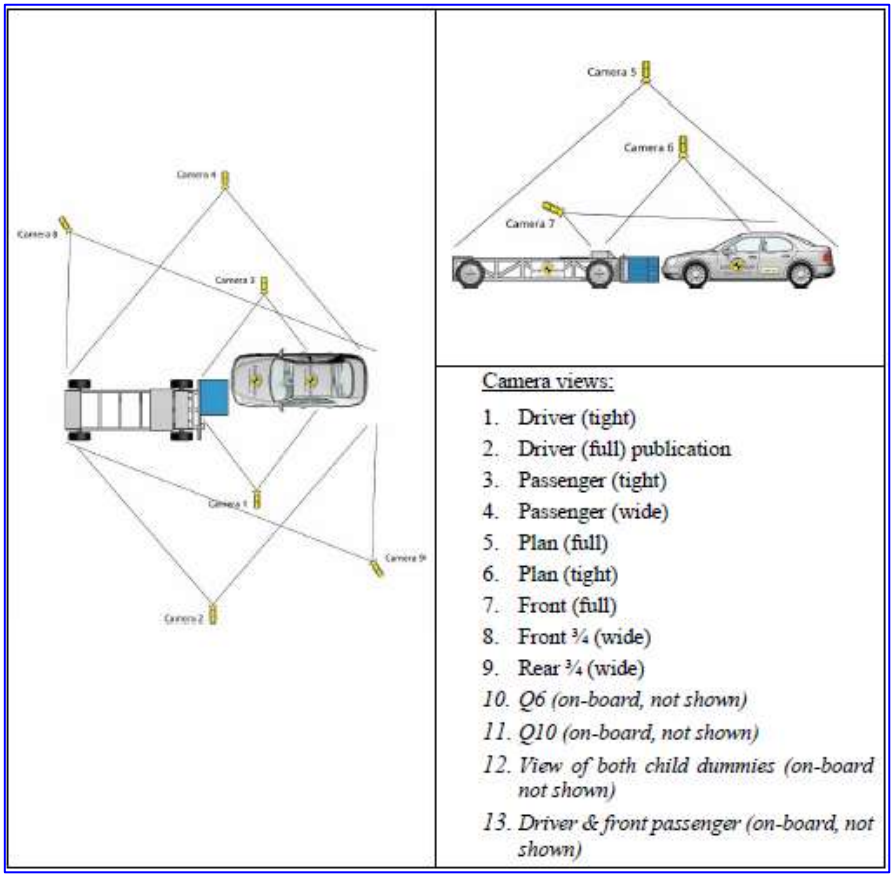
項 次	規 章 名 稱	修訂內容	新增項目	頁碼	說明
1	1.5錄影及拍照規章	◎		P.2-27	參考 Euro NCAP 錄影及拍照規章 1.4 版修訂被動試驗拍照及錄影相關說明，以及新增主動安全增加之試驗情境拍照及錄影說明。
2	2.3弱勢道路使用者保護評等規章	◎		P.28-48	參考 Euro NCAP 弱勢道路使用者保護評等規章 11.4 版，增訂自行車騎士頭部衝擊情境，並修訂腿部模型性能限制值，及腿部與上腿部模型試驗結果顏色界定。
3	3.9弱勢道路使用者試驗規章	◎		P.49-88	參考 Euro NCAP 弱勢道路使用者試驗規章 9.1 版，增訂自行車騎士頭部衝擊評等，並修訂腿部模型衝擊器之試驗規範。
4	3.20防止誤踩踏板之加速控制系統試驗規章		◎	P.89-125	參考 UN No. 175 Acceleration Control For Pedal Error (ACPE) 01 版增訂防止誤踩踏板之加速控制系統試驗。
5	2.4安全輔助評等規章-2.4.6防止誤踩踏板之加速控制系統評等		◎	P.126-128	新增防止誤踩踏板之加速控制系統評等。
6	3.21轉向輔助系統試驗規章		◎	P.129-133	參考 Euro NCAP 車輛輔助規章 1.2 版第三章節，新增轉向輔助系統試驗。
7	2.4安全輔助評等規章-2.4.9轉向輔助系統評等		◎	P.134-134	參考 Euro NCAP 車輛輔助規章 1.2 版第三章節，新增轉向輔助系統評等。
8	3.24車頂抗壓強度試驗規章		◎	P.135-152	參考 IIHS 車頂抗壓強度試驗規章 V 版，新增車頂抗壓強度試驗規範，並依據強度重量比進行評等。

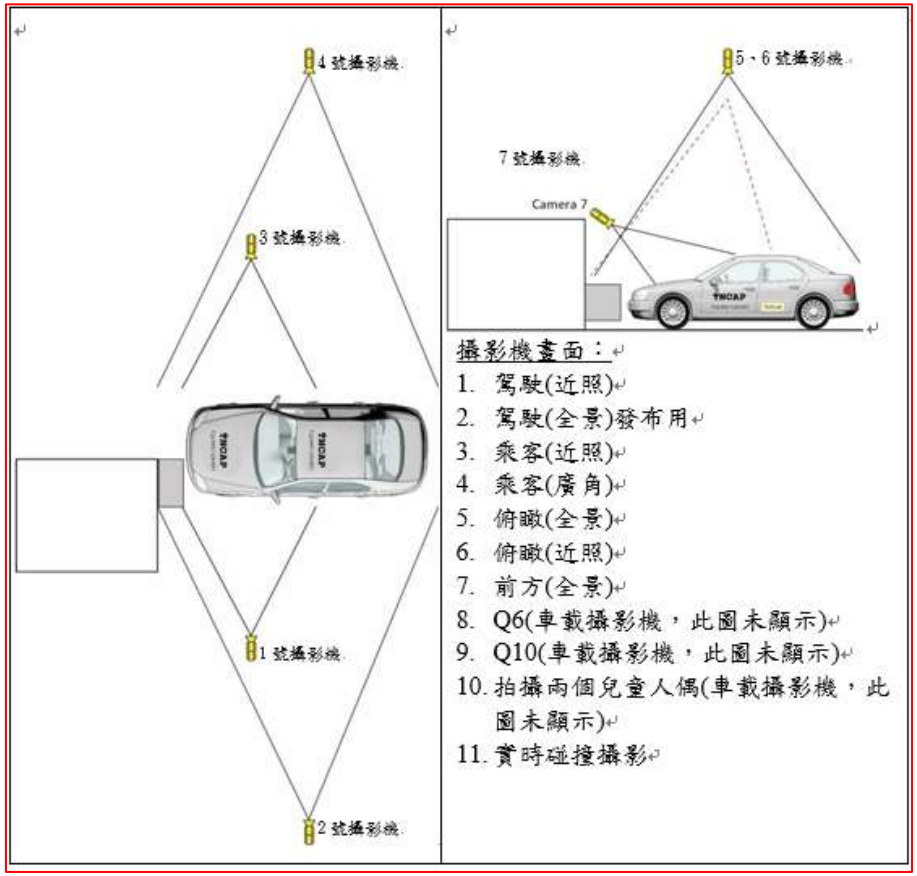
1.5錄影及拍照規章

Euro NCAP Film and Photo Protocol Version 1.4

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
1.5.1.1.2 行人衝擊(PP)試驗、鞭甩試驗與車頂抗壓強度試驗影片 檢測機構應依據 1.5.1.1.1 規定提供(1)查驗影片及(2)媒體影片。鞭甩試驗之媒體影片僅須提供單一廣角之高強度脈衝畫面供發布用。 1.5.1.1.3 測試道試驗影片(Track test films)內容包括：緊急煞車輔助系統(弱勢道路使用者)(AEB VRU)、緊急煞車輔助系統(市區道路)(AEB City)、緊急煞車輔助系統(快速道路)(AEB Inter-Urban)、車道輔助系統(LSS)、車速輔助系統(SAS)、乘員狀態監測系統(OSM)、盲點偵測系統(BSD)、盲點視覺系統(BSV)、防止誤踩踏板之加速控制系統(ACPE)、後方視野輔助系統(RVS)及轉向輔助系統(SA)。	1.5.1.1.2 行人衝擊(PP)試驗與鞭甩試驗影片 檢測機構應依據 1.5.1.1.1 規定提供(1)查驗影片及(2)媒體影片。鞭甩試驗之媒體影片僅須提供單一廣角之高強度脈衝畫面供發布用。 1.5.1.1.3 測試道試驗影片(Track test films)內容包括：緊急煞車輔助系統(弱勢道路使用者)(AEB VRU)、緊急煞車輔助系統(市區道路)(AEB City)、緊急煞車輔助系統(快速道路)(AEB Inter-Urban)、車道輔助系統(LSS)、車速輔助系統(SAS)、乘員狀態監測系統(OSM)、盲點偵測系統(BSD)及盲點視覺系統(BSV)。
1.5.1.4.4 照片資料夾應依試驗前、後差異進行分類，檢測機構無須將照片細分放至子目錄資料夾中，例如駕駛、乘客、兒童保護裝置(CRS)、車輛等。照片依照片清單內之號碼編號，清單有提及「媒體」或「移除人偶後」，須在編號之後標註。	1.5.1.4.4 照片資料夾應依試驗前、後差異進行分類，檢測機構無須將照片細分放至子目錄資料夾中，例如駕駛、乘客、兒童保護裝置(CRS)、車輛等。照片依照片清單內之號碼編號，清單有提及「媒體」或「移除人偶後」，須在編號之後標柱。
1.5.2.2 攝影機位置與畫面 受驗車輛周圍至少應安裝 9 台攝影機，安裝位置如圖 3 所示。且應額外使用 4 台車載攝影機拍攝兒童及駕駛人偶。另尚須一台實時攝影機進行碰撞紀錄(未標示於圖 3)。	1.5.2.2 攝影機位置與畫面 受驗車輛周圍至少應安裝 7 台攝影機，安裝位置如圖 3 所示。且應額外使用 3 台車載攝影機拍攝兒童人偶。另尚須一台實時攝影機進行碰撞紀錄(未標示於圖 3)。

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
圖 3：攝影機 1 至 9 號位置 (前方偏置撞擊移動式漸進可變形碰撞壁)	圖 3：攝影機 1 至 7 號位置 (前方偏置撞擊可變形碰撞壁)





修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
表 1：攝影機畫面清單 (前方偏置撞擊移動式漸進可變形碰撞壁)	表 1：攝影機畫面清單(前方偏置撞擊可變形碰撞壁)

	Camera:	1
	Filename:	1_Driver_tight
	Description :	The rear of barrier/trolley face to the b-pillar @ T0
	Camera:	2
	Filename:	2_Driver_publication
	Description :	(Space allowing) Rear of trolley to rear of vehicle @ T0
	Camera:	3
	Filename:	3_Passenger_tight
	Description :	Rear of the B-Pillar to the rear edge of the barrier trolley mount @ T0
	Camera:	4
	Filename:	4_Passenger_wide
	Description :	(Space allowing) Entire vehicle and trolley @ T0
	Camera:	5
	Filename:	5_Plan_full
	Description :	Entire vehicle and trolley @ T0 (allowing room for rotation also). Indoors this view may not be fully achievable and fish eye lens not desirable.

	攝影機編號	1
	檔案名稱	1_Driver_tight
	敘述	T0 位置：碰撞壁後方至 B 柱
	攝影機編號	2
	檔案名稱	2_Driver_publication
	敘述	T0 位置：碰撞壁後緣以及整台車輛
	攝影機編號	3
	檔案名稱	3_Passenger_tight
	敘述	T0 位置：B 柱到碰撞壁裝置後緣
	攝影機編號	4
	檔案名稱	4_Passenger_wide
	敘述	T0 位置：碰撞壁後緣以及整台車輛
	攝影機編號	5
	檔案名稱	5_Plan_full
	敘述	T0 位置：車輛後方至碰撞壁後緣。參考測量預留空間拍攝車輛旋轉姿態。

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章

	Camera:	6
	Filename:	6_Plan_tight
	Description :	From b-pillar to the rear edge of trolley front tyres @ T0
	Camera:	7
	Filename:	7_Front_full
	Description :	Camera on tripod or suspended from facility roof, **not on trolley**. Entire vehicle front to rear edge of the barrier @ T0
	Camera:	8
	Filename:	8_Front_Passenger_angled
	Description :	Camera should be centred on impact point, ¾ angle from front passenger side.
	Camera:	9
	Filename:	9_Rear_Driver_angled
	Description :	Camera should be centred on impact point, ¾ angle from rear on driver side.

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
	Camera: 10 (on-board) Filename: 10_Q6_onboard Description: Centred on 550mm head excursion line to include steering wheel. On-board lighting should be used.
	Camera: 11 (on-board) Filename: 11_Q10_onboard Description: Camera should be centred on 450mm head excursion line. On-board lighting should be used.
	Camera: 12 (on-board) Filename: 12_both_Q_dummies Description: Front view of both Q dummies
	Camera 13 (on-board) Filename: 13_driver_passenger_onboard Description: Camera located rearward pf front seats, view capturing both front occupants.
1.5.5.2 攝影機位置與畫面	1.5.5.2 攝影機位置與畫面

攝影機編號	6
檔案名稱	6_Plan_tight
敘述	T0 位置：從 B 柱到碰撞壁後緣
攝影機編號	7
檔案名稱	7_Front_full
敘述	T0 位置：從車頂前緣到碰撞壁後緣
攝影機編號	8(車載)
檔案名稱	8_Q6_onboard
敘述	T0 位置：以頭部偏移線(Head excursion line) 550mm 為中心且包含方向盤進行拍攝，並使用車載照明。
攝影機編號	9(車載)
檔案名稱	9_Q10_onboard
敘述	T0 位置：攝影機應對準頭部偏移線 450mm，並使用車載照明。
攝影機編號	10 (車載)
檔案名稱	10_Both_Q_dummies
敘述	T0 位置：兩個 Q 系列人偶的前方視角。

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
受驗車輛周圍至少應安裝 6 台攝影機，安裝位置如圖 6 所示。車輛增設 2 台額外車載攝影機，以供駕駛及乘客的前後視角。	受驗車輛周圍至少應安裝 6 台攝影機，安裝位置如圖 6 所示。此試驗無車載攝影機需求。

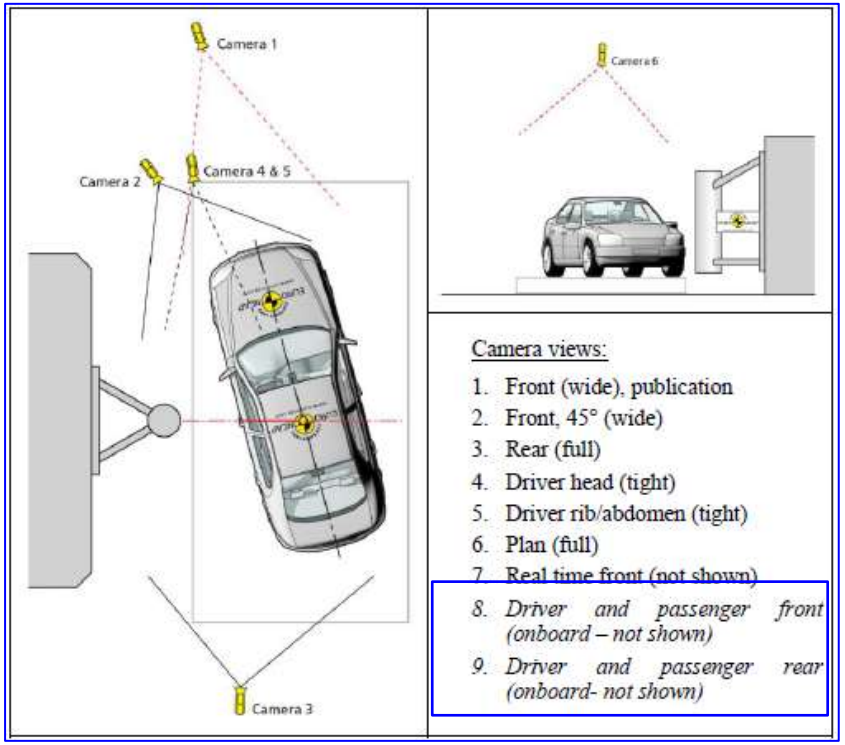
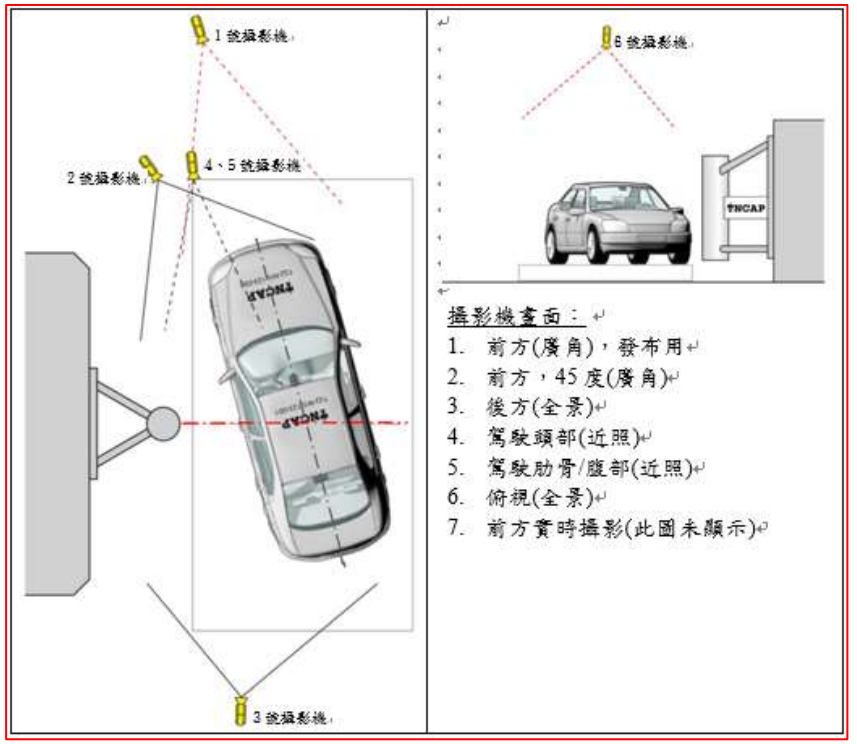

	

圖 6：攝影機 1 至 6 號位置(側方斜角立柱)	圖 6：攝影機 1 至 6 號位置(側方斜角立柱)

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章

表 7：攝影機畫面清單(側方斜角立柱)

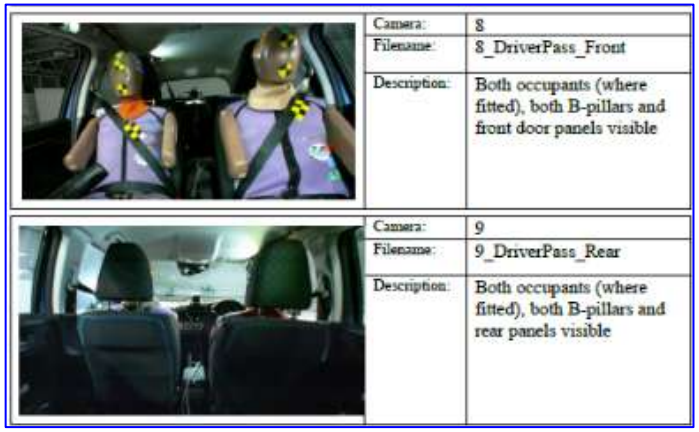
	攝影機編號	1
	檔案名稱	1_Front_wide_publication
	敘述	T0 位置：攝影機與車輛中線對齊。 畫面應涵蓋立柱至車輛非撞擊端側後一公尺。
	攝影機編號	2
	檔案名稱	2_Front_45_wide
	敘述	T0 位置：攝影機擺放於車輛中線 45 度角處。 畫面應涵蓋立柱至車輛非撞擊端側後一公尺。
	攝影機編號	3
	檔案名稱	3_Rear_full
	敘述	T0 位置：從立柱後方至車輛非撞擊側後一公尺。 畫面應涵蓋整台車，且攝影機應與移動式台車方向呈垂直。
	攝影機編號	4
	檔案名稱	4_Driver_head_tight
	敘述	T0 位置：立柱至車輛的乘客側。攝影機應與移動式台車方向呈垂直。

表 7：攝影機畫面清單(側方斜角立柱)

	攝影機編號	1
	檔案名稱	1_Front_wide_publication
	敘述	T0 位置：攝影機與車輛中線對齊。 畫面應涵蓋立柱至車輛非撞擊端側後一公尺。
	攝影機編號	2
	檔案名稱	2_Front_45_wide
	敘述	T0 位置：攝影機擺放於車輛中線 45 度角處。 畫面應涵蓋立柱至車輛非撞擊端側後一公尺。
	攝影機編號	3
	檔案名稱	3_Rear_full
	敘述	T0 位置：從立柱後方至車輛非撞擊側後一公尺。 畫面應涵蓋整台車，且攝影機應與移動式台車方向呈垂直。
	攝影機編號	4
	檔案名稱	4_Driver_head_tight
	敘述	T0 位置：立柱至車輛的乘客側。攝影機應與移動式台車方向呈垂直。

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
 攝影機編號 5 檔案名稱 5_Driver_body 敘述 T0 位置：車輛乘客側至立柱，畫面應涵蓋駕駛胸部及腹部。  攝影機編號 6 檔案名稱 6_Plan_full 敘述 T0 位置：面面應涵蓋整台車。  攝影機編號 7 檔案名稱 7_Front_realtime 敘述 實時攝影的畫面應與 2 號高速攝影機畫面相同。	 攝影機編號 5 檔案名稱 5_Driver_body 敘述 T0 位置：車輛乘客側至立柱，畫面應涵蓋駕駛胸部及腹部。  攝影機編號 6 檔案名稱 6_Plan_full 敘述 T0 位置：面面應涵蓋整台車。  攝影機編號 7 檔案名稱 7_Front_realtime 敘述 實時攝影的畫面應與 2 號高速攝影機畫面相同。

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章



Camera:	8
Filename:	8_DriverPass_Front
Description:	Both occupants (where fitted), both B-pillars and front door panels visible

Camera:	9
Filename:	9_DriverPass_Rear
Description:	Both occupants (where fitted), both B-pillars and rear panels visible

1.5.5.3 靜態照片

表 8：照片清單(側方斜角立柱)

編號	PRE	POST	媒體	畫面
車輛置於台車上並緊貼立柱：				
1	•	•	•	俯視整車、台車及立柱的全景(發布用)
2	•	•	•	從前方拍攝整車、台車和立柱(發布用)
3	•	•	•	從後方拍攝整車、台車和立柱(發布用)
4	•	•	•	從撞擊側前方 45 度角拍攝車輛側面、台車及立柱(發布用)

1.5.5.3 靜態照片

表 8：照片清單(側方斜角立柱)

編號	PRE	POST	媒體	畫面
車輛置於台車上並緊貼立柱：				
1	•	•	•	俯視整車、台車及立柱的全景(發布用)
2	•	•	•	從前方拍攝整車、台車和立柱(發布用)
3	•	•	•	從後方拍攝整車、台車和立柱(發布用)
4	•	•	•	從撞擊側前方 45 度角拍攝車輛側面、台車及立柱(發布用)

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
編號 PRE POST 媒體 畫面 5 • • • 從撞擊側後方 45 度角拍攝車輛側面、台車及立柱(發布用) 6 - • • 從車輛前方廣角拍攝立柱與整台車輛(發布用) 7 - • • 從車輛後方廣角拍攝立柱與整台車輛(發布用) 將車輛與台車遠離立柱： 8 • • • 從撞擊側拍攝車輛/台車，顯示整台車輛(發布用) 9 • • - 從非撞擊側拍攝車輛/台車，顯示整台車輛 10 - • 拍攝各個門閂及/或打開的車門的位置。 11 • - 打開駕駛車門，從側面拍攝駕駛和駕駛座椅，顯示駕駛室和座椅位置相對於門檻。 12 • - 打開駕駛車門，近拍(攝)駕駛的腿部和雙腳。 13 • • 打開前乘客車門，從側面拍攝駕駛。 14 • • 車輛/台車撞擊側對準碰撞線，從側面拍攝前門與 B 柱。 15 • - 從前方/側方拍攝立柱。 16 - • 透過前擋風玻璃，拍攝前方人偶。 17 • • 從車內拍攝腹部和骨盆區域。	編號 PRE POST 媒體 畫面 5 • • • 從撞擊側後方 45 度角拍攝車輛側面、台車及立柱(發布用) 6 - • • 從車輛前方廣角拍攝立柱與整台車輛(發布用) 7 - • • 從車輛後方廣角拍攝立柱與整台車輛(發布用) 將車輛與台車遠離立柱： 8 • • • 從撞擊側拍攝車輛/台車，顯示整台車輛(發布用) 9 • • - 從非撞擊側拍攝車輛/台車，顯示整台車輛 10 - • 拍攝各個門閂及/或打開的車門的位置。 11 • - 打開駕駛車門，從側面拍攝駕駛和駕駛座椅，顯示駕駛室和座椅位置相對於門檻。 12 • - 打開駕駛車門，近拍(攝)駕駛的腿部和雙腳。 13 • • 打開前乘客車門，從側面拍攝駕駛。 14 • • 車輛/台車撞擊側對準碰撞線，從側面拍攝前門與 B 柱。 15 • - 從前方/側方拍攝立柱。 16 - • 透過前擋風玻璃，拍攝前方人偶。 17 • • 從車內拍攝腹部和骨盆區域。
移除人偶後： 編號 PRE POST 畫面 18 - • 近拍駕駛車門和駕駛座上的色漆印痕。	移除人偶後： 編號 PRE POST 畫面 18 - • 近拍駕駛車門和駕駛座上的色漆印痕。
1.5.8.3 畫面挑選 提供給 TNCAP 執行機構之攝影機畫面及各試驗項目影片，應依下列規定辦理： (1)查驗影片 (A) 所有試驗項目皆須攝影(AEB 及 FCW) (B) 攝影機畫面需求： 車外攝影機 1 | 車載攝影機 2 | 儀錶板攝影機 3 是 | 是 | 是 (2)媒體影片 (A) 試驗項目	1.5.8.3 畫面挑選 提供給 TNCAP 執行機構之攝影機畫面及各試驗項目影片，應依下列規定辦理： (1)查驗影片 (A) 所有試驗項目皆須攝影(AEB 及 FCW) (B) 攝影機畫面需求： 車外攝影機 1 | 車載攝影機 2 | 儀錶板攝影機 3 是 | 是 | 是 (2)媒體影片 (A) 試驗項目

<table>
<tr><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
<tr><td>依下表提供各試驗項目對應之影片：
<table>
<tr><td></td><td>GOOD</td><td>ADEQUATE</td><td>MARGINAL</td><td>WEAK</td><td>POOR</td></tr>
<tr><td>CCRs
CCRm
CCRb</td><td>Random selected test point with GREEN result (avoidance)</td><td>Random selected test point with YELLOW result (mitigation) if not available use ORANGE</td><td>Random selected test point with ORANGE result (mitigation) if not available use BROWN</td><td>Random selected test point with BROWN result (mitigation)</td><td>Random selected test point with BROWN result and highest impact speed (mitigation)</td></tr>
<tr><td>CCFtap</td><td>Highest avoidance</td><td></td><td></td><td></td><td></td></tr>
</table>
(B) 攝影機畫面需求
<table>
<tr><td>車外攝影機 1</td><td>車載攝影機 2</td><td>儀錶板攝影機 3</td></tr>
<tr><td>是</td><td>是</td><td>是</td></tr>
</table></td><td>依下表提供各試驗項目對應之影片：
<table>
<tr><td></td><td>優</td><td>良好</td><td>尚可</td><td>差</td><td>不良</td></tr>
<tr><td>CCRs
CCRm
CCRb</td><td>在綠色結果隨機選取驗證點(避免碰撞)</td><td>在黃色結果隨機選取驗證點(減緩碰撞)
若不適用則用橘色</td><td>在橘色結果隨機選取驗證點(減緩碰撞)
若不適用則用棕色</td><td>在棕色結果隨機選取驗證點(減緩碰撞)</td><td>在棕色結果隨機選取驗證點及最高碰撞速度(減緩碰撞)</td></tr>
</table>
(B) 攝影機畫面需求
<table>
<tr><td>車外攝影機 1</td><td>車載攝影機 2</td><td>儀錶板攝影機 3</td></tr>
<tr><td>是</td><td>是</td><td>是</td></tr>
</table></td></tr>
<tr><td>1.5.9.2.2 車載攝影機(攝影機 2 號及 3 號)
(1) 攝影機 2 號：使用 “Go Pro” 或功能相同之攝影機，從車內拍攝前方狀況。畫面中不得有試驗設備，例如駕駛機器人。
(2) 攝影機 3 號：使用 “Go Pro” 或功能相同之攝影機，從車內拍攝儀表板。</td><td>1.5.9.2.2 車載攝影機(攝影機 2 號及 3 號)
(1) 攝影機 2 號：使用 “Go Pro” 或功能相同之攝影機，從車內拍攝前方狀況。畫面中不得有試驗設備，例如駕駛機器人。
(2) 攝影機 3 號：使用 “Go Pro” 或功能相同之攝影機，從車內拍攝儀表板。</td></tr>
</table>

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
表 15：攝影機畫面清單(緊急煞車輔助系統(弱勢道路使用者)試驗)	表 15：攝影機畫面清單(緊急煞車輔助系統(弱勢道路使用者)試驗)

攝影機編號	1
檔案名稱	1_AEB_VRU_wide
敘述	開始時，以廣角拍攝。受驗車輛與人偶皆應在畫面內，且人偶朝攝影機移動。攝影機與人偶行進方向呈約 45 度角

攝影機編號	2 (車載)
檔案名稱	2_Forward_onboard
敘述	使用“Go Pro”或功能相同之攝影機，從車內拍攝前方狀況。畫面中不得有試驗設備

攝影機編號	3 (車載)
檔案名稱	3_Dashboard
敘述	使用“Go Pro”或功能相同之攝影機，從車內向前拍攝儀表板、儀表組件、HUD 等。另須拍攝視/聽覺警示畫面。

攝影機編號	1
檔案名稱	1_AEB_VRU_wide
敘述	開始時，以廣角拍攝。受驗車輛與人偶皆應在畫面內，且人偶朝攝影機移動。攝影機與人偶行進方向呈約 45 度角

攝影機編號	2 (車載)
檔案名稱	2_Forward_onboard
敘述	使用“Go Pro”或功能相同之攝影機，從車內拍攝前方狀況。畫面中不得有試驗設備

攝影機編號	3 (車載)
檔案名稱	3_Dashboard
敘述	使用“Go Pro”或功能相同之攝影機，從車內向前拍攝儀表板、儀表組件、HUD 等。另須拍攝視/聽覺警示畫面。

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
自行車騎士車門碰撞情境試驗(CBDA)場景的攝影機視角  Camera: 1 Filename: 1_CBDA_VRU_Wide Description: Wide view initially. Car and target in view with target moving towards camera. Camera angled at approximately 45degrees.  Camera: 2 (onboard) Filename: 2_CBDA_VRU Description: "Go pro" (or equivalent type camera) on the EBT looking forward with the test vehicle in view.  Camera: 3 (on-board) Filename: 3_CBDA_dashboard "Go pro" (or equivalent type camera) inside, looking in oblique direction towards instrumentation cluster and outboard rear view mirror. Visual/Audio warning must be captured. Door handle operation must also be visible. Use multiple cameras to view all items above if required.	
1.5.9.3 畫面挑選 提供給 TNCAP 執行機構之攝影機畫面及各試驗項目影片，應依下列	1.5.9.3 畫面挑選 提供給 TNCAP 執行機構之攝影機畫面及各試驗項目影片，應依下列

<table>
<tr><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
<tr><td>
規定辦理：
(1)查驗影片
(A) 所有試驗項目皆須攝影
(B) 攝影機畫面需求：
<table>
<tr><td>車外攝影機 1</td><td>車載攝影機 2</td><td>儀錶板攝影機 3</td></tr>
<tr><td>是</td><td>是</td><td>是</td></tr>
</table>
(2)媒體影片
(A) 試驗項目
依下表提供各試驗項目對應之影片：
<table>
<tr><td></td><td>GOOD</td><td>ADEQUATE</td><td>MARGINAL</td><td>WEAK</td><td>POOR</td></tr>
<tr><td>CPNC
CPFA
CPNA25
CPNA25 @ night
CPLA50
CPLA50 @ night</td><td>Highest avoidance speed</td><td>Highest mitigation speed (>75% speed reduction)</td><td>Highest mitigation speed (>50% speed reduction)</td><td>Highest mitigation speed (>25% speed reduction)</td><td>No performance</td></tr>
<tr><td>CPTA
CPRA</td><td>Highest avoidance</td><td>Highest avoidance</td><td>Highest avoidance</td><td>Highest avoidance</td><td>No performance</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>CBFA
CBNA
CBNAO
CBLA50</td><td>Highest avoidance speed</td><td>Highest mitigation speed (>75% speed reduction)</td><td>Highest mitigation speed (>50% speed reduction)</td><td>Highest mitigation speed (>25% speed reduction)</td><td>No performance</td></tr>
</table>
(B) 攝影機畫面需求
<table>
<tr><td>車外攝影機 1</td><td>車載攝影機 2</td><td>儀錶板攝影機 3</td></tr>
<tr><td>是</td><td>是</td><td>是</td></tr>
</table>
</td><td>
規定辦理：
(1)查驗影片
(A) 所有試驗項目皆須攝影
(B) 攝影機畫面需求：
<table>
<tr><td>車外攝影機 1</td><td>車載攝影機 2</td><td>儀錶板攝影機 3</td></tr>
<tr><td>是</td><td>是</td><td>是</td></tr>
</table>
(2)媒體影片
(A) 試驗項目
依下表提供各試驗項目對應之影片：
<table>
<tr><td></td><td>優</td><td>良好</td><td>尚可</td><td>差</td><td>不良</td></tr>
<tr><td>CPFA
CPNC
CPNA25
CPNA25@晚上
CPLA50
CPLA50@晚上</td><td>最高避免碰撞速度</td><td>最高減緩碰撞速度(>75%減速)</td><td>最高減緩碰撞速度(>50%減速)</td><td>最高減緩碰撞速度(>25%減速)</td><td>無性能</td></tr>
<tr><td>CBNA
CBLA50</td><td>最高避免碰撞速度</td><td>最高減緩碰撞速度(>75%減速)</td><td>最高減緩碰撞速度(>50%減速)</td><td>最高減緩碰撞速度(>25%減速)</td><td>無性能</td></tr>
</table>
(B) 攝影機畫面需求
<table>
<tr><td>車外攝影機 1</td><td>車載攝影機 2</td><td>儀錶板攝影機 3</td></tr>
<tr><td>是</td><td>是</td><td>是</td></tr>
</table>
</td></tr>
<tr><td>1.5.10.3 畫面挑選
提供給 TNCAP 執行機構之攝影機畫面及各試驗項目影片，應依下列規定辦理：
(1)查驗影片</td><td>1.5.10.3 畫面挑選
提供給 TNCAP 執行機構之攝影機畫面及各試驗項目影片，應依下列規定辦理：
(1)查驗影片</td></tr>
</table>

<table>
<tr><th>修訂 TNCAP 條文草案(第三版)</th><th>對應 TNCAP 第二版規章</th></tr>
<tr><td>
(A) 所有試驗項目皆須攝影
(B) 攝影機畫面需求：
<table>
<tr><th>車外攝影機 1</th><th>車載攝影機 2</th><th>車門外攝影機 3</th><th>儀錶板攝影機 4</th></tr>
<tr><td>是</td><td>是</td><td>是</td><td>是</td></tr>
</table>
(2)媒體影片
(A) 試驗項目
每類型之評等僅一個試驗情境，依受驗車輛不同其評等之類型亦不同，例如車道維持輔助系統、ELK－道路邊緣、ELK-實線、ELK－對向來車及 ELK－車道超車。
<table>
<tr><td>ELK – Road Edge</td><td>0.5 m/s with least amount of lines where the vehicle scores points</td></tr>
<tr><td>ELK – Solid Line</td><td>0.5 m/s</td></tr>
<tr><td>ELK - Oncoming</td><td>0.6 m/s, only when test is performed with GVT</td></tr>
<tr><td>ELK - Overtaking</td><td>0.7 m/s Intentional GVT @ 72 km/h
0.7 m/s Intentional GVT @ 80 km/h</td></tr>
<tr><td>LKA</td><td>0.5 m/s Dashed Line @ passenger side</td></tr>
</table>
(B) 攝影機畫面需求
<table>
<tr><th>車外攝影機 1</th><th>車載攝影機 2</th><th>車門外攝影機 3</th><th>儀錶板攝影機 4</th></tr>
<tr><td>是</td><td>否</td><td>是</td><td>是</td></tr>
</table>
</td><td>
(A) 所有試驗項目皆須攝影
(B) 攝影機畫面需求：
<table>
<tr><th>車外攝影機 1</th><th>車載攝影機 2</th><th>車門外攝影機 3</th><th>儀錶板攝影機 4</th></tr>
<tr><td>是</td><td>是</td><td>是</td><td>是</td></tr>
</table>
(2)媒體影片
(A) 試驗項目
每類型之評等僅一個試驗情境，依受驗車輛不同其評等之類型亦不同，例如車道維持輔助系統、ELK－道路邊緣、ELK－對向來車及 ELK－車道超車。
<table>
<tr><td>ELK－道路邊緣</td><td>側向速度 0.5 m/s 並最少標線數量時受驗車輛得分</td></tr>
<tr><td>ELK－對向來車</td><td>側向速度 0.6 m/s，僅當使用全球目標車執行試驗時</td></tr>
<tr><td>ELK－車道超車</td><td>側向速度 0.7 m/s 刻意超車全球目標車@72 km/h
側向速度 0.7 m/s 刻意超車全球目標車@80 km/h</td></tr>
<tr><td>車道維持輔助系統</td><td>側向速度 0.5 m/s 在第一排乘客側之虛線</td></tr>
</table>
(B) 攝影機畫面需求
<table>
<tr><th>車外攝影機 1</th><th>車載攝影機 2</th><th>車門外攝影機 3</th><th>儀錶板攝影機 4</th></tr>
<tr><td>是</td><td>否</td><td>是</td><td>是</td></tr>
</table>
</td></tr>
<tr><td>1.5.13 防止誤踩踏板之加速控制系統試驗
1.5.13.1 車輛標記
除車頂的標識為可選擇性貼附外，TNCAP 標識應貼附於車輛外部，如 1.5.1.2.1 圖 1 所示。TNCAP 專屬試驗參照編號應貼附於 TNCAP 標識下方。
1.5.13.2 攝影機位置及畫面
1.5.13.2.1 車外 HD 攝影機(攝影機 1 號)</td><td></td></tr>
</table>

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
攝影時，受驗車輛及目標物皆應在畫面內，攝影機放置在受驗車輛之側方。 1.5.13.2.2 車載攝影機(攝影機 2 號、3 號、4 號及 5 號)： (1) 攝影機 2 號：使用“Go Pro”或功能相同之攝影機，攝影機安裝在受驗車輛前儀表板上，從車內拍攝前方目標物。 (2) 攝影機 3 號：使用“Go Pro”或功能相同之攝影機，從車內拍攝儀表板、中控台顯示螢幕及系統運作狀態。 (3) 攝影機 4 號：使用“Go Pro”或功能相同之攝影機，從車內拍攝踏板區。 (4) 攝影機 5 號：使用“Go Pro”或功能相同之攝影機，攝影機安裝在受驗車輛後方行李箱中，從車內拍攝後方目標物。 表 18：攝影機畫面清單(防止誤踩踏板之加速控制系統)	

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
	攝影機編號 1 檔案名稱 1_ACPE_roadside 敘述 攝影時，受驗車輛及目標物皆應在畫面內，攝影機放置在受驗車輛之側方。
	攝影機編號 2(車載) 檔案名稱 2_ACPE_onboard 敘述 在車內裝設“Go Pro”或功能相同之攝影機，從車內向前拍攝，確保目標物在畫面中間。
	攝影機編號 3(車載) 檔案名稱 3_dashboard 敘述 使用“Go Pro”或功能相同之攝影機，從車內向前拍攝儀表板，儀表組件，HUD 等。

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章

攝影機編號	4(車載)
檔案名稱	4_pedal
敘述	使用“Go Pro”或功能相同之攝影機，從車內向下方拍攝煞車踏板、加速踏板等，另須涵蓋駕駛腳部與設備的動作畫面。
攝影機編號	5(車載)
檔案名稱	5_rear
敘述	使用“Go Pro”或功能相同之攝影機，從車內向後方拍攝，確保目標物在畫面中間。

<圖片來源：JNCAP>

1.5.13.3 畫面挑選

提供給 TNCAP 執行機構之攝影機畫面及各試驗項目影片，應依下列規定辦理：

(1)查驗影片

(A)所有試驗項目皆須攝影

(B)攝影機畫面需求：

車外攝影機 1	車載攝影機 2	儀錶板攝影機 3	踏板攝影機 4	行李箱攝影機 5
是	是	是	是	是

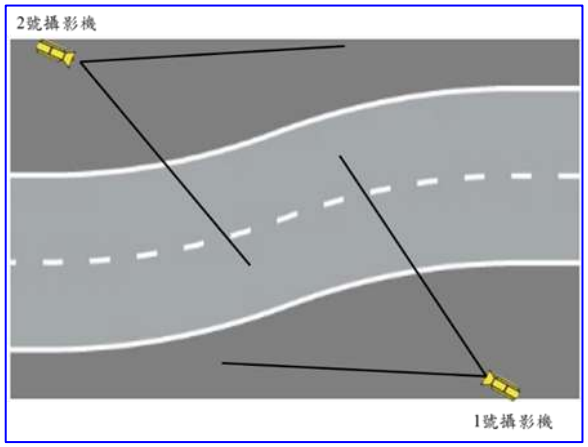
(2)媒體影片

(A)提供所有試驗項目之影片

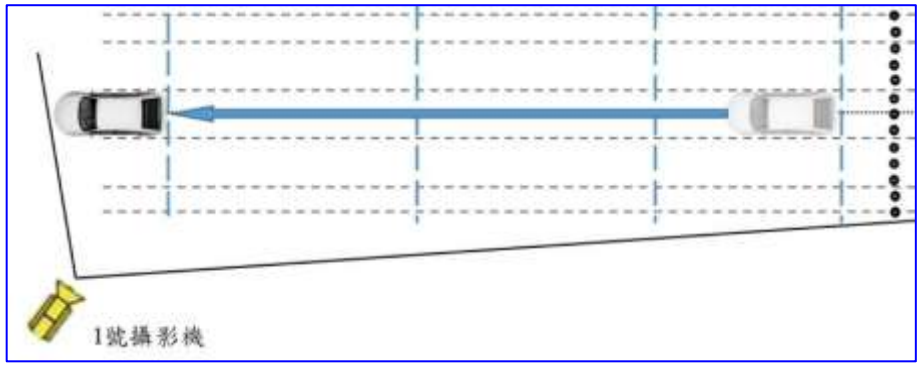
(B)攝影機畫面需求：

車外攝影機 1	車載攝影機 2	儀錶板攝影機 3	踏板攝影機 4	行李箱攝影機 5
是	是	是	是	是

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
1.5.13.4 靜態照片 試驗後，應拍攝受驗車輛感測器陣列可疑受損的部分。	
1.5.14 轉向輔助系統 1.5.14.1 車輛標記 除車頂的標識為可選擇性貼附外，TNCAP 標識應貼附於車輛外部，如 1.5.1.2.1 圖 1 所示。TNCAP 專屬試驗參照編號應貼附於 TNCAP 標識下方。 1.5.14.2 攝影機位置及畫面 1.5.14.2.1 車外 HD 攝影機(攝影機 1 號及 2 號) (1) 攝影機 1 號：應架設於 S 彎道第一彎車道旁，畫面應涵蓋完整第一彎，畫面須清晰記錄受驗車輛（VUT）在指定設定車速下行駛之軌跡。 (2) 攝影機 2 號：應架設於 S 彎道第二彎車道旁，畫面應涵蓋完整第二彎，畫面須清晰記錄受驗車輛（VUT）在指定設定車速下行駛之軌跡。	

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
 圖 8.轉向輔助系統試驗車外攝影機位置 1.5.14.2.2 車載攝影機(攝影機 3 號、4 號、5 號及 6 號)： (1) 攝影機 3 號：使用“Go Pro”或功能相同之攝影機，架設於副駕駛座車門外板上，使得清楚地拍攝車道偏離。畫面應對準前方拍攝。 (2) 攝影機 4 號：使用“Go Pro”或功能相同之攝影機，架設於駕駛座車門外板上，使得清楚地拍攝車道偏離。畫面應對準前方拍攝。 (3) 攝影機 5 號：使用“Go Pro”或功能相同之攝影機，從車內拍攝前方狀況。畫面中不得有其他人員、車輛等。 (4) 攝影機 6 號：使用“Go Pro”或功能相同之攝影機，從車內拍攝儀表板、中控台顯示螢幕及系統運作狀態。 1.5.14.3 畫面挑選 提供給 TNCAP 執行機構之攝影機畫面及各試驗項目影片，應依下列規定辦理：	

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
(1)查驗影片 (A)所有試驗項目皆須攝影 (B)攝影機畫面需求： <table><tr><td>車外攝影機 1</td><td>車外攝影機 2</td><td>車載攝影機 3</td><td>車載攝影機 4</td><td>車載攝影機 5</td><td>車載攝影機 6</td></tr><tr><td>是</td><td>是</td><td>是</td><td>是</td><td>是</td><td>是</td></tr></table> (2)媒體影片 (A)提供最高車速與最高維持於原車道車速之影片 (B)攝影機畫面需求： <table><tr><td>車外攝影機 1</td><td>車外攝影機 2</td><td>車載攝影機 3</td><td>車載攝影機 4</td><td>車載攝影機 5</td><td>車載攝影機 6</td></tr><tr><td>是</td><td>是</td><td>是</td><td>是</td><td>否</td><td>是</td></tr></table> 1.5.14.4 靜態照片 試驗後，應拍攝受驗車輛感測器陣列可疑受損的部分。	

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
1.5.15 後方視野輔助系統 1.5.15.1 車輛標記 除車頂的標識為可選擇性貼附外，TNCAP 標識應貼附於車輛外部，如 1.5.1.2.1 圖 1 所示。TNCAP 專屬試驗參照編號應貼附於 TNCAP 標識下方。 1.5.15.2 攝影機位置及畫面 1.5.15.2.1 車外 HD 攝影機(攝影機 1 號) 攝影時，驗車輛與車後標桿陣列皆應在畫面內，攝影機放置在受驗車輛之左前方，拍攝畫面中不得有受驗車輛及目標物以外之物件與人員。當車輛向前移動時鏡頭應隨之拉遠，以在不同試驗距離時畫面皆可涵蓋受驗車輛與標桿。  圖 9.後方視野輔助系統試驗攝影機位置 1.5.15.2.2 車載攝影機(攝影機 2 號及 3 號)： (1)攝影機 2 號：使用 “Go Pro” 或功能相同之攝影機，架設於駕駛標準眼點位置，朝向車內後方視野顯示螢幕拍攝。拍攝畫面應清晰涵	

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
蓋顯示螢幕內所呈現之車後及側後方區域。 (2)攝影機 3 號：使用 “Go Pro” 或功能相同之攝影機，從車內向前拍攝儀表板、中控台顯示螢幕及系統運作狀態。 1.5.15.3 畫面挑選 提供給 TNCAP 執行機構之攝影機畫面及各試驗項目影片，應依下列規定辦理： (1)查驗影片 (A)所有試驗項目皆須攝影 (B)攝影機畫面需求： <table><tr><td>車外攝影機 1</td><td>車載攝影機 2</td><td>車載攝影機 3</td></tr><tr><td>是</td><td>是</td><td>是</td></tr></table> (2)媒體影片 (A)提供所有試驗項目之影片 (B)攝影機畫面需求： <table><tr><td>車外攝影機 1</td><td>車載攝影機 2</td><td>車載攝影機 3</td></tr><tr><td>是</td><td>是</td><td>是</td></tr></table> 1.5.15.4 靜態照片 應提供傳統光學後視鏡視野照片（從駕駛眼點拍攝傳統鏡面視野，作為基準對比）、所有試驗項目之顯示螢幕照片，照片規格依條文(1.5.1.4.3)規範。 試驗後，應拍攝受驗車輛感測器陣列可疑受損的部分。	
1.5.16 車頂抗壓強度 1.5.16.1 車輛與其他標記	

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
為了遮蔽試驗設備背景或人員，應於車輛試驗區後方放置一塊不反光的淺色布幕，且使 TNCAP 標識與試驗參照編號清楚可見於畫面中。檢測機構標識及/或試驗編號亦可以顯示，惟其不得較 TNCAP 標識顯著(參照 1.5.1.2.2)。受驗車輛上不應有任何標識，包含檢測機構標識。 1.5.16.2 攝影機位置與畫面 本項試驗須使用四台攝影機： (1) 1 號攝影機：攝影機架設於車輛正前方中心線上，畫面應完整涵蓋完整車輛及壓板。 (2) 2 號攝影機：攝影機架設於車輛正前方，特寫壓板、前擋風玻璃上緣及受壓側 A 柱頂端結構。 (3) 3 號攝影機：攝影機架設於車輛非受壓側前方 45° 角的位置，畫面應完整涵蓋車輛整體、固定底座及加壓致動器主體。 (4) 4 號攝影機：攝影機架設於車輛受壓側前方 45° 角的位置，畫面應完整涵蓋車輛整體、固定底座及加壓致動器主體。	

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
表 19：攝影機畫面清單(車頂抗壓強度)  攝影機編號 1 檔案名稱 1_Front_wide_publication 敘述 T0 位置：攝影機架設於車輛正前方中心線上，畫面須含壓板（Load platen）與 TNCAP 標識。 攝影機編號 2 檔案名稱 1_Front_tight_publication 敘述 T0 位置：攝影機架設於車輛正前方，特寫壓板、前擋風玻璃上緣及受壓側 A 柱頂端結構。 攝影機編號 3 檔案名稱 3_Angle_untested	

修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章

敘述	T0 位置：攝影機架設於車輛非受壓側前方 45°角的位置，畫面應完整涵蓋車輛整體、固定底座及加壓致動器主體。
攝影機編號	4
檔案名稱	4_Angle_tested
敘述	T0 位置：攝影機架設於車輛受壓側前方 45°角的位置，畫面應完整涵蓋車輛整體、固定底座及加壓致動器主體。

<圖片來源：IIHS>

1.5.16.3 靜態照片

除另有說明，否則應依表 20 規定於試驗前、後拍攝靜態照片。

表 20：照片清單(車頂抗壓強度)

編號	PRE	POST	畫面
1	•	•	車輛正前方拍攝車輛整體與壓板。
2	•	•	車輛左前方 45°拍攝車輛整體與壓板。
3	•	•	車輛右前方 45°拍攝車輛整體與壓板。
4	•	•	車輛與壓版的相對位置照片。
5	•	•	車輛與固定底座的相對位置照片。
6	•	•	車輛與壓版的接觸局部照片。

2.3弱勢道路使用者保護評等規章 **<<本案暫以2.3規章編號說明弱勢道路使用者保護評等條文修訂內容，後續擬修訂至2.3碰撞保護評等規章>>**

Euro NCAP Assessment Protocol – Vulnerable Road User Protection Version 11.4

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
METHOD OF ASSESSMENT The assessment of VRU protection is combination of impact tests and AEB/LSS tests. For the impact tests, consisting of headform, upper legform, aPLI impacts, a grid will be marked on the outer surface of the vehicle for all of the impact zones. Euro NCAP will test a number of grid points and manufacturers may nominate an additional number of tests to be performed, which will also be included in the assessment. The vehicle manufacturer is required to provide the Euro NCAP Secretariat with data detailing the protection offered by the vehicle at all grid locations. The data shall be provided to the Euro NCAP Secretariat before any test preparation begins. The predicted level of protection offered by the vehicle is verified by Euro NCAP by means of testing of a sample of randomly selected	**2 METHOD OF ASSESSMENT** The assessment of pedestrian protection is made with the use of headform, upper legform, legform impact and AEB test data. In the legform areas, the bumper and front of the bonnet of the car will be marked with a grid and are assessed using the two legform impactors. Euro NCAP will test "worst case" grid points and manufacturers may nominate additional tests to be performed and the results will be included in the assessment. In the headform impact area, a grid will be marked on the outer surface of the vehicle. The vehicle manufacturer is required to provide the Euro NCAP Secretariat with data detailing the protection offered by the vehicle at all grid locations. The data shall be provided to the Euro NCAP Secretariat before any test preparation begins. The predicted level of protection offered by the	2.3.1 評等方法 弱勢道路使用者保護評等包括衝擊試驗與緊急煞車輔助系統/車道輔助系統(AEB/LSS)試驗。 關於衝擊試驗，包括頭部模型、上腿部模型及先進行人腿部模型(aPLI)衝擊，全部的衝擊區域將於車輛外表面標記網格(Grid)。TNCAP 將測試數個網格點，且車輛業者可自行選擇進行額外測試，結果皆會列入評等。 車輛業者須提供 TNCAP 執行機構所有網格位置詳細之保護數據。TNCAP 執行機構收到數據後才開始進行試驗整備。TNCAP 將依照車輛預期保護程度，隨機挑選網格點進行測試以驗證預期保護效果，並依照結果修正整體預期。	2.3.1 評等方法 行人保護評等包括頭部模型、上腿部模型及腿部模型衝擊與緊急煞車輔助試驗數據。腿部模型衝擊區域部分，將於車輛保險桿與前方車蓋前方標記網格(Grid)，並使用兩個腿部模型衝擊器進行評等。TNCAP 將測試「最嚴苛」網格點，且車輛業者可自行選擇進行額外測試，結果皆會列入評等。 頭部衝擊區域部分，將於車輛外表面標記網格，車輛業者須提供 TNCAP 執行機構所有網格位置詳細之保護數據。TNCAP 執行機構收到數據後才開始進行試驗整備。TNCAP 將依照車輛預期保護程度，隨機挑選網格點進行測試以驗證預期保護效果，並依照結果修正整體預期。

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
grid-points, the overall prediction is then corrected accordingly.	vehicle is verified by Euro NCAP by means of testing of a sample of randomly selected grid-points and the overall prediction is corrected accordingly.		
Points Calculation For the legform impact areas, a sliding scale system of points scoring has been used to calculate points based on each measured criterion. This involves two limits for each parameter, a more demanding limit (higher performance), below which a maximum score is obtained and a less demanding limit (lower performance), beyond which no points are scored. Where a value falls between the two limits, the score is calculated by linear interpolation. No capping is applied to any of the measurements.	**2.1 Points Calculation** For the legform impact areas, a sliding scale system of points scoring has been used to calculate points for each measured criterion. This involves two limits for each parameter, a more demanding limit (higher performance), below which a maximum score is obtained and a less demanding limit (lower performance), beyond which no points are scored. Where a value falls between the two limits, the score is calculated by linear interpolation. No capping is applied to any of the measurements. The maximum score for each grid point is one point for bumper and bonnet leading ledge tests. The total score will then be scaled to a maximum of six points for each impactor.	2.3.1.1 分數計算 腿部衝擊區域將以浮動計算法(Sliding scale)計算每項量測標準之分數，包括每一參數之兩限制值，其中一個為較嚴格限制值（較高性能），低於該限制值則可獲得最高分，以及另一個較不嚴格限制值（較低性能），超出該限制值則無法得分。若數值介於兩者之間，則以線性插值法計算分數。所有量測值皆無底限限制。	2.3.1.1 分數計算 腿部衝擊區域將以浮動計算法(Sliding scale)計算每項量測標準之分數，包括每一參數之兩限制值，其中一個為較嚴格限制值（較高性能），低於該限制值則可獲得最高分，以及另一個較不嚴格限制值（較低性能），超出該限制值則無法得分。若數值介於兩者之間，則以線性插值法計算分數。所有量測值皆無底限限制。保險桿與前方車蓋(Bonnet)（即引擎蓋）前緣試驗之每個網格點最高分為一分，最後以每個衝擊器(Impactor)最高六分為基礎計算總分。
For the headform impact area, the protection predicted by the vehicle manufacturer will	For the headform impact area, the protection predicted by the vehicle manufacturer will	對於頭部衝擊區域，車輛業者之預測保護將與隨機挑選試驗位置之結果	對於頭部衝擊區域，車輛業者之預測保護將與隨機挑選試驗位置之結果

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
be compared to the outcome of the randomly selected test locations. The results at those test locations will be used to generate a correction factor, which will then be applied to the predicted score. Only data that results in a correction factor of between 0.850 and 1.150 are accepted. Where this is not the case, the cause will be investigated and the Secretariat will subsequently decide how to proceed. Where the data are accepted, the headform score will be based on the predicted data score with correction applied.	be compared to the outcome of the randomly selected test locations. The results at those test locations will be used to generate a correction factor, which will then be applied to the predicted score. Only data that results in a correction factor of between 0.850 and 1.150 are accepted. Where this is not the case, the cause will be investigated and the Secretariat will subsequently take a decision as to how to proceed. Where the data are accepted, the headform score will be based on the predicted data score with correction applied.	進行對照，得出一修正係數後套用至預測分數。可接受修正係數介於 0.850 至 1.150 間之數據，若係數未介於此數值之間，將調查原因，並由執行機構作出裁決，以決定下一步如何處理。若數據獲得採納，則頭部模型分數將以預測數據分數套用修正係數後進行評等。	進行對照，得出一修正係數後套用至預測分數。可接受修正係數介於 0.850 至 1.150 間之數據，若係數未介於此數值之間，將調查原因，並由執行機構作出裁決，以決定下一步如何處理。若數據獲得採納，則頭部模型分數將以預測數據分數套用修正係數後進行評等。
1 PEDESTRIAN & CYCLIST IMPACT ASSESSMENT **1.1 Criteria and Limit Values** The assessment criteria used for the pedestrian and cyclist impact tests are summarised below along with the upper and lower performance limits for each parameter. Where multiple criteria exist for an individual test, the lowest scoring parameter is used to determine the performance of that test, unless indicated	**1 PEDESTRIAN IMPACT ASSESSMENT** **1.1 Criteria and Limit Values** The assessment criteria used for the pedestrian impact tests, with the upper and lower performance limits for each parameter, are summarised below. Where multiple criteria exist for an individual test, the lowest scoring parameter is used to determine the performance of that test, unless indicated otherwise.	2.3.2 行人與自行車騎士衝擊評等 2.3.2.1 標準與限制值 下述為行人與自行車騎士衝擊試驗評等標準各參數之較高與低性能限制值。若單項有多項標準，除非另有說明否則最低得分參數即為該試驗表現。	2.3.2 行人衝擊評等 2.3.2.1 標準與限制值 下述為行人衝擊試驗評等標準各參數之較高與低性能限制值。若單項有多項標準，除非另有說明否則最低得分參數即為該試驗表現。

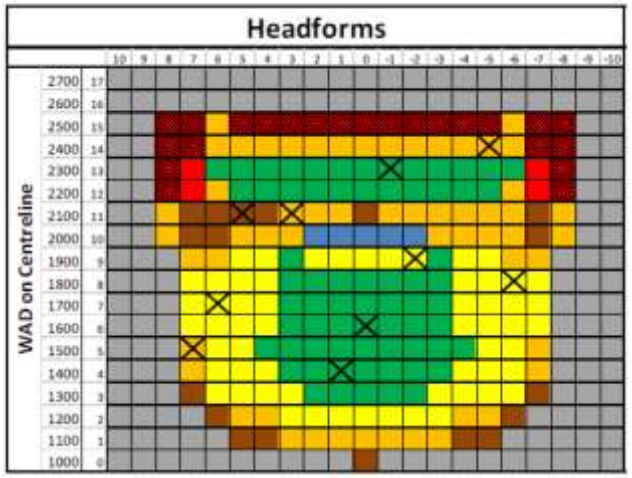
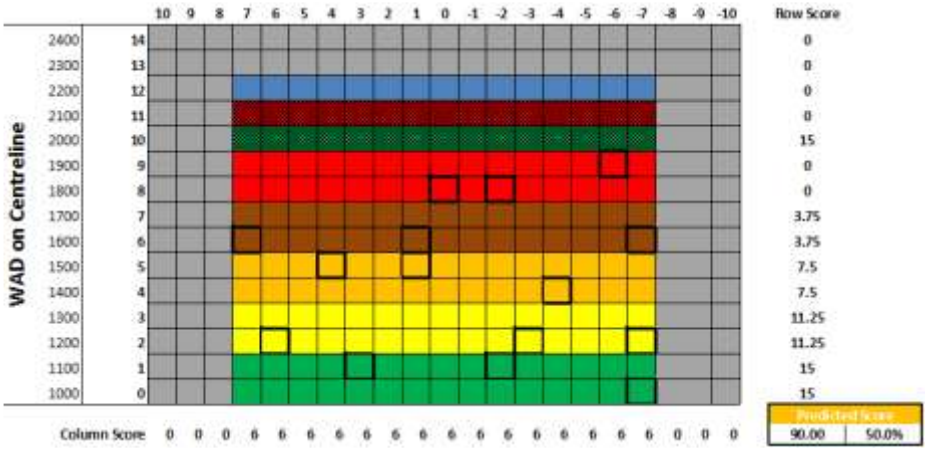
2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
otherwise.			
1.1.2 Upper Legform *Higher performance limit* Sum of forces 5.0kN *Lower performance limit* Sum of forces 6.0kN	**1.1.2 Upper Legform** *Higher performance limit* Bending Moment 285Nm Sum of forces 5.0kN *Lower performance limit* Bending Moment 350Nm Sum of forces 6.0kN	2.3.2.1.2 上腿部模型 較高性能限制值 衝擊力總和 5.0kN 較低性能限制值 衝擊力總和 6.0kN	2.3.2.1.2 上腿部模型 較高性能限制值 彎曲力矩 285Nm 衝擊力總和 5.0kN 較低性能限制值 彎曲力矩 350Nm 衝擊力總和 6.0kN
1.1.3 aPLI *Higher performance limit* Femur Bending Moment 390Nm Tibia Bending Moment 275Nm MCL Elongation 27mm *Lower performance limit* Femur Bending Moment 440Nm Tibia Bending Moment 320Nm MCL Elongation 32mm	**1.1.3 Legform** *Higher performance limit* Tibia Bending Moment 282Nm MCL Elongation 19mm ACL/PCL Elongation 10mm *Lower performance limit* Tibia Bending Moment 340Nm MCL Elongation 22mm ACL/PCL Elongation 10mm	2.3.2.1.3 aPLI 較高性能限制值 股骨彎曲力矩 390Nm 脛骨彎曲力矩 275Nm 內側副韌帶(MCL)伸長量 27mm 較低性能限制值 股骨彎曲力矩 440Nm 脛骨彎曲力矩 320Nm 內側副韌帶(MCL)伸長量 32mm	2.3.2.1.3 腿部模型 較高性能限制值 脛骨彎曲力矩 282Nm 內側副韌帶(MCL)伸長量 19mm 前十字韌帶(ACL)/後十字韌帶(PCL)伸長量 10mm 較低性能限制值 脛骨彎曲力矩 340Nm 內側副韌帶(MCL)伸長量 22mm 前十字韌帶(ACL)/後十字韌帶(PCL)伸長量 10mm
1.3 Scoring & Visualisation 1.3.1 Scoring A maximum of 18 points are available for the	**1.3 Scoring & Visualisation** **1.3.1 Scoring** A maximum of 24 points is available for the	2.3.2.3 評分與圖示說明 2.3.2.3.1 評分 頭部模型試驗區域（自行車騎士、成	2.3.2.3 評分與圖示說明 2.3.2.3.1 評分 頭部模型試驗區域最高分為 24 分。網

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
headform test zone (cyclist, adult and child/small adult). The total score for all grid points is calculated as a percentage of the maximum achievable score, which is then multiplied by 18 points. The pelvis and femur will both be awarded a maximum of 4.5 points and the knee/tibia will be awarded a maximum of 9 points. A total of 36 points are available in the passive VRU protection assessment.	headform test zone. The total score for all grid points is calculated as a percentage of the maximum achievable score, which is then multiplied by 24 points. The bonnet leading edge and bumper test zone will be awarded a maximum of 6 points each. A total of 36 points are available in the pedestrian protection assessment.	人及兒童/小型成人）最高分為 18 分。網格點總分計算方式為最高可得分數百分比乘以 18 分。骨盆與股骨最高分皆為 4.5 分，膝部/脛骨最高分為 9 分。弱勢道路使用者被動安全保護評等總分最高 36 分。	格點總分計算方式為最高可得分數百分比乘以 24 分。前方車蓋前緣與保險桿試驗區域最高分各為 6 分。行人保護評等總分最高 36 分。
1.3.2 Headform Correction factor The data provided by the manufacturer is scaled using a correction factor, which is calculated based on any differences between predicted data and the verification tests performed. The verification points are randomly selected and distributed in line with the predicted colour distribution. … The correction factor is multiplied by the predicted score of all the grid points (excluding defaulted and blue points). The final score for the vehicle can never exceed 100% regardless of the correction factor.	**1.3.2 Headform Correction factor** The data provided by the manufacturer is scaled using a correction factor, which is calculated based on a number of verification tests performed. The verification points are randomly selected grid points, distributed in line with the predicted colour distribution. … The correction factor is multiplied to all the grid points (excluding defaulted and blue points). The final score for the vehicle can never exceed 100% regardless of the correction factor.	2.3.2.3.2 頭部模型修正係數 車輛業者提供之數據將根據預測數據與驗證試驗表現間之差異，套用修正係數進行調整。驗證試驗點為隨機挑選，且符合預測顏色之分佈。 … 將修正係數乘以所有網格點預測分數（除預設與藍色分數外）。無論修正係數數值為何，車輛最終得分不可超過 100%。	2.3.2.3.2 頭部模型修正係數 將車輛業者提供之數據根據驗證試驗表現，套用修正係數進行調整。驗證試驗點為隨機挑選，且符合預測顏色之分佈。 … 將修正係數乘以所有網格點預測分數（除預設與藍色分數外）。無論修正係數數值為何，車輛最終得分不可超過 100%。

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
1.3.2.2 **Example:** (請參閱末頁表格)	**1.3.2.2 Example:** (請參閱末頁表格)	2.3.2.3.2.2 範例： (請參閱末頁表格)	2.3.2.3.2.2 範例： (請參閱末頁表格)
1.3.2.3 **Upper Legform - Pelvis** Each of the grid points can be awarded up to one point resulting in a maximum total of points equal to the number of grid points. A linear sliding scale is applied between the relevant limits of each parameter. The upper legform performance for each grid point is based upon the worst performing parameter. The total score for the upper legform area will be calculated out of 4.5 points by scaling the sum of grid points score by the relevant number of grid points. Example: (請參閱末頁表格)	**1.3.2.3 Upper Legform** Each of the grid points can be awarded up to one point resulting in a maximum total of points equal to the number of grid points. A linear sliding scale is applied between the relevant limits of each parameter. The upper legform performance for each grid point is based upon the worst performing parameter. The total score for the upper legform area will be calculated out of six by scaling the sum of grid points score by the relevant number of grid points. Example: (請參閱末頁表格)	2.3.2.3.2.3 上腿部模型-骨盆 各網格點最高分為 1 分，總分最高等於網格點總數。各參數相關限制值將以浮動計算法進行計算。上腿部模型各網格點性能得分將以最差表現參數計。 上腿部模型區域總分最高為 4.5 分，總分計算方式為各網格點得分加總除以網格點總數再乘以 4.5。 範例： (請參閱末頁表格)	2.3.2.3.2.3 上腿部模型 各網格點最高分為 1 分，總分最高等於網格點總數。各參數相關限制值將以浮動計算法進行計算。上腿部模型各網格點性能得分將以最差表現參數計。 上腿部模型區域總分最高為 6 分，總分計算方式為各網格點得分加總除以網格點總數再乘以六。 範例： (請參閱末頁表格)
1.3.2.4 **aPLI** Each of the grid points can be awarded up to one point resulting in a maximum total of points equal to the number of grid points. A linear sliding scale is applied between the relevant limits of the three parameters. The femur performance for each grid point is based upon the worst performing femur	**1.3.2.4 Legform** Each of the grid points can be awarded up to one point resulting in a maximum total of points equal to the number of grid points. A linear sliding scale is applied between the relevant limits of each parameter. The one point per grid point is divided into two independent assessment areas of equal	2.3.2.3.2.4 aPLI 各網格點最高分為 1 分，總分最高會等於網格點總數。三項參數相關限制值將以浮動計算法進行計算。各網格點之股骨性能將以股骨彎曲力矩最差性能表現計。膝部及脛骨性能將以兩項個別評等參數（內側副	2.3.2.3.2.4 腿部模型 各網格點最高分為 1 分，總分最高會等於網格點總數。各參數相關限制值將以浮動計算法進行計算。各衝擊點之 1 分平均分給下述二個影響程度相同(Equal weight)之獨立評等區域（脛骨傷害及內側副韌帶伸長量）：

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
bending moment. The knee and tibia performance is based upon the lowest of the two individual assessment parameters (MCL and maximum tibia bending moment). The total score for the femur will be calculated out of 4.5 and for the knee/tibia it will be out of 9 points. The sum of grid points scores will then be scaled down by the relevant number of grid points for each of those two regions. Example: (請參閱末頁表格)	weight: 1. Tibia injury assessment based on the worst performing of tibia moments T1, T2, T3, T4 (0.500 point). 2. Knee injury assessment based upon MCL elongation, as long as ACL/PCL elongation is smaller than the threshold (0.500 point). The total score for the legform area will be calculated out of six by scaling down the sum of grid points scores by the relevant number of grid points. Example: (請參閱末頁表格)	韌帶(MCL)與脛骨最大彎曲力矩）最差性能表現計。 股骨總分最高為 4.5 分，膝部與脛骨總分最高為 9 分，總分計算方式為各網格點得分加總除以網格點總數再乘以兩部位個別總分。 範例： (請參閱末頁表格)	(1)脛骨傷害將根據脛骨彎曲力矩 T1、T2、T3、T4（0.500 分）最差表現進行評等。 (2)只要前十字韌帶/後十字韌帶伸長量小於限制值(Threshold)，則膝部傷害將以內側副韌帶伸長量進行評等（0.500 分）。 腿部區域總分最高為 6 分，總分計算方式為各網格點得分加總除以網格點總數再乘以六。 範例： (請參閱末頁表格)
1.3.3.2 **aPLI & upper legform results** The protection provided by each grid location is illustrated by a coloured point on an outline of the front of the car. The colour used is based on the points awarded for that test site (rounded to three decimal places), as follows:	**1.3.3.2 Legform & upper legform results** The protection provided by each grid location is illustrated by a coloured point on an outline of the front of the car. The colour used is based on the points awarded for that test site (rounded to three decimal places), as follows:	2.3.2.3.3.2 aPLI 與上腿部模型結果 各網格位置之保護程度將以色塊呈現於車輛前方輪廓。色塊顏色係根據該試驗點得分（四捨五入取到小數點第三位）決定，如下表： 綠　　網格點得分　＝ 1.000	2.3.2.3.3.2 腿部模型與上腿部模型結果 各網格位置之保護程度將以色塊呈現於車輛前方輪廓。色塊顏色係根據該試驗點得分（四捨五入取到小數點第三位）決定，如下表： 綠　　網格點得分　＝ 1.000

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
Green grid point score = 1.000	*Green grid point score = 1.000*	黃 0.750 ≤ 網格點得分 < 1.000	黃 0.750 ≤ 網格點得分 < 1.000
Yellow 0.750 <= grid point score < 1.000	*Yellow 0.750 <= grid point score < 1.000*	橘 0.500 ≤ 網格點得分 < 0.750	橘 0.500 ≤ 網格點得分 < 0.750
Orange 0.500 <= grid point score < 0.750	*Orange 0.500 <= grid point score < 0.750*	棕 0.001 ≤ 網格點得分 < 0.500	棕 0.250 ≤ 網格點得分 < 0.500
Brown 0.001 <= grid point score < 0.500	*Brown 0.250 <= grid point score < 0.500*	紅 0.000 = 網格點得分	紅 0.000 ≤ 網格點得分 < 0.250
Red 0.000 <= grid point score	*Red 0.000 <= grid point score < 0.250*		

2025年版Euro NCAP規章	2022年版Euro NCAP規章
1.3.2.2 **Example:** Headform testing: Manufacturer X has provided the following prediction to Euro NCAP with a total score of 144 points (excluding blue) out of the possible 232 points:  The prediction consists of the following: *68 Green x 1.00 = 68.00* *58 Yellow x 0.75 = 43.50* *56 Orange x 0.50 = 28.00* *18 Brown x 0.25 = 4.50* *4 Red x 0.00 = 0.00* *23 Default Red x 0.00 = 0.00* *5 Blue* ***232 grid points 144.00 points***	**1.3.2.2 Example:** *Headform testing:* Manufacturer X has provided the following prediction to Euro NCAP with a total score of 90 points (excluding blue) out of the possible 195:  The prediction consists of the following: *15 Default Green x 1.00 = 15.00* *30 Green x 1.00 = 30.00* *30 Yellow x 0.75 = 22.50* *30 Orange x 0.50 = 15.00* *30 Brown x 0.25 = 7.50* *30 Red x 0.00 = 0.00* *15 Default Red x 0.00 = 0.00* *15 Blue* ***195 grid points 90.00 points***

10 verification points were chosen for testing:

VERIFICATION								
Testpoint	Prediction	Value	Points		Testpoint	Prediction	Value	Points
11,+3		1558.20	0.250					
8,-6		705.40	0.750					
7,+6		921.70	0.750					
13,-1		800.50	0.750					
6,0		350.10	1.000					
5,+7		1010.50	0.500					
4,+1		550.80	1.000					
14,-5		958.20	0.500					
9,-2		805.70	0.750					
11,+5		1432.30	0.250					
Total	7.000		6.500		Total	0.000		0.000

Correction factor	0.929

$$Correction\ Factor = \frac{Actual\ tested\ score}{Predicted\ score} = \frac{6.50}{7.00} = 0.929$$

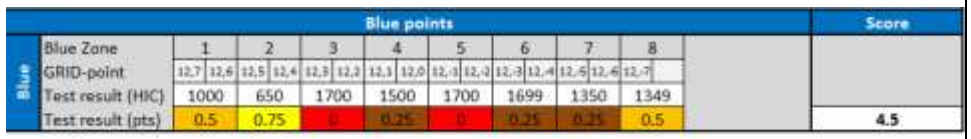
3 Blue zones were tested containing 5 blue points:

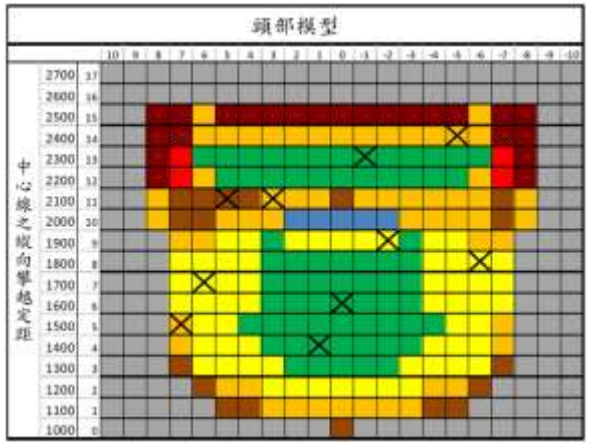
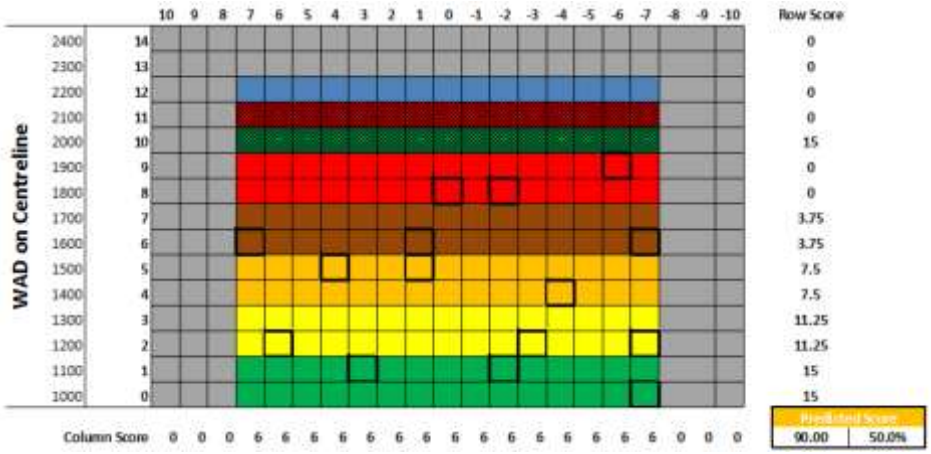
BLUE POINTS								
Zone	GRID-point	Value	Points		Zone	GRID-point	Value	Points
1	10,2	998.5	0.75		5			
	10,1		0.75					
2	10,0	1650.2	0.25		6			
	10,-1		0.25					
3	10,-2	1399.6	0.25		7			
4					8			
Total blue points							2.250	

15 verification points were chosen for testing:

$$Correction\ Factor = \frac{Actual\ tested\ score}{Predicted\ score} = \frac{6.00 + 1.75}{6.00 + 1.50} = 1.033$$

8 Blue zones were tested containing 15 blue points:



The final score will be: *204 Predicted 144.00 x 0.929 = 133.776* *23 Default Red* 0.000 *5 Blue 2.250* ***232 grid points 136.026 points*** The score in terms of percentage of the maximum achievable score is 136.026/232 = 58.632% The final headform score out of a maximum of 18 points is 58.632% x 18 = **10.554 points**	**The final score will be:** *150 Predicted 75.00 x 1.033 = 77.475* *15 Default Green 15.000* *15 Default Red 0.000* *15 Blue 4.500* ***195 grid points 96.975 points*** The score in terms of percentage of the maximum achievable score is 96.975/195 = 49.730% The final headform score is 49.730% x 24 = **11.935 points**
修訂TNCAP條文草案(第三版)	對應TNCAP第二版規章
2.3.2.3.2.2 範例： 頭部模型試驗： 某車輛業者提供 TNCAP 以下預測，滿分 232 中得分 144 分（不含藍色）： 	2.3.2.3.2.2 範例： 頭部模型試驗： 某車輛業者提供 TNCAP 以下預測，滿分 195 中得分 90 分（不含藍色）： 

預測包括：

68 綠	× 1.00	= 68.00
58 黃	× 0.75	= 43.50
56 橘	× 0.50	= 28.00
18 棕	× 0.25	= 4.50
4 紅	× 0.00	= 0.00
23 預設紅	× 0.00	= 0.00
5 藍		

232 網格點總數　144.00 分

挑選 10 個驗證點進行測試：

驗證

試驗點	預測	HIC值	分數		試驗點	預測	HIC值	分數
11,+3		1558.20	0.250					
8,-6		705.40	0.750					
7,+6		921.70	0.750					
13,-1		800.50	0.750					
6,0		350.10	1.000					
5,+7		1010.50	0.500					
4,+1		550.80	1.000					
14,-5		958.20	0.500					
9,-2		805.70	0.750					
11,+5		1432.30	0.250					
合計	7		6.500		合計	0		0.000

修正係數	0.929

$$\text{修正係數} = \frac{\text{實際試驗分數}}{\text{預測分數}} = \frac{6.50}{7.00} = 0.929$$

預測包括：

15 預設綠	× 1.00	= 15.00
30 綠	× 1.00	= 30.00
30 黃	× 0.75	= 22.50
30 橘	× 0.50	= 15.00
30 棕	× 0.25	= 7.50
30 紅	× 0.00	= 0.00
15 預設紅	× 0.00	= 0.00
15 藍		

195 網格點總數　90.00 分

挑選 15 個驗證點進行測試：

驗證

	網格點	R2	C-7	R2	C-3	R1	C-2	R4	C-4	R5	C1	R5	C4	R8	C-2	R6	C-7	R2	C6	R1	C3	分數
01-1	預測																					6
	試驗結果(HIC)	750		600		500		1200		1492		850		2000		1400		1112		660		
	試驗結果(分)	0.75		0.75		1		0.5		0.5		0.75		0		0.25		0.5		1		6
02-1	網格點	R8	C0	R6	C7	R0	C-7	R9	C-6	R6	C1											
	預測																					1.50
	試驗結果(HIC)	2000		1822		700		1544		1450												
	試驗結果(分)	0		0.25		1		0.25		0.25												1.75
																					修正係數	1.033

$$\text{修正係數} = \frac{\text{實際試驗分數}}{\text{預測分數}} = \frac{6.00 + 1.75}{6.00 + 1.50} = 1.033$$

測試 3 個藍色區域，共計 5 藍點：

藍點								
區域	網格點	HIC值	分數		區域	網格點	HIC值	分數
1	10,2	998.5	0.75		5			
	10,1		0.75					
2	10,0	1650.2	0.25		6			
	10,-1		0.25					
3	10,-2	1399.6	0.25		7			
4					8			
合計藍點分數							2.250	

最終分數：

204 預測　144.00×0.929＝133.776

23 預設紅　0.000

5 藍　2.250

232 網格點　136.026 分

總分換算成最高得分之百分比為 136.026/232＝58.632%。

頭部模型最終得分（滿分 18 分）為 58.632% × 18＝10.554 分。

測試 8 個藍色區域，共計 15 藍點：

藍點																分數
藍色區域	1		2		3		4		5		6		7		8	
網格點	12,7	12,6	12,5	12,4	12,3	12,2	12,1	12,0	12,-1	12,-2	12,-3	12,-4	12,-5	12,-6	12,-7	
試驗結果(HIC)	1000		650		1700		1500		1700		1699		1350		1349	
試驗結果(分)	0.5		0.75		0		0.25		0		0.25		0.25		0.5	4.5

最終分數：

150 預測　75×1.033＝77.475

15 預設綠　15.000

15 預設紅　0.000

15 藍　4.500

195 網格點　96.975 分

總分換算成最高得分之百分比為 96.975/195＝49.730%。

頭部模型最終得分為 49.730% × 24=11.935 分。

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章
1.3.2.3 **Upper Legform - Pelvis** … Example: For a vehicle that has 9 grid points and tests are performed to points U0, U-2 & U-4 with the following results: **Test result U0** **Score** **Total** Femur sum of forces = 5.26kN 0.740 **0.740** **Test result U-2** **Score** **Total** Femur sum of forces = 6.80kN 0.000 **0.000** **Test result U-4** **Score** **Total** Femur sum of forces = 4.89kN 1.000 **1.000**	**1.3.2.3 Upper Legform** … Example: For a vehicle that has 9 grid points and tests are performed to points U0, U-2 & U-4 with the following results: **Test result U0** **Score** **Total** Femur upper bending moment = 281.40Nm 1.000 Femur middle bending moment = 342.60Nm 0.114 => **0.114** Femur lower bending moment = 324.10Nm 0.398 Femur sum of forces = 5.26kN 0.740 **Test result U-2** **Score** **Total** Femur upper bending moment = 395.81Nm 0.000 **0.000** Femur middle bending moment = 467.69Nm 0.000 Femur lower bending moment = 435.69Nm 0.000 Femur sum of forces = 6.80kN 0.000 **Test result U-4** **Score** **Total** Femur upper bending moment = 152.00Nm 1.000 **1.000** Femur middle bending moment = 208.00Nm 1.000 Femur lower bending moment = 245.00Nm 1.000 Femur sum of forces = 4.89kN 1.000

Grid points that have not been tested will be awarded the worst result from one of the adjacent points. Given that U-1 and U-3 have not been tested, both will be awarded the result from the adjacent point U-2. Symmetry will also be applied to all grid points on the opposite side of the vehicle (U+1 to U+4). U+4 U+3 U+2 U+1 U0 U-1 U-2 U-3 U-4 1.000 0.0 0.0 0.0 0.740 0.0 0.0 0.0 1.000 The score for each individual grid point is then summed, this produces a score in terms of the maximum achievable percentage of 2.740/9 = 30.444% The final upper legform score is 30.444% x 4.5 = **1.370 points**	Grid points that have not been tested will be awarded the worst result from one of the adjacent points. Given that U-1 and U-3 have not been tested, both will be awarded the result from the adjacent point U-2. Symmetry will also be applied to all grid points on the opposite side of the vehicle (U+1 to U+4). U+4 U+3 U+2 U+1 U0 U-1 U-2 U-3 U-4 1.000 0.0 0.0 0.0 0.114 0.0 0.0 0.0 1.000 The score for each individual grid point is then summed, this produces a score in terms of the maximum achievable percentage of 2.114/9 = 23.488% The final upper legform score is 23.488% x 6 = **1.409 points**
修訂TNCAP條文草案(第三版)	對應TNCAP第二版規章
2.3.2.3.2.3 上腿部模型-骨盆 … 範例： 若某車輛共有9個網格點，U0、U-2及U-4試驗結果得分如下： 試驗結果 U0 分數 總計 股骨衝擊力總和 = 5.26kN 0.740 0.740 試驗結果 U-2 分數 總計 股骨衝擊力總和 = 6.80kN 0.000 0.000	2.3.2.3.2.3 上腿部模型 … 範例： 若某車輛共有9個網格點，U0、U-2及U-4試驗結果得分如下： 試驗結果 U0 分數 總計 股骨上彎曲力矩= 281.40Nm 1.000 股骨中彎曲力矩= 342.60Nm 0.114 0.114 股骨下彎曲力矩= 324.10Nm 0.398 股骨衝擊力總和= 5.26kN 0.740 試驗結果 U-2 分數 總計 股骨上彎曲力矩= 395.81Nm 0.000 0.000

	股骨中彎曲力矩= 467.69Nm 0.000 股骨下彎曲力矩= 435.69Nm 0.000 股骨衝擊力總和= 6.80kN 0.000
試驗結果 U-4 分數 總計 股骨衝擊力總和 ＝4.89kN 1.000 1.000	試驗結果 U-4 分數 總計 股骨上彎曲力矩= 152.00Nm 1.000 1.000 股骨中彎曲力矩= 208.00Nm 1.000 股骨下彎曲力矩= 245.00Nm 1.000 股骨衝擊力總和= 4.89kN 1.000
未執行測試之網格點將以相鄰點最差結果給分。由於 U-1 及 U-3 未執行測試，因此將直接套用相鄰點 U-2 結果給分。車輛另一側之所有網格點（U+1 至 U+4）將以對稱方式直接套用分數。	未執行測試之網格點將以相鄰點最差結果給分。由於 U-1 及 U-3 未執行測試，因此將直接套用相鄰點 U-2 結果給分。車輛另一側之所有網格點（U+1 至 U+4）將以對稱方式直接套用分數。
U+4 U+3 U+2 U+1 U0 U-1 U-2 U-3 U-4 1.000 0.0 0.0 0.0 0.740 0.0 0.0 0.0 1.000	U+4 U+3 U+2 U+1 U0 U-1 U-2 U-3 U-4 1.000 0.0 0.0 0.0 0.114 0.0 0.0 0.0 1.000
各網格點得分加總後，計算最高得分之百分比：2.740/9 = 0.444%。 上腿部模型最終得分為 30.444% × 4.5 = 1.370 分	各網格點得分加總後，計算最高得分之百分比：2.114/9 = 3.488%。 上腿部模型最終得分為23.488% ×6 = 1.409分

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章
1.3.2.4 **aPLI** … Example: For a vehicle that has 11 bumper test zone grid points and tests are performed to points L1, L+3 & L+5 with the following results: **Femur** **Test result L+1 Score Total** Max Femur Bending Moment = 400Nm 0.800 **0.800** **Test result L+3 Score Total** Max Femur Bending Moment = 438Nm 0.040 **0.040** **Test result L+5 Score Total** Max Femur Bending Moment = 385Nm 1.000 **1.000** **Knee & Tibia** **Test result L+1 Score Total** Tibia Bending Moment = 257Nm 1.000 1.000 MCL Elongation = 20mm 1.000 **Test result L+3 Score Total** Tibia Bending Moment = 300Nm 0.444 0.444 MCL Elongation = 29mm 0.600	**1.3.2.4 Legform** … Example: For a vehicle that has 11 grid points and tests are performed to points L1, L+3 & L+5 with the following results: **Test result L+1 Score Total** Tibia bending moment = 280.00Nm 0.500 0.500 ACL or PCL elongation = 10.00mm Fail } 0.000 **0.500** MCL elongation = 15.00mm 0.500 **Test result L+3 Score Total** Tibia bending moment = 320.00Nm 0.172 0.172 ACL or PCL elongation = 9.50mm Pass } 0.250 **0.422** MCL elongation = 20.50mm 0.250

Test result L+5	Score	Total
Tibia Bending Moment = 225Nm	1.000	
MCL Elongation = 36mm	0.000	0.000

Grid points that have not been tested will be awarded the worst result from one of the adjacent points. Given that L0, L+2 & L+4 have not been tested, L0 will be awarded the score from L+1, L+2 will be awarded the score from L+3 and L+4 will be awarded the score from L+5. Symmetry will also be applied to the other side of the vehicle.

Femur

L+5	L+4	L+3	L+2	L+1	L0	L-1	L-2	L-3	L-4	L-5
1.000	0.040	0.040	0.040	0.800	0.800	0.800	0.040	0.040	0.040	1.000

The score for each individual grid point is then summed, this produces a score in terms of the maximum achievable percentage of 4.640/11 = 42.182%

The final Femur score is 42.182% x 4.5 = **1.898 points**

Knee/tibia

L+5	L+4	L+3	L+2	L+1	L0	L-1	L-2	L-3	L-4	L-5
0.000	0.000	0.444	0.444	1.000	1.000	1.000	0.444	0.444	0.000	0.000

The score for each individual grid point is then summed, this produces a score in terms of the maximum achievable percentage of 4.776/11 = 43.418%

The final knee/tibia score is 43.418% x 9 = **3.908 points**

Test result L+5	Score		Total
Tibia bending moment = 340.00Nm	0.000	0.000	
ACL or PCL elongation = 10.00mm	Fail	0.000	**0.000**
MCL elongation = 19.00mm	0.000		

Grid points that have not been tested will be awarded the worst result from one of the adjacent points. Given that L0, L+2 & L+4 have not been tested, L0 will be awarded the score from L+1, L+2 will be awarded the score from L+3 and L+4 will be awarded the score from L+5. Symmetry will also be applied to the other side of the vehicle.

L+5 L+4 L+3 L+2 L+1 L0 L-1 L-2 L-3 L-4 L-5

0.0 0.0 0.422 0.422 0.500 0.500 0.500 0.422 0.422 0.0 0.0

The score for each individual grid point is then summed, this produces a score in terms of the maximum achievable percentage of 3.188/11 = 28.981%

The final upper legform score is 28.981% x 6 = **1.739 points**

修訂TNCAP條文草案(第三版)	對應TNCAP第二版規章
2.3.2.3.2.4 aPLI … 範例： 若某車輛共有 11 個保險桿試驗區域網格點，L1、L+3 及 L+5 試驗結果得分如下： **股骨** 試驗結果 L+1 分數 總分 最大股骨彎曲力矩= 400Nm 0.800 0.800 試驗結果 L+3 分數 總分 最大股骨彎曲力矩= 438Nm 0.040 0.040 試驗結果 L+5 分數 總分 最大股骨彎曲力矩= 385Nm 1.000 1.000 **膝部與脛骨** 試驗結果 L+1 分數 總分 脛骨彎曲力矩 =257Nm 1.000 1.000 MCL 伸長量 =20mm 1.000	2.3.2.3.2.4 腿部模型 … 範例： 若某車輛共有 11 個網格點，L1、L+3 及 L+5 試驗結果得分如下： 試驗結果 L+1 分數 總分 脛骨彎曲力矩 =280.00Nm 0.500 0.500 ACL 或 PCL 伸長量 =10.00mm 未通過 0.000

試驗結果 L+3	分數	總分
脛骨彎曲力矩= 300Nm	0.444	0.444
MCL 伸長量 ＝29mm	0.600	

試驗結果 L+5	分數	總分
脛骨彎曲力矩= 225Nm	1.000	
MCL 伸長量= 36mm	0.000	0.000

未執行測試之網格點將以相鄰點最差結果給分；由於 L0、L+2 及 L+4 未執行測試，因此 L+1 得分將直接套用至 L0、L+3 得分直接套用至 L+2 且 L+5 得分直接套用至 L+4。車輛另一側之所有網格點將以對稱方式直接套用分數。

股骨

L+5	L+4	L+3	L+2	L+1	L0	L-1	L-2	L-3	L-4	L-5
1.000	0.040	0.040	0.040	0.800	0.800	0.800	0.040	0.040	0.040	1.000

各網格點得分加總後，計算最高得分之百分比：4.640/11 = 42.182%
股骨最終得分為 42.182% × 4.5 = 1.898 分

膝部與脛骨

L+5	L+4	L+3	L+2	L+1	L0	L-1	L-2	L-3	L-4	L-5

MCL 伸長量 ＝15.00mm	0.500	
		=0.500
試驗結果 L+3	分數	總分
脛骨彎曲力矩= 320.00Nm	0.172	0.172
ACL 或 PCL 伸長量 ＝9.50mm	通過	0.250
MCL 伸長量 ＝20.50mm	0.250	
		=0.422

試驗結果 L+5	分數	總分
脛骨彎曲力矩= 340.00Nm	0.000	0.000
ACL 或 PCL 伸長量= 10.00mm	未通過	0.000
MCL 伸長量= 19.00mm	0.000	
		=0.000

未執行測試之網格點將以相鄰點最差結果給分；由於 L0、L+2 及 L+4 未執行測試，因此 L+1 得分將直接套用至 L0、L+3 得分直接套用至 L+2 且 L+5 得分直接套用至 L+4。車輛另一側之所有網格點將以對稱方式直接套用分數。

L+5	L+4	L+3	L+2	L+1	L0	L-1	L-2	L-3	L-4	L-5

0.000 0.000 0.444 0.444 1.000 1.000 1.000 0.444 0.444 0.000 0.000 各網格點得分加總後，計算最高得分之百分比：4.776/11 = 43.418% 膝部與脛骨最終得分為 43.418% × 9 = 3.908 分	0.0 0.0 0.422 0.422 0.500 0.500 0.500 0.422 0.422 0.0 0.0 各網格點得分加總後，計算最高得分之百分比：3.188/11 = 28.981% 腿部模型最終得分為 28.981% × 6 = 1.739 分

3.9弱勢道路使用者試驗規章
Euro NCAP Vulnerable Road User Testing Protocol Version 9.1

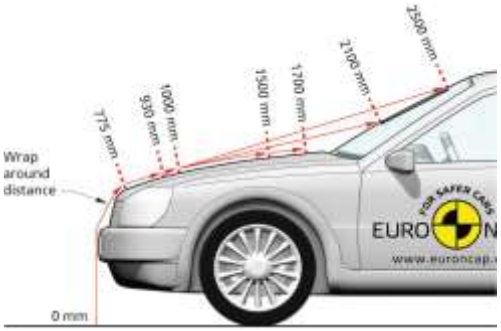
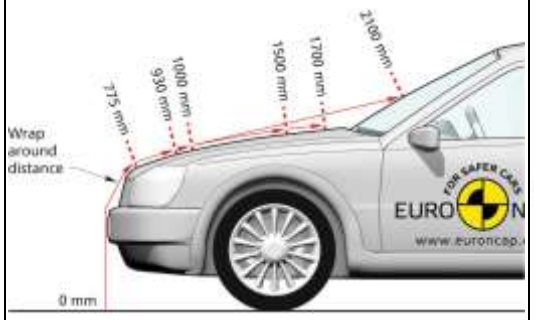
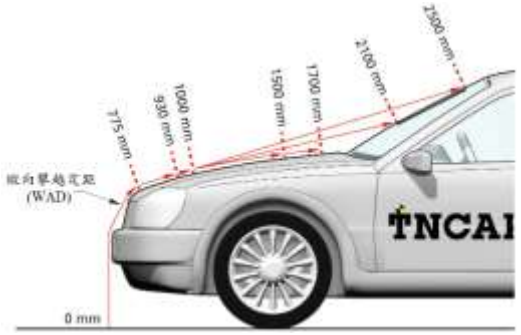
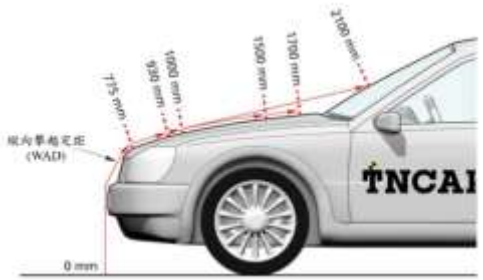
2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
1 VEHICLE PREPARATION **1.1 Unladen Kerb Weight** **…** 1.1.7 Where the vehicle has been supplied directly by the OEM and has a license plate holder attached, this shall not be removed for testing. If the vehicle has been sourced from a dealership, license plate holders that have been added to the vehicle shall be removed.	**1 VEHICLE PREPARATION** **1.1 Unladen Kerb Weight** **…** 1.1.7 Remove the front vehicle license plate and its holder/brackets if these are removable from the bumper.	3.9.1 車輛整備 3.9.1.1 空車重量 … 3.9.1.1.7 若車輛出廠即附有車牌架，則試驗不得將其移除。	3.9.1 車輛整備 3.9.1.1 空車重量 … 3.9.1.1.7 若能自保險桿移除，則移除前方車牌及車牌架/框。
2 ASSESSMENT OF VEHICLES WITH DEPLOYABLE SYSTEMS **…** **2.2 Detection of Pedestrians** … 2.2.2.9 The simulations will be conducted at two separate locations on the bumper. For each of the appropriate statures simulations will be performed on the vehicle centreline and at the outboard end of the bumper test zone defined in Section 3.9.8. An additional simulation may be required where the	**2 ASSESSMENT OF VEHICLES WITH DEPLOYABLE SYSTEMS** **…** **2.2 Detection of Pedestrians** … 2.2.2.9 The simulations will be conducted at two separate locations on the bumper. For each of the appropriate statures simulations will be performed on the vehicle centreline and at the outboard end of the bumper test zone defined in Section 3.8.8. An additional simulation may be required where the	3.9.2 開展式系統(Deployable system)之車輛評等 … 3.9.2.2 行人偵測 … 3.9.2.2.2.9 模擬應於保險桿兩個不同位置進行。各適當人偶之模擬應於車輛中線及保險桿試驗區域外側端處（如 3.9.3.9.8 規定）進行。若保險桿試驗區域較可移動式前方車蓋頂部寬處狹窄，則可進行額外模擬。	3.9.2 開展式系統(Deployable system)之車輛評等 … 3.9.2.2 行人偵測 … 3.9.2.2.2.9 模擬應於保險桿兩個不同位置進行。各適當人偶之模擬應於車輛中線及保險桿試驗區域外側端處（如 3.9.3.8.8 規定）進行。若保險桿試驗區域較可移動式前方車蓋頂部寬處狹窄，則可進行額外模擬。

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
bumper test zone is relatively narrow when compared to the width of the moveable bonnet top.	bumper test zone is relatively narrow when compared to the width of the moveable bonnet top.		
2.2.3 Physical testing will be used to assess the capability of the sensing system(s). As a surrogate for a pedestrian that is larger/heavier than a 50th percentile male, the legform detailed in 2.2.3.2 (test 4) for legform to bumper tests shall be used. This is to ensure that the system deploys when impacting larger or 'upper limit' pedestrians.	2.2.3 Physical testing will be used to assess the capability of the sensing system(s). As a surrogate for a pedestrian that is larger/heavier than a 50th percentile male, the legform detailed in Section 9 for legform to bumper tests shall be used. This is to ensure that the system deploys when impacting larger or 'upper limit' pedestrians.	3.9.2.2.3 使用物理試驗評估感測系統能力。試驗時，對於比第 50 百分位男性高大/重的行人，應使用 3.9.2.2.3.2(試驗 4)保險桿腿部模型試驗詳述之腿部模型(Legform)替代。此規範可確保撞擊到較高大或「最高限制(Upper limit)」之行人，系統仍能作動。	3.9.2.2.3 使用物理試驗評估感測系統能力。試驗時，對於比第 50 百分位男性高大/重的行人，應使用 3.9.9 保險桿腿部模型試驗詳述之腿部模型(Legform)替代。此規範可確保撞擊到較高大或「最高限制(Upper limit)」之行人，系統仍能作動。
2.2.3.2 Test matrix: (請參閱末頁表格)	2.2.3.2 Test matrix: (請參閱末頁表格)	3.9.2.2.3.2 試驗矩陣： (請參閱末頁表格)	3.9.2.2.3.2 試驗矩陣： (請參閱末頁表格)
3 VEHICLE MARKING … 3.1.5 A comparison of the grid origin C0,0 and two other points on WAD 2100, will be made between the laboratory mark out and the data provided by the vehicle manufacturer. For manufacturer predicted data to be accepted, grid points must be within 10mm of each other.	**3 VEHICLE MARKING** … 3.1.5 A comparison of the grid origin C0,0 and two other points on 2100WAD, will be made between the laboratory mark out and the data provided by the vehicle manufacturer. For manufacturer predicted data to be accepted, grid points must be within 10mm of each other.	3.9.3 車輛標記 … 3.9.3.1.5 比較檢測機構標記與車輛業者提供之原點 C0,0 及 WAD 2100mm 上之兩點。上述網格點距離若在 10mm 範圍內，車輛業者預測數據才會被接受。	3.9.3 車輛標記 … 3.9.3.1.5 比較檢測機構標記與車輛業者提供之原點 C0,0 及 WAD2100 上之兩點。上述網格點距離若在 10mm 範圍內，車輛業者預測數據才會被接受。

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
3.1.10 For vehicles fitted with deployable systems, the WAD 775mm and WAD 930mm will be marked on the vehicle with the system in the un-deployed state. If deployment occurs prior to the pedestrian contact with the WAD 775mm, creating an increased hazard such as increased height, the Euro NCAP secretariat will give consideration to marking out the WAD 775mm and WAD 930mm in the deployed state.	3.1.10 For vehicles fitted with deployable systems, the WAD775mm and WAD930mm will be marked on the vehicle with the system in the un-deployed state. If deployment occurs prior to the pedestrian contact with the WAD775mm, creating an increased hazard such as increased height, the Euro NCAP secretariat will give consideration to marking out the WAD775 and WAD930mm in the deployed state.	3.9.3.1.10 針對配備開展式系統之車輛，WAD 775mm 及 WAD 930mm 將於車輛系統未開展狀態下進行標記。若開展式系統於行人接觸 WAD 775mm 前即作動，導致因高度上升等原因風險增加，則 TNCAP 執行機構將考慮於開展狀態下標記 WAD 775mm 及 WAD 930mm。	3.9.3.1.10 針對配備開展式系統之車輛，WAD775 及 WAD930mm 將於車輛系統未開展狀態下進行標記。若開展式系統於行人接觸 WAD775mm 前即作動，導致因高度上升等原因風險增加，則 TNCAP 執行機構將考慮於開展狀態下標記 WAD775 及 WAD930mm。
3.1.11 Where the vehicle manufacturer provides data showing that a deployable system offers protection to the upper leg, the upper legform tests will be carried out by conducting dynamic tests. The WAD 775mm and WAD 930mm will be marked on the vehicle in the deployed position.	3.1.11 Where the vehicle manufacturer provides data showing that a deployable system offers protection to the upper leg, the upper legform tests will be carried out by conducting dynamic tests. The WAD775mm and WAD930mm will be marked on the vehicle in the deployed position.	3.9.3.1.11 若車輛業者提供之數據顯示開展式系統提供上腿部保護，則上腿部模型試驗將以動態試驗之型式進行。WAD 775mm 及 WAD 930mm 將於開展狀態下進行標記。	3.9.3.1.11 若車輛業者提供之數據顯示開展式系統提供上腿部保護，則上腿部模型試驗將以動態試驗之型式進行。WAD775 及 WAD930mm 將於開展狀態下進行標記。
3.2.5 Repeat Sections 3.2.3 to 3.2.4 moving the edge along the length of the wing, A-Pillar and Cant Rail if required (depending on the anticipated position of the 2500 Wrap Around Distance).	3.2.5 Repeat Sections 3.2.3 to 3.2.4 moving the edge along the length of the wing, A-Pillar and Cant Rail if required (depending on the anticipated position of the 2100 Wrap Around Distance).	3.9.3.2.5 重複 3.9.3.2.3 及 3.9.3.2.4，將直尺沿著葉子板、A 柱及側樑(Cant rail)（依實際狀況）（依 WAD 2500mm 之預期位置）移動。	3.9.3.2.5 重複 3.9.3.2.3 及 3.9.3.2.4，將直尺沿著葉子板、A 柱及側樑(Cant rail)（依實際狀況）（依 WAD2100 之預期位置）移動。

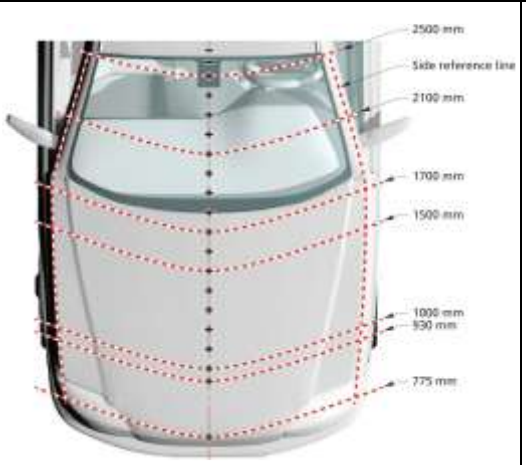
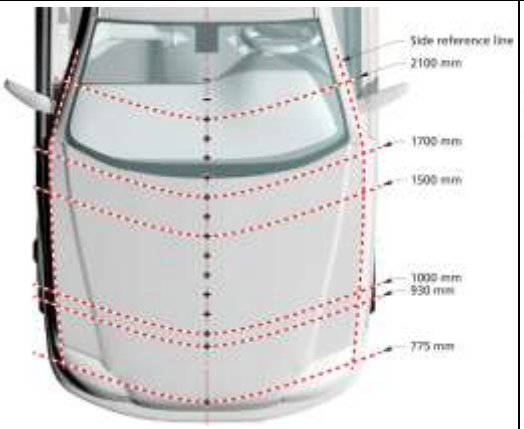
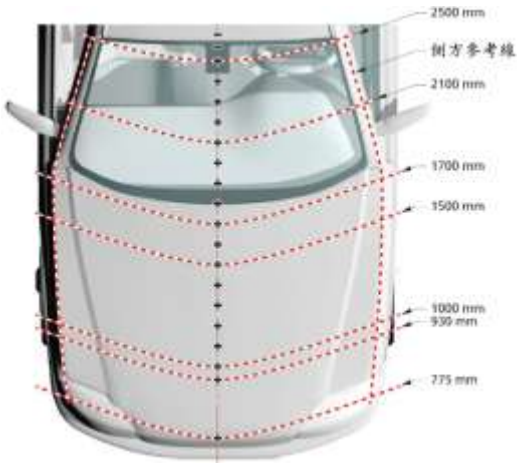
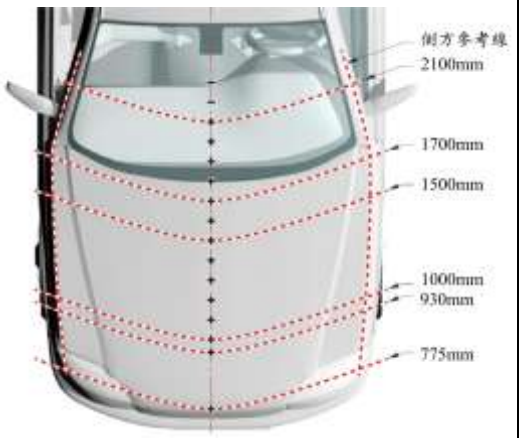
2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
3.2.8 A partial modification of the side reference lines may be necessary subsequent to the determination of the corner reference points according to Section 3.7.2.	3.2.8 A partial modification of the side reference lines may be necessary subsequent to the determination of the corner reference points according to Section 3.6.2.	3.9.3.2.8 依照 3.9.3.7.2 判定彎角參考點，可局部調整側方參考線。	3.9.3.2.8 依照 3.9.3.6.2 判定彎角參考點，可局部調整側方參考線。
3.5 Windscreen Rear Reference Line The windscreen rear reference line is defined as the physical rearmost edge of the visible windscreen glazing. Glazing at the rear edge of the windscreen that is behind a rubber seals will be counted as the roof. Where a there is no discernible boundary for the windscreen rear reference line e.g. the windscreen has formed part of the roof, then the windscreen rear reference line is defined as the geometric trace of the highest points of contact between a straight edge 700mm long and the front surface of the windscreen when the straight edge, held parallel to the longitudinal vertical plane of the car and inclined rearwards by 45°. 3.5.1 Beginning at the vehicle centreline draw a line outboard along the intersection of the rearmost glazing edge with the rubber seal up to the outboard edge of the glazing.		3.9.3.5 擋風玻璃後方參考線 擋風玻璃後方參考線係指擋風玻璃可見區域實體上最後之邊緣。擋風玻璃後緣且在橡膠密封件後方之玻璃視為車頂。若擋風玻璃後方參考線未有明確邊界（例如擋風玻璃為車頂一部分），則擋風玻璃後方參考線定義為以 700mm 長、平行於車輛縱向垂直平面且從垂直線向後傾斜 45 度之直尺，橫向掃掠擋風玻璃前方表面，其於擋風玻璃接觸之最高接觸點幾何軌跡。 3.9.3.5.1 從車輛中心線開始，沿著玻璃最後邊緣與橡膠密封件之交點向外側畫一條線，直到玻璃之外側邊緣。	

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
3.5.2 Using the template defined in Section 3.4.5, place it on the vehicle with corners 'A' and 'B' coincident with the side reference line. Ensuring these two corners remain coincident with the side reference line, the template shall be slid progressively rearwards until the arc of the template makes first contact with the bonnet rear reference line. If the contact between the template and windscreen rear reference line is tangential and the point of tangency lies outside the arc scribed by points 'C' and 'D', then the windscreen rear reference line is extended and/or modified to follow the circumferential arc of the template to meet the side reference line		3.9.3.5.2 使用 3.9.3.4.5 所定義之樣板，將其放置於車輛上，並使轉角 A 及轉角 B 與側方參考線重疊。確保前述轉角皆與側方參考線重疊之條件下，逐漸向後滑動樣板直到其弧線與擋風玻璃後方參考線首次接觸。若樣板與擋風玻璃後方參考線相切，且切點位於 C D 弧線外，則應沿著樣板之圓弧線延展及/或修正擋風玻璃後方參考線，使其與側方參考線相交。	
3.5.3 If the template does not make simultaneous contact with the side reference line at points 'A' and 'B' and tangentially with the windscreen rear reference line, or the point at which the windscreen rear reference line and template touch lies within the arc scribed by points 'C' and 'D', then additional templates shall be used where the		3.9.3.5.3 若無法同時使樣板 A 點及 B 點與側方參考線接觸，及與擋風玻璃後方參考線相切，或若擋風玻璃後方參考線與樣板之接觸點落在 C D 弧線上，則應另使用其他樣板，其半徑以 20mm 為增量逐漸加大，直到於符合上述所有認定條件下完成延展及/或修正擋風玻璃後方參考	

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
radii are increased progressively in increments of 20mm, until all the above criteria are met.		線。	
3.6 Marking Wrap Around Distances The headform test area is defined as the outer structure that includes the upper surface of all outer structures. It includes, but is not limited to, the bonnet, wings, windscreen scuttle, wiper arms/spindles, windscreen frame, A-pillars and roof. It is bounded by the geometric trace of the 1000mm wrap around line in the front, the Bonnet Side Reference Lines and the 2500mm wrap around distance (WAD).	**3.5 Marking Wrap Around Distances** The headform test area is defined as the outer structure that includes the upper surface of all outer structures. It includes, but is not limited to, the bonnet, wings, windscreen scuttle, wiper arms/spindles, windscreen frame, A-pillars and roof. It is bounded by the geometric trace of the 1000mm wrap around line in the front, the Bonnet Side Reference Lines and the 2100mm wrap around distance (WAD).	3.9.3.6 縱向攀越定距(WAD)標記 頭部模型試驗區域定義為車輛外部結構，包括所有外部結構之上部表面。試驗區域包含但不限於前方車蓋、葉子板、擋風玻璃之氣窗(Scuttle)、雨刷臂/轉軸(Spindle)、擋風玻璃框、A 柱與車頂，並以車輛前方結構 1000mm 縱向攀越定距線、前方車蓋側方參考線及 2500mm 縱向攀越定距之幾何軌跡為邊界。	3.9.3.5 縱向攀越定距(WAD)標記 頭部模型試驗區域定義為車輛外部結構，包括所有外部結構之上部表面。試驗區域包含但不限於前方車蓋、葉子板、擋風玻璃之氣窗(Scuttle)、雨刷臂/轉軸(Spindle)、擋風玻璃框、A 柱與車頂，並以車輛前方結構 1000mm 縱向攀越定距線、前方車蓋側方參考線及 2100mm 縱向攀越定距之幾何軌跡為邊界。
 Figure 9: Marking wrap around lines	 **Figure 9: Marking wrap around lines**	 圖 9：縱向攀越定距線標記	 圖 9：縱向攀越定距線標記

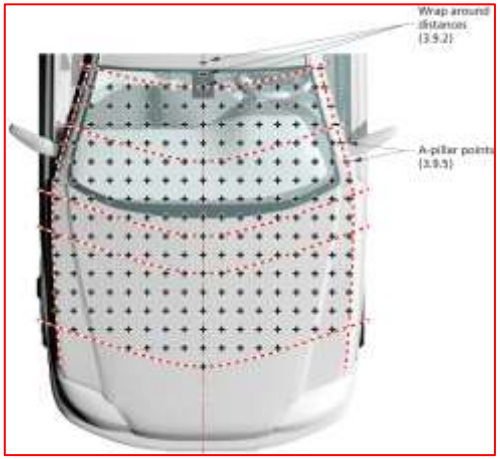
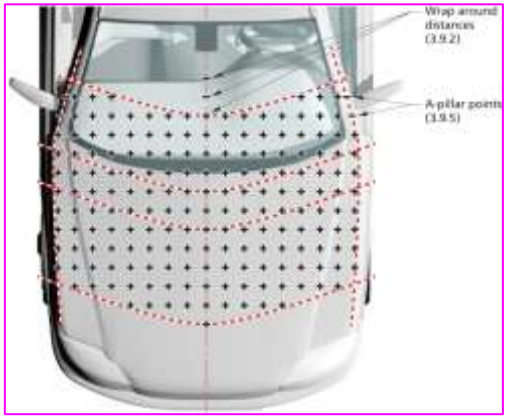
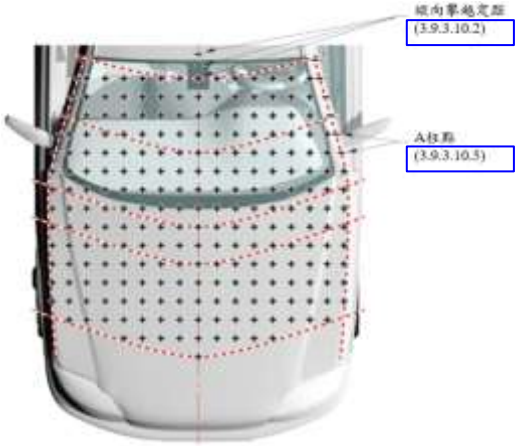
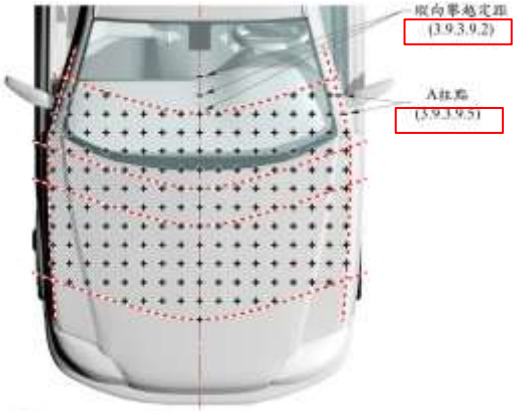
2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
3.6.4 Mark on the bumper/grille, bonnet top, windscreen, A-pillars and/or roof the wrap around distances of 775mm, 930mm, 1000mm, 1500mm, 1700mm, 2100mm and 2500mm. These are the geometric traces described on the outer surface of the vehicle by the end of flexible tape or wire 775mm, 930mm, 1000mm, 1500mm, 1700mm, 2100mm or 2500mm long, when it is held in a vertical fore/aft plane of the car and traversed across the front of the bonnet and bumper.	3.5.4 Mark on the bumper/grille, bonnet top, windscreen, A-pillars and/or roof the wrap around distances of 775mm, 930mm, 1000mm, 1500mm, 1700mm and 2100mm. These are the geometric traces described on the outer surface of the vehicle by the end of flexible tape or wire 775mm, 930mm, 1000mm, 1500mm, 1700mm or 2100mm long, when it is held in a vertical fore/aft plane of the car and traversed across the front of the bonnet and bumper.	3.9.3.6.4 於保險桿/網格護罩、前方車蓋頂部、擋風玻璃、A 柱及/或車頂標記 775mm、930mm、1000mm、1500mm、1700mm、2100mm 及 2500mm 之縱向攀越定距。由捲尺或刻度線之末端構成 775mm、930mm、1000mm、1500mm、1700mm、2100mm 或 2500mm 之車輛外部表面標記，其由車輛前/後垂直平面及橫向掃掠於車輛前方結構之前方車蓋與保險桿所形成之幾何軌跡。	3.9.3.5.4 於保險桿/網格護罩、前方車蓋頂部、擋風玻璃、A 柱及/或車頂標記 775mm、930mm、1000mm、1500mm、1700mm 及 2100mm 之縱向攀越定距。由捲尺或刻度線之末端構成 775mm、930mm、1000mm、1500mm、1700mm 或 2100mm 之車輛外部表面標記，其由車輛前/後垂直平面及橫向掃掠於車輛前方結構之前方車蓋與保險桿所形成之幾何軌跡。
3.6.7 Repeat steps 3.6.2 to 3.6.6 until the width of the vehicle has been marked up to the Side Reference Lines. 3.6.8 Join the points marked on the bonnet to form lines at wrap around distances of 775mm, 930mm, 1000mm, 1500mm, 1700mm, 2100mm and 2500mm. Points located on WAD 1000mm up to and including WAD 1500mm will be assessed using the child/small adult headform. Points rearward of WAD 1700mm up to and including WAD 2500mm will be assessed	3.5.7 Repeat steps 3.5.2 to 3.5.6 until the width of the vehicle has been marked up to the Side Reference Lines. 3.5.8 Join the points marked on the bonnet to form lines at wrap around distances of 775mm, 930mm, 1000mm, 1500mm, 1700mm and 2100mm. Points located from 1000mm to 1500mm WAD inclusive will be assessed using the child/small adult headform. Points from 1700mm to 2100 mm WAD inclusive will be assessed with the adult headform, see Figure 10.	3.9.3.6.7 重複 3.9.3.6.2 至 3.9.3.6.6 步驟，直到車寬至側方參考線範圍內皆已標記。 3.9.3.6.8 將前方車蓋 775mm、930mm、1000mm、1500mm、1700mm 及 2100mm 縱向攀越定距之標記點分別連成線。WAD 1000mm 至 WAD 1500mm 的點將用於兒童/小型成人頭部模型評等；WAD 1700mm 之後至 WAD 2500mm 的點則用於成人頭部模型評等，如圖 10 所示。在 WAD 1500mm 之後至 WAD 1700mm 區域	3.9.3.5.7 重複 3.9.3.5.2 至 3.9.3.5.6 步驟，直到車寬至側方參考線範圍內皆已標記。 3.9.3.5.8 將前方車蓋 775mm、930mm、1000mm、1500mm、1700mm 及 2100mm 縱向攀越定距之標記點分別連成線。1000mm 至 1500mm 縱向攀越定距的點將用於兒童/小型成人頭部模型評等；1700mm 至 2100 mm 縱向攀越定距的點則用於成人頭部模型評等，如圖 10 所示。

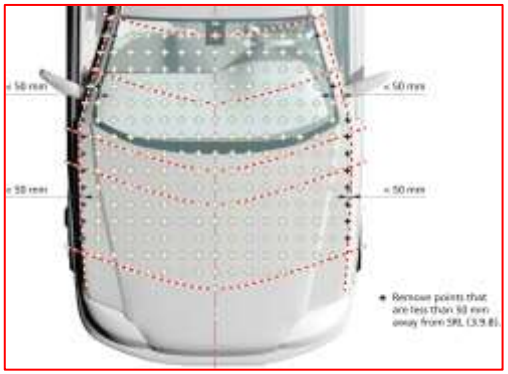
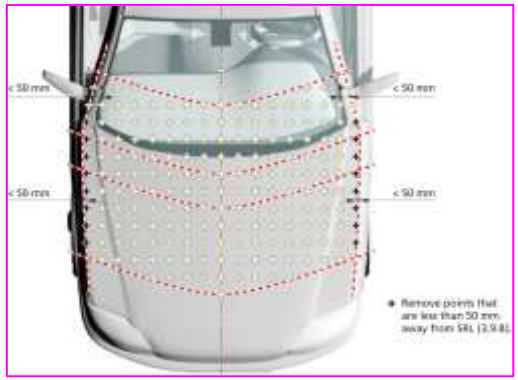
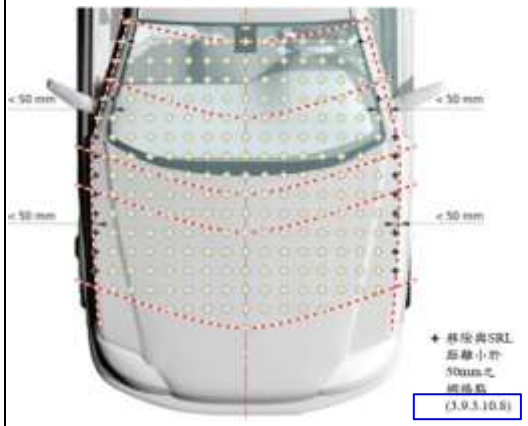
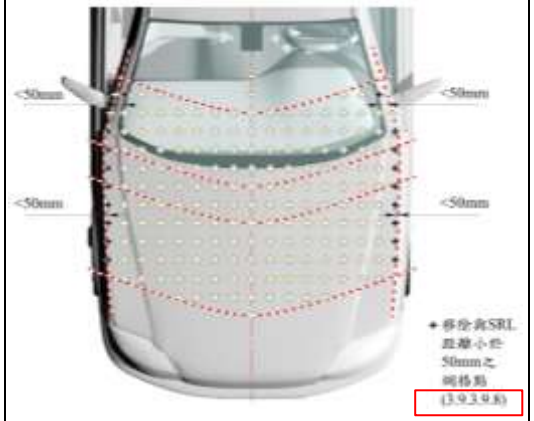
2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
with the adult headform, see Figure 10. The headform to be used in the area rearward of WAD 1500mm up to and including WAD 1700mm depends on the location of the bonnet rear reference line (BRRL).		所使用的頭部模型，將取決於前方車蓋後方參考線(BRRL)之位置。	
3.6.9 Where the BRRL is rearward of WAD 1500mm up to and including WAD 1700mm, points forward of and directly on the bonnet rear reference line will be assessed using the child/small adult headform, while points rearward of the BRRL will use the adult headform. Where the BRRL is rearward of WAD 1700mm, the child/small adult headform shall be used up to and including WAD 1700mm.	3.5.9 Where the bonnet rear reference line is between 1500mm and 1700mm WAD, points forward of and directly on the bonnet rear reference line will be assessed using the child/small adult impactor. Where the BRRL is rearward of 1700mm WAD, the child/small adult headform shall be used up to and including 1700mm. Points rearward of the bonnet rear reference line between 1500mm and 1700mm WAD will use the adult impactor.	3.9.3.6.9 若 BRRL 位於 WAD 1500mm 之後至 WAD 1700mm，則前方車蓋後方參考線及其前方區域為兒童/小型成人頭部模型試驗區域，BRRL 後方區域為成人頭部模型試驗區域。若 BRRL 位於 WAD 1700mm 之後方，則 WAD 1700mm 前方（包括 WAD 1700mm）區域為兒童/小型成人頭部模型試驗區域。	3.9.3.5.9 若前方車蓋後方參考線位於 1500mm 至 1700mm 縱向攀越定距間，則前方車蓋後方參考線及其前方區域為兒童/小型成人頭部模型模型試驗區域。若前方車蓋後方參考線(BRRL)位於 1700mm 縱向攀越定距之後方，則 1700mm 前方（包括 1700mm）區域為兒童/小型成人頭部模型試驗區域。於前方車蓋後方參考線後方但介於 1500mm 及 1700mm 縱向攀越定距間之區域為成人頭部模型試驗區域。
3.6.10 Where the BRRL is between and area rearward of WAD 1500mm up to an including WAD 1700mm, the zone is determined by the designated impactor detailed in Section 3.6.9.		3.9.3.6.10 若 BRRL 位於 WAD 1500mm 之後至 WAD 1700mm 區域，則該區域應依 3.9.3.6.9 所述之指定衝擊器進行決定。	

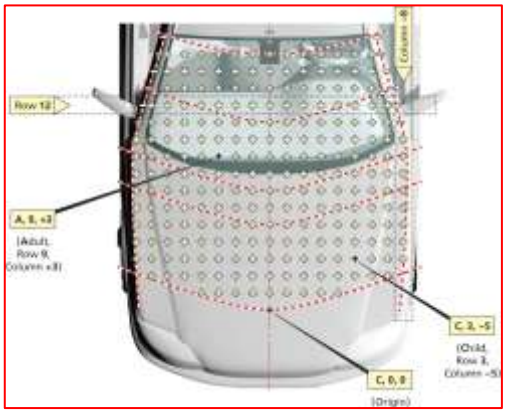
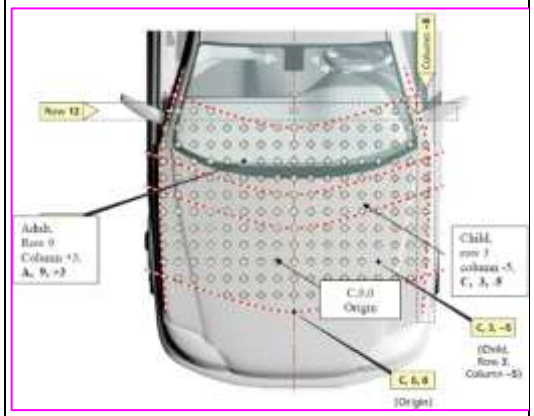
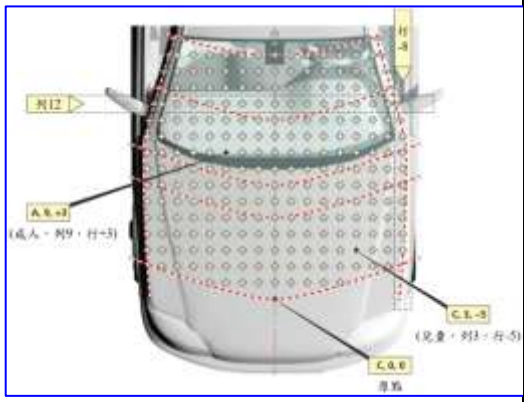
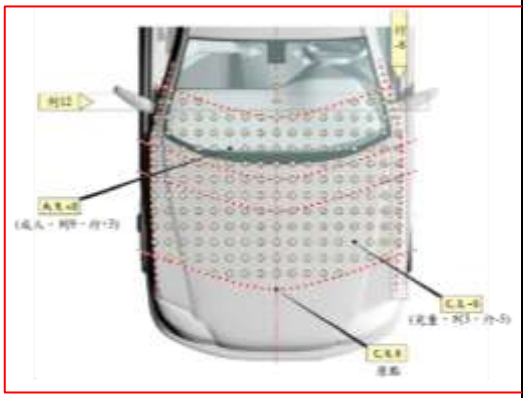
2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
 Figure 10: Headform test area	 **Figure 10: Headform test area**	 圖10：頭部模型試驗區域	 圖10：頭部模型試驗區域
3.7 Corner Reference Point The Corner Reference Point is defined as the intersection of the Bonnet Leading Edge reference line (Section 3.3) and the Bonnet Side reference line (Section 3.2), see Figure 11. Where multiple or continuous contacts occur the most outboard contact shall form the corner reference point. 3.7.1 The corner reference point shall be transferred forwards onto the WAD 775mm at the same distance from the vehicle centreline. 3.7.2 In case of the corner reference point	**3.6 Corner Reference Point** The Corner Reference Point is defined as the intersection of the Bonnet Leading Edge reference line (Section) and the Bonnet Side reference line (Section 3.2), see Figure 11.Where multiple or continuous contacts occur the most outboard contact shall form the corner reference point. 3.6.1 The corner reference point shall be transferred forwards onto the WAD775mm at the same distance from the vehicle centreline. 3.6.2 In case of the corner reference point	3.9.3.7 彎角參考點 彎角參考點定義為前方車蓋前緣參考線（如 3.9.3.3）與前方車蓋側方參考線（如 3.9.3.2）之交點，如圖 11 所示。若有多點或連續接觸，則以最外側接觸點作為彎角參考點。 3.9.3.7.1 彎角參考點應以與車輛中線相同距離向前推移至 WAD 775mm。 3.9.3.7.2 若彎角參考點位於 WAD	3.9.3.6 彎角參考點 彎角參考點定義為前方車蓋前緣參考線（如 3.9.3.3）與前方車蓋側方參考線（如 3.9.3.2）之交點，如圖 11 所示。若有多點或連續接觸，則以最外側接觸點作為彎角參考點。 3.9.3.6.1 彎角參考點應以與車輛中線相同距離向前推移至 WAD775mm。 3.9.3.6.2 若彎角參考點位於 1000mm

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
being located rearwards the WAD 1000mm, a line connecting the corner reference point and its forward projection onto the WAD 1000mm at the same distance from the vehicle centreline shall replace the section of the side reference line which is located forwards the corner reference point.	being located rearwards the WAD 1000 mm, a line connecting the corner reference point and its forward projection onto the WAD 1000 mm at the same distance from the vehicle centerline shall replace the section of the side reference line which is located forwards the corner reference point.	1000mm 後方，則應以連接彎角參考點及彎角參考點與車輛中線相同距離向前投射至 WAD 1000mm 的直線，形成位於彎角參考點前方之側方參考線部分區域。	之縱向攀越定距後方，則應以連接彎角參考點及彎角參考點與車輛中線相同距離向前投射至 1000mm 之縱向攀越定距的直線，形成位於彎角參考點前方之側方參考線部分區域。
3.8 Bumper Reference Lines … 3.8.5 Repeat Sections 3.8.3 and 3.8.4 along the whole of the length of the bumper. … 3.8.8 Proceed as per Sections 3.8.2 to 3.8.6 this line is the Lower Bumper Reference Line.	3.7 Bumper Reference Lines … 3.7.5 Repeat Sections 3.7.3 and 3.7.4 along the whole of the length of the bumper. … 3.7.8 Proceed as per Sections 3.7.2 to 3.7.6 this line is the Lower Bumper Reference Line.	3.9.3.8 保險桿參考線 … 3.9.3.8.5 重複 3.9.3.8.3 及 3.9.3.8.4 步驟，直到整個保險桿長度皆完成標記。 … 3.9.3.8.8 重複 3.9.3.8.2 至 3.9.3.8.6 步驟，建立保險桿下方參考線(LBRL)。	3.9.3.7 保險桿參考線 … 3.9.3.7.5 重複 3.9.3.7.3 及 3.9.3.7.4 步驟，直到整個保險桿長度皆完成標記。 … 3.9.3.7.8 重複 3.9.3.7.2 至 3.9.3.7.6 步驟，建立保險桿下方參考線(LBRL)。
3.9 Bumper Corners, Bumper Test Zone and Internal Bumper Reference Line … 3.9.13 For every upper legform grid point outboard of the bumper beam, use the average bumper beam height allocated to the outermost grid point on the bumper beam as defined in 3.9.14. …	3.8 Bumper Corners, Bumper Test Zone and Internal Bumper Reference Line … 3.8.13 For every upper legform grid point outboard of the bumper beam, use the average bumper beam height allocated to the outermost grid point on the bumper beam as defined in 3.8.14. …	3.9.3.9 保險桿彎角、保險桿試驗區域及保險桿內部參考線 … 3.9.3.9.13 保險桿橫樑外側之上腿部模型網格點，應使用 3.9.3.9.14 定義之保險桿橫樑量測最外側網格點之保險桿橫樑平均高度。 …	3.9.3.8 保險桿彎角、保險桿試驗區域及保險桿內部參考線 … 3.9.3.8.13 保險桿橫樑外側之上腿部模型網格點，應使用 3.9.3.8.14 定義之保險桿橫樑量測最外側網格點之保險桿橫樑平均高度。 …

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
3.9.17 The internal bumper reference line is then constructed using the heights marked on the bumper face in 3.9.16 up to a maximum height above ground reference level of 520mm. Where there are locations above 520mm, the internal reference line will be limited to no more than 520mm above ground reference level for those locations.	3.8.17 The internal bumper reference line is then constructed using the heights marked on the bumper face in 3.8.16 up to a maximum height above ground reference level of 520mm. Where there are locations above 520mm, the internal reference line will be limited to no more than 520mm above ground reference level for those locations.	3.9.3.9.17 接著以 3.9.3.9.16 標記在保險桿表面上之高度畫出保險桿內部參考線，最高距離地面參考平面 520mm。若有高於 520mm 之位置，仍以不超過 520mm 為準。	3.9.3.8.17 接著以 3.9.3.8.16 標記在保險桿表面上之高度畫出保險桿內部參考線，最高距離地面參考平面 520mm。若有高於 520mm 之位置，仍以不超過 520mm 為準。
3.10 Marking Headform Impact Area Grid Points …	**3.9 Marking Headform Impact Area Grid Points** …	3.9.3.10 標記頭部模型衝擊區域之網格點 …	3.9.3.9 標記頭部模型衝擊區域之網格點 …
3.10.2 Mark Wrap Around Distances (not lines) on the centreline only at 100mm intervals. Start from Wrap Around Distance 1000mm and end at Wrap Around Distance 2500mm. For vehicles with a V-shaped front end it may also be necessary to mark additional Wrap Around Distances of 2600mm, 2700mm, etc. See Figure 17. …	3.9.2 Mark Wrap Around Distances (not lines) on the centreline only at 100mm intervals. Start from Wrap Around Distance 1000mm and end at Wrap Around Distance 2100mm. For vehicles with a V-shaped front end it may also be necessary to mark additional Wrap Around Distances of 2200mm, 2300mm, etc. See Figure 17. …	3.9.3.10.2 在車輛中線上，從 WAD 1000mm 開始，沿著車輛前部外輪廓以 100mm 為間隔進行標記，直到 WAD 2500mm 為止。對於前端呈 V 字型之車輛，可能須要額外標記 WAD 2600mm、WAD 2700mm 等，如圖 17 所示。 …	3.9.3.9.2 在車輛中線上，從 WAD1000mm 開始，沿著車輛前部外輪廓以 100mm 為間隔進行標記，直到 WAD2100mm 為止。對於前端呈 V 字型之車輛，可能須要額外標記 WAD2100mm、WAD2300mm 等，如圖 17 所示。 …
3.10.4 Repeat step 3.10.3 for every wrap around distance on the vehicle centreline until the entire headform impact area is	3.9.4 Repeat step 3.9.3 for every wrap around distance on the vehicle centreline until the entire headform impact area is marked with	3.9.3.10.4 在車輛中線所有 WAD 皆重複 3.9.3.10.3 步驟，直到整個頭部模型衝擊試驗區域皆標記網格點。依	3.9.3.9.4 在車輛中線所有 WAD 皆重複 3.9.3.9.3 步驟，直到整個頭部模型衝擊試驗區域皆標記網格點。依

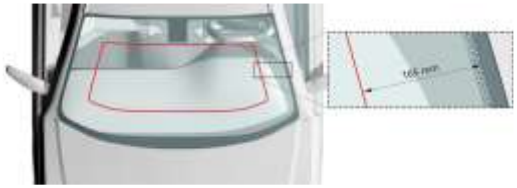
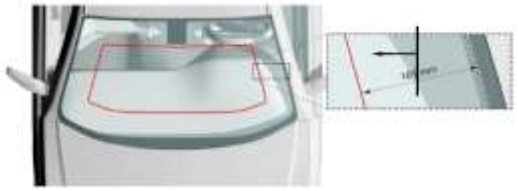
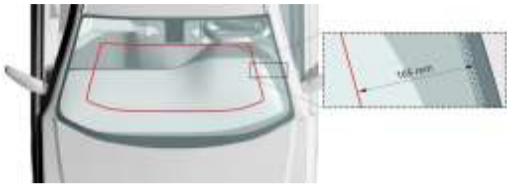
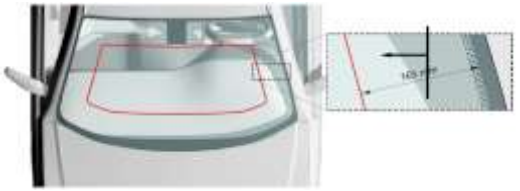
2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
marked with grid points. Depending on the shape of the vehicle, (e.g. V-shaped vehicle front end) it may be necessary to also use the wrap around distance points at 2600mm, 2700mm, etc. See Figure 17.	grid points. Depending on the shape of the vehicle, (e.g. V-shaped vehicle front end) it may be necessary to also use the wrap around distance points at 2200mm, 2300mm, etc. See Figure 17.	照車輛形狀（例如車輛前方呈 V 字型），可能須要標記 2600mm、2700mm 等縱向攀越定距點。如圖 17 所示。	照車輛形狀（例如車輛前方呈 V 字型），可能須要標記 2200mm、2300mm 等縱向攀越定距點。如圖 17 所示。
 Figure 17: Grid points	 **Figure 17: Grid points**	 圖 17：頭部試驗網格點標記	 圖 17：頭部試驗網格點標記

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
 Figure 19: Deleting grid points	 **Figure 19: Deleting grid points**	 圖 19：移除與側方參考線距離小於 50mm 之網格點	 圖 19：移除與側方參考線距離小於 50mm 之網格點
3.11 Identification of the Headform Grid Points 3.11.1 All child/small adult grid points will contain the prefix ‘C’. All adult grid points will contain the prefix ‘A’. All (bi)cyclist grid points will contain the prefix ‘B’. 3.11.2 The child/small adult zone is defined as all grid points on WAD 1000mm up to and including WAD 1500mm. 3.11.3 The adult zone is defined as all grid points rearward of WAD 1700mm up to and including WAD 2100mm. 3.11.4 The cyclist zone is defined as all grid	**3.10 Identification of the Headform Grid Points** 3.10.1 All child/small adult headform grid points will contain the prefix ‘C’. All adult headform points will contain the prefix ‘A’.	3.9.3.11 頭部模型網格點識別 3.9.3.11.1 所有兒童/小型成人網格點皆以 C 編號開頭；所有成人網格點則皆以 A 編號開頭。所有自行車騎士網格點皆以 B 編號開頭。 3.9.3.11.2 兒童/小型成人區域定義為位於 WAD 1000mm 之後至 WAD 1500mm（含）之所有網格點。 3.9.3.11.3 成人區域定義為位於 WAD 1700mm 之後至 WAD 2100mm(含)之所有網格點。 3.9.3.11.4 自行車騎士區域定義為位於	3.9.3.10 頭部模型網格點識別 3.9.3.10.1 所有兒童/小型成人頭部模型試驗區域網格點皆以 C 編號開頭；所有成人頭部模型試驗區域網格點則皆以 A 編號開頭。

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
points rearward of WAD 2100mm up to and including WAD 2500mm. See Figure 20. Figure 20 Identification of VRU headform zones (請參閱末頁圖示)		WAD 2100mm 之後至 WAD 2500mm（含）之所有網格點，如圖 20 所示。 圖 20：弱勢道路使用者頭部模型區域識別 (請參閱末頁圖示)	
3.11.8 Every point will be identified firstly by the relevant headform impactor (A or C), then by the row, then by the column. See Figure 21.	3.10.5 Every point will be identified firstly by the relevant headform impactor (A or C), then by the row, then by the column. See Figure 20.	3.9.3.11.8 每個網格點先以相關頭部模型衝擊器（A 或 C）進行標示，接著為列，再為行，如圖 21 所示。	3.9.3.10.5 每個網格點先以相關頭部模型衝擊器（A 或 C）進行標示，接著為列，再為行，如圖 20 所示。
 Figure 21 Labelling of the headform grid points	 **Figure 20 Labelling of the headform grid points**	 圖 21：頭部模型網格點編號	 圖 20：頭部模型網格點編號
3.14.4 Every point will be labelled firstly by the relevant impactor (U or L), then by the	3.13.4 Every point will be labelled firstly by the relevant impactor (U or L), then by the	3.9.3.14.4 每個網格點先以相關衝擊器(U 或 L)進行標示，接著為數字，	3.9.3.13.4 每個網格點先以相關衝擊器(U 或 L)進行標示，接著為數字，

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
individual number. See Figure 23.	individual number. See 3.13.5 Figure 22.	如圖 23 所示。	如圖 22 所示。
4 Headform DATA **4.1 Manufacturer Supplied Data** **…** 4.1.4 Some grid points shall have a default red rating awarded to them. These shall be clearly identified as defaulted in the predicted data. The only areas to be defaulted red are as follows: • A-pillars • Roof 4.1.5 Where the vehicle manufacturer can provide evidence that shows either an A-pillar or the roof is not red, those grid points will be considered in the same way as other points. 4.1.6 Grid points on the side reference line that are rearward of the bonnet rear reference line will be deemed as grid points on the A-pillars.	**4 Headform DATA** **4.1 Manufacturer Supplied Data** **…** 4.1.4 Some grid points shall have a default red or green rating awarded to them. These shall be clearly identified as defaulted in the predicted data. The only areas to be defaulted are as follows: · A-pillars = Default red (unless data is provided to suggest otherwise) · Windscreen glazing = Default green (except for areas defined in Section 1.1.1 to 4.1.7)	3.9.4 頭部模型數據 3.9.4.1 車輛業者提供之數據 … 3.9.4.1.4 部分網格點之評估應具有預設紅，且應在預測數據中清楚標為預設。預設紅區域如下： (1)A 柱 (2)車頂 3.9.4.1.5 若車輛業者能提供證據，顯示 A 柱或車頂並非紅色，則這些網格點評等方式與其他點相同。 3.9.4.1.6 前方車蓋後方參考線後方之側方參考線網格點將被視為 A 柱網格點。	3.9.4 頭部模型數據 3.9.4.1 車輛業者提供之數據 … 3.9.4.1.4 部分網格點之評估應具有預設紅或預設綠，且應在預測數據中清楚標為預設。預設區如下： (1)A 柱 = 預設紅(除非與車輛業者提供數據不符) (2)擋風玻璃 = 預設綠（3.9.4.1.5 至 3.9.4.1.7 定義之區域除外）

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
4.1.7 Grid points on the windscreen glazing that are predicted green will be excluded from point selection providing that: • The green grid point is completely surrounded by predicted green grid points. • The green grid point is more than 165mm from the solid strip around the periphery of the windscreen mounting frame. The 165mm shall be measured along the outer contour of the windscreen, see Figure 24. • There are no underlying structures.	4.1.5 Any grid points that are within 165mm of the solid strip around the periphery of the windscreen mounting frame cannot be defaulted green. The 165mm shall be measured along the outer contour of the windscreen . See Figure 23.	3.9.4.1.7 擋風玻璃上預測為綠色的網格點將從選點中被排除，其應符合下列條件： (1)該綠色網格點完全被其他預測為綠色的網格點包圍。 (2)該綠色網格點距離擋風玻璃外框周圍實心帶(Solid strip)超過165mm。165mm 距離為順著擋風玻璃外輪廓向內量測而得，如圖 24 所示。 (3)該網格點下方不得有其他結構。	3.9.4.1.5 擋風玻璃外框周圍實心帶(Solid strip)165mm 範圍內之所有網格點皆不得為預設綠。165mm 距離為順著擋風玻璃外輪廓向內量測而得，如圖 23 所示。
4.1.8 Where there are any structures mounted directly behind the windscreen, such as cameras and/or sensor systems, the overlying grid points shall be included for point selection.	4.1.6 Where there are any structures mounted directly behind the windscreen, such as sensor systems, the overlying grid points shall not be defaulted green.	3.9.4.1.8 若擋風玻璃正後方有任何結構，例如攝影機及/或感測系統，則上方網格點應被納入選點。	3.9.4.1.6 若擋風玻璃正後方有任何結構，例如感測系統，則上方網格點不應為預設綠。
4.1.9 Grid points on the windscreen that are within 100mm of ANY underlying structures in the windscreen base area, measured from the grid point in the impact direction of the relevant headform shall also be included for point selection.	4.1.7 Grid points on the windscreen that are within 100mm of ANY underlying structures in the windscreen base area, measured from the grid point in the impact direction of the relevant headform, cannot be defaulted green. 4.1.8 Where the vehicle manufacturer can provide evidence that shows an A-pillar is	3.9.4.1.9 自網格點相關頭部模型衝擊方向量測，若擋風玻璃上之衝擊點位於擋風玻璃底部 100mm 以內有其他結構的區域，則亦應納入選點。	3.9.4.1.7 自網格點相關頭部模型衝擊方向量測，若擋風玻璃上之衝擊點位於擋風玻璃底部 100mm 以內有其他結構的區域，則不得為預設綠。 3.9.4.1.8 若車輛業者能提供證據，顯示 A 柱並非紅色，則這些網格點評

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
	not red, those grid points will be considered in the same way as other points. 4.1.9 Grid points on the side reference line that are rearward of the bonnet rear reference line will be deemed as grid points on the A-pillars.		等方式與其他點相同。 3.9.4.1.9 前方車蓋後方參考線後方之側方參考線網格點將被視為 A 柱網格點。
… 4.1.11 Before test points are selected, default red locations and excluded green points will be confirmed by the laboratory.	… 4.1.11 Before test points are selected, defaulted locations will be confirmed by the laboratory.	… 3.9.4.1.11選擇試驗點前，預設紅區域及排除綠色網格點應由檢測機構先進行確認。	… 3.9.4.1.11選擇試驗點前，預設區域應由檢測機構先進行確認。
 Figure 24: Windscreen periphery measurement	 **Figure 23: Windscreen periphery measurement**	 圖 24：擋風玻璃周圍量測	 圖 23：擋風玻璃周圍量測
4.3 Absence of Manufacturer Data 4.3.1 Where predicted data is NOT provided by the vehicle manufacturer, the vehicle sponsor may choose for ALL grid points to be tested by the Euro NCAP laboratory. 4.3.2 Alternatively, test points will be selected on a worst case performance basis.	**4.3 Absence of Manufacturer Data** 4.3.1 Where predicted data is NOT provided by the vehicle manufacturer, the vehicle sponsor may chose for ALL grid points to be tested by the Euro NCAP laboratory. 4.3.2 Alternatively, test points will be selected on a worst case performance basis.	3.9.4.3 車輛業者未提供數據 3.9.4.3.1 若車輛業者未提供預測數據，則車輛業者可選擇自費所有網格點由 TNCAP 檢測機構進行試驗。 3.9.4.3.2 或者，由 TNCAP 執行機構及檢測機構以最嚴苛狀況為基礎選擇試驗點。	3.9.4.3 車輛業者未提供數據 3.9.4.3.1 若車輛業者未提供預測數據，則車輛業者可選擇自費所有網格點由 TNCAP 檢測機構進行試驗。 3.9.4.3.2 或者，由 TNCAP 執行機構及檢測機構以最嚴苛狀況為基礎選擇試驗點。

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
4.3.3 The bonnet marking and point selection for all impactors will follow that outlined in the Euro NCAP Pedestrian Testing Protocol version 5.3.1, November 2011.	4.3.2.1 The bonnet marking and point selection for all impactors will follow that outlined in the Euro NCAP Pedestrian Testing Protocol version 5.3.1, November 2011.	3.9.4.3.3 依照 2011 年 11 月 Euro NCAP 行人保護試驗規章 5.3.1 版規範，畫出前方車蓋標記及所有衝擊點。	3.9.4.3.2.1 依照 2011 年 11 月 Euro NCAP 行人保護試驗規章 5.3.1 版規範，畫出前方車蓋標記及所有衝擊點。
4.3.4 The latest impactors will be used which are specified in Section 11.	4.3.2.2 The latest impactors will be used which are specified in Section 12.	3.9.4.3.4 使用 3.9.11 規範之最新衝擊器。	3.9.4.3.2.2 使用 3.9.12 規範之最新衝擊器。
4.3.5 The latest performance criteria (HIC650-1700) will be applied; details of the criteria are contained in the assessment protocol.	4.3.2.3 The latest performance criteria (HIC650-1700) will be applied; details of the criteria are contained in the assessment protocol.	3.9.4.3.5 遵守最新性能標準(HIC650 至 1700)規範，標準細節參見評等規章。	3.9.4.3.2.3 遵守最新性能標準(HIC650 至 1700)規範，標準細節參見評等規章。
5 HEADFORM VERIFICATION TESTS **5.1 Verification Tests** … 5.1.4 At least one of the verification tests shall always be a green point on the excluded glazed area that is in accordance with Section 4.1.7.	**5 HEADFORM VERIFICATION TESTS** **5.1 Verification Tests** …	3.9.5 頭部模型驗證試驗 3.9.5.1 驗證試驗 … 3.9.5.1.4 依 3.9.4.1.7 所規定玻璃區域上被排除之綠色網格點，應至少執行一次驗證試驗。	3.9.5 頭部模型驗證試驗 3.9.5.1 驗證試驗 …
5.1.5 Only those grid points on defaulted red, excluded green (noting the exception above) positions or those coloured blue will be excluded from the randomly selected points. All other grid points are eligible for selection.	5.1.4 Only those grid points on defaulted grid positions or those coloured blue will be excluded from the randomly selected points. All other grid points are eligible for selection.	3.9.5.1.5 僅位於預設紅、排除綠（上述例外情況）位置或標示為藍色網格點才會排除於隨機選擇點之外，其他所有網格點皆得選擇。	3.9.5.1.4 僅位於預設區網格位置或標示為藍色網格點才會排除於隨機選擇點之外，其他所有網格點皆得選擇。

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
5.1.6 There is no restriction as to the location of the randomly selected tests. Tests to adjacent impact locations are acceptable provided that permanent vehicle damage would not influence other test results.	5.1.5 There is no restriction as to the location of the randomly selected tests. Tests to adjacent impact locations are acceptable provided that permanent vehicle damage would not influence other test results.	3.9.5.1.6 隨機選擇試驗並無位置限制。若車輛之永久損壞不影響其他試驗結果，亦可接受相鄰之衝擊位置試驗。	3.9.5.1.5 隨機選擇試驗並無位置限制。若車輛之永久損壞不影響其他試驗結果，亦可接受相鄰之衝擊位置試驗。
5.1.7 Where damage from already tested grid points affects other verification tests, the Secretariat will be informed and will take a decision on how to proceed.	5.1.6 Where damage from already tested grid points affects other verification tests, the Secretariat will be informed and will take a decision on how to proceed.	3.9.5.1.7 已試驗網格點之損壞若會影響其他驗證試驗，應告知執行機構並由其決定下一步。	3.9.5.1.6 已試驗網格點之損壞若會影響其他驗證試驗，應告知執行機構並由其決定下一步。
5.1.8 The results of all verification tests will be used in the calculation of a correction factor.	5.1.7 The results of all verification tests will be used in the calculation of a correction factor.	3.9.5.1.8 所有驗證試驗結果皆會納入修正係數計算。	3.9.5.1.7 所有驗證試驗結果皆會納入修正係數計算。
5.3 Testing Glazed Points 5.3.1 Where a test point to a glazed area results in a colour change of three or more boundaries, the Secretariat will allow the vehicle manufacturer to sponsor two retests in that location (assessment years 2023 & 2024 only). 5.3.2 Results to glazed points that were not predicted green may not be retested. 5.3.3 The results of the re-tests will only be accepted where atypical performance has been demonstrated and is supported by all		(此為 2023 及 2024 年試驗要求，故修訂不影響規章草案)	

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
of the following data: • Physical and/or CAE test data, from at least three impacts to the same test location • All acceleration traces (x, y, z, resultant) must be provided • Details of headform instrumentation used • High speed film for physical test or animation for CAE data 5.3.4 Where the three results are all a different colour the original test result shall be applied to that grid location. Where any two results are of the same colour, that colour shall be applied to the grid location. 5.3.5 Euro NCAP will consider adoption of an improved definition for atypical behaviour on glazing tests should one become available.			
6 DETERMINATION OF UPPER LEGFORM AND LEGFORM IMPACT POINTS **6.1 Legform to Bumper Tests** 6.1.1 The legform to bumper tests will be conducted to selected grid locations within the test zone defined in Section 3.9.	**6 DETERMINATION OF UPPER LEGFORM AND LEGFORM IMPACT POINTS** **6.1 Legform to Bumper Tests** 6.1.1 The legform to bumper tests will be conducted if the lower bumper reference line at the chosen grid point is less than	3.9.6 上腿部模型與腿部模型衝擊點判定 3.9.6.1 保險桿之腿部模型試驗 3.9.6.1.1 於 3.9.3.9 定義之試驗區域選擇網格位置，進行保險桿之腿部模型試驗。	3.9.6 上腿部模型與腿部模型衝擊點判定 3.9.6.1 保險桿之腿部模型試驗 3.9.6.1.1 受驗車輛處於正常乘載狀態下，若選定保險桿下方參考線之網格點距地高小於 425mm，則應進行

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
	425mm above the ground when the test vehicle is at its Normal Ride Attitude. For vehicles where part or all of the Lower Bumper Reference Line is above 425mm, select the bumper impact points as in Sections 6.1.2 to 6.1.4 and afterwards refer to Section 6.2.		保險桿之腿部模型試驗。若車輛部分或全部的保險桿下方參考線距地高皆大於 425mm，則依照 3.9.6.1.2 至 3.9.6.1.4 選擇保險桿衝擊點，並接著參考 3.9.6.2 執行試驗。
6.1.4 Symmetry is applied across the vehicle. Tests can be made on both sides of the vehicle. For each pair of symmetrical grid points the laboratory chooses the point to be physically tested.	6.1.4 Symmetry is applied across the vehicle. Tests can be made on both sides of the vehicle. For each pair of symmetrical grid points the laboratory chooses the point to be actually tested.	(修訂不影響規章草案)	3.9.6.1.4 預設車輛兩側結構對稱。試驗可於車輛任一側進行。每組對稱網格點由檢測機構選擇一點進行試驗。
6.1.6 Where the vehicle manufacturer believes that the performance of an unselected point will not be reflected correctly or symmetry does not apply, they may choose to sponsor additional tests to any of these points. Nominations must be made for both possible starting points and before the first point to test is chosen as detailed in Section 6.1.3.	6.1.6 Where the vehicle manufacturer believes that the performance of a non selected point will not be reflected correctly or symmetry does not apply, they may choose to sponsor additional tests to any of these points. Nominations must be made for both possible starting points and before the first point to test is chosen as detailed in Section 6.1.3.	(修訂不影響規章草案)	3.9.6.1.6 當車輛業者認為有必要增加試驗點數，進而得到更準確之評等結果，或認為對稱性不適用於某些網格點時，車輛業者得選擇自費這些點之額外試驗，指定試驗點應在試驗前針對兩個可能的開始試驗點分別指定，參見 3.9.6.1.3 說明。前述額外試驗費用（包含測試費及零組件相關費用）應由車輛業者負擔。
	6.2 Upper Legform to Bumper Tests 6.2.1 These tests are conducted, instead of the legform to bumper tests, where the Lower		3.9.6.2 保險桿之上腿部模型試驗 3.9.6.2.1 車輛處於正常乘載狀態下，若保險桿下方參考線位置（如

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
	Bumper Reference Line at the position(s) defined in Section 6.1, is greater than 500mm vertically above the ground at the vehicle's normal ride attitude. Each grid point shall be regarded individually, i.e. it may be necessary to use the legform to bumper test and the upper legform to bumper test at different locations on the same vehicle. 6.2.2 Where the Lower Bumper Reference Line at and position defined in Section 6.1, is between 425mm and 500mm vertically above the ground at the vehicle's normal ride attitude, the vehicle manufacturer may choose to use either the Legform to bumper test or the Upper Legform to bumper test for this test point. 6.2.3 The upper legform to bumper tests must be carried out at the same lateral position as the points selected in Section 6.1, with the intersection of the longitudinal and lateral planes, at the centre of the impactor, aimed mid way between the Upper Bumper Reference Line and the Lower Bumper		3.9.6.1 定義）距地高大於 500mm，則應進行本項試驗而非保險桿之腿部模型試驗。每個網格點應被各別考慮，即相同車輛可能需要在不同位置進行保險桿之腿部模型試驗與保險桿之上腿部模型試驗。 3.9.6.2.2 車輛處於正常乘載狀態下，若保險桿下方參考線位置（如 3.9.6.1 定義）距地高介於 425mm 與 500mm 之間，則車輛業者得選擇該試驗點進行保險桿之腿部模型試驗或保險桿之上腿部模型試驗。 3.9.6.2.3 保險桿之上腿部模型試驗執行的橫向位置應與 3.9.6.1 規定選擇點一致，縱向與橫向平面交界為衝擊器中心，並瞄準保險桿上方參考線與保險桿下方參考線中間。

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
	Reference Line.		
6.2 Upper Legform to WAD775mm Tests	**6.3 Upper Legform to WAD775mm Tests**	3.9.6.2 WAD775mm 之上腿部模型試驗	3.9.6.3 WAD775mm 之上腿部模型試驗
6.2.1 A test is not required if the calculated impact energy would be less than 160J.	6.3.1 A test is not required if the calculated impact energy would be less than 160J.	3.9.6.2.1 若計算之衝擊能量小於160J，則無須執行本項試驗。	3.9.6.3.1 若計算之衝擊能量小於160J，則無須執行本項試驗。
6.2.2 The vehicle manufacturer must identify any asymmetrical grid points before the start location is selected and any nominations are made.	6.3.2 The vehicle manufacturer must identify any asymmetrical grid points before the start location is selected and any nominations are made.	3.9.6.2.2 若車輛兩側對稱網格點位置之結構不同，則車輛業者應在起始位置選擇及試驗點決定前提供資料證明。	3.9.6.3.2 若車輛兩側對稱網格點位置之結構不同，則車輛業者應在起始位置選擇及試驗點決定前提供資料證明。
6.2.3 The Euro NCAP Secretariat will select one of the locations U0 or U1 for testing; additional tests will then be performed to every second grid point outboard of this point.	6.3.3 The Euro NCAP Secretariat will select one of the locations U0 or U1 for testing; additional tests will then be performed to every second grid point outboard of this point.	3.9.6.2.3 TNCAP 執行機構及檢測機構將於 U0 或 U1 位置選擇一處進行試驗；額外試驗則會以此點為中心，向外每隔一網格點選擇一網格點進行試驗。	3.9.6.3.3 TNCAP 執行機構及檢測機構將於 U0 或 U1 位置選擇一處進行試驗；額外試驗則會以此點為中心，向外每隔一網格點選擇一網格點進行試驗。
6.2.4 Symmetry is applied across the vehicle. Tests can be made on both sides of the vehicle. For each pair of symmetrical grid points the laboratory chooses the point to be actually tested.	6.3.4 Symmetry is applied across the vehicle. Tests can be made on both sides of the vehicle. For each pair of symmetrical grid points the laboratory chooses the point to be actually tested.	3.9.6.2.4 預設車輛兩側結構對稱。試驗可於車輛任一側進行。每組對稱網格點由檢測機構選擇一點進行試驗。	3.9.6.3.4 預設車輛兩側結構對稱。試驗可於車輛任一側進行。每組對稱網格點由檢測機構選擇一點進行試驗。
6.2.5 Grid points that have not been tested will be awarded the worst result from one of the adjacent points.	6.3.5 Grid points that have not been tested will be awarded the worst result from one of the adjacent points.	3.9.6.2.5 未進行試驗之網格點將直接套用相鄰點最差結果。	3.9.6.3.5 未進行試驗之網格點將直接套用相鄰點最差結果。
6.2.6 Where a point is to be awarded a symmetrical or adjacent result, there must	6.3.6 Where a point is to be awarded a symmetrical or adjacent result, there must	3.9.6.2.6 若一點要套用對稱或相鄰結果，兩點計算之衝擊能量差距不得	3.9.6.3.6 若一點要套用對稱或相鄰結果，兩點計算之衝擊能量差距不得

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
be no more than a 10% difference in the calculated impact energy between the two points. Where the energy differs by more than 10%, a test is required. 6.2.7 Where the vehicle manufacturer believes that the performance of a non selected point will not be reflected correctly or symmetry does not apply, they may choose to sponsor additional tests to any of these points. Nominations must be made for both possible starting points and before the first point to test is chosen as detailed in Section 6.1.2.	be no more than a 10% difference in the calculated impact energy between the two points. Where the energy differs by more than 10%, a test is required. 6.3.7 Where the vehicle manufacturer believes that the performance of a non selected point will not be reflected correctly or symmetry does not apply, they may choose to sponsor additional tests to any of these points. Nominations must be made for both possible starting points and before the first point to test is chosen as detailed in Section 6.1.2.	超過 10%，若差距大於 10%，則應額外執行試驗。 3.9.6.2.7 當車輛業者認為有必要增加試驗點數，進而得到更準確之評等結果，或認為對稱性不適用於某些網格點時，車輛業者得選擇自費這些點之額外試驗，指定試驗點應在試驗前針對兩個可能的開始試驗點分別指定，詳見 3.9.6.1.2 說明。	超過 10%，若差距大於 10%，則應額外執行試驗。 3.9.6.3.7 當車輛業者認為有必要增加試驗點數，進而得到更準確之評等結果，或認為對稱性不適用於某些網格點時，車輛業者得選擇自費這些點之額外試驗，指定試驗點應在試驗前針對兩個可能的開始試驗點分別指定，詳見 3.9.6.1.2 說明。
8 PERFORMING OF PEDESTRIAN IMPACT TESTS **…** **8.2 Propulsion System** 8.2.1 An air, spring, electric or hydraulic gun may be used to propel the various body form impactors.	**8 PERFORMING OF PEDESTRIAN IMPACT TESTS** **…** **8.2 Propulsion System** 8.2.1 An air, spring or hydraulic gun will be used to propel the various body form impactors.	3.9.8 行人衝擊試驗規範 … 3.9.8.2 推進系統 3.9.8.2.1 使用空氣、彈簧、電力或液壓槍推進各式身體衝擊器。	3.9.8 行人衝擊試驗表現 … 3.9.8.2 推進系統 3.9.8.2.1 使用空氣、彈簧或液壓槍推進各式身體衝擊器。
9 LEGFORM TESTS **9.1 Description of Legform and its Instrumentation**	**9 LEGFORM TESTS** **9.1 Description of Legform and its Instrumentation**	3.9.9 腿部模型試驗 3.9.9.1 腿部模型及其試驗設備	3.9.9 腿部模型試驗 3.9.9.1 腿部模型及其試驗設備

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
9.1.1 The legform impactor used shall conform to the specification in ISO/TS 20458:2023.	9.1.1 The legform impactor used shall conform to that specified in UN Regulation No. 127 Revision 2, Annex 4.	3.9.9.1.1 使用之腿部模型衝擊器應符合 ISO/TS 20458:2023 之規定。	3.9.9.1.1 使用之腿部模型衝擊器應符合 UN R127 第 2 版附件 4 之規定。
9.1.2 Instrumentation: (請參閱末頁表格)	9.1.2 Instrumentation: (請參閱末頁表格)	3.9.9.1.2 試驗設備 (請參閱末頁表格)	3.9.9.1.2 試驗設備 (請參閱末頁表格)
9.2 Certification	**9.2 Certification**	3.9.9.2 查驗	3.9.9.2 查驗
9.2.1 The certification procedures are based on the FlexPLI inverse certification test[2] and are detailed in the aPLI user manual.	9.2.1 The certification procedures are detailed in UN Regulation No. 127 Revision 2, Annex 6, Chapter 1.4.	3.9.9.2.1 查驗程序係基於 FlexPLI 逆向查驗(Inverse certification)試驗，參見 aPLI 使用手冊之規定。	3.9.9.2.1 查驗程序參見 UN R127 第 2 版附件 6 條文 1.4 之規定。
9.2.2 The dynamic certification corridors are detailed in Euro NCAP Technical Bulletin TB 032.		3.9.9.2.2 動態查驗通道參見 Euro NCAP 技術通報 TB 032。	
9.2.3 The legform shall be re-certified after a maximum of 20 impacts and at least once every 12 months.	9.2.2 The legform shall be re-certified after a maximum of 20 impacts and at least once every 12 months.	3.9.9.2.3 至多 20 次衝擊後，且至少每 12 個月，腿部模型應重新查驗。	3.9.9.2.2 至多 20 次衝擊後，且至少每 12 個月，腿部模型應重新查驗。
9.2.4 If the legform exceeds any of its lower performance limits then it shall be re-certified.	9.2.3 If the legform exceeds any of its lower performance limits then it shall be re-certified.	3.9.9.2.4 若腿部模型超過其任一較低性能限制值，則應重新查驗。	3.9.9.2.3 若腿部模型超過其任一較低性能限制值，則應重新查驗。
9.2.5 The legform shall be re-certified according to the procedures prescribed in ISO TS 20458.	9.2.4 The legform shall be re-certified according to the procedures prescribed in UN Regulation No. 127 Revision 2, Annex 6, Chapter 1.2 at least once a year.	3.9.9.2.5 腿部模型應依照 ISO TS 20458 規定之程序重新查驗。	3.9.9.2.4 腿部模型應依照 UN R127 第 2 版附件 6 條文 1.2 規定之程序，每年至少應重新查驗一次。
--- 2 Un regulation No. 127, revision 2. Available at			

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
https://unece.org/transport/vehicle-regulationswp29/standards/addenda-1958-agreement-regulations-121-140			
9.3 Test Procedure - Pre Test … 9.3.5 At the time of first contact the bottom of the legform shall be 25mm above Ground Reference Level ±10mm. The measurement must be taken from the bottom of the legform without any protective covers.	**9.3 Test Procedure - Pre Test** … 9.3.5 At the time of first contact the bottom of the legform shall be 75mm above Ground Reference Level ±10mm. The measurement must be taken from the bottom of the legform without any protective covers.	3.9.9.3　試驗程序—試驗前 … 3.9.9.3.5 首次接觸時，腿部模型底部應於地面參考平面上方 25mm±10mm 處。其高度應自腿部模型底部、無任何保護套下進行量測。	3.9.9.3　試驗程序—試驗前 … 3.9.9.3.5 首次接觸時，腿部模型底部應於地面參考平面上方 75mm±10mm 處。其高度應自腿部模型底部、無任何保護套下進行量測。
9.3.6 Insert blocks under the wheels of the vehicle such that vehicle height is raised as required by the gravity correction method used to ensure the above tolerance; and the tolerance for direction of impact are both satisfied. Alternatively, ensure that the vehicle is positioned above a trench in the floor. See Figure 27. (請參閱末頁圖示)	9.3.6 Insert blocks under the wheels of the vehicle such that vehicle height is raised as required by the gravity correction method used to ensure the above tolerance; and the tolerance for direction of impact are both satisfied. Alternatively, ensure that the vehicle is positioned above a trench in the floor. See Figure 26. (請參閱末頁圖示)	3.9.9.3.6 車輛輪胎下方墊塊狀物，提升車輛高度至重力校正方法之要求，以確保上述容許誤差，並應確保衝擊方向容許誤差亦達標。或者，確保車輛置於地面溝槽(Trench)以上之位置，如圖 27 所示。 (請參閱末頁圖示)	3.9.9.3.6 車輛輪胎下方墊塊狀物，提升車輛高度至重力校正方法之要求，以確保上述容許誤差，並應確保衝擊方向容許誤差亦達標。或者，確保車輛置於地面溝槽(Trench)以上之位置，如圖 26 所示。 (請參閱末頁圖示)
9.3.8 To ensure that the legform impacts with its bottom at the correct height above the ground a correction to take into account the action of gravity when the legform is in free flight is required. This can take the form of	9.3.8 To ensure that the legform impacts with its bottom at the correct height above the ground a correction to take into account the action of gravity when the legform is in free flight is required. This can take the form of	3.9.9.3.8 為確保腿部模型衝擊之底部位於地面上方之正確高度，校正腿部模型自由飛行高度時，應考量重力影響：可提高腿部模型距離 h 並水平發射，讓即使因重力因素，與車	3.9.9.3.8 為確保腿部模型衝擊之底部位於地面上方之正確高度，校正腿部模型自由飛行高度時，應考量重力影響：可提高腿部模型距離 h 並水平發射，讓即使因重力因素，與車

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
raising the legform a distance h, and firing it horizontally so that the action due to gravity results in the bottom of the impactor being at 25mm above ground level at the point of first contact with the vehicle. This can be achieved using the method in Section 9.4. However, this method will only remain within the tolerance specified in 9.5.9 if its free flight distance is about 400mm or less. For test houses that use a free flight distance of more than 400mm then the legform shall be fired using a ballistic correction procedure as described in Section 9.5.	raising the legform a distance h, and firing it horizontally so that the action due to gravity results in the bottom of the impactor being at 75mm above ground level at the point of first contact with the vehicle. This can be achieved using the method in Section 9.4. However, this method will only remain within the tolerance specified in 9.5.9 if its free flight distance is about 400mm or less. For test houses that use a free flight distance of more than 400mm then the legform shall be fired using a ballistic correction procedure as described in Section 9.5.	輛首次接觸時，衝擊器底部仍維持地面上方 25mm 之高度。可使用 3.9.9.4 之方法達成。惟若自由飛行距離小於或等於 400mm，則該方法仍應符合 3.9.9.5.9 規定之容許誤差。檢測機構若使用超過 400mm 之自由飛行距離，則腿部模型發射時應依照 3.9.9.5 所述之彈道校正程序。	輛首次接觸時，衝擊器底部仍維持地面上方 75mm 之高度。可使用 3.9.9.4 之方法達成。惟若自由飛行距離小於或等於 400mm，則該方法仍應符合 3.9.9.5.9 規定之容許誤差。檢測機構若使用超過 400mm 之自由飛行距離，則腿部模型發射時應依照 3.9.9.5 所述之彈道校正程序。
9.4 Compensation for Gravity (horizontal firing) … 9.4.3 Raise the propulsion system by this calculated amount, h. The angle θ must remain within the tolerance specified in Section 9.5.9. See Figure 28. (請參閱末頁圖示)	**9.4 Compensation for Gravity (horizontal firing)** … 9.4.3 Raise the propulsion system by this calculated amount, h. The angle θ must remain within the tolerance specified in Section 9.5.9. See Figure 27. (請參閱末頁圖示)	3.9.9.4　重力補償（水平發射） … 3.9.9.4.3 藉由計算得出之 h 值將推進系統提高。θ 角應維持於 3.9.9.5.9 規定之容許誤差內，如圖 28 所示。 (請參閱末頁圖示)	3.9.9.4　重力補償（水平發射） … 3.9.9.4.3 藉由計算得出之 h 值將推進系統提高。θ 角應維持於 3.9.9.5.9 規定之容許誤差內，如圖 27 所示。 (請參閱末頁圖示)

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
9.5 Ballistic Compensation There are two procedures which can be used for ballistic compensation, it is at the discretion of the test house as to the most appropriate method, see Figure 29. The terms used for the calculations are: … (請參閱末頁圖示)	**9.5 Ballistic Compensation** There are two procedures which can be used for ballistic compensation, it is at the discretion of the test house as to the most appropriate method, see Figure 28. The terms used for the calculations are: … (請參閱末頁圖示)	3.9.9.5 彈道補償 彈道補償可用兩種程序，由檢測機構決定最適當之程序，如圖 29 所示。計算時之專有名詞： … (請參閱末頁圖示)	3.9.9.5 彈道補償 彈道補償可用兩種程序，由檢測機構決定最適當之程序，如圖 28 所示。計算時之專有名詞： … (請參閱末頁圖示)
(整段刪除)	**10 UPPER LEGFORM TO BUMPER TESTS** …	(刪除 3.9.10 保險桿之上腿部模型試驗整段條文)	3.9.10 保險桿之上腿部模型試驗 …
10 UPPER LEGFORM TO WAD775mm TESTS **10.1 Description of Upper Legform and its Instrumentation** 10.1.1 The upper legform used shall conform to that specified in UN Regulation No. 127 Revision 2, Annex 4. 10.1.2 Instrumentation: …	**11 UPPER LEGFORM TO WAD775mm TESTS** **11.1 Description of Upper Legform and its Instrumentation** 11.1.1 The upper legform used shall conform to that specified in UN Regulation No. 127 Revision 2, Annex 4. 11.1.2 Instrumentation: …	3.9.10 WAD775mm 之上腿部模型試驗 3.9.10.1 上腿部模型及其試驗設備 3.9.10.1.1 使用之上腿部模型應符合 UN R127 第 2 版附件 4 之規定。 3.9.10.1.2 試驗設備： …	3.9.11 WAD775mm 之上腿部模型試驗 3.9.11.1 上腿部模型及其試驗設備 3.9.11.1.1 使用之上腿部模型應符合 UN R127 第 2 版附件 4 之規定。 3.9.11.1.2 試驗設備： …
10.2 Certification 10.2.1 The certification procedures are	**11.2 Certification** 11.2.1 The certification procedures are	3.9.10.2 查驗 3.9.10.2.1 查驗程序參見 UN R127 第	3.9.11.2 查驗 3.9.11.2.1 查驗程序參見 UN R127 第二

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
detailed in Regulation UN Regulation No. 127 Revision 2 Annex 6, Chapter 2. 10.2.2 The foam sheet[3] from which the pieces of foam shall be taken shall be certified before the test programme. 10.2.3 The upper legform shall be re-certified after a maximum of 20 impacts and at least once every 12 months. 10.2.4 If the upper legform exceeds any of its lower performance limits then it shall be re-certified. --- 3 The foam shall be 25mm thick ConforTM foam type CF-45 or equivalent	detailed in Regulation UN Regulation No. 127 Revision 2 Annex 6, Chapter 2. 11.2.2 The foam sheet[2] from which the pieces of foam shall be taken shall be certified before the test programme. 11.2.3 The upper legform shall be re-certified after a maximum of 20 impacts and at least once every 12 months. 11.2.4 If the upper legform exceeds any of its lower performance limits then it shall be re-certified. --- [2] The foam shall be 25mm thick Confor™ foam type CF-45 or equivalent	二版附件 6 條文 2 之規定。 3.9.10.2.2 泡棉試驗片取自之泡棉片應於試驗計畫前完成查驗。 泡棉應為厚度 25mm 之 ConforTM 泡棉種類 CF-45 或其同等物。 3.9.10.2.3 至多 20 次衝擊後，且至少每 12 個月，上腿部模型應重新查驗。 3.9.10.2.4 若上腿部模型超過其任一較低性能限制值，則應重新查驗。	版附件 6 條文 2 之規定。 3.9.11.2.2 泡棉試驗片取自之泡棉片應於試驗計畫前完成查驗。 泡棉應為厚度 25mm 之 ConforTM 泡棉種類 CF-45 或其同等物。 3.9.11.2.3 至多 20 次衝擊後，且至少每 12 個月，上腿部模型應重新查驗。 3.9.11.2.4 若上腿部模型超過其任一較低性能限制值，則應重新查驗。
10.4 Test procedure - Pre-test … 10.4.9 Roll the vehicle forwards to give the desired distance, so that the impactor strikes the vehicle after it has been accelerated to the test speed and so that any end stops on the guidance system do not interfere with its interaction with the vehicle. See Figure 30. … Figure 30: Upper Legform to WAD775mm	**11.4 Test procedure - Pre-test** … 11.4.9 Roll the vehicle forwards to give the desired distance, so that the impactor strikes the vehicle after it has been accelerated to the test speed and so that any end stops on the guidance system do not interfere with its interaction with the vehicle. See Figure 29. … **Figure 29:** Upper Legform to WAD775mm	3.9.10.4 試驗程序—試驗前 … 3.9.10.4.9 調整車輛前後位置，進而確保衝擊器衝擊車輛時達到所要求之試驗速度，且於車輛衝擊過程中不會撞到導向機構上之擋板，如圖 30 所示。 … 圖 30：WAD775mm 之上腿部模型試	3.9.11.4 試驗程序—試驗前 … 3.9.11.4.9 調整車輛前後位置，進而確保衝擊器衝擊車輛時達到所要求之試驗速度，且於車輛衝擊過程中不會撞到導向機構上之擋板，如圖 29 所示。 … 圖 29：WAD775mm 之上腿部模型試

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
Test	Test	驗	驗
11.3 Test Procedure - Pre Test … 11.3.4 Fit the required headform to the propulsion system. A child/small adult headform impactor shall be used for tests to the forward section of the bonnet top, A-pillars, windscreen, roof (labelled C in Section 3.11), with the test locations lying between boundaries described by wrap around distances of 1000mm and 1500mm. An adult headform impactor shall be used for tests to the rearward section of the bonnet top (labelled A in Section 3.11), with the test locations lying between boundaries described by wrap around distances of 1700 mm and 2500 mm. Where test locations lie between 1500 mm and 1700 mm the structure being tested will determine the headform to be used, see Section 3.6.9.	**12.3 Test Procedure - Pre Test** … 12.3.4 Fit the required headform to the propulsion system. A child/small adult headform impactor shall be used for tests to the forward section of the bonnet top, A-pillars, windscreen, roof (labelled C in Section 3.10), with the test locations lying between boundaries described by wrap around distances of 1000mm and 1500mm. An adult headform impactor shall be used for tests to the rearward section of the bonnet top (labelled A in Section 3.10), with the test locations lying between boundaries described by wrap around distances of 1700 mm and 2100 mm. Where test locations lie between 1500 mm and 1700 mm the structure being tested will determine the headform to be used, see Section 3.5.9.	3.9.11.3 試驗程序—試驗前 … 3.9.11.3.4 將頭部模型安裝於推進系統。兒童/小型成人頭部模型衝擊器將使用於前方車蓋頂部前方部位、A 柱、擋風玻璃、車頂（3.9.3.11 編號 C 開頭），試驗位置介於 WAD 1000mm 與 WAD 1500mm 範圍內。成人頭部模型衝擊器將使用於前方車蓋頂部後方部位（3.9.3.11 編號 A 開頭），試驗位置介於 WAD 1700mm 與 WAD 2500mm 範圍內。若試驗位置介於 1500mm 與 1700mm 範圍間，則依受驗結構判定使用何種頭部模型衝擊器，參見 3.9.3.6.9。	3.9.12.3 試驗程序—試驗前 … 3.9.12.3.4 將頭部模型安裝於推進系統。兒童/小型成人頭部模型衝擊器將使用於前方車蓋頂部前方部位、A 柱、擋風玻璃、車頂（3.9.3.10 編號 C 開頭），試驗位置介於 WAD1000mm 與 WAD1500mm 範圍內。成人頭部模型衝擊器將使用於前方車蓋頂部後方部位（3.9.3.10 編號 A 開頭），試驗位置介於 WAD1700 mm 與 WAD2100 mm 範圍內。若試驗位置介於 1500mm 與 1700 mm 範圍間，則依受驗結構判定使用何種頭部模型衝擊器，參見 3.9.3.5.9。
11.3.9 The angle of impact for tests with the child/small adult headform impactor to the bonnet and windscreen shall be 50° ±2° to the Ground Reference Level. For all	12.3.9 The angle of impact for tests with the child/small adult headform impactor shall be 50° ±2° to the Ground Reference Level. For all headform grid points on or forward	3.9.11.3.9 針對前方車蓋與擋風玻璃之兒童/小型成人頭部模型衝擊器，試驗衝擊角應與地面參考平面呈 50 度±2 度。針對位於前方車蓋前	3.9.12.3.9 兒童/小型成人頭部模型衝擊器之試驗衝擊角應與地面參考平面呈 50 度±2 度。針對位於前方車蓋前緣參考線上或之前的頭部模

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
headform grid points on or forward of the bonnet leading edge reference line, defined in Section 3.3, the angle of impact shall be 20° ±2° to ground reference level. 11.3.10 For tests with the adult headform impactor to the bonnet and windscreen the angle of impact shall always be 65° ±2° to the Ground Reference Level. Tests to the roof shall be performed with an impact angle of 45° ± 2° to the Ground reference Level. For tests with the adult headform impactor to heavy vehicles, as defined in the Vehicle Specification, Selection, Testing and Retesting Protocol, the angle of impact shall always be 50° ±2° to the Ground Reference Level.	of the bonnet leading edge reference line, defined in Section 3.3, the angle of impact shall be 20° ±2° to ground reference level. 12.3.10 For tests with the adult headform impactor the angle of impact shall always be 65° ±2° to the Ground Reference Level. For tests with the adult headform impactor to heavy vehicles, as defined in the Heavy Vehicle Test and Assessment Protocol, the angle of impact shall always be 50° ±2° to the Ground Reference Level.	緣參考線上或之前的頭部模型網格點，參見 3.9.3.3 定義，衝擊角應與地面參考平面呈 20 度±2 度。 3.9.11.3.10 針對前方車蓋與擋風玻璃之成人頭部模型衝擊器，試驗衝擊角應與地面參考平面呈 65 度±2 度。針對車頂之試驗衝擊角應與地面參考平面呈 45 度±2 度。針對重型車輛之成人頭部模型衝擊器試驗，衝擊角應與地面參考平面呈 50 度±2 度。重型車輛係指符合下列條件之車輛： (1)車種代號為 M1 類。 (2) 總重量(Gross vehicle weight)逾 2,500kg 但未逾 3,500kg。 (3)座位數(含駕駛座)為 8 座或 9 座。 (4)商用車衍生之車輛。	型網格點，參見 3.9.3.3 定義，衝擊角應與地面參考平面呈 20 度±2 度。 3.9.12.3.10 成人頭部模型衝擊器之試驗衝擊角應與地面參考平面呈 65 度±2 度。針對重型車輛之成人頭部模型衝擊器試驗，衝擊角應與地面參考平面呈 50 度±2 度。重型車輛係指符合下列條件之車輛： (1)車種代號為 M1 類。 (2) 總重量(Gross vehicle weight)逾 2,500kg 但未逾 3,500kg。 (3)座位數(含駕駛座)為 8 座或 9 座。 (4)商用車衍生之車輛。
GLOSSARY OF TERMS … **Locking devices** - Systems that reach and remain in the intended position before head impact. **Non locking devices** - Systems that do not	**GLOSSARY OF TERMS** … **Locking devices** - systems that reach and remain in the intended position before head impact. **Non locking devices** - systems that do not	3.9.12 名詞釋義 … 3.9.12.3 鎖定裝置(Locking devices)：於頭部衝擊前達到並維持預期位置之系統。 3.9.12.4 非鎖定裝置(Non locking	3.9.13 名詞釋義 … 3.9.13.3 鎖定裝置(Locking devices)：於頭部衝擊前達到並維持預期位置之系統。 3.9.13.4 非鎖定裝置(Non locking

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章	修訂 TNCAP 條文草案(第三版)	對應 TNCAP 第二版規章
remain in a permanent deployed position or systems that do not reach the intended position before head impact. **Initiate deployment** - Initiation of deployment means that there must be visible movement of the deployable component, such as the bonnet top. The signal sent from the ECU to the deployable components alone is NOT considered as 'initiation of deployment'. **Deployment time** – The duration from the initiation (triggering) of the deployment module to when the deployable pedestrian protection system reaches the final position. For example, where there is a movable bonnet, the end of the deployment time would be where the bonnet has passed any locking devices and does not travel below this point. It is not necessarily the highest point of travel.	remain in a permanent deployed position or systems that do not reach the intended position before head impact. **Initiate deployment** - Initiation of deployment means that there must be visible movement of the deployable component, such as the bonnet top. The signal sent from the ECU to the deployable components alone is NOT considered as 'initiation of deployment'.	devices)：不維持永久開展狀態之系統或於頭部衝擊前未達到預期位置之系統。 3.9.12.5 啟動開展(Initiate deployment)：啟動開展係指應有明顯之開展組件移動，例如前方車蓋頂部。若僅有 ECU 傳送訊號至可開展組件，則不視為「啟動開展」。 3.9.12.6 開展時間(Deployment time)：指從開展模組啟動（觸發），直到開展式行人保護系統至最終位置之持續時間。例如若為可移動式前方車蓋，其開展時間之結束點為前方車蓋經過任何鎖定裝置且不再移動至低於此點位置的時刻。最終位置不一定為行程的最高點。	devices)：不維持永久開展狀態之系統或於頭部衝擊前未達到預期位置之系統。 3.9.13.5 啟動開展(Initiate deployment)：啟動開展係指應有明顯之開展組件移動，例如前方車蓋頂部。若僅有 ECU 傳送訊號至可開展組件，則不視為「啟動開展」。

2025年版Euro NCAP規章

2.2.3.2 Test matrix:

Test	Impactor	Impact point	Speed	Output
1	PDI2/HTD[1]	• Directly on localised sensor e.g. accelerometer +/- 50mm. If the sensing system uses a combination of contact strip switches and localised accelerometers, the positions of the accelerometers should be used to define the impact locations. • For non-localised sensor systems, such as contact switches, test the vehicle centreline.	LT[2] +/-2km/h	• High speed film • Actuator trigger time • Initiation of deployment
2	PDI2/HTD	Bumper test zone end, left or right hand side, +/- 50mm.	LT +/-2km/h	• High speed film • Actuator trigger time • Initiation of deployment
3	PDI2/HTD	Farthest from sensor(s) if not tested already, +/- 50mm.	LT +/-2km/h	
4[3]	FlexPLI or WG17 impactor to account for larger pedestrians	Directly on localised sensor e.g. accelerometer, +/- 50mm. For non-localised sensor systems test directly in line with the front longitudinal member to produce the highest acceleration levels on the impactor. This test may be performed using a representative surrogate with equivalent mass and stiffness to prevent damage to instrumentation.	40km/h +/-2km/h	

修訂 TNCAP 條文草案(第三版)

2019年版Euro NCAP規章

2.2.3.2 Test matrix:

Test	Impactor	Impact point	Speed	Output
1	PDI2/HTD[1]	• Directly on localised sensor e.g. accelerometer +/- 50mm. If the sensing system uses a combination of contact strip switches and localised accelerometers, the positions of the accelerometers should be used to define the impact locations. • For non-localised sensor systems, such as contact switches, test the vehicle centreline.	LT[2] +/-2km/h	• High speed film • Actuator trigger time • Initiation of deployment
2	PDI2/HTD	Bumper test zone end, left or right hand side, +/- 50mm.	LT +/-2km/h	• High speed film • Actuator trigger time • Initiation of deployment
3	PDI2/HTD	Farthest from sensor(s) if not tested already, +/- 50mm.	LT +/-2km/h	
4[3]	Euro NCAP detailed in Section 9.1 or WG17 impactor to account for larger pedestrians	Directly on localised sensor e.g. accelerometer, +/- 50mm. For non-localised sensor systems test directly in line with the front longitudinal member to produce the highest acceleration levels on the impactor. This test may be performed using a representative surrogate with equivalent mass and stiffness to prevent damage to instrumentation.	40km/h +/-2km/h	

對應 TNCAP 第二版規章

3.9.2.2.3.2　試驗矩陣：

試驗	衝擊器	衝擊點	速度	輸出
1	PDI2/ HTD(1	•對準定位感測器（例如加速度計）+/- 50mm。若感測系統為接觸帶開關(Contact strip switch)與定位加速度計作整合，則以加速度計位置作為衝擊位置。 •針對非定位感測系統，例如接觸開關，則以車輛中線作為試驗位置。	LT(2+/- 2km/h	•高速影片 •驅動器觸發時間 •開展啟動時間
2	PDI2/ HTD	保險桿試驗區域末端，左側或右側+/- 50mm。	LT+/-2 km/h	
3	PDI2/ HTD	若尚未測試，離感測器最遠端+/- 50mm。	LT+/-2 km/h	
4(3	FlexPLI 或 WG17 規定之衝擊器，考量較高大行人	對準感測器(例如加速度計)+/- 50mm。針對非定位感測系統，直接在縱向構件上進行試驗，以產生衝擊器最高加速度。本試驗可以相同重量與剛度之替代品代替進行，以避免相關設備損壞。	40km/h +/- 2km/h	

3.9.2.2.3.2　試驗矩陣：

試驗	衝擊器	衝擊點	速度	輸出
1	PDI2/ HTD(1	•對準定位感測器（例如加速度計）+/- 50mm。若感測系統為接觸帶開關(Contact strip switch)與定位加速度計作整合，則以加速度計位置作為衝擊位置。 •針對非定位感測系統，例如接觸開關，則以車輛中線作為試驗位置。	LT(2+/- 2km/h	•高速影片 •驅動器觸發時間 •開展啟動時間
2	PDI2/ HTD	保險桿試驗區域末端，左側或右側+/- 50mm。	LT+/-2 km/h	
3	PDI2/ HTD	若尚未測試，離感測器最遠端+/- 50mm。	LT+/-2 km/h	
4(3	TNCAP 3.9.9.1 規定或 WG17 規定之衝擊器，考量較高大行人	對準感測器(例如加速度計)+/- 50mm。針對非定位感測系統，直接在縱向構件上進行試驗，以產生衝擊器最高加速度。本試驗可以相同重量與剛度之替代品代替進行，以避免相關設備損壞。	40km/h +/- 2km/h	

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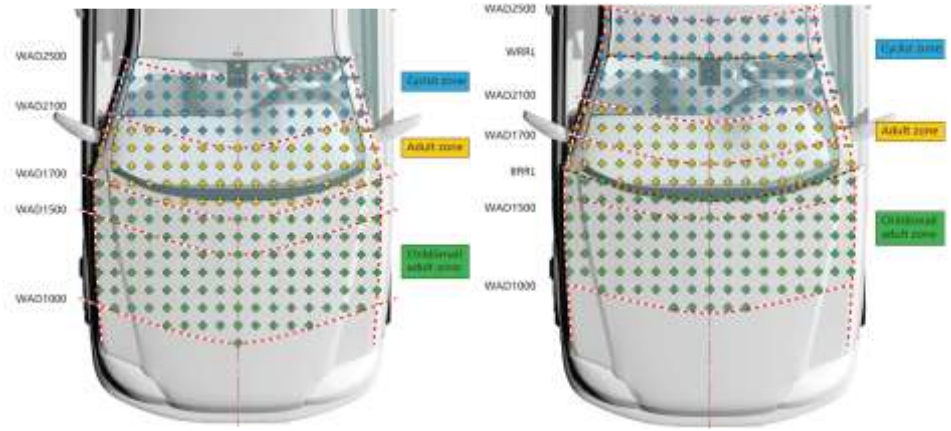
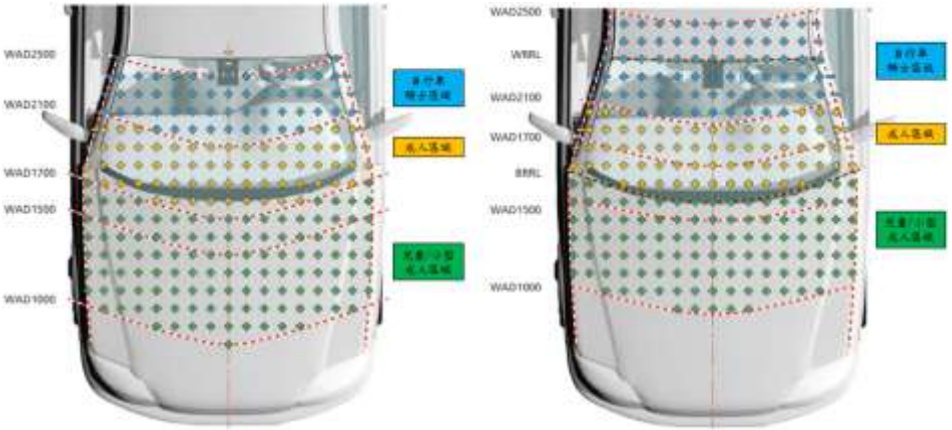
3.11 Identification of the Headform Grid Points  Figure 20 Identification of VRU headform zones	3.10 Identification of the Headform Grid Points (無)
修訂TNCAP條文草案(第三版)	對應TNCAP第二版規章
3.9.3.11 頭部模型網格點識別  圖20：弱勢道路使用者頭部模型區域識別	3.9.3.10 頭部模型網格點識別

<table>
<tr><th>2025年版Euro NCAP規章</th><th>2022年版Euro NCAP規章</th></tr>
<tr><td>9.1.2 Instrumentation:
<table>
<tr><th>Location</th><th>Measurement</th><th>CFC (Hz)</th><th>CAC</th><th>No of channels</th></tr>
<tr><td>Upper mass</td><td>Acceleration</td><td>180</td><td>500g</td><td>3</td></tr>
<tr><td>Femur Bending</td><td>Femur upper -3
Femur middle -2
Femur lower -1</td><td>180</td><td>600Nm</td><td>3</td></tr>
<tr><td>Knee Elongation</td><td>Medial collateral ligament
Anterior cruciate ligament
Posterior cruciate ligament</td><td>180</td><td>40mm</td><td>3</td></tr>
<tr><td>Tibia Bending</td><td>Tibia upper -1
Tibia upper middle -2
Tibia lower middle -3
Tibia lower -4</td><td>180</td><td>400Nm</td><td>4</td></tr>
</table></td><td>9.1.2 Instrumentation:
<table>
<tr><th>Location</th><th>Measurement</th><th>CFC (Hz)</th><th>CAC</th><th>No of channels</th></tr>
<tr><td>Tibia Bending</td><td>Tibia-1
Tibia-2
Tibia-3
Tibia-4</td><td>180</td><td>400Nm</td><td>4</td></tr>
<tr><td>Knee Elongation</td><td>Medial collateral ligament
Anterior cruciate ligament
Posterior cruciate ligament</td><td>180</td><td>30mm</td><td>3</td></tr>
<tr><td>Tibia*</td><td>Acceleration</td><td>180</td><td>500g</td><td>1</td></tr>
</table>
* Optional</td></tr>
<tr><td>修訂 TNCAP 條文草案(第三版)</td><td>對應 TNCAP 第二版規章</td></tr>
</table>

3.9.9.1.2 試驗設備

位置	量測	CFC (Hz)	CAC	通道數量
上部質量	加速度	180	500g	3
股骨彎曲	股骨上部-3 股骨中部-2 股骨下部-1	180	600Nm	3
膝部伸長量	內側副韌帶(Medial collateral ligament) 前十字韌帶(Anterior cruciate ligament) 後十字韌帶(Posterior cruciate ligament)	180	40mm	3
脛骨彎曲	脛骨上部-1 脛骨中上部-2 脛骨中下部-3 脛骨下部-4	180	400Nm	4

3.9.9.1.2 試驗設備

位置	量測	CFC (Hz)	CAC	通道數量
脛骨彎曲	脛骨-1 脛骨-2 脛骨-3 脛骨-4	180	400Nm	4
膝部伸長量	內側副韌帶(Medial collateral ligament) 前十字韌帶(Anterior cruciate ligament) 後十字韌帶(Posterior cruciate ligament)	180	30mm	3
脛骨*	加速度(Acceleration)	180	500g	1

備註：*非強制

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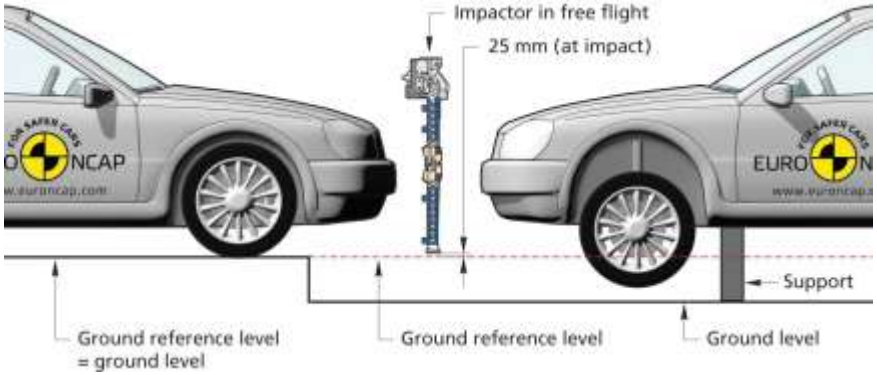
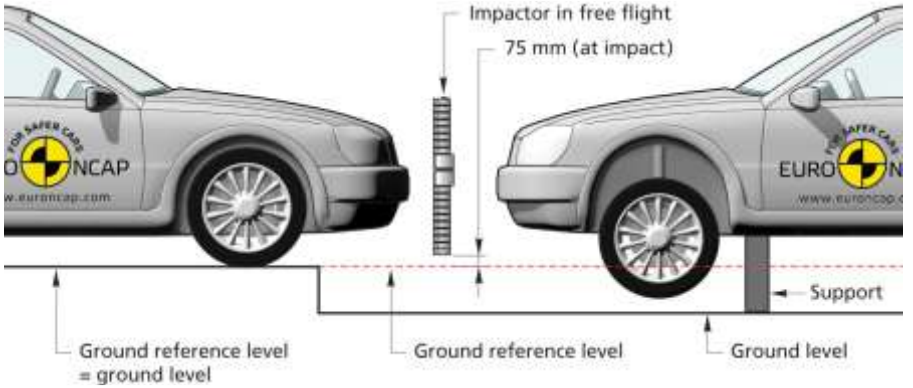
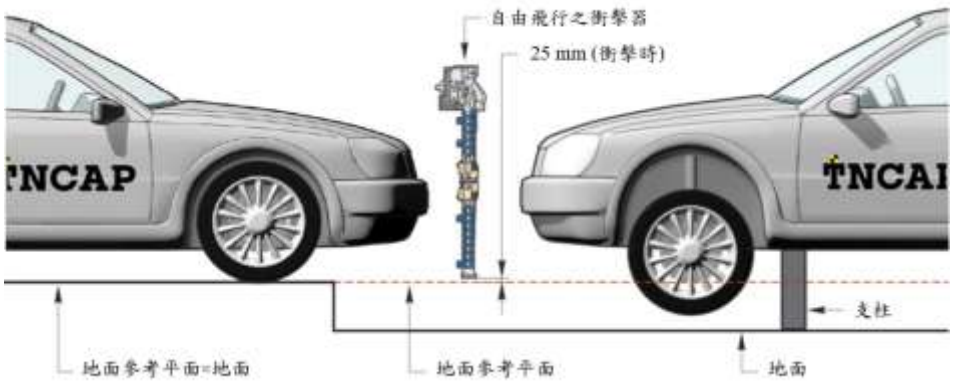
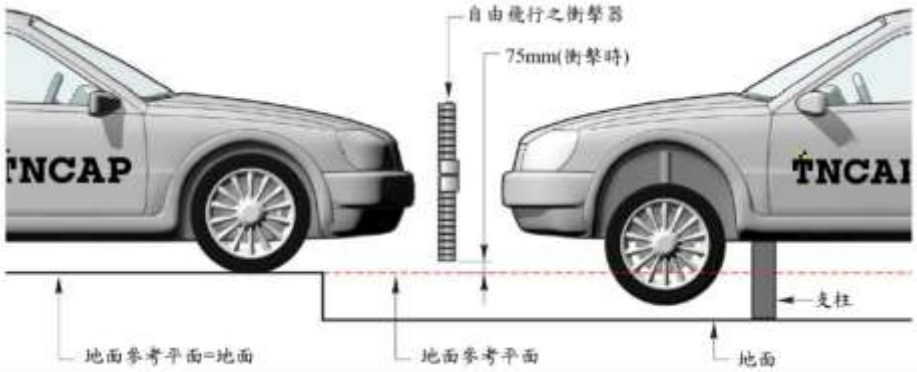
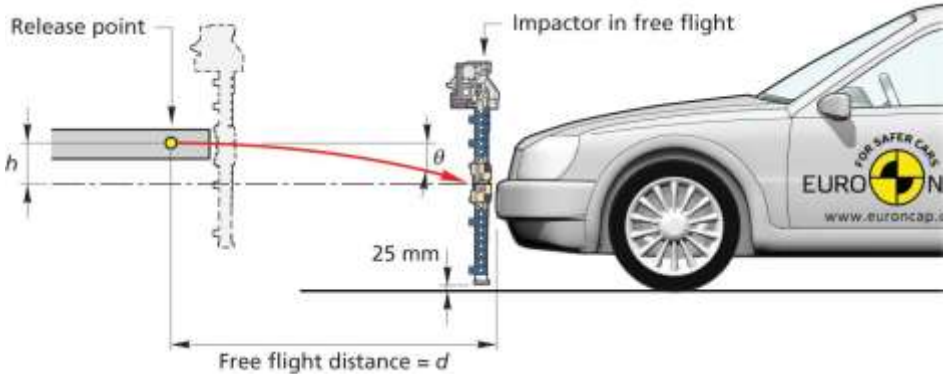
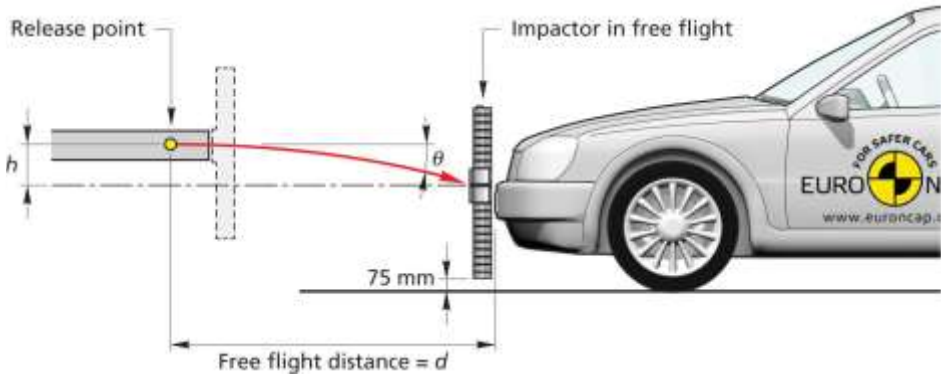
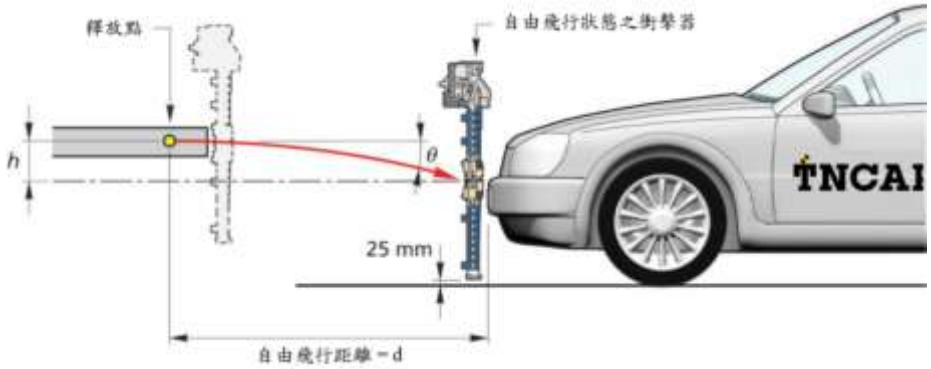
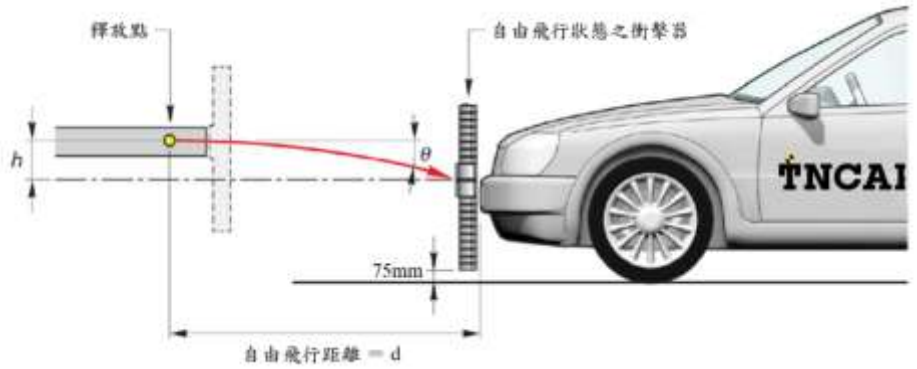
9.3.6 …  Figure 27: Legform to Bumper tests	9.3.6 …  **Figure 26: Legform to Bumper tests**
修訂TNCAP條文草案(第三版)	對應TNCAP第二版規章
3.9.9.3.6 …  圖27：保險桿之腿部模型試驗	3.9.9.3.6 …  圖26：保險桿之腿部模型試驗

2025 年版 Euro NCAP 規章	2022 年版 Euro NCAP 規章
9.4 Compensation for Gravity (horizontal firing) 9.4.3 …  Figure 28: Droop Compensation	**9.4 Compensation for Gravity (horizontal firing)** 9.4.3 …  **Figure 27: Droop Compensation**
修訂TNCAP條文草案(第三版)	對應TNCAP第二版規章
3.9.9.4　重力補償（水平發射） 3.9.9.4.3 …  圖28：下墜補償	3.9.9.4　重力補償（水平發射） 3.9.9.4.3 …  圖27：下墜補償

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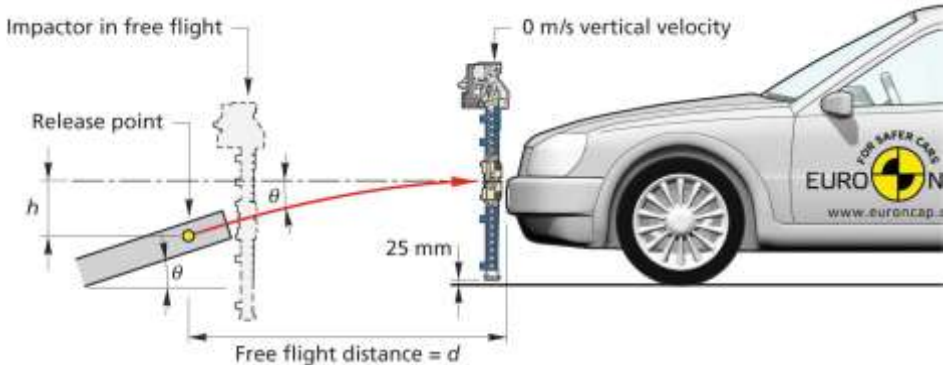
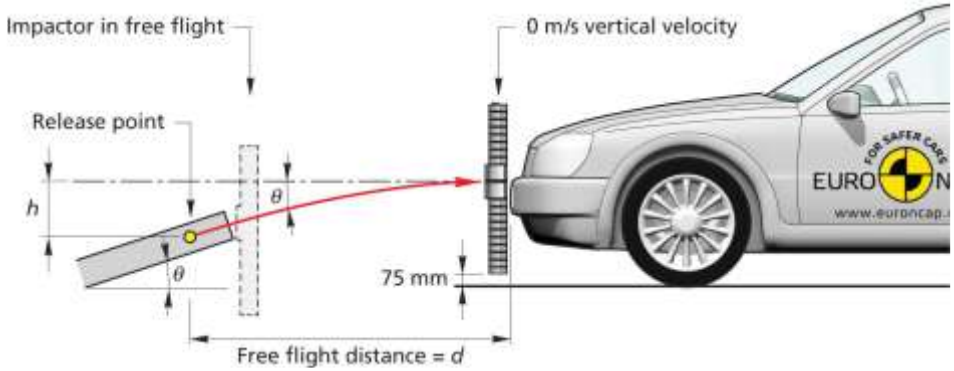
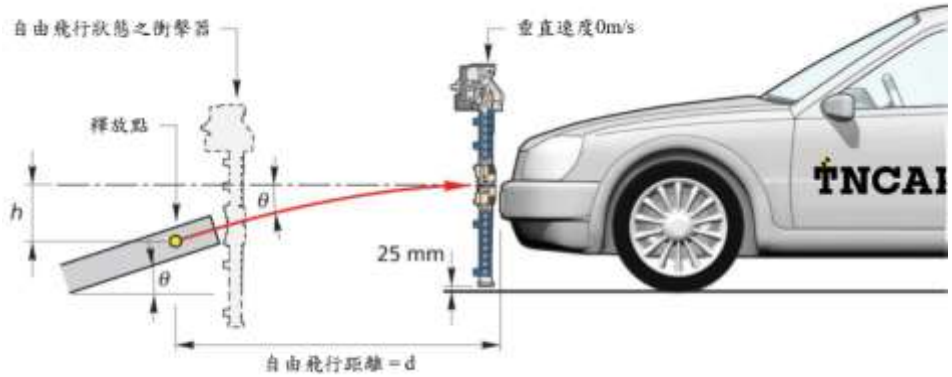
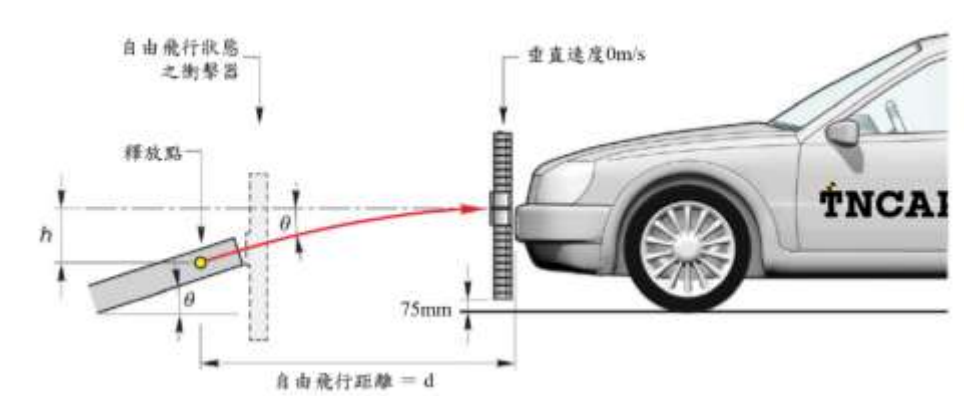
9.5 Ballistic Compensation …  Figure 29 Ballistic compensation	**9.5 Ballistic Compensation** …  **Figure 28: Ballistic Correction Procedure**
修訂TNCAP條文草案(第三版)	對應TNCAP第二版規章
3.9.9.5　彈道補償 …  圖29：彈道補償	3.9.9.5　彈道補償 …  圖28：彈道修正程序

3.20防止誤踩踏板之加速控制系統試驗規章
UN No. 175 Acceleration Control for Pedal Error (ACPE) 01版

UN R175 01 版原文	TNCAP 條文草案(第三版)
2. Definitions For the purposes of this Regulation:	3.20.1 名詞釋義
2.1. “Acceleration Control for Pedal Error (ACPE)” means a system to detect misapplication of the accelerator control by the driver and to control unintended acceleration. ...	3.20.1.1 防止誤踩踏板之加速控制系統(Acceleration Control for Pedal Error；ACPE)：係指偵測駕駛人誤使用加速器控制，並控制非預期加速之系統。
2.3. "Common space" means an area on which two or more information functions (e.g. symbol) may be displayed but not simultaneously.	3.20.1.2 共用空間(Common space)：係指可供二個或以上之功能訊息（如符號）顯示之空間，但不同步顯示。
2.4. "Dry road affording good adhesion" means a road with a sufficient nominal Peak Braking Coefficient (PBC) that would permit: (a) A mean fully developed deceleration of at least 9 m/s^2; or (b) The design maximum deceleration of the relevant vehicle; whichever is lower.	3.20.1.3 具備良好抓地力之乾燥道路(Dry road affording good adhesion)：係指具備充足標稱最高煞車係數(PBC)以允許下述狀況發生之道路： (1)平均減速度至少 9 公尺／秒平方；或 (2)達到相關車輛之設計最高減速度。 以較低者為主。
2.5. "Sufficient nominal Peak Braking Coefficient (PBC)" means a road surface friction coefficient of: (a) 0.9, when measured using the American Society for Testing and Materials (ASTM) of E1136-19 standard reference test tyre in accordance	3.20.1.4 充足標稱最高煞車係數(Sufficient nominal Peak Braking Coefficient (PBC))：係指道路表面摩擦係數： (1) 利用美國材料試驗學會(ASTM) E1136-19 標準參考試驗輪胎，並依照美國材料試驗學會 ASTM E1337- 19 試驗方法，以時速 64

UN R175 01 版原文	TNCAP 條文草案(第三版)
with ASTM Method E1337-19 at a speed of 40 mph; (b) 1.017, when measured using either: (i) The American Society for Testing and Materials (ASTM) of F2493-20 standard reference test tyre in accordance with ASTM Method E1337 19 at a speed of 40 mph; or (ii) The k-test method specified in Appendix 2 to Annex 6 of UN Regulation No. 13-H. (c) The required value to permit the design maximum deceleration of the relevant vehicle, when measured using the k-test method in Appendix 2 to Annex 13 of UN Regulation No. 13.	公里／小時進行量測時為 0.9。 (2) 依照下述其中一種方法量測時為 1.017： (A) 利用美國材料試驗學會 (ASTM) F2493-20 標準參考試驗輪胎，並依照美國材料試驗學會 ASTM E1337- 19 試驗方法，以時速 64 公里／小時進行量測；或 (B) 車輛安全檢測基準「附件四十三、防鎖死煞車系統」所述之抓地力係數(K)試驗方法。 (3) 於使用車輛安全檢測基準「防鎖死煞車系統」所述之抓地力係數(K)試驗方法進行測量時，容許 M2、M3、N2 或 N3 車輛可達設計最大減速度所需值。
2.6. "Self-check" means an integrated function that checks for a system failure on a continuous basis at least while the system is active.	3.20.1.5 自我檢查(Self-check)：係指一個至少於系統作動時以連續方式進行系統偵錯之整合功能。
2.7. "Obstacle" means either a vehicle, or a wall-like structure or a pedestrian.	3.20.1.6 障礙(Obstacle)：係指車輛或如牆壁之結構體或行人。
2.8. “Automatic Transmission” means any transmission which does not require the use of a clutch control by the driver in order to shift gears (automatic transmissions include e.g. single gear transmissions, continuously- variable transmissions, transmissions with an automated	3.20.1.7 自動變速箱(Automatic Transmission)：係指任意無需駕駛人使用離合器控制以切換檔位（自動變速箱包含如單一檔位變速箱、連續變化變速箱、具備自動化離合器之變速箱等）之變速箱。

UN R175 01 版原文	TNCAP 條文草案(第三版)
clutch).	
2.9. "Mass of a vehicle in running order" means the mass of an unladen vehicle with bodywork, including coolant, oils, at least 90 per cent of fuel, 100 per cent of other liquids, driver (75 kg) but except used waters, tools, spare wheel.	3.20.1.8 可行駛狀態之車重(Mass of a vehicle in running order)：係指含車身之無負載車輛重量，包含冷卻液、機油、至少 90%之燃油、100%之其他液體及駕駛（75 公斤），惟排除廢水、隨車工具及備用輪胎。
2.10. "Extreme outer edge" on either side of the vehicle, means the plane parallel to the median longitudinal plane of the vehicle and touching its lateral outer edge, disregarding the projection: (a) Of tyres near their point of contact with the ground, and of connections for tyre- pressure gauges; (b) Of any anti-skid devices mounted on the wheels; (c) Of devices for indirect vision; (d) Of side direction-indicator lamps, end- outline marker lamps, front and rear position lamps, parking lamps, retro-reflectors and side-marker lamps.	3.20.1.9 極端外部邊緣 (Extreme outer edge)：係指平面平行於車輛之中央縱向平面並接觸其側方外部邊緣，且於不考慮下述投影之狀況下的車輛其中一側： (1) 靠近地面接觸點之輪胎，以及胎壓計之連接處； (2) 任意安裝於車輪上之防滑裝置； (3) 間接視野裝置； (4) 側方之方向燈、輪廓邊界標識燈、車寬燈（前位置燈）、尾燈（後位置 燈）、停車燈、反光標誌，以及側方標識燈。
2.11. "Vehicle width" means the distance between the two vertical planes defined in paragraph 2.10.	3.20.1.10 車輛寬度(Vehicle width)：係指規定 3.20.1.9 定義之兩垂直平面之間的距離。
2.12. “Moving off” means starting from stationary and moving forward or rearward after releasing the brakes.	3.20.1.11 起步(Moving off)：係指自靜態開 始並於釋放煞車後，向前或向後移動。

UN R175 01 版原文	TNCAP 條文草案(第三版)
2.13. “Maximum Creeping Speed” means the maximum steady state speed which the vehicle achieves on a horizontal surface with the powertrain engaged and operating at idle, and no acceleration or brake demand. 2.13.1. “Creeping” means the state of motion with the powertrain engaged and operating at idle, and no acceleration or brake demand, up to the Maximum Creeping Speed. 2.14. "Reducing the effective demand of the accelerator control to zero" means where the resulting power/torque demand from the accelerator control is reduced to the equivalent of the driver removing any input into the accelerator control, irrespective of the actual input being given (this is exclusive of power/torque demand not in connection with the relative position of the accelerator control, e.g. rollback prevention, anti-stall).	3.20.1.12 最高蠕行速度(Maximum Creeping Speed)：係指車輛於水平地面上，隨著動力系統連接、於怠速運作，以及無加速或煞車需求之狀況下所達成之穩定狀態的最高速度。 3.20.1.13 蠕行(Creeping)：係指隨著動力系統連接、於怠速運作，以及無加速或煞車需求之狀況下，至多於最高蠕行速度之移動狀態。 3.20.1.14 將加速器控制之有效需求降低至零(Reducing the effective demand of the accelerator control to zero)：係指不考慮已實際提供之輸入下（排除能量／扭力需求未與加速器控制相關位置連接之情形，例如：倒退防止措施、防失速措施），加速器控制之最終能量／扭力需求減少至相等於駕駛人停止任意對加速器控制之輸入的情形。
5. Specifications 5.1. Performance Requirements The following performance requirements shall apply to a vehicle with no trailer coupled, with a mass between maximum mass and mass in running order, and whose powertrain management system is properly operational. 5.1.1. The ACPE shall be able to limit unintended acceleration of the vehicle when an accelerator control misapplication by the driver has been detected at least:	3.20.2 規格規定 3.20.2.1 性能要求 下述性能要求應適用於未與拖車聯結、重量介於最大重量與可行駛狀態之車重，且傳動管理系統適當運作之車輛。 3.20.2.1.1ACPE 應能至少於下述狀況偵測駕駛人誤使用加速器控制時，限制車輛之非預期加速： (1) 當行駛方向選擇為向前，且障礙存在於車輛之前方時，及

UN R175 01 版原文	TNCAP 條文草案(第三版)
(a) When an obstacle exists in front of the vehicle when the driving direction is selected to be forward, and (b) When an obstacle exists behind the vehicle when the driving direction is selected to be rearwards.	(2) 當行駛方向選擇為向後，且障礙存在於車輛之後方時。
5.1.2. An accelerator control application resulting in continuous acceleration and having a velocity of at least 400 per cent per second over a travel distance of at least 70 per cent of the total travel distance of the accelerator control, and reaching a maximum position of the accelerator control of at least 90 per cent with that velocity shall be regarded as an accelerator control misapplication in the context of the paragraph 5.1.1.	3.20.2.1.2 加速器控制之使用上造成連續加速，並以至少每秒 400%的速度、總行程距離至少 70%的行程距離，且達到加速器控制至少 90%的最大位置者，應被作為 3.20.2.1.1 內容中所述加速器控制誤使用。
5.1.3. Notwithstanding paragraph 5.1.2., in the case of systems that implement force-based triggering of the ACPE, an accelerator control force greater than the triggering threshold shall be considered as accelerator control misapplication. The manufacturer shall justify the triggering threshold to the satisfaction of the Type Approval Authority.	3.20.2.1.3 儘管 3.20.2.1.2 已有規定，於系統實施基於強制方式觸發 ACPE 者，加速器控制力大於觸發值域者應視為加速器控制誤使用。車輛業者為滿足檢測機構應說明觸發值域。
5.1.4. The ACPE shall control acceleration when the vehicle is accelerated both from standstill and, as relevant, while creeping. 5.1.4.1 An ACPE intervention is not required when: (a) there is an AEBS warning or intervention occurring; or (b) the vehicle speed is greater than 10 km/h.	3.20.2.1.4ACPE 應於車輛係自靜止及蠕行（如相關時）開始加速時皆控制加速。 3.20.2.1.4.1 於下述狀況發生時，無需 ACPE 介入： (1) AEBS 警示或介入發生中，或； (2) 車輛速度大於 10km/h。

UN R175 01 版原文	TNCAP 條文草案(第三版)
5.1.4.2 If ACPE is not ready to perform an intervention 6 s after the initiation of the vehicle powertrain, information of this status shall be indicated to the driver. This information shall exist until the system has been successfully initialised.	3.20.2.1.4.2 若 ACPE 未於車輛動力系統啟動 6 秒後完成執行介入之預備時，應向駕駛人提供此狀態之資訊。該資訊應持續存在直至系統已成功完成初始化。
5.1.5. The ACPE shall limit vehicle acceleration in order to prevent or mitigate a collision with an obstacle located not more than 1.5 m in front of or behind the vehicle, in the vehicle path, at the time the triggering conditions (as outlined in paragraph 5.1.2.) are achieved, provided:	3.20.2.1.5 若於下述情況下，ACPE 應於達到觸發條件（如 3.20.2.1.2 所述）時，限制車輛加速以防止或減輕與位於車輛前方或後方之車輛路徑上，距離不超過 1.5 公尺之障礙的碰撞：
(a) Vehicle external influences allow for the required acceleration inhibition, i.e.: (i) The road is flat, horizontal and dry affording good adhesion; (ii) The weather conditions do not affect the performance of the vehicle (e.g. no storm, not below 0°C);	(1) 車輛外部影響允許執行所需之加速抑制，即： (A) 於平坦、水平且具備良好抓地力之乾燥道路上； (B) 於不受影響車輛性能之天氣狀況（如未有風暴，溫度不低於攝氏零度）；
(b) The vehicle state itself allows for the required acceleration inhibition, e.g.: (i) The tyres are in an appropriate state and properly inflated; (ii) The brakes if intended to be used are properly operational (brake temperature, pads condition etc.); (iii) There is no severe uneven load distribution; (iv) No trailer is coupled to the motor vehicle and the mass of the motor vehicle is between maximum mass and mass in running order conditions;	(2) 車輛本身狀態允許執行所需加速抑制，例如： (A) 輪胎為合適狀態且已適當充氣； (B) 預期使用之煞車適於運作（煞車溫度、來令片條件）； (C) 無嚴重不均之負載分配； (D) 無拖車聯結至機動車輛，且車輛之重量介於最大重量及可行駛狀態間之狀況； (E) 車輛之傳動管理系統適當地運作。 (F) 若車輛配備尾門、車廂蓋或後擋板，則其於車輛運作之正常

UN R175 01 版原文	TNCAP 條文草案(第三版)
(v) The vehicle's powertrain management system is properly operational (vi) If the vehicle is equipped with rear hatches, trunk lids or tailgates, they are closed and latched in the normal conditions of vehicle operation.	狀況下被關閉並閂上。
(c) There are no external influences affecting the physical sensing capabilities, i.e.: (i) The ambient illumination conditions are at least 1000 Lux and there is no extreme blinding of the sensors (e.g. direct blinding sunlight, highly radar-reflective environment); (ii) The target vehicle is not extreme with regard to the Radar Cross Section (RCS) or the shape/silhouette (e.g. below fifth percentile of RCS of all M1 vehicles) (iii) There are no significant weather conditions affecting the sensing capabilities of the vehicle (e.g. heavy rain, dense fog, snow, dirt); (iv) There are no overhead obstructions close to the vehicle;	(3) 無影響實體感測能力之外部影響，即： (A) 環境照度狀況處於至少 1000Lux，且無感測器之極端致盲狀況（例如：直射致盲日光，高度雷達反射環境）； (B) 目標車輛於雷達截面積(RCS)或形狀/輪廓上無極端狀況（例如：小於所有 M1 類車輛之第五百分位 RCS）； (C) 無影響車輛感測能力之重大氣候條件（例如：暴雨、濃霧、降雪、塵土）； (D) 接近車輛處未有過高之障礙；
(d) The situation is unambiguous, i.e.: (i)The obstacle is stationary, unobstructed, clearly separated from other objects in the driving direction; (ii) In the case of a vehicle obstacle, the centre line of the obstacle is located between two vertical longitudinal planes defining the extreme outer edge of the vehicle.	(4) 狀況明確下，即： (A) 障礙為靜態、不受阻礙，且明確與所行駛方向內其它物件區隔； (B) 於障礙為車輛之狀況下，障礙之中心線係位於定義車輛之極端外部邊緣的兩垂直縱向平面之間。 (C) 於障礙為牆壁之狀況下，牆壁與車輛之間的重疊率至少為 1.0

UN R175 01 版原文	TNCAP 條文草案(第三版)
(iii) In the case of a wall obstacle, the overlap between wall and vehicle is at least 1.0 m. (iv) In the case of a pedestrian obstacle, the distance between the centre line of the pedestrian obstacle and the centre line of the vehicle is not more than 25 per cent of the vehicle width. (v) The direction of travel is straight with no curve, and the vehicle is not turning at an intersection and following its lane. (vi) The obstacle is a vehicle of category M1, or a wall-like structure with a width of at least 2.0 m and a height of at least 1.0 m or a silhouette of a pedestrian that relates to a human being. (vii) The obstacle is located at least 1.0m from the vehicle at the time the triggering conditions (as outlined in paragraph 5.1.2.) are achieved; (viii)The vehicle is travelling at or below its maximum creeping speed in the forward direction and at or below 4km/h in rearward direction[3]. [3] This condition shall be reviewed by September 2032.	公尺。 (D) 於障礙為行人之狀況下，行人障礙中心線及車輛中心線之間的距離不超過車輛寬度的 25%。 (E) 行駛方向為直線無彎曲，且車輛未於路口轉向並跟隨著其車道。 (F) 障礙為 M1 類車輛、與牆壁相似且至少具備 2.0 公尺之寬度及 1.0 公尺之高度的結構，或能與人類連結之行人剪影。 (G) 障礙於達成觸發條件（如 3.20.2.1.2 所述）之時，係位於距離車輛至少 1.0 公尺處； (H) 車輛係以處於或低於最高蠕行速度向前，以及 4km/h 向後行駛。~~(本規定配合此項附件討論期程再行調整)~~(此備註不適用 TNCAP 規章故刪除)
5.1.5.1 When conditions deviate from those listed above, the system shall not deactivate or unreasonably switch the control strategy. This shall be demonstrated by the manufacturer in accordance with Annex 3 of this Regulation and, if deemed justified, may be followed by testing by the Technical Service in conditions deviating from those listed above or those in paragraph 6. The rationale for and the results of this verification testing shall be appended to the test report.	3.20.2.1.5.1 於條件偏離上述所列項目之狀況下，系統不應解除或無理地切換控制之策略。此項目應由車輛業者依照 3.20.4 進行展示，或可於視為合理之狀況下，由檢測機構於偏離上述所列項目或 3.20.3 之條件下測試進行依循。此驗證測試之合理性及結果應檢附於試驗報告中。

UN R175 01 版原文	TNCAP 條文草案(第三版)
5.1.6. ACPE performance	3.20.2.1.6ACPE 性能
5.1.6.1. Acceleration from standstill In the case that a collision is not prevented, the collision speed shall be no greater than 8 km/h higher than the vehicle speed at the point where the triggering conditions specified in paragraph 5.1.2. are met.	3.20.2.1.6.1 自靜止進行加速 於無法避免碰撞之狀況下，碰撞速度不應高於 3.20.2.1.2 所述之觸發條件滿足當下之車輛速度 8km/h。
In addition, the collision speed shall not be greater than 70 per cent of that speed the vehicle would have had in the same position and under the same circumstances but without any ACPE intervention.	另碰撞速度不應高於相同位置且於相同情況下，惟無 ACPE 介入將產生之車輛速度的 70%。
5.1.6.1.1. Low power to weight vehicles, In the case of vehicles that do not exceed 8 km/h without ACPE in the test scenarios but for which a speed reduction of 30 per cent cannot be achieved due to a low engine power to test mass ratio, the speed reduction shall be of at least 15 per cent.	3.20.2.1.6.1.1 低功率重量比之車輛 於不超過 8km/h 之車輛於試驗情境中無 ACPE，惟因低引擎功率對試驗重量比而無法達成 30%的速度減少量之狀況下，速度減少量應至少為 15%。
5.1.6.2. Acceleration while creeping, In the case a collision is not prevented, the ACPE shall reduce the effective demand of the accelerator control to zero at or before the point of collision.	3.20.2.1.6.2 蠕行時進行加速 於碰撞無法避免之狀況下，ACPE 應於碰撞點或其之前將加速器控制之有效需求降低至零。
5.1.7. During any intervention, the vehicle acceleration shall continue to be limited by the ACPE. The intervention may be ended when the obstacle is no longer detected, or the driver has interrupted the function. The	3.20.2.1.7 於任意介入期間，車輛加速應持續受到 ACPE 之限制。介入可於不再偵測障礙，或駕駛人已中斷功能時受到終止。車輛業者應向檢測機構宣告 ACPE 連續性條件。

UN R175 01 版原文	TNCAP 條文草案(第三版)
Manufacturer shall declare the ACPE continuation conditions to the technical service.	
5.1.8. The effectiveness of ACPE shall not be adversely affected by magnetic or electrical fields. This shall be demonstrated by fulfilling the technical requirements and respecting the transitional provisions of the 06 or later series of amendments to UN Regulation No. 10.	3.20.2.1.8ACPE 之效能不應受到電場或磁場之影響。此項目應透過滿足技術要求且符合車輛安全檢測基準「附件五十六、電磁相容性」進行展示。
5.1.9. Conformity with the safety aspects of electronic control systems shall be shown by meeting the requirements of Annex 3.	3.20.2.1.9 應透過滿足 3.20.4 之要求以展現電子控制系統之安全層面符合規定。
5.1.10. The ACPE shall inform the driver of its intervention in accordance with paragraph 5.4.2.	3.20.2.1.10ACPE 應依照 3.20.2.4.2 向駕駛人通知其介入。
5.1.11. Interruption of ACPE by driver	3.20.2.1.11 駕駛人之 ACPE 介入
5.1.11.1. The ACPE shall provide a means for the driver to interrupt its intervention. This interruption shall be started by any intentional action which indicates that the driver has recognised the situation.	3.20.2.1.11.1ACPE 應對駕駛人提供一個用於中斷其介入之手段。前述中斷應藉由任意顯示駕駛人已識別相關情形之中斷行為而開始。
5.1.11.2. In the case of interruption by maintaining the accelerator control application, there shall be no rapid increase of acceleration.	3.20.2.1.11.2 於中斷係藉由維持加速器控制之施加，則不應有急促之加速量增加。

UN R175 01 版原文	TNCAP 條文草案(第三版)
5.1.11.3. The fulfilment of these requirements shall be documented and demonstrated by the manufacturer to the Approval Authority during the inspection of the safety concept as part of the assessment to Annex 3.	3.20.2.1.11.3 應就前述要求之達成情形進行記錄，且由車輛業者於 3.20.4 之評估期間，作為安全性概念檢驗之一部分向檢測機構展示。
5.1.12. The performance requirements shall be verified using the test procedure as described in section 6.6.1. and 6.6.2.	3.20.2.1.12 性能要求應使用 3.20.3.6.1 及 3.20.3.6.2 所述試驗程序進行驗證。
5.2. Deactivation	3.20.2.2 解除
5.2.1. Short term deactivation When a vehicle is equipped with a means to manually deactivate the ACPE, the ACPE shall be automatically reinstated at the initiation of any new engine start (or run cycle, as relevant). This requirement does not apply when a new engine start (or run cycle, as relevant) is performed automatically, e.g., the operation of a stop/start system. A deactivation warning shall be given at least at the time of deactivation.	3.20.2.2.1 短期解除 於車輛配備有手動解除 ACPE 之手段時，ACPE 應能於任意新引擎啟動（或運轉循環，如相關時）之開始時自動恢復運作。於新引擎啟動（或運轉循環，如相關時）係自動執行時不適用此要求，例如：怠速熄火系統之運作。應至少於解除之時發出解除警示。
5.2.2. Long term deactivation Notwithstanding paragraph 5.2.1., a vehicle may be equipped with a long term deactivation means to manually deactivate the ACPE, in that case, the system is not required to be reinstated at the initiation of each engine start (or run cycle, as relevant). However, the system shall provide information to the driver by either (a), (b) or (c): (a) A constant optical warning signal shall inform the driver that the ACPE has been deactivated. The yellow warning signal specified in paragraph	3.20.2.2.2 長期解除 儘管 3.20.2.2.1 已有規定，車輛仍可配備有長期解除手段以手動解除 ACPE，於相關狀況下，系統無須於每一次新引擎啟動（或運轉循環，如相關時）之開始時恢復運作。惟系統應依(1)、(2)或(3)中其一向駕駛人提供資訊： (1) 一恆亮之光學警示訊號應向駕駛人通知 ACPE 已被解除。3.20.2.4.3 所述之黃色警示訊號可用於此目的；

UN R175 01 版原文	TNCAP 條文草案(第三版)
5.4.3. may be used for this purpose; (b) The driver shall be periodically informed that the ACPE has been deactivated. In this case this information shall be given for a minimum of 10 seconds or until driver confirmation. This information shall be given at least either every 7 days or every 10 engine starts (or run cycles, as relevant), not counting when a new engine start (or run cycle, as relevant) is performed automatically, e.g. the operation of a stop/start system. This information shall be distinct from the failure warning signal specified in paragraph 5.4.3.;	(2) 應定時向駕駛人通知 ACPE 已被解除。於此狀況下，應最少每十秒一次或直到駕駛人確認為止前發送此資訊。資訊應於不計新引擎啟動（或運轉循環，如相關時）係自動執行下，例如：怠速熄火系統之運作，至少每七天或每十次引擎啟動（或運轉循環，如相關時）時發出。此資訊應與 3.20.2.4.3 所述故障警示訊號有所區別；
or	或
(c) If deactivation is only for one direction of operation (forward or rearwards), a constant optical warning shall be given when the corresponding driving direction is selected for first time in the engine start cycle (or run cycle, as relevant). The long-term deactivation process shall be designed in such a way that deactivation shall not be possible with less than 2 deliberate actions.	(3) 若解除僅適用於單一之運作方向（前進或後退）時，一恆亮之光學警示訊號應於對應行駛方向於引擎啟動循環（或運轉循環，如相關時）首次被選擇時發出。長期解除程序應以解除不少於兩個之正面行為方式執行下進行設計。
5.2.3. Automatic deactivation	3.20.2.2.3 自動解除
5.2.3.1. When the vehicle is equipped with a means to automatically deactivate the ACPE, for instance in situations such as carrying a bicycle rack or towing a trailer, the following conditions shall apply as appropriate:	3.20.2.2.3.1 於車輛配備有自動解除 ACPE 之手段時，例如於搭載自行車架或牽引一部拖車之狀況下，應依實際狀況適用下述條件：

UN R175 01 版原文	TNCAP 條文草案(第三版)
5.2.3.1.1. The vehicle manufacturer shall provide a list of situations and corresponding criteria where the ACPE is automatically deactivated to the technical service at the time of type-approval and it shall be annexed to the test report.	3.20.2.2.3.1.1 車輛業者應向執行機構及檢測機構提供狀況之列表以及 ACPE 自動解除之對應指標。
5.2.3.1.2. The ACPE shall be automatically reactivated as soon as the conditions that led to the automatic deactivation are not present anymore.	3.20.2.2.3.1.2 一旦於導致自動解除之狀況不再存在時，ACPE 應自動重新啟動。
5.2.3.1.3. A deactivation warning shall be given at least at the time of deactivation unless a failure warning is given as per paragraph 5.3.3.	3.20.2.2.3.1.3 除故障警示已依照 3.20.2.3.3 發出外，解除警示應至少於解除之時發出。
5.2.3.1.3.1. While an Automated Driving System is in control of the vehicle, or an Advanced Driver-Assistance System is in active mode (e.g. ALKS or ACSF category A is active), the ACPE may be suspended or its control strategies adapted without indication to the driver, as long as it remains ensured that the vehicle provides at least the same acceleration suppression capabilities as the ACPE. The suspension of the ACPE or the adapted control strategies shall be documented and demonstrated by the manufacturer to the Approval Authority during the inspection of the safety concept as part of the assessment to Annex 3.	3.20.2.2.3.1.3.1 於自動駕駛系統正在控制車輛，或先進駕駛人輔助系統（例如：ALKS 或 ACSF 類型 A 為開啟狀況）處於啟動模式時，一旦維持於確保車輛能提供至少與 ACPE 相同之加速抑制能力下，可暫停 ACPE 或其控制策略於未向駕駛人顯示之狀況下進行調適。ACPE 之暫停或已調適之控制策略應被記錄，並由車輛業者向檢測機構於 3.20.4 之評估期間，作為安全性概念檢驗之一部分向檢測機構展示。
5.3. Failure detection / self-check	3.20.2.3 故障偵測/自我檢查

UN R175 01 版原文	TNCAP 條文草案(第三版)
5.3.1. A failure warning shall be given to the driver when there is a failure in the ACPE that prevents the requirements of this Regulation being met. The warning shall be as specified in paragraph 5.4.3.	3.20.2.3.1 於 ACPE 產生故障並符合其滿足本規章要求時，應向駕駛人發出故障警示。相關警示應如 3.20.2.4.3 所述。
5.3.1.1. It is not required to provide the driver with a failure warning signal to indicate that the ACPE is temporarily not available, for example due to inclement weather conditions.	3.20.2.3.1.1 於指示 ACPE 暫時無法使用時（例如因極端天氣狀況），無須向駕駛人發出故障警示訊號。
5.3.2. There shall not be an appreciable time interval between each ACPE self-check, and subsequently there shall not be a delay in illuminating the warning signal, in the case of an electrically detectable failure. However, if the vehicle speed is greater than 10 km/h at the time a failure is detected, the warning signal may be suppressed until the next time the vehicle speed is below 10 km/h.	3.20.2.3.2 於可電子偵測故障情況下，每次 ACPE 之自我檢查區間不應有明顯之時間間隔，且後續之警示訊號亮起亦不應延遲。惟若車輛於故障受到偵測之時速度高於 10km/h，則警示訊號可被暫停直至下次車輛速度降低至 10km/h 以下。
5.3.3. A failure warning shall also be given to the driver in the case of a detected non- electrical failure condition (e.g. sensor blindness or sensor misalignment) unless a deactivation warning is given as per paragraph 5.2.3.1.3.	3.20.2.3.3 除解除警示已依 3.20.2.2.3.1.3 發出外，於偵測到任何非電氣故障之狀況時（例如感測器失效或感測器未對準），亦應向駕駛人發出故障警示訊號。
5.4. Warning signals	3.20.2.4 警示訊號
5.4.1. General	3.20.2.4.1 通則

UN R175 01 版原文	TNCAP 條文草案(第三版)
5.4.1.1. The optical warning signals shall be visible even by daylight; the satisfactory condition of the signals must be easily verifiable by the driver from the driver's seat.	3.20.2.4.1.1 光學警示訊號應於白天時清楚可視，並設置於當駕駛者乘坐於駕駛座時，視野範圍內清楚可辨識之適當位置。
5.4.1.2. Each ACPE optical warning signal shall be activated either when the engine start (or run, as relevant) switch is turned to the "on" (run) position or when the engine start (or run, as relevant) switch is in a position between the "on" (run) and "start" position that is designated by the manufacturer as a check position (initial system (power-on)). This requirement does not apply to warning signals shown in a common space.	3.20.2.4.1.2 每一 ACPE 光學警示訊號應於引擎啟動（或運轉循環，如相關時）切換至「on（開啟）」位置，或切換至一個介於「on（開啟）」及「start（啟動）」位置之間，由車輛業者設計作為檢查位置（初始化系統（電源開啟））時啟動。此規定不適用於共用空間顯示區內之警示訊號。
5.4.2. Intervention warning signal An intervention warning shall be given by an optical signal. In addition, a haptic or acoustic signal shall be provided to the driver, unless such a signal is already being provided by another vehicle system comprising an object detection capability (e.g. parking distance warning). The optical warning signal may be the flashing of the failure warning signal. A description of the warning indication presented to the driver shall be provided by the vehicle manufacturer at the time of type- approval and recorded in the test report.	3.20.2.4.2 介入警示訊號 應藉由光學訊號發出介入警示。此外，除相關警示已由另一個組成物件偵測能力之車輛系統（例如：停車距離警示）提供外，應向駕駛人提供一個觸覺或聲音訊號。光學警示訊號可為閃爍之故障警示訊號。向駕駛人呈現警示之說明應由車輛業者提供，並記錄於試驗報告中。
5.4.3. Failure warning signal The failure warning shall be given by a constant yellow optical signal.	3.20.2.4.3 故障警示訊號 故障警示應藉由一個恆亮之黃色光學訊號發出。

UN R175 01 版原文	TNCAP 條文草案(第三版)
5.5. Provisions for the Periodic Technical Inspection	(定期檢驗相關規定，僅調和部分內容)
5.5.1. At a Periodic Technical Inspection, it shall be possible to confirm the correct operational status of the ACPE by a visible observation of the failure warning signal status. Following a “power-ON” and any bulb check, the failure warning signal shall remain illuminated if any failure was present at the end of the previous engine start (or run, as relevant) cycle, unless this failure is detected to be no longer present. In the case of the failure warning signal being in a common space, the common space must be observed to be functional prior to the failure warning signal status check.	
5.5.2. At the time of type approval, the means to protect against simple unauthorised modification of the operation of the failure warning signal chosen by the manufacturer shall be confidentially outlined. Alternatively, this protection requirement is fulfilled when a secondary means of checking the correct operational status of the ACPE is available.	3.20.2.5 於評等期間，由車輛業者所選擇用於防止故障警示訊號運作之簡易未授權修改的手段應機密地概述。 作為替代，於用於檢查 ACPE 正確運作狀態之次要手段可用時，視為滿足此保護要求。
6. Test procedure 6.1. Test surface and environment conditions 6.1.1. The test shall be performed on a flat, dry, concrete or asphalt road	3.20.3 試驗程序 3.20.3.1 試驗表面及環境條件 3.20.3.1.1 試驗場地應於乾燥、平坦且有良好摩擦係數之水泥或柏油路

UN R175 01 版原文	TNCAP 條文草案(第三版)
affording good adhesion.	面。
6.1.2. The test surface has a consistent slope between level and 1 per cent.	3.20.3.1.2 試驗表面應具備一致之坡度，其應介於水平與 1%之間。
6.1.3. The ambient temperature shall be between 0°C and 45°C.	3.20.3.1.3 環境溫度應介於攝氏 0 度至 45 度之間。
6.1.4. The horizontal visibility range shall allow the target to be observed throughout the test.	3.20.3.1.4 水平可見範圍應可使目標於整個試驗中受到觀察。
6.1.5. The tests shall be performed when there is no wind liable to affect the results.	3.20.3.1.5 試驗應於風速不影響試驗結果之狀況下執行。
6.1.6. Natural ambient illumination must be homogeneous in the test area and in excess of 1000 lux. It should be ensured that testing is not performed whilst driving towards, or away from the sun at a low angle.	3.20.3.1.6 試驗區域須具備均勻之自然環境照度，且照度超過 1000Lux。應確保試驗於朝向或遠離行駛時，日光不處於低角度位置。
6.1.7. At the request of the manufacturer and with the agreement of the Technical Service tests may be conducted under deviating test conditions (suboptimal conditions, e.g. on a not dry surface; below the specified minimum ambient temperature), whilst the performance requirements are still to be met.	3.20.3.1.7 依車輛業者要求且與檢測機構協商後，當性能要求仍可符合時，可於偏離試驗狀況下實施測試（次佳狀況，如於非乾燥表面；環境溫度低於特定最低要求）。
6.2. Instrumentation	3.20.3.2 儀器

UN R175 01 版原文	TNCAP 條文草案(第三版)
6.2.1. The speed of the vehicle shall be measured with an accuracy of +/- 0.1 km/h.	3.20.3.2.1 車輛之速度應以+/- 0.1 km/h 之準確度進行測量。
6.2.2. The position of the vehicle shall be measured with an accuracy of +/- 0.03 m.	3.20.3.2.2 車輛之位置應以+/- 0.03 m 之準確度進行測量。
6.2.3. The accelerator control force (if applicable) shall be measured with an accuracy of +/- 1 N.	3.20.3.2.3 加速器控制力（依實際狀況）應以+/- 1 N 之準確度進行測量。
6.2.4. The accelerator control position shall be measured with an accuracy of +/- 1%. Alternatively, at the choice of the manufacturer. This measurement may be taken from the vehicle's own position sensor.	3.20.3.2.4 加速器控制位置應以+/- 1%的準確度進行測量。作為替代，依照車輛業者之選擇，此量測可由車輛自身位置感測器採取。
6.2.5. Measurements shall be recorded at a frequency of at least 100 Hz.	3.20.3.2.5 量測應以至少 100 Hz 之頻率進行記錄。
6.3. Test Vehicle	3.20.3.3 試驗車輛
6.3.1. Pre-Test Conditioning If requested by the vehicle manufacturer: (a) The vehicle can be driven a maximum of 100 km on a mixture of urban and rural roads with other traffic and roadside furniture to initialise the sensor system. (b) The vehicle can undergo a sequence of brake activations in order to ensure the service brake system is bedded in prior to the test.	3.20.3.3.1 試驗前調整 若車輛業者要求： (1) 則車輛可於具備其他交通及道路側設備之都市及鄉村混合道路上至多行駛 100 公里以初始化感測器系統。 (2) 車輛於試驗前可透過煞車啟動之流程以確保常用煞車系統已經安置。

UN R175 01 版原文	TNCAP 條文草案(第三版)
Details of the pre-test condition strategy requested by the vehicle manufacturer shall be identified and recorded in the vehicle type approval documentation.	應識別且記錄由車輛業者所要求之試驗前調整策略之細節於車輛測試文件之中。
6.3.2. Prior to any testing, it shall be ensured that the ACPE is switched on and ready to function.During the conduct of the test the technical service need to ensure that the boundary conditions of the ACPE - as defined by the manufacturer - with regard to the detection of the test target are taken into account (e.g. avoid blocking of a sonar system used, ensure that a vision system used can properly identify the pedestrian test target used as a human by making it fully visible to the camera system before testing, etc.)	3.20.3.3.2 於任意試驗之前，應確保 ACPE 已切換至開啟並預備以運作。於試驗執行期間，檢測機構需要於將對試驗目標之偵測納入考量下（例 如:避免阻擋所使用之聲納系統、藉由使其於試驗前由攝影機系統完整拍攝，確保所使用視野系統可妥善識別做為人類所使用之行人試驗目表等），確保 ACPE 之邊界條件如車輛業者所定義。
6.3.3.Test mass The vehicle shall be tested: (a) At the minimum mass (mass in running order with an additional mass of maximum125 kg); (b) If this is deemed justified, the technical service may test at any other mass up to the technically permissible maximum laden mass as defined by the manufacturer. No alteration shall be made once the test procedure has begun.	3.20.3.3.3 試驗重量 車輛應以如下狀況進行試驗： (1) 處於最小重量（可行駛狀態之車重增加額外最大 125 公斤之重量）。 (2) 若視為合理之狀況下，檢測機構可於最高至技術允許最大載重之任意其他重量下進行試驗。一但試驗程序已經開始則不應進行任何變更。
6.4. Test Targets	3.20.3.4 試驗目標
6.4.1. The target used for the vehicle detection tests shall be a regular	3.20.3.4.1 用於車輛偵測試驗之目標應為一般大量生產之 M1 類小客

UN R175 01 版原文	TNCAP 條文草案(第三版)
high-volume series production passenger car of Category M1 or alternatively a "soft target" representative of a passenger vehicle in terms of its identification characteristics applicable to the sensor system of the ACPE under test according to either ISO 19206-1:2018 or ISO 19206-3:2021 at the choice of the manufacturer.	車，或代表客車之「軟式目標」，且依車輛業者選擇，就其識別性質而言，適用 ISO 19206-1:2018 或 ISO 19206-3:2021 試驗中之 ACPE 的感測器系統。
6.4.2. The targets used for the pedestrian detection tests shall be a child articulated "soft target" in its resting position with the articulation being switched off and be representative of the human attributes applicable to the sensor system of the ACPE under test according to ISO 19206-2:2018.	3.20.3.4.2 用於行人偵測試驗之目標，應為處於閒置位置且已將鉸接處關閉之孩童鉸接「軟式目標」，並依照 ISO 19206-2:2018 現適用於受試驗 ACPE 之感測器系統的人類特質。
6.5. Offset of vehicle and target	3.20.3.5 車輛與目標之偏置
6.5.1. The reference point for the location of the vehicle shall be the most rearward point on the centreline of the vehicle when going rearwards, and the most forward point of the vehicle when going forwards.	3.20.3.5.1 車輛位置之參考點應為向後行駛時車輛中心線上之最後點，以及向前行駛時車輛之最前點。
6.5.2. The lateral offset between the centreline of the vehicle target and the centreline of the vehicle shall be between 0.0 m and the distance to extreme outer edge of the vehicle.	3.20.3.5.2 介於車輛目標中心線及車輛中心線之間的側向偏置應介於 0.0 公尺以及與車輛之極端外部邊緣的距離之間。
6.5.3. The lateral offset between the centre line of the pedestrian	3.20.3.5.3 介於行人障礙中心線及車輛中心線之間的側向偏置不超過

UN R175 01 版原文	TNCAP 條文草案(第三版)
obstacle and the centre line of the vehicle is not more than 25 per cent of the vehicle width.	車輛寬度的 25%。
6.5.4. The orientation of the pedestrian target is to be determined by the technical service.	3.20.3.5.4 行人目標之定位係由檢測機構決定。
6.5.5. The orientation of the vehicle target shall be 0° or 180° respectively as defined in ISO 19206-3:2021, chosen by the technical service.	3.20.3.5.5 車輛目標之定位應分別如 ISO 19206-3:2021 所定義為角度 0 度或 180 度，並由檢測機構進行選擇。
6.6. Test procedures The test procedures shall be performed both in a forward and rearward direction and at least with the ACPE interventions triggered at 1.0 m (+0.1 m tolerance) and 1.5 m (-0.1 m tolerance) distance from the target position (as detailed in Table 1).	3.20.3.6 試驗程序 試驗程序就前進及後退方向，至少於 ACPE 介入距目標位置 1.0 公尺（容許誤差+0.1 公尺）及 1.5 公尺（容許誤差-0.1 公尺）受到觸發下執行（詳述如表一所示）。
Table 1 Test conditions (表格如頁末所示)	表一、試驗條件 (參末頁表格)
6.6.1. Test procedure for a stationary vehicle	3.20.3.6.1 對靜態車輛之試驗程序
6.6.1.1. Each test condition according to Table 1 shall be tested with and without the presence of the target. For tests without a target the ACPE shall	3.20.3.6.1.1 應對表一中每一試驗條件，於有目標存在以及無目標存在之狀況下進行試驗。對於無目標之試驗而言，如需要時應解除 ACPE，

UN R175 01 版原文	TNCAP 條文草案(第三版)
be deactivated if necessary, and may be combined where feasible.	且於可行時可組合執行。
6.6.1.2. The procedure for each test with a stationary (non-creeping) vehicle shall be as follows: (a) Position the vehicle at a distance to the relevant target or speed measurement point as defined in Table 1. (b) Hold the vehicle stationary and select the corresponding driving direction. (c) Accelerate the vehicle, whilst maintaining the steering control in the neutral position, by operating the accelerator control in order to achieve the relevant triggering conditions (as outlined in paragraph 5.1.2.) before the vehicle reaches a speed of 0.5 km/h. (d) Record the speed at the collision point (if applicable) or the speed at the respective speed measurement point.	3.20.3.6.1.2 對於以靜態車輛（非蠕行）進行之每一試驗的程序應如下所示： (1) 將車輛定位至一個如表一所定義之對相關目標或速度量測點的距離。 (2) 將車輛維持於靜態並選擇對應行駛方向。 (3) 藉由操作加速控制，於維持轉向控制於中間位置之同時將車輛加速，以於車輛到達 0.5km/h 之速度前達成相關觸發條件（如 3.20.2.1.2 所述）。 (4) 記錄於碰撞點（依實際狀況）或於相關速度量測點之速度。
6.6.2. Test procedure for a creeping vehicle	3.20.3.6.2 對蠕行車輛之試驗程序
6.6.2.1. Each test condition according to Table 1 shall be tested once with a starting point and a profile of the accelerator control application selected at the discretion of the Technical Service. The starting point and the accelerator control application profile shall be selected such that the triggering condition (as outlined in paragraph 5.1.2.) is achieved as close to: (a) The maximum creeping speed in the forward direction, (b) 4km/h in the rearward direction,	3.20.3.6.2.1 應對表一中每一試驗條件，依檢測機構所選擇之開始點及加速器控制施加樣態進行一次試驗。開始點及加速器控制施加樣態應以接近下述條件下達成觸發條件（如 3.20.2.1.2 所述）進行選擇： (1) 於前進方向之最高蠕行速度。 (2) 於後退方向之 4km/h。 合理實例係如維持於或低於該速度，並避免導致不發生 ACPE 介入之任意 AEBS 警示或介入。

UN R175 01 版原文	TNCAP 條文草案(第三版)
As reasonably practical whilst remaining at or below that speed and avoiding any AEBS warning or intervention which results in an ACPE intervention not occurring.	
6.6.2.2. The procedure for each test with a creeping vehicle shall be as follows: (a) Position the vehicle at the selected starting point as determined by paragraph 6.6.2.1. (b) Hold the vehicle stationary and select the corresponding driving direction. (c) Release the braking system so that the vehicle starts creeping. (d) Operate the accelerator control in order to achieve the relevant triggering conditions (as outlined in paragraph 5.1.2.) at the point the vehicle has reached the distance to target according to Table 1. (e) In the case a collision is not prevented the manufacturer shall demonstrate to the satisfaction of the technical service that the intervention complies with the requirements of paragraph 5.1.6.2.	3.20.3.6.2.2 對於以蠕行車輛進行之每一試驗的程序應如下所示： (1) 將車輛定位於 3.20.3.6.2.1 決定之選擇開始點。 (2) 將車輛維持於靜態並選擇對應行駛方向。 (3) 釋放煞車系統以使車輛開始蠕行。 (4) 操作加速器控制以於車輛已到達依照表一之對目標距離下達成相關觸發條件（如 3.20.2.1.2 所述）。 (5) 於未能避免碰撞之狀況，車輛業者為滿足檢測機構之要求下，應就介入符合 3.20.2.1.6.2 一項進行展演。
6.7. If this is deemed justified, the Technical Service may additionally test in any test condition within the conditions specified in paragraph 5.1.5. or	3.20.3.7 若視為合理之狀況下，檢測機構可額外以 3.20.2.1.5 條件內之任意試驗條件下試驗，或試驗替代之加速器控制施加樣態。

UN R175 01 版原文	TNCAP 條文草案(第三版)
test alternative accelerator control application profiles.	
Annex 3 Special requirements to be applied to the safety aspects of electronic control systems	3.20.4 電子控制系統之安全性特殊要求
1. General	3.20.4.1 通則
This annex defines the special requirements for documentation, fault strategy and verification with respect to the safety aspects of Complex Electronic Vehicle Control Systems (paragraph 2.4. below) as far as this Regulation is concerned.	本項可由車輛業者確保及聲明符合此規定。此要求涉及本項規定中關於複合式電子車輛控制系統安全層面之文件提供、故障對策及驗證之特殊要求。
This annex shall also apply to safety related functions identified in this Regulation which are controlled by electronic system(s) (paragraph 2.3.) as far as this Regulation is concerned.	此要求亦應適用於本規章部分特殊規定所需電子系統控制（如3.20.4.2.3）之安全相關功能。
This annex does not specify the performance criteria for "The System" but covers the methodology applied to the design process and the information which must be disclosed to the Technical Service, for type approval purposes.	此要求未具體規範系統(The System)之性能標準，惟為達認證需求而涵蓋有於設計過程中運用之方法、及必須向檢測機構揭露之資訊。
This information shall show that "The System" respects, under non-fault and fault conditions, all the appropriate performance requirements specified elsewhere in this Regulation and that it is designed to operate in such a way that it does not induce safety critical risks.	此資訊應顯示系統於非故障及故障狀態皆符合本規章內其它規定所有適合之性能要求，及其設計之運作模式不會引起安全之風險。

UN R175 01 版原文	TNCAP 條文草案(第三版)
2. Definitions For the purposes of this annex, 2.1. The System" means an electronic control system or complex electronic control system that provides or forms part of the control transmission of a function to which this Regulation applies. This also includes any other system covered in the scope of this Regulation, as well as transmission links to or from other systems that are outside the scope of this Regulation, that acts on a function to which this Regulation applies."	3.20.4.2 名詞釋義 3.20.4.2.1 系統(The system)：係指一電子控制系統或複合式電子控制系統，其提供或組成適用於本規章功能之部分控制傳動裝置。系統亦包含任何涵蓋於本規章適用範圍之其他系統，以及作用於本規章適用功能之傳輸連接或非本規章適用範圍之其他系統。
2.2. "Safety Concept" is a description of the measures designed into the system, for example within the electronic units, so as to address system integrity and thereby ensure safe operation under fault and non-fault conditions, including in the event of an electrical failure. The possibility of a fall- back to partial operation or even to a back- up system for vital vehicle functions may be a part of the safety concept.	3.20.4.2.2 安全性概念(Safety concept)：係指一種設計在系統中的措施，例如電子控制單元內，使系統更加健全以便在故障及非故障狀況時（包含電子系統有故障時）仍能於安全性狀況下操控。部份操作功能的持續或有一個備用系統維持車輛功能，也是安全性概念的部份。
2.3. "Electronic Control System" means a combination of units, designed to co-operate in the production of the stated vehicle control function by electronic data processing. Such systems, often controlled by software, are built from discrete functional components such as sensors, electronic control units and actuators and connected by transmission links. They may include mechanical, electro-pneumatic or electro-hydraulic elements.	3.20.4.2.3 電子控制系統(Electronic control system)：係指電子單元組合設計，經由電子式資料處理來對車輛的某些功能進行控制。這系統由軟體控制，連結不同的功能元件例如感知器、電子控制單元及作動器，且其元件間由傳輸連結線連接。可能包含機械式、電動氣壓式或電動液壓式元件。

UN R175 01 版原文	TNCAP 條文草案(第三版)
2.4. "Complex Electronic Vehicle Control Systems" are those electronic control systems in which a function controlled by an electronic system or the driver may be over- ridden by a higher level electronic control system/function. A function which is over- ridden becomes part of the complex system, as well as any overriding system/function within the scope of this Regulation. The transmission links to and from overriding systems/function outside of the scope of this Regulation shall also be included.	3.20.4.2.4 複合式電子車輛控制系統(Complex electronic vehicle control systems)：係指一個由電子系統或駕駛者所控制之電子控制系統功能，它可被高層次電子控制系統/功能介入而取代。被取代的功能成為此複合式系統的一部分，以及本規章適用範圍內之任何取代系統/功能者。傳輸連接至與用於取代非本規章適用範圍之系統/功能者亦同。
2.5. "Higher-Level Electronic Control" systems/functions are those which employ additional processing and/or sensing provisions to modify vehicle behaviour by commanding variations in the function(s) of the vehicle control system. This allows complex systems to automatically change their objectives with a priority which depends on the sensed circumstances.	3.20.4.2.5 高層次電子控制(Higher- Level Electronic Control)系統/功能：指運用額外處理及/或感應方式，於車輛控制系統功能上進行變動，以調整車輛行駛行為。由感應得之情況(Sensed circumstances)，允許複合式系統依其優先度自動改變其目標。
2.6. "Units" are the smallest divisions of system components which will be considered in this annex, since these combinations of components will be treated as single entities for purposes of identification, analysis or replacement.	3.20.4.2.6 單元(Unit)：係指本項規定所述系統組件(Component)之最小組合單元，以將這些組件組合視為一個被識別、分析或替換之整體。
2.7. "Transmission links" are the means used for inter-connecting distributed units for the purpose of conveying signals, operating data or an energy supply. This equipment is generally electrical but may, in some part, be mechanical, pneumatic or hydraulic.	3.20.4.2.7 傳輸連接(Transmission links)：係指用於內部連結各配置元件，以傳送信號、作動數據或能源供給。一般而言，此等設備為電氣式，惟其可有部份為機械式、氣壓式或液壓式。

UN R175 01 版原文	TNCAP 條文草案(第三版)
2.8. "Range of control" refers to an output variable and defines the range over which the system is likely to exercise control.	3.20.4.2.8 控制幅度(Range of control)：係指輸出之變數，其定義系統可能進行操控之幅度。
2.9. "Boundary of functional operation" defines the boundaries of the external physical limits within which the system is able to maintain control.	3.20.4.2.9 功能性作動範圍(Boundary of functional operation)：其定義外部實體限制之範圍，讓系統能於該範圍內維持控制。
2.10. "Safety Related Function" means a function of "The System" that is capable of changing the dynamic behaviour of the vehicle. "The System" may be capable of performing more than one safety related function.	3.20.4.2.10 安全相關功能(Safety related function)：係指「系統」中能改變車輛動態行為之功能。「系統」可具備執行多於一種安全相關功能之能力。
3. Documentation	3.20.4.3 文件提供
3.1. Requirements	3.20.4.3.1 要求
The manufacturer shall provide a documentation package which gives access to the basic design of "The System" and the means by which it is linked to other vehicle systems or by which it directly controls output variables. The function(s) of "The System" and the safety concept, as laid down by the manufacturer, shall be explained. Documentation shall be brief, yet provide evidence that the design and development has had the benefit of expertise from all the system fields which are involved. For periodic technical inspections, the documentation shall describe how the current operational status of "The System" can be checked.	車輛業者應提供一份文件以說明「系統」之基本設計及連結車輛其他系統或直接控制輸出變數之方法。車輛業者應於該文件中說明「系統」之功能及安全性概念。文件應簡要且應能佐證該系統所涉及領域於設計及開發時所受益的專業技術。

UN R175 01 版原文	TNCAP 條文草案(第三版)
The Technical Service shall assess the documentation package to show that "The System": (a) Is designed to operate, under non-fault and fault conditions, in such a way that it does not induce safety critical risks; (b) Respects, under non-fault and fault conditions, all the appropriate performance requirements specified elsewhere in this Regulation; and, (c) Was developed according to the development process/method declared by the manufacturer.	檢測機構應評估相關文件以顯示「系統」: (1) 非故障及故障狀態之設計運作模式下，不應引起安全之風險； (2) 各方面在非故障及故障狀態下，皆符合本規章其它規定所有適合之性能要求；及 (3) 依照車輛業者所宣告之研發流程/步驟進行開發。
3.1.1.Documentation shall be made available in two parts: (a) The formal documentation package for the approval, containing the material listed in paragraph 3. (with the exception of that of paragraph 3.4.4.) which shall be supplied to the Technical Service at the time of submission of the type approval application. This documentation package shall be used by the Technical Service as the basic reference for the verification process set out in paragraph 4. of this annex. The Technical Service shall ensure that this documentation package remains available for a period determined in agreement with the Approval Authority. This period shall be at least 10 years counted from the time when production of the vehicle is definitely discontinued.	3.20.4.3.1.1 相關文件應包括兩部分： (1) 測試之正式文件，包括 3.20.4.3 所列資料(除 3.20.4.3.4.4 之內容)，該資料於測試時應提供予檢測機構。此文件將由檢測機構用於 3.20.4.4 驗證程序之基本引用。檢測機構應確保將此份文件留存一段時間，留存時間應由車輛完全停止生產起至少十年。
(b) Additional material and analysis data of paragraph 3.4.4. which shall be retained by the manufacturer, but made open for inspection at the time of type approval. The manufacturer shall ensure that this material and analysis	(2) 3.20.4.3.4.4 之附加資料及分析數據，車輛業者應保有此等資料，惟應於評等過程中開放予檢測機構。車輛業者應確保將此資料及分析數據留存一段時間，留存時間應由車輛完全停止生產起至少

UN R175 01 版原文	TNCAP 條文草案(第三版)
data remains available for a period of 10 years counted from the time when production of the vehicle is definitely discontinued."	十年。
3.2. Description of the functions of "The System" A description shall be provided which gives a simple explanation of all the control functions of "The System" and the methods employed to achieve the objectives, including a statement of the mechanism(s) by which control is exercised.	3.20.4.3.2 系統功能說明文件 應提供一份說明文件，簡要解釋「系統」所有控制功能及用來實現目的之方法，包括控制功能運行之機制說明。
Any described function that can be over-ridden shall be identified and a further description of the changed rationale of the function's operation provided.	應詳述任何可被取代之功能且更進一步說明運作功能所改變之基本原理。
3.2.1.A list of all input and sensed variables shall be provided and the working range of these defined.	3.20.4.3.2.1 應提供所有輸入與感測變數清單，以及定義工作範圍。
3.2.2.A list of all output variables which are controlled by "The System" shall be provided and an indication given, in each case, of whether the control is direct or via another vehicle system. The range of control (paragraph 2.8.) exercised on each such variable shall be defined.	3.20.4.3.2.2 應提供由系統所控制之所有輸出變數清單，及各變數由系統直接控制或由其他車輛系統控制之說明。應定義各變數之控制幅度（3.20.4.2.8）。
3.2.3. Limits defining the boundaries of functional operation (paragraph 2.9.) shall be stated where appropriate to system performance.	3.20.4.3.2.3 應說明適用於系統性能之功能性作動範圍（3.20.4.2.9）之界限值。

UN R175 01 版原文	TNCAP 條文草案(第三版)
3.3. System layout and schematics	3.20.4.3.3 系統佈線圖及示意圖
3.3.1. Inventory of components. A list shall be provided, collating all the units of "The System" and mentioning the other vehicle systems which are needed to achieve the control function in question.	3.20.4.3.3.1 零組件清單 應提供一份清單，彙整電子控制系統所有單元(Unit)，及說明所需控制功能之其他車輛系統。
An outline schematic showing these units in combination, shall be provided with both the equipment distribution and the interconnections made clear.	應提供一份所有單元組合之簡要示意圖，明確標示裝置配置與內部連接。
3.3.2. Functions of the units The function of each unit of "The System" shall be outlined and the signals linking it with other units or with other vehicle systems shall be shown. This may be provided by a labelled block diagram or other schematic, or by a description aided by such a diagram.	3.20.4.3.3.2 單元功能說明文件 應概述電子控制系統各單元之功能，及顯示與其他單元或其他車輛系統間互相連結之信號。此文件可為附有標示之方塊圖(Block diagram)或其他示意圖，或由此等圖面輔助之說明。
3.3.3. Interconnections Interconnections within "The System" shall be shown by a circuit diagram for the electric transmission links, by a piping diagram for pneumatic or hydraulic transmission equipment and by a simplified diagrammatic layout for mechanical linkages. The transmission links both to and from other systems shall also be shown.	3.20.4.3.3.3 內部連接 系統內部連接之電氣傳輸連結，應以電路圖表示；氣壓或液壓傳動裝置之連接，應以管路圖表示；機械連接應以簡要配置圖表示。亦應表示輸入或由其他系統輸出之傳輸連結。

UN R175 01 版原文	TNCAP 條文草案(第三版)
3.3.4. Signal flow, operating data and priorities There shall be a clear correspondence between these transmission links and the signals and/or operating data carried between units. Priorities of signals and/or operating data on multiplexed data paths shall be stated wherever priority may be an issue affecting performance or safety as far as this Regulation is concerned.	3.20.4.3.3.4 信號流程、運作資料與優先順序 單元間之傳輸連結與信號及／或運作資料應彼此明確對應。信號優先順序及／或運作資料可能會影響本規章相關之性能或安全性者，應說明多工路傳輸數據通路(Multiplexed data path)上之信號優先順序。
3.3.5. Identification of units Each unit shall be clearly and unambiguously identifiable (e.g. by marking for hardware and marking or software output for software content) to provide corresponding hardware and documentation association.	3.20.4.3.3.5 單元識別 各單元應能被清楚且明確地辨識（例如：藉由硬體之標示、軟體內容之標示或軟體輸出），以提供硬體與文件間之相對應關聯。
Where functions are combined within a single unit or indeed within a single computer, but shown in multiple blocks in the block diagram for clarity and ease of explanation, only a single hardware identification marking shall be used. The manufacturer shall, by the use of this identification, affirm that the equipment supplied conforms to the corresponding document.	為能清楚並簡易說明而以多方塊形式表示於方塊圖之單一單元或單一電腦內多項功能者，應僅使用單一硬體識別標示。車輛業者應藉由使用此識別以確認所收到之配備與相對應文件一致。
3.3.5.1. The identification defines the hardware and software version and, where the latter changes such as to alter the function of the unit as far as this Regulation is concerned, this identification shall also be changed.	3.20.4.3.3.5.1 單元識別定義出硬體及軟體之版本，且軟體之改變（例如改變該單元之本規章相關功能），亦應改變此單元識別。

UN R175 01 版原文	TNCAP 條文草案(第三版)
3.4. Safety concept of the manufacturer	3.20.4.3.4 車輛業者之安全性概念說明文件
3.4.1. The Manufacturer shall provide a statement which affirms that the strategy chosen to achieve "The System" objectives will not, under non-fault conditions, prejudice the safe operation of the vehicle.	3.20.4.3.4.1 車輛業者應提供說明文件，確保為達到系統目的所選擇之策略，於非故障情況下不會損害車輛之安全運作。
3.4.2. In respect of software employed in "The System", the outline architecture shall be explained and the design methods and tools used shall be identified. The manufacturer shall show evidence of the means by which they determined the realisation of the system logic, during the design and development process.	3.20.4.3.4.2 對於使用於系統內之軟體，應說明該軟體之概要架構，及識別出所用之設計方法與工具。車輛業者應出示證明文件以說明於設計及開發階段時所確定實現系統邏輯之方法。
3.4.3. The Manufacturer shall provide the Technical Service with an explanation of the design provisions built into "The System" so as to generate safe operation under fault conditions. Possible design provisions for failure in "The System" are for example:	3.20.4.3.4.3 車輛業者應向檢測機構說明系統內建之設計機制，該機制用於故障發生時執行安全運行。系統故障設計機制範例如下：
(a) Fall-back to operation using a partial system.	(1) 使用部分系統運作之備用機制(Fall-back)。
(b) Change-over to a separate back-up system.	(2) 更換(Change-over)至獨立備用系統。
(c) Removal of the high level function.	(3) 解除高層級控制系統/功能。
In case of a failure, the driver shall be warned for example by warning signal or message display. When the system is not deactivated by the driver, e.g. by turning the ignition (run) switch to "off", or by switching off that particular function if a special switch is provided for that purpose, the	若發生故障，則應警告駕駛者（例如：警告訊號或顯示警告訊息）。當系統非由駕駛者關閉（例如：關閉點火/啟動開關，或藉由所提供具關閉功能之特殊開關關閉該特定功能），只要故障情況持續存在，即應顯示警告。

UN R175 01 版原文	TNCAP 條文草案(第三版)
warning shall be present as long as the fault condition persists.	
3.4.3.1. If the chosen provision selects a partial performance mode of operation under certain fault conditions, then these conditions shall be stated and the resulting limits of effectiveness defined.	3.20.4.3.4.3.1 若選定於某些故障情況下使用部分性能運作模式，則應說明該些故障情況並界定其產生之效益極限。
3.4.3.2. If the chosen provision selects a second (back-up) means to realise the vehicle control system objective, the principles of the change-over mechanism, the logic and level of redundancy and any built in back-up checking features shall be explained and the resulting limits of back-up effectiveness defined.	3.20.4.3.4.3.2 若選定備用系統以實現車輛控制系統目的，則應說明其更換機制之原理、邏輯、冗餘度(Level of redundancy)與任何內建之備用檢查功能，並界定其產生之備用系統效益極限。
3.4.3.3. If the chosen provision selects the removal of the Higher Level Function, all the corresponding output control signals associated with this function shall be inhibited, and in such a manner as to limit the transition disturbance.	3.20.4.3.4.3.3 若選定解除高層級控制系統/功能，則應抑制所有與該功能相關並對應之輸出控制信號，以此限制其轉換干擾(Transition disturbance)。
3.4.4. The documentation shall be supported, by an analysis which shows, in overall terms, how the system will behave on the occurrence of any individual hazard or fault which will have a bearing on vehicle control performance or safety.	3.20.4.3.4.4 應以分析資料作為佐證文件，整體而言，該文件說明任何會影響車輛控制性能或安全性之獨立風險或故障出現時系統之行為。
The chosen analytical approach(es) shall be established and maintained by	所選擇之分析方法應由車輛業者建置及維持，且應於評等過程中開放

UN R175 01 版原文	TNCAP 條文草案(第三版)
the Manufacturer and shall be made open for inspection by the Technical Service at the time of the type approval.	予檢測機構。
The Technical Service shall perform an assessment of the application of the analytical approach(es). The audit shall include: (a) Inspection of the safety approach at the concept (vehicle) level with confirmation that it includes consideration of interactions with other vehicle systems. This approach shall be based on a Hazard / Risk analysis appropriate to system safety. (b) Inspection of the safety approach at the system level. This approach shall be based on a Failure Mode and Effect Analysis (FMEA), a Fault Tree Analysis (FTA) or any similar process appropriate to system safety. (c) Inspection of the validation plans and results. This validation shall use, for example, Hardware in the Loop (HIL) testing, vehicle on–road operational testing, or any means appropriate for validation.	檢測機構應評估分析方法。查核內容應包含： (1) 概念（車輛）層級之安全方法檢查，包含與其他車輛系統互動之考量進行確認。此方法應基於系統安全合適之危險/風險分析。 (2) 系統層級之安全方法檢查，此方法可依照失效模式及影響分析(FMEA)、故障樹分析(FTA)或任何適用於判斷控制系統安全之類似過程。 (3) 驗證計畫及結果檢查，此項驗證應使用如：硬體迴路(HIL)試驗、車輛於道路進行操作性試驗或任何適當之驗證方法。
The assessment shall consist of checks of hazards and faults chosen by the Technical Service to establish that the manufacturer’s explanation of the safety concept is understandable, logical and that the validation plans are suitable and have been completed.	此評估應包含由檢測機構所選擇之危險及錯誤檢查，以證實車輛業者安全性概念之說明可理解、合邏輯且驗證計畫為合適且已被完成。
The Technical Service may perform or may require to perform tests as specified in paragraph 4. to verify the safety concept.	檢測機構可執行或可要求執行 3.20.4.4 之試驗以驗證安全性概念。

UN R175 01 版原文	TNCAP 條文草案(第三版)
3.4.4.1. This documentation shall itemize the parameters being monitored and shall set out, for each fault condition of the type defined in paragraph 3.4.4. of this annex, the warning signal to be given to the driver and/or to service/technical inspection personnel.	3.20.4.3.4.4.1 此文件應詳列所監測之參數，且依照 3.20.4.3.4.4 所述該型式系列之各故障情況，列出發送給駕駛者及/或維修/技術性檢查人員之警告訊號。
3.4.4.2. This documentation shall describe the measures in place to ensure the "The System" does not prejudice the safe operation of the vehicle when the performance of "The System" is affected by environmental conditions e.g. climatic, temperature, dust ingress, water ingress, ice packing.	3.20.4.3.4.4.2 此文件應描述所採取之措施，以確保「系統」之性能受環境狀況影響（例如：氣候、溫度、灰塵侵入、進水及堆冰(Ice packing)）時，不會損害車輛之安全運作。
4. Verification and test	3.20.4.4 驗證及試驗
4.1. The functional operation of "The System", as laid out in the documents required in paragraph 3., shall be tested as follows:	3.20.4.4.1 系統之功能運作，應依 3.20.4.3 要求之相關文件內容，進行下列條件試驗：
4.1.1. Verification of the function of "The System" The Technical Service shall verify "The System" under non-fault conditions by testing a number of selected functions from those declared by the manufacturer in paragraph 3.2. above.	3.20.4.4.1.1 系統功能之驗證 檢測機構應於非故障狀況下，藉由試驗車輛業者所宣告之上述 3.20.4.3.2 中一數量之功能驗證系統。
For complex electronic systems, these tests shall include scenarios whereby a declared function is overridden.	對於複合式電子系統而言，試驗應包含一宣告功能受到取代之場景。
4.1.2. Verification of the safety concept of paragraph 3.4. The reaction of "The System" shall be checked under the influence of a	3.20.4.4.1.2 系統安全性概念（依 3.20.4.3.4）之驗證 應藉由運用對應之輸出信號給電氣單元或機械元件，模擬該單元內部

UN R175 01 版原文	TNCAP 條文草案(第三版)
failure in any individual unit by applying corresponding output signals to electrical units or mechanical elements in order to simulate the effects of internal faults within the unit. The Technical Service shall conduct this check for at least one individual unit, but shall not check the reaction of "The System" to multiple simultaneous failures of individual units.	故障，以讓檢測機構檢查系統於任何獨立單元內發生故障影響時之反應。檢測機構應至少於一獨立單元上執行此項檢查，惟不應檢查「系統」對單一獨立單元同時發生多個失效之反應。
The Technical Service shall verify that these tests include aspects that may have an impact on vehicle controllability and user information (HMI aspects)."	檢測機構應驗證這些包含可能會對車輛可控性及使用者資訊（人機介面層面）造成影響之試驗。
4.1.2.1. The verification results shall correspond with the documented summary of the failure analysis, to a level of overall effect such that the safety concept and execution are confirmed as being adequate.	3.20.4.4.1.2.1 就其整體影響程度之驗證結果，應符合車輛業者所提供之故障分析文件所述結果，以確認該安全性概念及運作均適切。
5. Reporting by Technical Service Reporting of the assessment by the Technical Service shall be performed in such a manner that allows traceability, e.g. versions of documents inspected are coded and listed in the records of the Technical Service.	3.20.4.5 檢測機構之報告 檢測機構應執行報告之評估，且其應允許進行追蹤，例如已檢查文件版本編碼及列於檢測機構之紀錄。

修正後	修正前
(UN) Table 1 of paragraph 6.5 *Distance to target at the point triggering conditions achieved /* *Distance to speed measuring point* → *Tolerance on the longitudinal distance* *Driving direction* → *(m)* → *(m)* Forward → 1.0 → +0.1 Forward → 1.5 → -0.1 Rearward → 1.0 → +0.1 Rearward → 1.5 → -0.1 規定6.5之表一 *行駛方向* / *對處於觸發點達成點上之目標／速度量測點之距離（公尺）* / *縱向距離上之容許誤差（公尺）* 前進 / 1.0 / +0.1 前進 / 1.5 / -0.1 後退 / 1.0 / +0.1 後退 / 1.5 / -0.1	

2.4.6防止誤踩踏板之加速控制系統評等規章 **<<本案暫以2.4規章編號說明防止誤踩踏板之加速控制系統評等條文修訂內容，後續擬修訂至2.2碰撞預防評等規章>>**

<table>
<tr><th>UN R175 01版原文</th><th>TNCAP條文草案(第三版)</th></tr>
<tr><td>(無對應條文)</td><td>2.4.6.1防止誤踩踏板之加速控制系統評等
防止誤踩踏板之加速控制系統最高可獲得4分，得分條件為：
(1) 靜止狀態加速情境試驗之各子情境(8項)速度變化率皆應>0.3
(2) 蠕行狀態加速試驗之各子情境(8項)皆應通過
(3) 系統應符合本規章之其他所有要求，例如系統解除、警示、安全性等規定

2.4.6.1.1防止誤踩踏板之加速控制系統之靜止狀態加速情境試驗，將速度變化率(定義如下)以線性內插法計算得分，並將得分四捨五入到小數點後三位。
速度變化率 $=\frac{Voff-Von}{Voff}$
Von：有試驗目標之碰撞速度
Voff：無試驗目標之加速速度

2.4.6.2得分範例與視覺呈現
2.4.6.2.1得分範例如下表所示：
<table>
<tr><th colspan="5">靜止狀態加速情境試驗</th></tr>
<tr><td>試驗目標</td><td colspan="2">目標車或全球目標車</td><td colspan="2">目標兒童</td></tr>
<tr><td>方向</td><td>前進</td><td>後退</td><td>前進</td><td>後退</td></tr>
</table>
</td></tr>
</table>

距離	1.0公尺	1.5公尺	1.0公尺	1.5公尺	1.0公尺	1.5公尺	1.0公尺	1.5公尺
速度變化率	0.92	0.65	0.83	0.45	0.43	0.34	0.43	0.34
得分	0.443分	0.250分	0.379分	0.107分	0.093分	0.029分	0.093分	0.029分
總分	1.423分							

蠕行狀態加速情境試驗								
試驗目標	目標車或全球目標車				目標兒童			
方向	前進		後退		前進		後退	
距離	1.0公尺	1.5公尺	1.0公尺	1.5公尺	1.0公尺	1.5公尺	1.0公尺	1.5公尺

2.4.6.2.2防止誤踩踏板之加速控制系統係以不同顏色來呈現不同防止誤踩踏板之加速控制系統功能之得分，使用的顏色分別基於各別功能分數，四捨五入到小數點後三位。

顏色	**判定**	**適用於總得分**	**功能性比**
綠色	優	3.001-4.000分	75.0%-100.0%
黃色	良好	2.001-3.000分	50.0%-75.0%
橘色	尚可	1.001-2.000分	25.0%-50.0%
棕色	差	0.001-1.000分	00.0%-25.0%

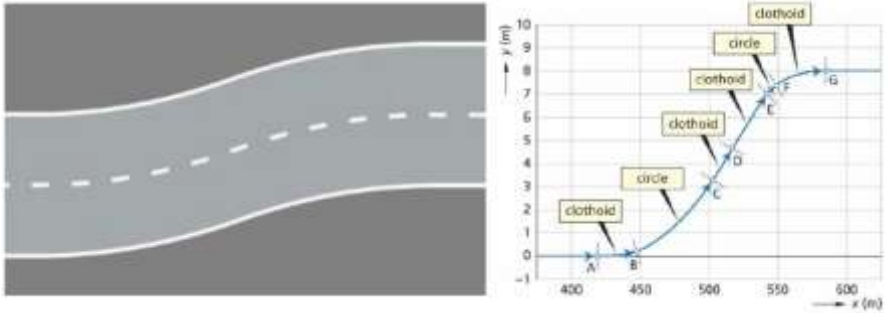
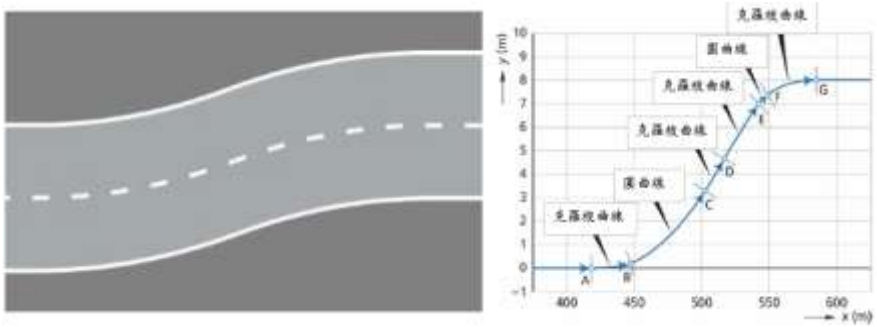
	紅色	不良	0.000分	00.0%
	灰色	未具備	0.000分	00.0%

3.21 轉向輔助系統試驗規章

Euro NCAP Protocol – Safe Driving Vehicle Assistance Version 1.2

2026 年版 Euro NCAP 規章	TNCAP 條文草案(第三版)
Definitions Throughout this protocol the following terms are used:	3.21.1 名詞釋義：
Journey – A journey starts with activation of the master control switch and lasts until the deactivation of the master control switch and the driver's door being opened	3.21.1.1 旅程：旅程始於主控制開關之啟動，並持續至主控制開關關閉且駕駛側車門開啟為止。
Vehicle master control switch – Means the device by which the vehicle's on-board electronics system is brought from being switched off, as in the case where a vehicle is parked without the driver being present, to a normal operation mode.	3.21.1.2 車輛主控制開關：係指將車載電子系統從關閉狀態（如車輛停放且駕駛不在車內之情況）切換至正常操作模式之裝置。
Default-ON – A function that is ON by default at the start of every journey. It may be voluntarily switched OFF by the driver, but voluntary function deactivation shall not be possible with a single momentary push of a button.	3.21.1.3 預設開啟：係指在每次旅程開始時預設為開啟狀態之功能，該功能可由駕駛主動關閉，但不得僅短按一鍵即關閉。
Vehicle under test (VUT) – means the vehicle tested according to this protocol with a pre- crash collision mitigation or avoidance system on board. Adaptive Cruise Control (ACC) – a system that controls the vehicle speed while maintaining a set distance to vehicles ahead.	3.21.1.4 受驗車輛(VUT)：係指配備減緩碰撞或預防碰撞系統，並依據此規章進行試驗之車輛。 3.21.1.5 自動巡航系統(ACC)：係指系統控制車速同時並與前方車輛保持設定之距離。
Lane Support System (LSS) – a set of lateral control features that correct the	3.21.1.6 車道輔助系統(LSS)：係指能修正車輛行駛方向，使其維持於行

2026 年版 Euro NCAP 規章	TNCAP 條文草案(第三版)
vehicle heading to keep the vehicle within its driving lane and/or warns the driver.	駛車道內，及／或警示駕駛之側向控制功能。
Lane Centering (LC) – a function which assists the driver in keeping the vehicle within the chosen lane, by influencing the lateral movement of the vehicle.	3.21.1.7 車道置中(Lane Centering, LC)：係指透過影響車輛側向移動，以輔助駕駛將車輛維持在所選車道內之功能。
Lane Change Assist (LCA) – a function which is initiated/activated by the driver and which can perform a single lateral manoeuvre (e.g. lane change) when commanded by the driver.	3.21.1.8 車道變換輔助(Lane Change Assist, LCA)：係指由駕駛啟用／啟動，並於接收到駕駛指令時可執行單一側向操作（例如變換車道）之功能。
3.1 Test Scenarios A steering assistance function should support the driver to keep the vehicle in lane, not only on straight roads. If a car departs from its lane there is an increased risk of collision. Euro NCAP does not expect vehicles to stay in the center of the lane in all corners, but expects the vehicle to always support the driver by directing the vehicle to the correct heading. Euro NCAP tests the steering assistance in a so called S-Bend. All tests shall be performed with longitudinal and lateral assistance activated. For test vehicles without longitudinal assistance available, the vehicle shall be controlled with driver input or using alternative control systems that can modulate the vehicle controls as necessary to perform the tests. 3.1.1 S-Bend dimensions	3.21.2 試驗情境 轉向輔助功能應輔助駕駛將車輛維持於車道內，且不僅限於直線道路，若車輛偏離車道，將增加碰撞風險。TNCAP 執行機構不預期車輛在所有彎道中皆維持在車道中央，而是預期車輛能藉由導向正確之行車方向來輔助駕駛。TNCAP 執行機構係採用 S 彎道進行轉向輔助試驗。 所有試驗皆應在縱向及側向輔助啟用的狀態下執行。對於未具備縱向輔助功能之受驗車輛，車輛應由駕駛控制，或視需要使用可調節車輛控制之控制系統作替代。 3.21.2.1 S 彎道尺寸

2026 年版 Euro NCAP 規章	TNCAP 條文草案(第三版)
	
S-Bend parameters are:	S 彎道參數如下：
S-Bend / Clothoid parameter / Radius / Length 1st turn: 153.7 / 30.0; 787 m / 57.1; 105.0 / 14.0 2nd turn: 98.6 / 26.0; 374 m / 5.1; 120.8 / 39.0	S彎道 / 克羅梭曲線參數 / 半徑 / 長度 第一彎道: 153.7 / 30.0; 787公尺 / 57.1; 105.0 / 14.0 第二彎道: 98.6 / 26.0; 374公尺 / 5.1; 120.8 / 39.0
It is permissible for an S-Bend to be used with the turn directions mirrored as long as the same geometry is maintained.	只要維持相同的幾何形狀，允許使用鏡像翻轉之 S 彎道。
3.1.2 Test Method	3.21.2.2 試驗方法
The capability of the steering assist system is tested at ACC indicated vehicle speeds of 60, 80km/h, 100km/h and 130km/h. Where possible, all other lane support systems shall be switched off for the duration of the test.	轉向輔助系統性能試驗係於自動巡航系統指示速率 60km/h、80km/h、100km/h 及 110 km/h 下進行測試。在可行的情況下，於試驗期間所有其他車道輔助系統皆應關閉。 (為符合國內交通環境，130km/h 調整為 110km/h)

2026 年版 Euro NCAP 規章	TNCAP 條文草案(第三版)
The vehicle shall be driven along the straight section of the fully marked lane at a constant speed with the steering assist system on for enough time for the steering assist system to take up a constant position within the lane, prior to the start of the S-Bend.	在進入 S 彎道之前，受驗車輛應在轉向輔助系統開啟之狀態下，以恆定速度沿著完整車道標線之直線路段行駛足夠時間，以使轉向輔助系統穩定車輛於車道內。
The driver shall make every effort not to add any input into the steering system which can affect the path of the vehicle once it has entered the S-Bend section. It is permissible for the test driver to remove their hands from the steering wheel. However, the driver may need to keep their hands on the wheel or provide a different input to prevent the actions of the vehicle being dictated by the systems recognition of an inattentive driver.	受驗車輛一旦進入 S 彎道路段，試驗人員應盡力避免對轉向系統施加任何可能影響車輛路徑之控制。允許試驗人員將雙手移開方向盤。然而，試驗人員可能需要將雙手維持在方向盤上或提供其他控制輸入，以避免車輛因系統判定駕駛注意力不集中而產生相應動作。
The driver shall allow the vehicle to maintain a continuous maximum ACC speed as set throughout each test run. It is permissible for the vehicle system to reduce the driven speed in response to the road geometry, and this reduction in speed shall not be overridden by the test driver. It may also be the case that the curvature tested would cause the vehicle to slow sufficiently to remain within lane if it were on a mapped location (real world driving); if this is predicted to be the case the Vehicle Manufacturer shall advise the laboratory carrying out the test and confirm a suitable location to prove that the vehicle can slow and remain in lane.	駕駛應允許車輛在每次測試過程中，持續維持所設定之 ACC 最大車速。車輛系統可依道路幾何條件而降低行駛速度，駕駛不應取代該減速動作。此外，在該情況下，若所試驗的彎道曲率可能導致車輛減速，足以在具有地圖資訊之位置(實際道路行駛)下維持於車道內，若預期會出現此情形，車輛業者應通知檢測機構進行測試，並確認一處適當之地點，以驗證車輛能夠減速並維持於車道內。
3.2 Lane Change Assist If the VUT is equipped with Lane Change Assist, i.e. a function which is initiated	3.21.3 車道變換輔助 若受驗車輛配備車道變換輔助，即由駕駛啟動或由系統建議並經駕駛確

2026 年版 Euro NCAP 規章	TNCAP 條文草案(第三版)
by the driver OR proposed by the system and confirmed by the driver, which can perform a single lateral manoeuvre (e.g. lane change), 1 point shall be awarded.	認，且能執行單一側向操作（例如車道變換）之功能，應給予 1 分。

2.4.9轉向輔助系統評等 **<<本案暫以2.4規章編號說明轉向輔助系統評等條文修訂內容，後續擬修訂至2.1安全駕駛評等規章>>**

Euro NCAP Protocol – Safe Driving Vehicle Assistance Version 1.2

Euro NCAP Vehicle Assistance 1.2版	TNCAP條文草案(第三版)
3 STEERING ASSISTANCE **Steering Assistance Performance** — **Total points 5** **Steering Assistance** — 4 **Lane Change Assist** — 1 **3.1 Steering Assistance** **Steering Assistance** S-bend: 60 km/h / 80 km/h / 100 km/h / 130 km/h VUT stays in lane in both turns: 1 / 1 / 1 / 1 VUT stays in lane in 1st turn and redirects in 2nd turn: 0.5 / 0.5 / 0.5 / 0.5 Where: -VUT stays in lane in both turns: means that the VUT does not cross any lane markings to the left and/or right side of the vehicle (DTLE ≥ 0cm) - VUT stays in lane in 1st turn and redirects in 2nd turn: means VUT does not cross any lane markings in the 1st turn. VUT crosses the lane marking in/after the 2nd turn. VUT returns to the lane or put on a trajectory parallel to or heading back towards the original lane. All 4 tyres cannot leave the lane.	3 轉向輔助 轉向輔助性能 — 總分5分 轉向輔助 — 4 車道變換輔助 — 1 3.1 轉向輔助 轉向輔助 S彎道: 60 km/h / 80 km/h / 100 km/h / 110 km/h 受驗車輛在兩個彎道中均保持在車道內: 1 / 1 / 1 / 1 受驗車輛在第1個彎道保持在車道內，並於第2個彎道修正方向: 0.5 / 0.5 / 0.5 / 0.5 其中： 受驗車輛在兩個轉彎中均維持在車道內：係指受驗車輛未跨越車輛左側及／或右側的任何車道標線（車道邊緣剩餘距離大於等於0公分）。 受驗車輛在第1個彎道保持在車道內，並於第2個彎道進行路線修正：係指受驗車輛在第1個彎道時未跨越任何車道標線，於第2個彎道中或通過第2個彎道後跨越車道標線，隨後返回原車道或調整至與原車道平行之行駛軌跡或朝原車道之方向行駛。所有四個輪胎皆不可離開車道。

3.24車頂抗壓強度試驗規章

Crashworthiness Evaluation - Roof Strength Test Protocol - Version V

IIHS 原文	TNCAP 條文草案(第三版)
OVERVIEW This protocol explains how the Insurance Institute for Highway Safety (IIHS) evaluates and rates the roof strength of motor vehicles. Roof strength evaluations consist of a quasi-static test conducted on a vehicle's roof in a manner similar to tests used to judge compliance with U.S. Federal Motor Vehicle Safety Standard (FMVSS) 216 (Office of the Federal Register, 2009). The main differences between the IIHS roof strength test and that specified by FMVSS 216 are that the IIHS test: • Specifies testing one side of a vehicle's roof, • Does not include a headroom criterion, • Specifies testing to a given displacement instead of a given force level, and • Specifies setting the vehicle's pitch angle during testing based on the measured on-road pitch angle. An overall rating is assigned based on the peak strength-to-weight ratio (SWR) measured within 127 mm of plate displacement. Supporting documents for the Insurance Institute for Highway Safety (IIHS) roof strength program are available from the Technical Protocols section of the IIHS website.	**3.24.1 簡介** 3.24.1.1 本規章說明 TNCAP 如何評估及評定機動車輛的車頂強度。車頂強度評估包含一項針對車輛車頂進行的準靜態試驗（Quasi-static test）。整體評等將依據壓板位移 127 mm 範圍內所測得之峰值強度重量比（SWR）進行評等。
Curb Weight Measurement Curb weight values used for calculating the SWR are based on IIHS	3.24.1.2 空車重量量測 TNCAP 將以試驗車輛實際所測得之空車重量計算強度重量比，並非車輛

IIHS 原文	TNCAP 條文草案(第三版)
measurements of a vehicle, not the manufacturer's specified curb weight. Vehicle curb weight is measured with full fluid levels using scales manufactured by Longacre Racing Products (Computerscales DX series 72634).	業者宣告之空車重量。 空車重量應於所有液體均以加滿之狀態下，並使用 Longacre Racing Products 製造之 Computerscales DX series 72634 秤具進行量測。
Test Vehicle Selection For information on how we select vehicles for our crash test programs, including how we define typically equipped vehicles, see Test Vehicle Selection (IIHS, 2021). Whenever possible, the vehicle acquired for testing is the same vehicle used for the curb weight measurement. At times, it is necessary to test a vehicle that does not meet the IIHS definition of a typically equipped vehicle, and the curb weight measurement is applied from another vehicle that does meet the definition. In these cases, the test vehicle does not differ from our typically equipped vehicle definition in any way that might influence the roof strength (e.g., a vehicle with a sunroof would not be tested if the typically equipped vehicle lacks this option). Once the test vehicle has been acquired, either the driver or passenger side of the vehicle is selected for testing. For most vehicles, the test side is chosen at random. However, for roof designs that appear asymmetrical, engineering judgment is used to select the side of the roof that may result in a lower peak force.	3.24.1.3 受驗車輛選定 TNCAP 根據「車型挑選提名、自費申請評等、車輛規格及試驗管理規章」，挑選基本安全等級車款進行本項試驗。 原則上，試驗車輛應與測量空車重量之車輛相同。惟必要情況下，得使用非基本安全等級車款進行試驗，並採用另一車輛所量測之空車重量。在此情況下，受驗車輛規格及配備，除不影響車頂強度之差異外，不得與基本安全等級車款有所差異，例如若基本安全等級車款未配備天窗，則不得選用配備天窗之車輛。 試驗車輛取得後，應選定車輛駕駛側或乘客側進行試驗。多數車輛，試驗側應隨機選定。惟對於車頂呈現非對稱設計之車輛，應依工程判斷選定可能產生較低峰值力之車頂側進行試驗。
TEST VEHICLE PREPARATION	**3.24.2 受驗車輛整備**

IIHS 原文	TNCAP 條文草案(第三版)
With the vehicle on a level surface, the on-road pitch angle at the front door sill is measured on both sides of the vehicle. Unless the vehicle manufacturer requests otherwise, roof racks and other nonstructural items that may be contacted during the test are left as installed from the factory. Any trim or other components are removed if they interfere with supporting the vehicle along its rocker panels.	3.24.2.1 將車輛停放於水平面上，分別於車輛兩側前門門檻處測量行駛狀態之俯仰角(Pitch angle)。除非車輛業者另有要求，車頂行李架及其他於試驗過程中可能與試驗設備接觸之非結構性部件，應維持出廠時之安裝狀態。若車輛之飾板或其他組件會干擾沿車身側裙支撐車輛，則應將該等組件拆除。
For vehicles with vertical pinch weld flanges on the bottom of the rocker panels, the vehicle support system consists of one I-beam (HR A-36, W4X13) for each rocker panel. Each I-beam has a clamping system incorporated on the top that is tightened against the pinch weld flange to clamp the system in place (Figures 1 and 2).	對於側裙底部具有垂直側邊樑(Pinch weld flange)之車輛，其支撐系統應由每側側裙各設置一支工字樑（HR A-36，W4X13）組成。每支工字樑頂部應配備夾持系統，並將其鎖緊於側邊樑，以固定支撐系統，如圖 1 及圖 2 所示。
When the pinch weld flange has a bend that prevents supporting the sill with one I-beam, more than one I-beam can be used on each side of the vehicle. For vehicles with no pinch weld flange, or with a nonvertical flange angle that precludes clamping, mounting by another method may be necessary, such as that described in the National Highway Traffic Safety Administration's Laboratory Test Procedure (2006).	若側邊樑之彎曲形狀導致無法使用單支工字樑支撐車輛門檻，則可在車輛每側使用多支工字樑。對於無側邊樑之車輛，或側邊樑角度非垂直以致無法夾緊者，得採用其他方法進行安裝。
Prior to testing, the front-row seat back on the side being tested is reclined to prevent interaction with the crushing roof. Rear seats are latched in their upright position. All windows are closed and doors are locked. (請參考末頁圖示)	3.24.2.2 試驗前，應將受驗側之前排座椅椅背向後傾斜，以避免與受壓車頂產生干涉。後排座椅應固定於直立位置。所有車窗均須關閉，車門亦須上鎖。 （請參考末頁圖示）
TESTING Roof strength evaluations are conducted on a quasi-static test system manufactured by MGA Research Corporation (Figure 3).	3.24.3 試驗規範 3.24.3.1 由 MGA Research Corporation 製造之準靜態測試系統執行車頂抗壓強度評估（如圖 3 所示）。

IIHS 原文	TNCAP 條文草案(第三版)
The system consists of an upright assembly and an attached loading head that can be fixed at varying heights from the ground and at pitch angles ranging from −5 to +5 degrees to accommodate testing on the driver or passenger side.	3.24.3.1.1 該系統由立柱組件及附帶之加載頭所組成，加載頭可固定於不同距地高度之位置，且其俯仰角可於−5 至+5 度範圍內調整，以適應駕駛側或乘客側之試驗需求。
The roll angle is permanently fixed at 25 degrees.	3.24.3.1.2 翻轉角(Roll angle)固定為 25 度。
Four hydraulic actuators control the movement of the platen along two linear guides.	3.24.3.1.3 四組液壓致動器控制壓板沿兩條線性導軌移動。
The entire system is mounted on a T-slot bed plate anchored to the floor of the test facility. (請參考末頁圖示)	3.24.3.1.4 整個系統安裝於 T 型槽底板上，該底板固定於試驗設施地板上。（請參考末頁圖示）
Two I-beams (HR A-36 W10x88) are mounted on the bed plate perpendicular to the longitudinal axis of the platen. The vehicle, with the attached rocker panel support system, is placed on these beams. The vehicle is adjusted so that:	3.24.3.2 底板應安裝兩支工字樑（HR A-36 W10x88），且其與壓板縱軸垂直。將裝有側裙支撐系統之車輛置於該兩支工字樑上。車輛應調整至符合下列條件：
1. The longitudinal centerline of platen is within 10 mm of the initial roof contact point.	(1)壓板縱向中心線與車頂初始接觸點之距離於 10 mm 以內。
2. The yaw angle of the vehicle relative to the longitudinal axis of the platen is 0 ± 0.5 degrees.	(2)車輛相對於壓板縱軸之偏離角(Yaw angle)為 0 ± 0.5 度。
3. The midpoint of the platen’s forward edge is 254 ± 10 mm beyond the most forward point of the roof (including the windshield trim if it overlaps the roof) lying on the vehicle’s longitudinal centerline.	(3)壓板前緣之中點位於車輛縱向中心線上之車頂最前端前方 254 ± 10 mm 處（若擋風玻璃飾條與車頂重疊，則應包括該飾條）。
To minimize the potential for loading the edge of the platen during the test, there should be a minimum clearance of 150 mm between every point along the forward edge of the platen and the structurally significant	為盡可能降低試驗過程中壓板邊緣承受負載之可能性，壓板前緣上任一點與車身主要結構組件間之最小間隙，應至少為 150 mm，此間隙應沿垂直於壓板表面之方向進行測量（如圖 4 所示尺寸「A」）。

IIHS 原文	TNCAP 條文草案(第三版)
body components, when measured normal to the platen's face (Dimension "A" in Figure 4).	
Note: Structurally significant body components include the roof, roof pillars, and any glass (windshield, side windows, roof glass) but not the side mirrors, trim, removable roof rails, roof-mounted antennas, and generally any component that consumers can remove.	車身主要結構組件包括車頂、車頂支柱及所有玻璃（擋風玻璃、側窗、車頂玻璃），但不包括後視鏡、飾條、可拆卸式車頂導軌、車頂天線，以及一般可由消費者自行拆卸之任何組件。
If the 150-mm clearance is not achieved, then the vehicle is moved rearward longitudinally until the 150-mm clearance is achieved at the front edge of the platen, or an equal measure of clearance (±20 mm) less than 150 mm at the front and rear edges of the platen is obtained (Dimensions "A" and "B" in Figure 4), whichever occurs first.	若無法達成 150 mm 之間隙，則將車輛沿縱向向後移動，直至壓板前緣之間隙達到 150 mm，或壓板前緣及後緣之間隙達到等同於 150 mm（±20 mm）之間隙（如圖 4 所示尺寸「A」及「B」），以先達成者為準。
(請參考末頁圖示)	（請參考末頁圖示）
4. The pitch angle of the vehicle matches the on-road angle, while also accounting for any difference between the platen's pitch angle and the nominal −5 degrees.	(4)車輛之俯仰角應與行駛狀態下之角度一致，並同時考量壓板俯仰角與標準值−5 度間之差異。
The maximum combined difference of the vehicle and platen pitch angles from their targets is ± 0.5 degrees. (For example, if the on-road vehicle pitch angle is −0.2 degrees and the platen pitch angle is −5.2 degrees, the target sill angle for the test is −0.4 ± 0.5 degrees.) If necessary to achieve this angle, shims are inserted between the rocker panel supports and the W10x88 I-beams attached to the bed plate.	車輛與壓板俯仰角偏離目標值之合併最大差值應為±0.5 度。例如，若車輛行駛狀態下之俯仰角為−0.2 度，且壓板俯仰角為−5.2 度，則試驗之目標門檻角應為−0.4 ± 0.5 度。若為達成此角度要求，得於側裙撐桿與固定於底板上之 W10x88 工字樑之間插入墊片進行調整。
Once the vehicle is positioned correctly, the rocker panel supports are clamped to the two perpendicular I-beams, and the beams are marked to confirm that the vehicle position is maintained during the test. For body-	車輛正確定位後，將側裙撐桿夾持於兩支垂直之工字樑上，並於樑上做標記，以確認測試過程中車輛位置維持不變。對於車身與底盤分離(Body-on-frame)之車輛，需對底盤提供支撐，以避免車身重量於車身固定點處

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on-frame vehicles, the frame is supported to prevent the weight of the chassis from stressing the body at the body mounts.	產生應力。
The roof is crushed to a minimum displacement of 127 mm at a nominal rate of 5 mm/second. Some tests are conducted to a greater displacement to collect additional strength data for research purposes. Force data are recorded from five load cells (Interface Inc., model 1220) attached to the loading platen. Displacement data are recorded from four linear variable displacement transducers (LVDTs) (MTS Temposonics model GH) integrated into the hydraulic actuators. Figure 5 shows the locations of the load cells and LVDTs on the loading platen. （請參考末頁圖示）	3.24.3.3 車頂以 5 mm/s 之速率進行擠壓，直至達到 127 mm 之最小位移。部分試驗得進行更大之擠壓位移，以取得供研究用途之額外車頂強度數據。力量數據係由安裝於負載壓板上之五個荷重計（Load cell）（Interface Inc., model 1220）記錄。位移數據則由整合於液壓致動器內之四組線性可變位移轉換器（LVDTs）（MTS Temposonics model GH）記錄。負載壓板上之荷重計與 LVDTs 位置如圖 5 所示。 （請參考末頁圖示）
Force and displacement data are collected with a National Instruments USB-6210 data acquisition system and reported at 100 Hz. These data are based on a sampling rate of 2,000 Hz, with every 20 points being averaged to produce the output data at 100 Hz.	力量及位移數據透過 National Instruments USB-6210 資料擷取系統進行擷取，並以 100 Hz 之頻率輸出。這些數據之取樣頻率為 2,000 Hz，並以每 20 個數據點進行平均運算，以產生 100 Hz 之輸出數據。
The displacement-time histories from the LVDTs are compared to verify that the platen's roll angle and pitch angle (relative to the vehicle's on-road pitch) were maintained at 25 ± 0.5 degrees and −5 ± 0.5 degrees, respectively.	透過比對 LVDTs 所測得之位移-時間歷程，以驗證壓板之翻轉角與俯仰角（相對於車輛行駛狀態之俯仰角）分別維持於 25 ± 0.5 度及−5 ± 0.5 度。
The precrash and postcrash conditions of each test vehicle are documented with still photographs. The position of the vehicle in the test fixture also is recorded. Motion picture photography is made of the test with real-time video cameras.	3.24.3.4 每一受驗車輛於試驗前與試驗後之狀態，均應以靜態照片記錄留存。受驗車輛於試驗設備中之位置亦應予以記錄。試驗過程應使用實時攝影機進行動態錄影。
CALCULATING THE STRENGTH-TO-WEIGHT RATIO (SWR)	3.24.4 強度重量比（SWR）評等計算

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RATING Force and displacement data are recorded for 5 seconds prior to each test, while the test system holds the loading platen at initial roof contact. The data recorded from 1 to 4 seconds of this hold time are averaged for each channel to produce a measurement offset that is subtracted from the data recorded during the crushing of the roof. After removing the offset for each channel, the force-displacement curve is plotted using the summed output from the five load cells and the average displacement from the four LVDTs.	3.24.4.1 每次試驗前，當試驗系統將壓板保持在與車頂初始接觸位置時，應連續記錄 5 秒之力量與位移數據。針對此保持時間之第 1 秒至第 4 秒所記錄之數據，應分別針對每個通道進行平均運算，以取得量測偏移值。該偏移值應自車頂擠壓過程所記錄之數據中扣除。完成各量測通道之偏移修正後，以五個荷重計之力量輸出總和及四個 LVDTs 之平均位移值，繪製力量-位移曲線。
The maximum force prior to 127 mm of platen displacement is divided by the measured curb weight to obtain the SWR. Both the force and curb weight are rounded to the nearest pound prior to performing the calculation, and the resulting SWR is rounded to the nearest one-hundredth of a unit. Displacement is rounded to the nearest 0.1 mm. (The maximum displacement where the load can be used for the vehicle rating is 126.9 mm.) The vehicle's rating is assigned based on the boundaries listed in Table 1.	於壓板位移達 127 mm 前所量測之最大力量，除以量測所得之空車重量，即算得強度重量比（SWR）。在進行計算前，力量與空車重量均應四捨五入取至最接近之重量，計算所得之 SWR 應四捨五入取至小數點第二位。位移量（mm）四捨五入取至小數點第一位（用於車輛評等之負載最大位移量為 126.9 mm）。車輛應依據表 1 所列之評等區間進行評等。
Table 1 Roof Strength Rating Boundaries **SWR** / **Rating** ≥ 4.00 / Good ≥ 3.25 to < 4.00 / Acceptable ≥ 2.50 to < 3.25 / Marginal <2.50 / Poor	表 1：車頂強度評等區間 **SWR** / **評等** / **顏色** / **分數** ≥ 4.00 / 優良 / 綠 / 3 ≥ 3.25 to < 4.00 / 良好 / 黃 / 2 ≥ 2.50 to < 3.25 / 尚可 / 橘 / 1 <2.50 / 不良 / 紅 / 0

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All trim levels sharing the tested vehicle's body type and roof structure are assigned the same rating as the typically equipped trim level, provided their curb weights do not exceed 110% of the selected vehicle's weight. Based on published curb weights from multiple sources, any trim levels that may exceed this weight are identified and weighed. If the weight does exceed 110% of the weight of the selected vehicle, a unique SWR is calculated for that trim level. If this SWR results in a lower rating, both ratings are reported for the model, with a split according to trim level. If a trim level weighs more than 110% of the typically equipped model, but the lower SWR does not fall in a lower rating band, only the original SWR and rating are reported for the model.	3.24.4.2 凡與受驗車輛具有相同車身外型及車頂結構之車款，若其空車重量不超過受驗車輛重量之 110%，則適用與標準配備車型等級相同之評等。 根據多方來源所公布之空車重量，應識別任何可能超過此重量之車款，並對該車款進行測量。若重量確實超過所選車輛重量之 110%，則應針對該車款另行計算其 SWR。若所得之 SWR 導致較低之評等，則該車型之兩個評等均同時公布，並依車款進行區分。若某車款之重量超過標準配備車型之 110%，但其較低的 SWR 所對應之評等仍未落入較低之評等區間，則該車型僅公布原算得之 SWR 及評等。

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TEST VEHICLE PREPARATION

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Figure 1: Rocker Panel Support System Attached to the Vehicle

3.24.2 受驗車輛整備

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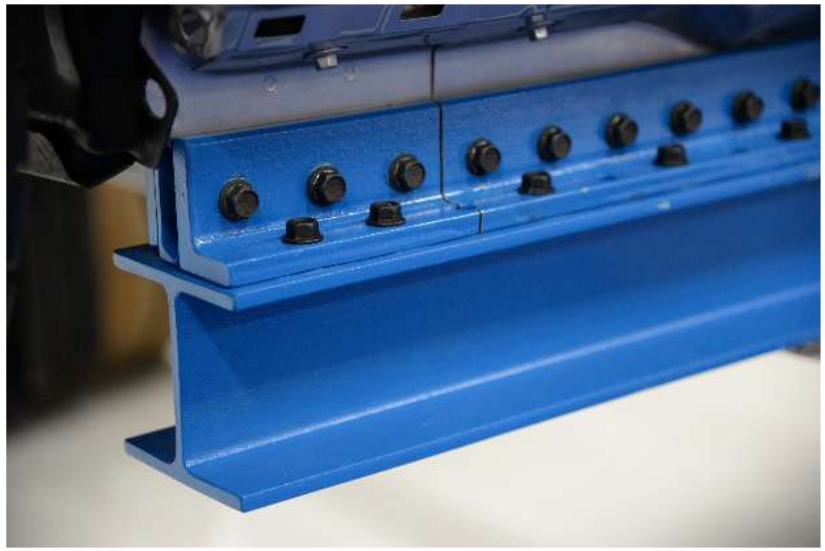

圖1：安裝於車身之側裙支撐系統

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TEST VEHICLE PREPARATION

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Figure 2: Rocker Panel Support System — Detail

3.24.2 受驗車輛整備

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圖2：側裙支撐系統—細部圖示

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TESTING

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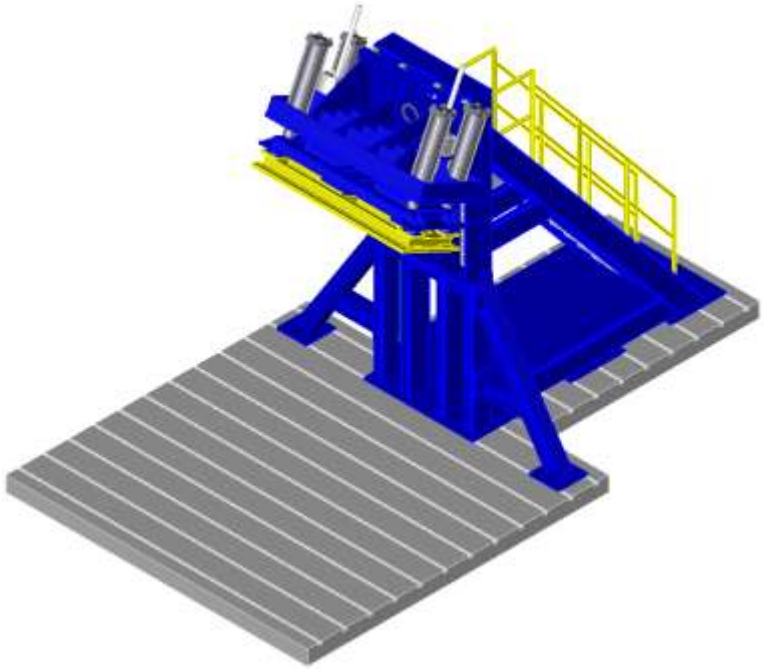

Figure 3: MGA Roof Crush Test System

3.24.3 試驗規範

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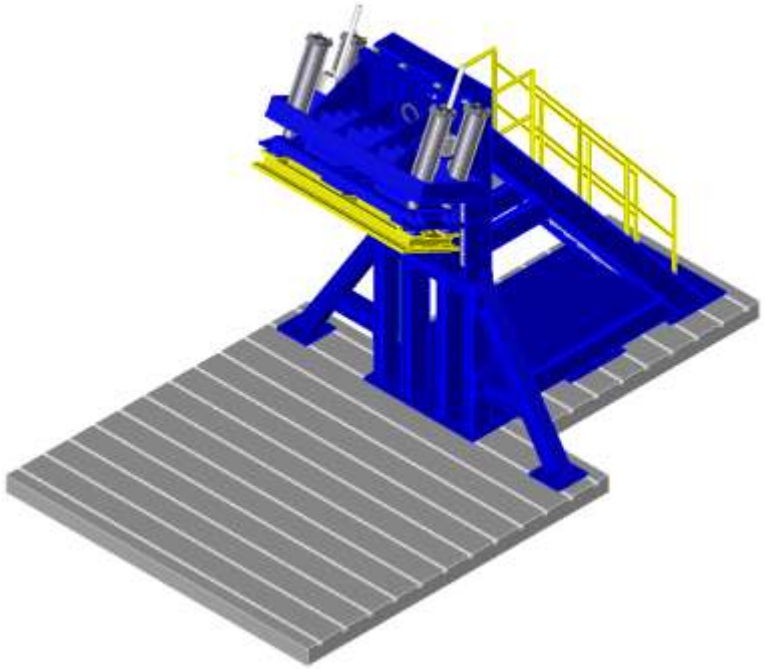

圖3：MGA車頂抗壓強度試驗系統

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TESTING

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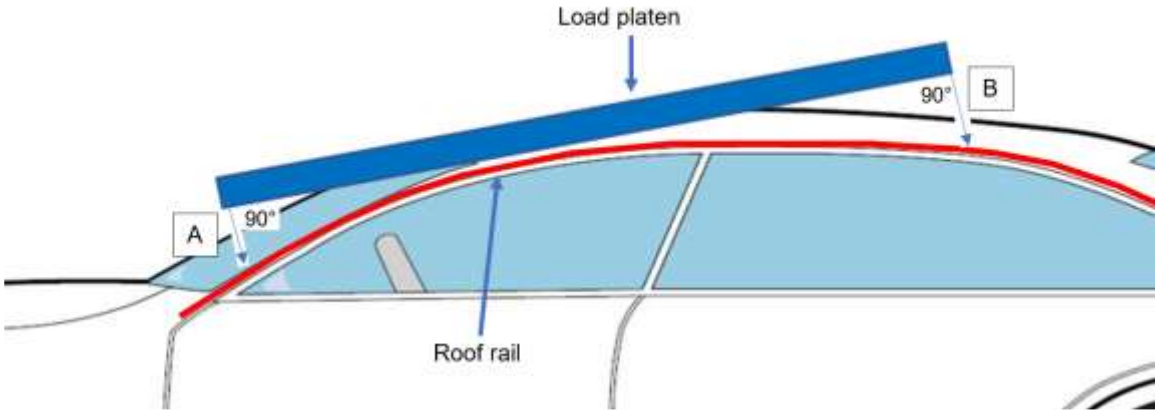
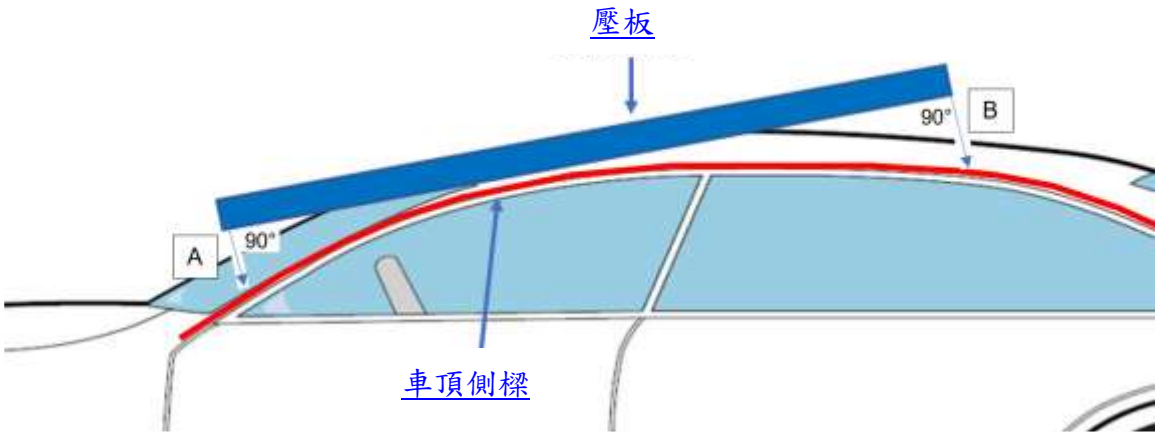


Figure 4: Vehicle Position at the Initial Contact Point

Note: The view shown is coplanar to the load face of the platen. The platen is positioned at the first point of contact. "A" indicates the front edge of the platen; "B" indicates the rear edge of the platen.

3.24.3 試驗規範



備註：所示視圖與壓板負載面處於同一平面。壓板定位於首次接觸點之位置。標記「A」表示壓板前緣；標記「B」表示壓板後緣。

圖4：車輛於初始接觸點之位置

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TESTING

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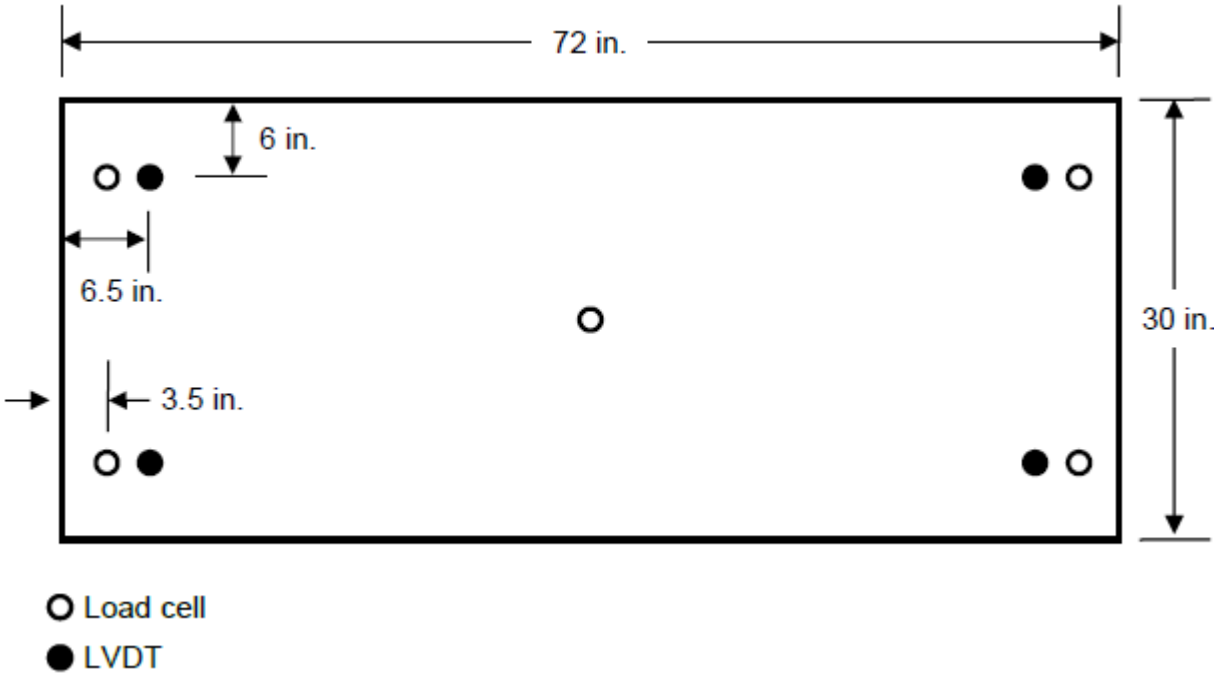

Figure 5: Position of Load Cells and LVDTs on Loading Platen

3.24.3 試驗規範

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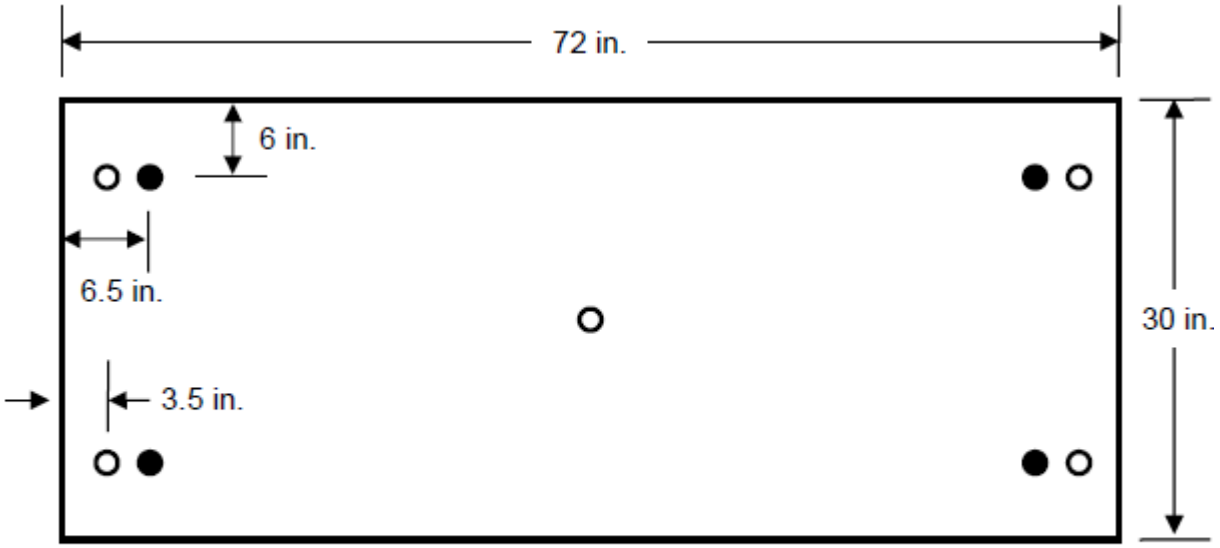

○ 荷重計

● 線性可變位移轉換器

圖5：負載壓板上荷重計與LVDTs位置