

ARTC 試車場實車測試能量統計表：研發及產品改良 Example of Proving Ground Test Procedures: Research & Development		1	2	3	4	5	6	7	8	9	10	11	12
		高速周回路	綜合性能測試道	煞車性能測試道	噪音測試道	綜合耐久測試道	標準不良路	斜坡測試道	滑行道測試道	振動噪音測試道	動態平台	乾地操安測試道	溼地操安測試道
<b>一、性能 Performance:</b>													
1. 煞車性能	1.Braking Test		●	●				●			●		
2. ABS 性能	2.ABS Test			●									
3. 動力、加速性能	3.Performance Test	●	●						●				
4. 滑行道測試 (車輛行駛阻力量測)	4.Coastdown Test								●				
5. 爬坡性能	5.Climbing Test							●					
6. 牽引試驗	6.Traction Test	●	●					●					
7. 迴轉半徑	7.Turning Radius Test										●		
8. 懸吊特性	8.Suspension Test	●	●			●	●			●	●	●	●
9. 一般行駛操安試驗	9.General Handling Test		●							●	●	●	●
10. 高速行駛操安試驗	10.High Speed Handling Test	●	●							●	●	●	●
11. 曲行	11.Slalom Test		●							●	●	●	●
12. 轉彎煞車性能	12.Braking In Turn									●	●	●	●
13. 乘適性能	13.Ride Test	●	●			●	●			●	●	●	●
14. 振動噪音性能	14.Noise Vibration & Harshness	●			●					●	●	●	●
<b>二、耐久 Durability:</b>													
1. 全車加速性耐久測試	1.Accelerated Durability Test					●	●	●		●			
2. 全車實用性耐久測試	2.General Durability Test	●	●			●	●	●		●			
3. 底盤結構強度耐久測試	3.Structural Durability Test					●	●			●			
4. 驅動 (高速驅動) 耐久測試	4.High Speed Drive Line Durability Test	●											
<b>三、主觀評量 Subjective Assessment:</b>													
1. 駕駛性綜合主觀評價測試	1.Dynamic Subjective Assessment	●	●	●		●	●	●	●	●	●	●	●
<b>四、其他 Else:</b>													
1. 運轉性駕駛評估與測試 (起動、熄火、動力平順性)	1.Driveability Test / Assessment	●	●					●			●		
2. 路面干涉性測試	2.Kerbside Impact Test					●		●		●			
3. 低級音 (裝配性) 測試	3.Cheap Noise Test									●			
4. 水密性	4.Waterproofing Test			●									
5. 迴旋水漂測試	5.Tyre Hydrop Loning Test											●	
		High Speed Circuit	General Performance	Brake Performance	Pass-By Noise	General Durability	Belgium Road (PAVE)	Test Hills	Coastdown	Noise Vibration	Dynamic Platform	Dry Handling Circuit Test Track	Wet Handling Circuit Test Track

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1. 煞車性能測試： (效能、失效、衰退回復、浸水回復、駐車) CNS D3015, D3030, D3114, D3198, FMVSS122, FMVSS135, ECE R13H, R13, R78, EEC 93/14, SAE J843, J299	1. Braking Test : CNS D3015, D3030, D3114, D3198, FMVSS122, FMVSS135, ECE R13H, R13, R78, EEC 93/14, SAE J843, J299			●	●					●			
2. 防鎖煞車 (ABS) 測試： CNS D2201, SAE J46, ECE R13H, R13, R78, EEC 93/14	2. ABS Test : CNS D2201, SAE J46, ECE R13H, R13, R78, EEC 93/14				●								
3. 加速測試 (起步、超越)： CNS D1074-4, D3016, D3031	3. Acceleration Test : CNS D1074-4, D3016, D3031	●	●							●			
4. 爬坡性能測試： NS D1074-5, D3019, D3034	4. Climbing Test : NS D1074-5, D3019, D3034								●				
5. 最高速測試： CNS D3018, D3039, EEC 95/1	5. Maximum Speed Test : CNS D3018, D3039, EEC 95/1	●								●			
6. 迴轉性能測試： CNS D3119, D3120	6. Cornering Performance Test : CNS D3119, D3120										●		
7. 速度計校正測試： CNS D1001, ECE R39, EEC 2000/7, 75/443	7. Speedometer Calibration Test : CNS D1001, ECE R39, EEC 2000/7, 75/443	●	●							●			
8. 滑行道測試： CNS D3017, SAE J1263, ECE R83, EEC 70/220	8. Coastdown Test : CNS D3017, SAE J1263, ECE R83, EEC 70/220									●			
9. 噪音測試： CNS D3146, CNS 5799, ISO 7188, 362, EEC 97/24, ADR 83, SAE J1477, ECE R51, R41, R117	9. Noise Test : CNS D3146, CNS 5799, ISO 7188, 362, EEC 97/24, ADR 83, SAE J1477, ECE R51, R41, R117							●			●		
10. 客觀操安 (急遽車道變換) 測試： ISO 3888	10. Lane Change Test : ISO 3888							●				●	
11. 客觀操安 (定圓迴轉) 測試： ISO 4138	11. Steady State Circular Test : ISO 4138											●	
12. 客觀操安 (曲行) 測試： CNS D3131	12. Slalom Test : CNS D3131							●				●	
13. ISO 客觀乘適性測試： ISO 2631-1	13. Objective Ride Test : ISO 2631-1	●								●			
		High Speed Circuit	General Performance	Brake Performance	Pass-By Noise	General Durability	Belgium Road (PAVE)	Test Hills	Coastdown	Noise Vibration	Dynamic Platform	Dry Handling Circuit Test Track	Wet Handling Circuit Test Track

INTRODUCTION



試車場簡介  
PROVING GROUND

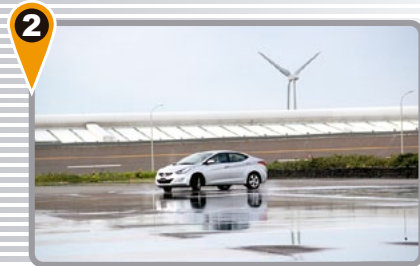




### 1 高速周回路 HIGH SPEED CIRCUIT

- 一、測試道規格：總長度為3,575公尺，最大彎道坡度38°，設計車速每小時160公里，為橢圓形3車道。
- 二、測試能量：可執行各國法規及共同標準，主要測試項目有：  
加速、最高速率、速度/里程計校正、燃料消耗、排污耐久、里程累積、高速換安、乘適性能與高速耐久等測試。

1. Specification: The high-speed circuit is designed with total length of 3,575 m and a banking angle of 38°. The designed neutral speed is 160 km/h. The oval-shaped circuit is divided into 3 lanes.
2. Application: Acceleration, Maximum Speed, Speedometer Calibration, Fuel Consumption, Emissions Durability, Mileage Accumulation, High Speed Handling, Ride, and High Speed Durability test, etc.



### 2 煞車性能測試道 BRAKE PERFORMANCE TEST TRACK

- 一、測試道規格：設置4種不同摩擦係數之路面及水膜路、深水槽路，特殊鋪面測試區長200公尺，摩擦係數分別為：高摩擦係數路面( $\mu=0.7\sim0.8$ )、中摩擦係數路面( $\mu=0.4\sim0.5$ )、低摩擦係數路面( $\mu=0.3\sim0.4$ )、極低摩擦係數路面( $\mu=0.1\sim0.2$ )。
- 二、測試能量：可執行各國法規及共同標準，主要測試項目有：  
煞車、ABS、與起步加速等測試。

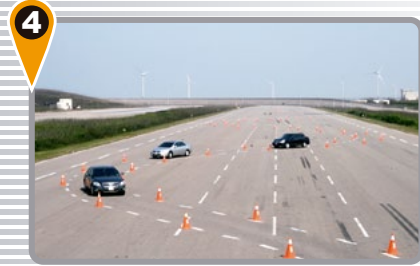
1. Specification: The brake performance test track is designed to arrange four paving types (three low friction coefficient special types and one high friction coefficient asphalt concrete type), to allow split  $\mu$ , in consideration of ABS performance testing.
2. Application: Braking, ABS, and Acceleration test, etc.



### 3 斜坡測試道 TEST HILLS

- 一、測試道規格：設置有12%(長68m)、18%(長59m)、20%(長49m)、30%(長29m)、35%(長24m)、42%(長18m)及50%(長14m)7種不同坡度之測試道。
- 二、測試能量：可執行各國法規及共同標準，主要測試項目有：  
駐煞車與爬坡等測試。

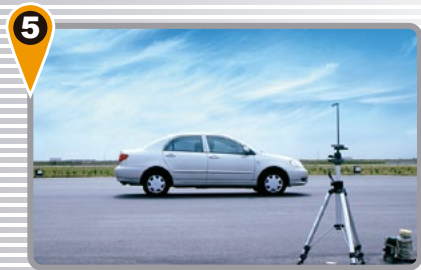
1. Specification: Seven test hills, with gradients of 12%(68m), 18%(59m), 20%(49m), 30%(29m), 35%(24m), 42%(18m) and 50%(14m).
2. Application: Braking and Climbing test, etc.



### 4 綜合性能測試道 GENERAL PERFORMANCE TEST TRACK

- 一、測試道規格：測試道寬40公尺，長1,042公尺，兩端設置加減速及迴車道。
- 二、測試能量：可執行各國法規及共同標準，主要測試項目有：  
煞車、加速、換安與乘適性能等測試。

1. Specification: The general performance test track is place inside with the High Speed Circuit. A 40 m wide and 1,042 m long straight test track with access on the both side.
2. Application: Braking, Acceleration, Handling, and Ride test, etc.



### 5 噪音測試道 PASS-BY NOISE TEST TRACK

- 一、測試道規格：噪音測試路面表層符合國際ISO標準之瀝青路面，測試區兩側助跑道760公尺。
- 二、測試能量：可執行各國法規及共同標準，主要測試項目有：  
噪音等測試。

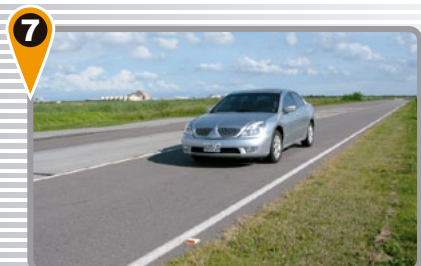
1. Specification: The surface area, provided on the noise test track, is complied with ISO. The runway is 4 m in width and 760 m in length. Turning loops are set at each end.
2. Application: Pass-By Noise test, etc.



### 6 綜合耐久測試道 GENERAL DURABILITY TEST TRACK

- 一、測試道規格：總長度5,432公尺，設置各種特殊鋪裝測試路面，包含砂礫路、AC凹凸路、RC凹凸路、輪轍路、河床路、側傾斜路、積水路、泥濘路。
- 二、測試能量：可執行產品研發及共同標準，主要測試項目有：  
耐久與乘適性能等測試。

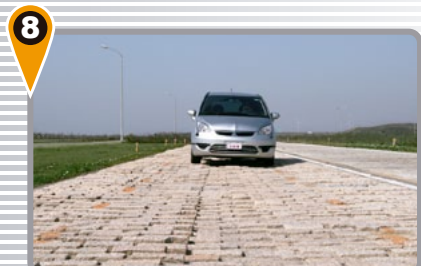
1. Specification: The General durability test track contains several tracks that simulate poor quality unpaved roads like gravel road, asphalt uneven road, cement concrete uneven road, rutted road, cobblestone road, side slop road, splash road, mud pit road. The total length is 5,432m. Each of these test tracks is linked with a bypass to enable test drivers to freely change among the tracks after completing each circuit.
2. Application: Durability and Ride test, etc.



### 7 滑行測試道 COASTDOWN TEST TRACK

- 一、測試道規格：測試道長1,569公尺及1,811公尺，寬4公尺，兩端設置迴車道。
- 二、測試能量：可執行各國法規及共同標準，主要測試項目有：  
滑行、加速、乘適性能與最高速率等測試。

1. Specification: Two test tracks of the length are 1,569m & 1,811m, and the curved sections are at each end of the track to allow vehicles to turn and accelerate during coastdown operation.
2. Application: Coastdown, Acceleration, Ride, and Maximum Speed test, etc.



### 8 標準不良路 ACCELERATED DURABILITY ROAD

- 一、測試道規格：標準不良路以花岡岩塊建構而成，亦稱比利時路面，路寬4公尺，圈長1,101公尺，包含高頻、低頻與極嚴苛路面。
- 二、測試能量：可執行產品研發及共同標準，主要測試項目有：  
懸吊、耐久與乘適性能等測試。

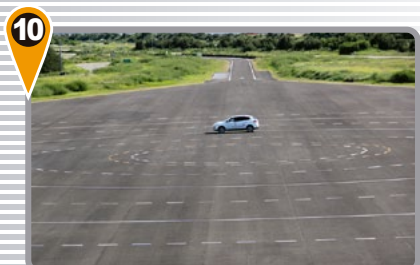
1. Specification: The road is made bumpy through laying granite blocks. The closed curve alignment is selected whereby S curves with 4m wide, and the total length is 1,101m. It contains high frequency, low frequency and extreme severe levels.
2. Application: Suspension, Durability, and Ride test, etc.



### 9 振動噪音測試道 NOISE VIBRATION & HARSHNESS SURFACES TEST TRACK

- 一、測試道規格：包含6種低振幅路面(段差路、橋樑接縫路、人孔+突起路、裂縫路、粗糙路與R10突起路)、9種高振幅路面(短波狀路、波狀路、長波狀路、起伏路、大型起伏路、低窪路、瀝青不良路、H80雙波狀路與洗衣板路面)、3種噪音路面(粗面路、排水性路面與低噪音瀝青路)。另設有底盤強度測試區(包含9種不同路面：路緣石、停車輪止、突起路、凹窪路、輪轍路、排水溝、壕溝、鐵軌與止檔)。
- 二、測試能量：可執行各國法規及共同標準，主要測試項目有：  
振動噪音、耐久、乘適性能與空氣囊誤作動等測試。

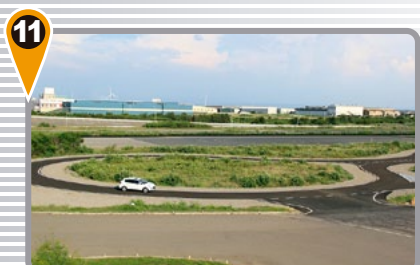
1. Specification: 6 low amplitude surfaces (stepped joint road, bridge expansion joint road, manhole & projection road, crack asphalt road, rough asphalt road, and radius-10mm projection road), 9 high amplitude surfaces (short wave road, wave road, long wave road, undulation road, big undulation road, bottoming road, patched asphalt road, height-80mm wave road, and wash board road) and 3 noise surfaces (rough texture road, drainage pavement surface, and low noise surface) of 4m in width, and chassis-strength test area which contains 9 different surfaces (hump, concave, kerb, rutted, parking stone, drain, ditch, railway, and interference rail), are designed to simulate various road conditions in order to enable evaluations of noise and vibration.
2. Application: Noise Vibration & Harshness, Durability, Ride, and Airbag Misuse test, etc.



### 10 動態平台 DYNAMIC PLATFORM

- 一、測試道規格：測試區路面扇形開展，最大迴轉區域達曲率半徑60公尺，加速道長457公尺，測試區平均寬度140公尺。
- 二、測試道能量：可執行各國法規、共同標準及較激烈或需較大緩衝空間的車輛操控測試，主要測試項目有：  
步階轉向、定圓測試及電子穩定控制系統(ESC)等換安評價測試。

1. Specification: The fan-shaped expanded and 140 m average of wide platform, the allowable maximum 60 m radius of circle, with a 457 m-long of acceleration lane.
2. Application: Step Steer Input Test, Steady-State Circular Test, Sine with Dwell Test for ESC functional assessment, etc.



### 11 乾地換安測試道 DRY HANDLING CIRCUIT

- 一、測試道規格：測試道總長892公尺，寬5.5公尺，由彎道曲率半徑20公尺~140公尺之各種圓弧所串接而成，路面摩擦係數約0.9，並具備半徑100公尺、長10公尺圓弧、水膜1公分之旋迴水漂車道。
- 二、測試道能量：可執行產品研發的測試，主要測試項目有：  
車輛操控性能主觀評價及旋迴水漂測試。

1. Specification: The 892 m-long and 5.5 m-wide circuit, consisted of series-wound curves with radiuses of 20~140 m, the dry surface of friction ( $\mu$ ) 0.9, with a section of 10 m-long wet curve (100 m radius, 1 cm water height).
2. Application: Handling Subjective Assessment, Tyre Hydroplaning Test, etc.



### 12 溼地換安測試道 WET HANDLING CIRCUIT

- 一、測試道規格：測試道總長349公尺，寬6.5公尺，由彎道曲率半徑20公尺及40公尺圓弧串接組成，路面摩擦係數約0.6~0.8，並設置灑水設施。
- 二、測試道能量：可模擬行駛溼滑路面情境，執行產品研發的測試，主要測試項目有：  
低摩擦路面之車輛操控性能主觀評價。

1. Specification: The 349 m-long and 6.5 m-wide circuit, consisted of series-wound curves with radiuses of 20~40 m, the wet surface of friction ( $\mu$ ) 0.6 to 0.8, with a track watering system.
2. Application: Handling Subjective Assessment on low adherence surfaces, etc.