FIFA EPTS TEST REPORT

EPTS Performance Test

Product Name	Kinexon GPS PRO (Post)
Partner	Kinexon Sports & Media GmbH
EPTS Product Type	Wearable System
Quality Level	FIFA Quality
Data Submission	Player - Centre of mass Post data submission
Test Date	19.05.2024
Certification Date	28.11.2024 to 27.11.2028
Submission Data Type	Post-Match Performance Data

INTRODUCTION

Introduction

The EPTS Performance test offers a four-year FIFA Quality certification for tracking providers who generate player (either centre of mass, skeletal or both) and, in certain cases, ball tracking data. This process is carried out by quantifying the accuracies of Global Navigation Satellite Systems (GNSS), Local Positioning Systems (LPS) and Optical Tracking Systems (OTS). The certification is offered to providers who publish the accuracy of their systems.

The test, conducted at an independent stadium, consists of the players and the ball being fitted with reflective markers before performing football specific drills. During these drills Vicon motion capture and technology provider data is collected simultaneously. Post-event, the data is temporarily and spatially synchronised before the differences between the data sets are calculated and visualised in the below report.

Declaration of conformity

This report details the results of EPTS Performance Tests carried out in accordance with the 'Handbook of Test Methods for EPTS Devices'. For further information about the exact test procedure, please refer to the 2022 edition of the Handbook of Test Methods for EPTS devices.

Technician	Jade Haycraft
Date	30.07.2024
Signature	
Report checked by	Sam Robertson
Date	30.07.2024
Signature	

PLAYER TRACKING TEST CONDITIONS

Test details	Centre of mass - player data
Test Date	19.05.2024
Test Location	Municipal Stadium of Leiria, Dr. Magalhães Pessoa
Test Institute	Victoria University
Test Number	142302
Test Manual	EPTS Performance Standard | 2022
Number of VICON Cameras	38
Type of VICON cameras	35 x Valkyrie, 3 x Vantage V16
Player Participant Details (number & sex)	7 Male and 3 Female
Approximate Player Age	18

SYSTEM DETAILS

System Details	Centre of Mass Player Data
Test Number	142302
Test Manual	EPTS Performance Standard | 2022
EPTS Product Type	Wearable System - GNSS
Assessment Metrics	Post-Match Performance Data
Submission Time	< 1 hour

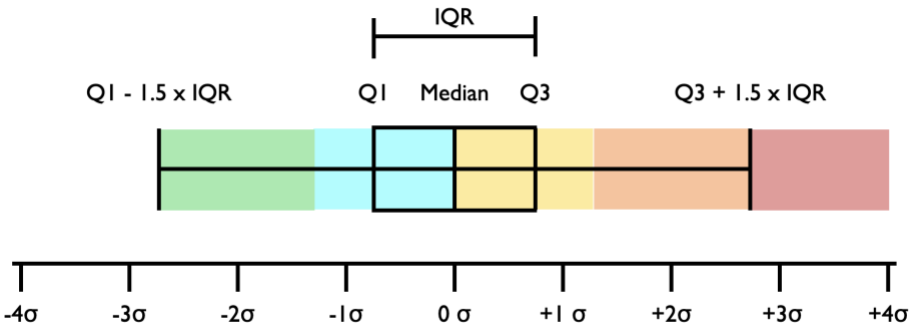
Fulfilment of test requirements

Test block	Capture & submission
Circuit	Yes
2 v 2 Game	Yes
5 v 5 Game	Yes
Sprints	Yes
Full Pitch Coverage	Yes

Analysis interpretation

Measure	Definition
Root Mean Square Difference (RMSD)	A commonly used measure of accuracy based on the standard deviation (σ) of the differences between the manufacturer and Vicon system.
Data Points Compared with Vicon	Varies depending on the quality of Vicon capture, as only the highest quality data is used for comparative purposes.
Live Data Submissions	Live data is considered as data that can be used in real time; this varies depending on the application.

Rating System (including legend)



Well-above industry standard
Above industry standard
At industry standard
Below industry standard
Well-below industry standard

PLAYER TRACKING RESULTS – CENTRE OF MASS

FIGURE 1: Rating by FIFA Velocity Band

Rating by Velocity Band

	0-5 km/h	5-10 km/h	10-15 km/h	15-20 km/h	20-25 km/h	25+ km/h
Velocity						
Position						

Legend

Well-above	Above	Standard	Below	Well-below

System Differences by Speed Band

FIGURE 2: Mean speed difference, expressed as Root Mean Square Difference (RMSD) ± Standard Deviation (SD), across all players by FIFA speed zones.

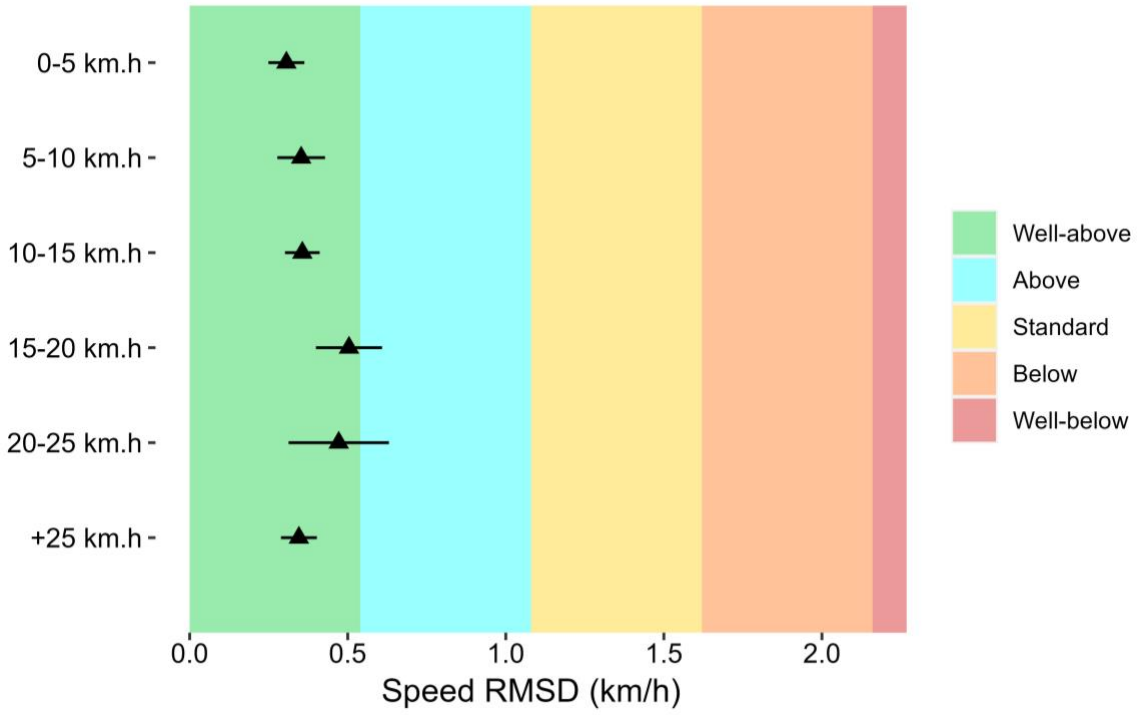
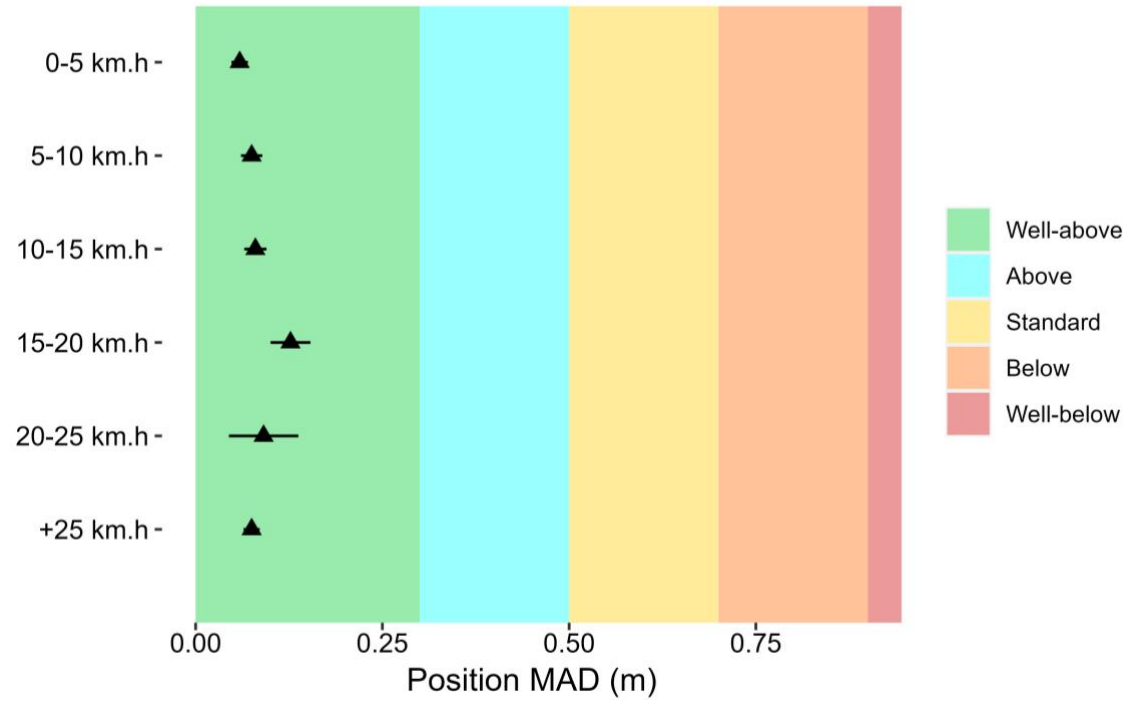


FIGURE 3: Mean position difference, expressed as Mean Absolute Difference (MAD) ± Standard Deviation (SD), across all players by FIFA speed zones.



Model of Differences Relative to Criterion

FIGURE 4: Analysis of system speed difference relative to Criterion (VICON) Speed. Upper and Lower boundaries are the mean positive and negative speed differences observed across all manufacturers for the 2023 and 2024 FIFA EPTS test events. The linear equation can be used to systematically account for the differences between systems, with the standard error of the estimate (SEE) of the model also shown.

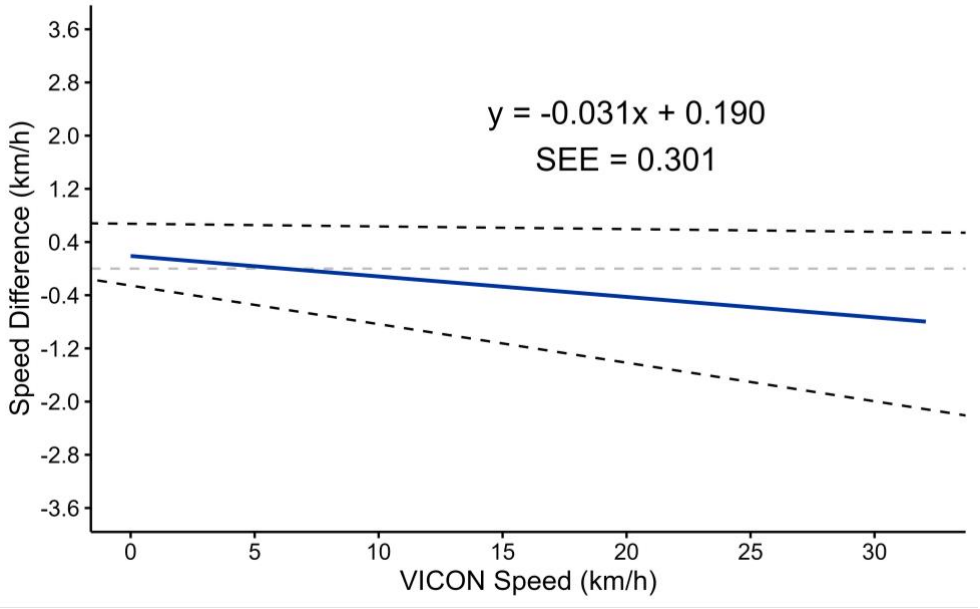
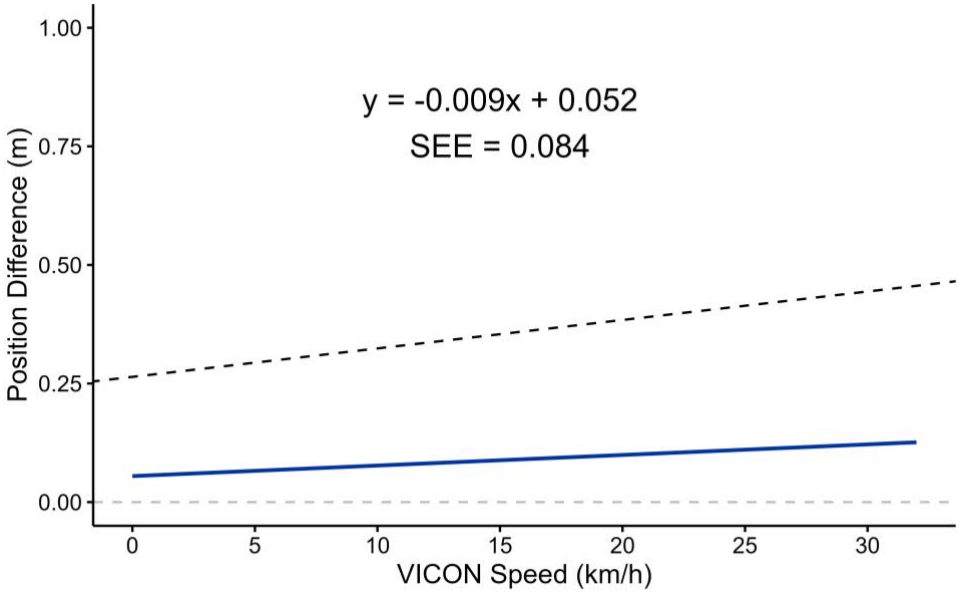


FIGURE 5: Analysis of system position difference relative to Criterion (VICON) Speed. The upper boundary (dotted line) represents the mean position differences observed across all manufacturers for this test event. The equation can be used to systematically account for the differences between systems, with the standard error of the estimate (SEE) of the model also shown. Unlike in Figure 4, no lower boundary is shown due to only absolute differences in position being assessed.



Total Distance Comparison & Data Submission Details

FIGURE 6: Comparison between VICON system and provider system of total distance covered by each player, aggregated across all drills. Total distance difference between systems is calculated based only on comparable VICON points.

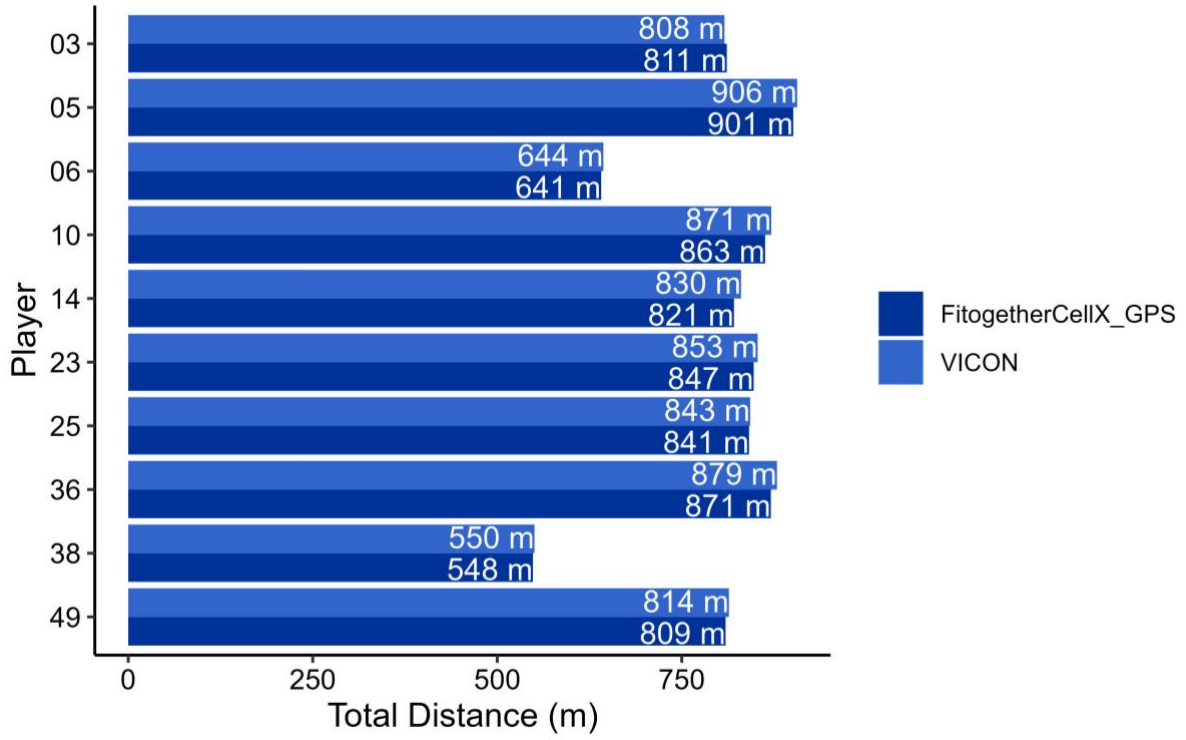


FIGURE 7: Provider data submission completeness (%) by player by drill. Table cells are presented only for players participating in a specific drill. Percentage values relate to the number of provider data points submitted as a proportion of Vicon data points used in the analysis.

	Drill						
Player	**Circuit 1**	**Circuit 2**	**2v2 (a)**	**2v2 (b)**	**5v5**	**Sprint 1**	**Sprint 2**
Player 03	100		100		100	100	100
Player 05		100		100	100	100	100
Player 06		100			100	100	100
Player 10	100		100		100	100	100
Player 14		100	100		100	100	100
Player 23		100		100	100	100	100
Player 25	100			100	100	100	100
Player 36	100			100	100	100	100
Player 38	100				100	100	100
Player 49		100	100		100	100	100