**Site Acceptance Test Report for**

**S236**

**For**

**PSA Tuas Terminal Transfer Zone**



**MVIZN PTE. LTD.**

Document revision records

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# Objective

This SAT test report shall be submitted to PSA before applying for the Provisional Acceptance Certificate (PAC) from PSA. This document shall be endorsed and witnessed by mVizn and PSA respectively to ensure the accuracy and validity of the test results. The details of the test plan can be found in *Document No.: 2023-SAT-TZMS-*01 and the test plan is designed to ensure that the systems comply with the project requirements.

# Methodology

The commissioning of the transfer zone management system is divided into four (4) main sections:

* Hardware check
* Front process i.e., without aRMG
  + Cabin positioning system
  + Haulier position detection system (initial setpoint)
* Operation full process i.e., with aRMG
  + Front process + haulier position detection system (near setpoint)
* Safety system check
  + Cabin door open detection system
  + Human in operating bay detection system
  + Chassis lifted prevention system
  + Container landout detection system

The commissioning of the front, full process and safety system are conducted during the day.

Front process commissioning is conducted to ensure that the data flow between the sub-systems and PLC is accurate.

Operation full process commissioning is conducted by sending autojob for mounting and offloading. One trailer/container configuration is tested in two bays, to ensure that results are consistent.

Safety system checks are conducted to ensure that the detection rate and confidence level are met.

The testing configuration can be found in their respective sections.

# Hardware Check

## Kiosk

The following has been checked and tested:

* Devices are powered up and running
* No loose connections
* No missing items

|  |  |  |
| --- | --- | --- |
| Components | Check (circle) | Remarks |
| Network switch | OK / ~~NOK~~ |  |
| PC | OK / ~~NOK~~ |  |
| PLC | OK / ~~NOK~~ |  |
| Air-con | OK / ~~NOK~~ | Set at 25°C. |
| Open rack components | OK / ~~NOK~~ | As per schematic diagram |
| Open panel components | OK / ~~NOK~~ | As per schematic diagram |
| Lighting | OK / ~~NOK~~ |  |
| High chair | OK / ~~NOK~~ |  |
| Solar film | OK / ~~NOK~~ |  |
| PSA logo | OK / ~~NOK~~ |  |
| Door stopper | OK / ~~NOK~~ |  |
| Key | OK / ~~NOK~~ | Handover to PSA |
| Housekeeping | OK / ~~NOK~~ |  |

## Bays

The following has been checked and tested:

* Devices are powered up and running
* No loose connections
* No missing items

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Bay #1 | Bay #2 | Bay #3 | Bay #4 | Remarks |
| CU/DB box | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ |  |
| Camera stand | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ |  |
| Camera bracket | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / NOK | OK / NOK |  |
| Traffic light | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ |  |
| Bay operational status lamp | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ |  |
| Bay in service blinker lamp | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ |  |
| Motion stop switch | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ |  |
| PMNVAS camera | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ |  |
| MI camera | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ | Some are share between bays |
| 3D camera | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ | OK / ~~NOK~~ | 6 per bay |

## I/O Check

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Input Bit | Input Description | Check (tick) | Output Bit | Output Description | Check (tick) |
| I0.0 | Kiosk E-Stop | ✓ | Q0.0 | Bay 1 PMNVA Control | ✓ |
| I0.1 | Bay 1 E-Stop | ✓ | Q0.1 | Bay 1 MI F Control | ✓ |
| I0.2 | Bay 2 E-Stop | ✓ | Q0.2 | Bay 1 MI R Control | ✓ |
| I0.3 | Bay 3 E-Stop | ✓ | Q0.3 | Bay 2 PMNVA Control | ✓ |
| I0.4 | Bay 4 E-Stop | ✓ | Q0.4 | Bay 2 MI F Control | ✓ |
| I0.5 | Bay 5 E-Stop | ✓ | Q0.5 | Bay 2 MI R Control | ✓ |
| I0.6 | Incoming MCB | ✓ | Q0.6 | Bay 3 PMNVA Control | ✓ |
| I0.7 | Incoming SPD FB | ✓ | Q0.7 | Bay 3 MI F Control | ✓ |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Input Bit | Input Description | Check (tick) | Output Bit | Output Description | Check (tick) |
| I1.0 | Bay 1 48V DC PSU to POE MCB | ✓ | Q1.0 | Bay 3 MI R Control | ✓ |
| I1.1 | Bay 2 48V DC PSU to POE MCB | ✓ | Q1.1 | Bay 4 PMNVA Control | ✓ |
| I1.2 | Bay 3 48V DC PSU to POE MCB | ✓ | Q1.2 | Bay 4 MI F Control | ✓ |
| I1.3 | Bay 4 48V DC PSU to POE MCB | ✓ | Q1.3 | Bay 4 MI R Control | ✓ |
| I1.4 | Spare | ✓ | Q1.4 | Bay 5 MI F Control | ✓ |
| I1.5 | Bay 1,2 PSU for GigEVision Switch MCB | ✓ | Q1.5 | Bay 5 MI R Control | ✓ |
| I1.6 | Bay 3,4 PSU for GigEVision Switch MCB | ✓ | Q1.6 | VA PC1 Control | ✓ |
| I1.7 | PTZ 9,10 PSU for POE MCB | ✓ | Q1.7 | VA PC2 Control | ✓ |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Input Bit | Input Description | Check (tick) | Output Bit | Output Description | Check (tick) |
| I2.0 | Bay 1 Outgoing Supply 230VAC MCB | ✓ | Q2.0 | EIU PC Control | ✓ |
| I2.1 | Bay 1 Outgoing SPD Feedback | ✓ | Q2.1 | Client PC Control | ✓ |
| I2.2 | Bay 2 Outgoing Supply 230VAC MCB | ✓ | Q2.2 | Spare | ✓ |
| I2.3 | Bay 2 Outgoing SPD Feedback | ✓ | Q2.3 | Spare | ✓ |
| I2.4 | Bay 3 Outgoing Supply 230VAC MCB | ✓ | Q2.4 | Spare | ✓ |
| I2.5 | Bay 3 Outgoing SPD Feedback | ✓ | Q2.5 | Spare | ✓ |
| I2.6 | Bay 4 Outgoing Supply230VAC MCB | ✓ | Q2.6 | Spare | ✓ |
| I2.7 | Bay 4 Outgoing SPD Feedback | ✓ | Q2.7 | Spare | ✓ |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Input Bit | Input Description | Check (tick) | Output Bit | Output Description | Check (tick) |
| I3.0 | Kiosk Aircon Status | ✓ | Q3.0 | Spare | ✓ |
| I3.1 | Kiosk High Temperature Sensor Alarm | ✓ | Q3.1 | Spare | ✓ |
| I3.2 | Spare | ✓ | Q3.2 | Spare | ✓ |
| I3.3 | Spare | ✓ | Q3.3 | Spare | ✓ |
| I3.4 | Spare | ✓ | Q3.4 | Spare | ✓ |
| I3.5 | Spare | ✓ | Q3.5 | Spare | ✓ |
| I3.6 | Spare | ✓ | Q3.6 | Spare | ✓ |
| I3.7 | Spare | ✓ | Q3.7 | Spare | ✓ |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Input Bit | Input Description | Check (tick) | Output Bit | Output Description | Check (tick) |
| I4.0 | PSA Network Switch 1 On/Off Status | ✓ | Q4.0 | Bay 1 PSA Lamp 1 (front) | ✓ |
| I4.1 | PSA Network Switch 2 On/Off Status | ✓ | Q4.1 | Bay 1 PSA Lamp 2 (rear) | ✓ |
| I4.2 | PSA Network Switch 3 On/Off Status | ✓ | Q4.2 | Bay 1 Bay Operation Status Indicator (Green) | ✓ |
| I4.3 | Motor Gate 1 Power On | ✓ | Q4.3 | Bay 1 Bay Operation Status Indicator (Red) | ✓ |
| I4.4 | Motor Gate 2 Power On | ✓ | Q4.4 | Bay 1 Traffic Light (Green Fwd) | ✓ |
| I4.5 | Motor Gate 3 Power On | ✓ | Q4.5 | Bay 1 Traffic Light (Red Stop) | ✓ |
| I4.6 | Motor Gate 4 Power On | ✓ | Q4.6 | Bay 1 Traffic Light (Green Rev) | ✓ |
| I4.7 | Spare | ✓ | Q4.7 | Bay 1 Tower Light (Red) | ✓ |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Input Bit | Input Description | Check (tick) | Output Bit | Output Description | Check (tick) |
| I5.0 | Spare | ✓ | Q5.0 | Bay 1 Tower Light (Yellow) | ✓ |
| I5.1 | Spare | ✓ | Q5.1 | Bay 1 Tower Light (Green) | ✓ |
| I5.2 | Spare | ✓ | Q5.2 | Spare | ✓ |
| I5.3 | Spare | ✓ | Q5.3 | Bay 2 PSA Lamp 1 (front) | ✓ |
| I5.4 | Spare | ✓ | Q5.4 | Bay 2 PSA Lamp 2 (rear) | ✓ |
| I5.5 | Spare | ✓ | Q5.5 | Bay 2 Bay Operation Status Indicator (Green) | ✓ |
| I5.6 | Spare | ✓ | Q5.6 | Bay 2 Bay Operation Status Indicator (Red) | ✓ |
| I5.7 | Spare | ✓ | Q5.7 | Bay 2 Traffic Light (Green Fwd) | ✓ |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Output Bit | Input Description | Check (tick) | Output Bit | Output Description | Check (tick) |
| Q6.0 | Bay 2 Traffic Light (Red Stop) | ✓ | Q7.0 | Bay 3 Bay Operation Status Indicator (Green) | ✓ |
| Q6.1 | Bay 2 Traffic Light (Green Rev) | ✓ | Q7.1 | Bay 3 Bay Operation Status Indicator (Red) | ✓ |
| Q6.2 | Bay 2 Tower Light (Red) | ✓ | Q7.2 | Bay 3 Traffic Light (Green Fwd) | ✓ |
| Q6.3 | Bay 2 Tower Light (Yellow) | ✓ | Q7.3 | Bay 3 Traffic Light (Red Stop) | ✓ |
| Q6.4 | Bay 2 Tower Light (Green) | ✓ | Q7.4 | Bay 3 Traffic Light (Green Rev) | ✓ |
| Q6.5 | Spare | ✓ | Q7.5 | Bay 3 Tower Light (Red) | ✓ |
| Q6.6 | Bay 3 PSA Lamp 1 (front) | ✓ | Q7.6 | Bay 3 Tower Light (Yellow) | ✓ |
| Q6.7 | Bay 3 PSA Lamp 2 (rear) | ✓ | Q7.7 | Bay 3 Tower Light (Green) | ✓ |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Input Bit | Input Description | Check (tick) | Output Bit | Output Description | Check (tick) |
| Q8.0 | Spare | ✓ | Q9.0 | Bay 4 Tower Light (Red) | ✓ |
| Q8.1 | Bay 4 PSA Lamp 1 (front) | ✓ | Q9.1 | Bay 4 Tower Light (Yellow) | ✓ |
| Q8.2 | Bay 4 PSA Lamp 2 (rear) | ✓ | Q9.2 | Bay 4 Tower Light (Green) | ✓ |
| Q8.3 | Bay 4 Bay Operation Status Indicator (Green) | ✓ | Q9.3 | Spare | ✓ |
| Q8.4 | Bay 4 Bay Operation Status Indicator (Red) | ✓ | Q9.4 | Bay 5 PSA Lamp 1 (front) | ✓ |
| Q8.5 | Bay 4 Traffic Light (Green Fwd) | ✓ | Q9.5 | Bay 5 PSA Lamp 2 (rear) | ✓ |
| Q8.6 | Bay 4 Traffic Light (Red Stop) | ✓ | Q9.6 | Spare | ✓ |
| Q8.7 | Bay 4 Traffic Light (Green Rev) | ✓ | Q9.7 | Spare | ✓ |

# Front Process

In this section, two (2) systems will be tested.

* Cabin positioning system (CPS)
* Haulier position detection system (HPDS)

The general test procedures are as follows:

* Vehicle start reversing into a bay
* Check CPS has detected and guide trailer into the ideal parking position with traffic light indication (red = stop)
* Upon parking, issue the job via PLC logic

There are a total of six (6) empty trailers:

* 20’ XT
* 40’ XT
* 45’ XT
* 40’ External IGH
* 45’ External IGH
* 45’ PSA IGH
* Empty
* Day

Refer to Section 4.1 for the detailed configurations.

## Empty Trailer

* 20’ XT
* Day

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bay No. | CPS | | HPDS (initial setpoint) | | | Results | Date/  Time |
| Within tolerance?  (+/-100mm) | Duration  (<120s) | VA measurement in mm  (x,z) | Actual measurement in mm  (x,z) | Within tolerance?  (+/-30mm) | Pass / Fail? |
| 1 | Y / ̶N̶ | Y / ̶N̶ | FL(-90,21) FR(-115,-91) RL(-58,-46) RR(-117,-31) | FL(-60,-5) FR(-90,-110) RL(-55,-40) RR(-90,-10) | Y / ̶N̶ | Pass | (22/7/2024) 14:27 |
| 3 | Y / ̶N̶ | Y / ̶N̶ | FL(-32,-33) FR(-38,36) RL(-56,-109) RR(-36,14) | FL(-20,-50) FR(-20,10) RL(-30,-90) RR(-30,10) | Y / ̶N̶ | Pass | (22/7/2024) 11:16 |

* 40’ XT
* Day

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bay No. | CPS | | HPDS (initial setpoint) | | | Results | Date/  Time |
| Within tolerance?  (+/-100mm) | Duration  (<120s) | VA measurement in mm  (x,z) | Actual measurement in mm  (x,z) | Within tolerance?  (+/-30mm) | Pass / Fail? |
| 2 | Y / ̶N̶ | Y / ̶N̶ | FL(1,84) FR(0,-91) RL(-17,-84) RR(11,-111) | FL(30,70) FR(20,-110) RL(0,-100) RR(30,-90) | Y / ̶N̶ | Pass | (23/7/2024) 13:33 |
| 4 | Y / ̶N̶ | Y / ̶N̶ | FL(20,-120) FR(35,51) RL(30,-130) RR(75,79) | FL(50,-100) FR(40,30) RL(50,-120) RR(60,90) | Y / ̶N̶ | Pass | (23/7/2024) 12:52 |

* 45’ XT
* Day

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bay No. | CPS | | HPDS (initial setpoint) | | | Results | Date/  Time |
| Within tolerance?  (+/-100mm) | Duration  (<120s) | VA measurement in mm  (x,z) | Actual measurement in mm  (x,z) | Within tolerance?  (+/-30mm) | Pass / Fail? |
| 1 | Y / ̶N̶ | Y / ̶N̶ | FL(66,28) FR(56,-108) RL(128,4) RR(166,-110) | FL(95,50) FR(80,-120) RL(130,-10) RR(136,-80) | Y / ̶N̶ | Pass | (25/7/2024) 09:22 |
| 3 | Y / ̶N̶ | Y / ̶N̶ | FL(32,105) FR(16,-106) RL(77,18) RR(66,-16) | FL(60,90) FR(20,-80) RL(50,10) RR(40,0) | Y / ̶N̶ | Pass | (25/7/2024) 10:19 |

* 40’ External IGH
* Day

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bay No. | CPS | | HPDS (initial setpoint) | | | Results | Date/  Time |
| Within tolerance?  (+/-100mm) | Duration  (<120s) | VA measurement in mm  (x,z) | Actual measurement in mm  (x,z) | Within tolerance?  (+/-30mm) | Pass / Fail? |
| 2 | Y / ̶N̶ | Y / ̶N̶ | FL(-60,-9) FR(-47,-5) RL(-72,-12) RR(-120,23) | FL(-50,-20) FR(-20,-10) RL(-90,-15) RR(-90,20) | Y / ̶N̶ | Pass | (24/7/2024) 10:19 |
| 4 | Y / ̶N̶ | Y / ̶N̶ | FL(-51,122) FR(-61,-165) RL(-89,42) RR(-63,-31) | FL(-35,120) FR(-40,-135) RL(-65,60) RR(-70,-50) | Y / ̶N̶ | Pass | (24/7/2024) 13:17 |

* 45’ External IGH
* Day

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bay No. | CPS | | HPDS (initial setpoint) | | | Results | Date/  Time |
| Within tolerance?  (+/-100mm) | Duration  (<120s) | VA measurement in mm  (x,z) | Actual measurement in mm  (x,z) | Within tolerance?  (+/-30mm) | Pass / Fail? |
| 1 | Y / ̶N̶ | Y / ̶N̶ | FL(-35,79) FR(-77,-130) RL(-67,-112) RR(-61,-1) | FL(-35,60) FR(-60,-110) RL(-35,-110) RR(-60,20) | Y / ̶N̶ | Pass | (24/7/2024) 15:35 |
| 3 | Y / ̶N̶ | Y / ̶N̶ | FL(-95,1100) FR(-135,-91) RL(-152,-83) RR(-172,98) | FL(-100,70) FR(-120,-62) RL(-125,-100) RR(-150,100) | Y / ̶N̶ | Pass | (23/7/2024) 15:53 |

* 45’ PSA IGH
* Day

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bay No. | CPS | | HPDS (initial setpoint) | | | Results | Date/  Time |
| Within tolerance?  (+/-100mm) | Duration  (<120s) | VA measurement in mm  (x,z) | Actual measurement in mm  (x,z) | Within tolerance?  (+/-30mm) | Pass / Fail? |
| 2 | Y / ̶N̶ | Y / ̶N̶ | FL(2,85) FR(5,-111) RL(-17,82) RR(-2,-88) | FL(20,100) FR(30,-140) RL(-10,60) RR(-30,-80) | Y / ̶N̶ | Pass | (22/7/2024) 14:25 |
| 4 | Y / ̶N̶ | Y / ̶N̶ | FL(-68,-14) FR(-60,-42) RL(-77,37) RR(-10,-125) | FL(-95,-10) FR(40,-40) RL(-85,35) RR(-20,-100) | Y / ̶N̶ | Pass | (22/7/2024) 10:28 |

# Operation Full Process Commissioning

## Mounting

* 20’ XT
* POS C 20’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 1 | ̶Y̶ / N | 99 | (22/7/2024) 14:01-14:03 |
| 3 | ̶Y̶ / N | 98 | (22/7/2024) 12:40-12:41 |

* 40’ XT
* POS C 40’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 2 | ̶Y̶ / N | 96 | (23/7/2024) 13:06-13:07 |
| 4 | ̶Y̶ / N | 108 | (23/7/2024) 10:44-10:46 |

* 45’ XT
* POS C 45’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 1 | ̶Y̶ / N | 87 | (25/7/2024) 09:36-09:38 |
| 3 | ̶Y̶ / N | 102 | (25/7/2024) 10:24-10:26 |

* 40’ EXT IGH
* POS C 40’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 2 | ̶Y̶ / N | 102 | (24/7/2024) 10:19-10:20 |
| 4 | ̶Y̶ / N | 101 | (24/7/2024) 13:33-13:35 |

* 45’ External IGH
* POS C 45’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 1 | ̶Y̶ / N | 97 | (23/7/2024) 14:12-14:14 |
| 3 | ̶Y̶ / N | 95 | (23/7/2024) 15:19-15:21 |

* 45’ PSA IGH
* POS C 45’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 2 | ̶Y̶ / N | 84 | (22/7/2024) 14:31-14:32 |
| 4 | ̶Y̶ / N | 99 | (22/7/2024) 14: 59-15:01 |

* 45’ CST
* POS C 45’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 1 | ̶Y̶ / N | 107 | (23/7/2024) 12:15-12:15 |
| 3 | ̶Y̶ / N | 95 | (23/7/2024) 13:52 -13:53 |

## Offloading

* 20’ XT
* POS C 20’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 1 | ̶Y̶ / N | 199 | (22/7/2024) 14:04-14:06 |
| 3 | ̶Y̶ / N | 170 | (22/7/2024) 12:42-12:45 |

* 40’ XT
* POS C 40’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 2 | ̶Y̶ / N | 165 | (23/7/2024) 13:08-13:11 |
| 4 | ̶Y̶ / N | 185 | (23/7/2024) 10:47-10:50 |

* 45’ XT
* POS C 45’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 1 | ̶Y̶ / N | 179 | (25/7/2024) 09:38-09:41 |
| 3 | ̶Y̶ / N | 203 | (25/7/2024) 10:27-10:30 |

* 40’ EXT IGH
* POS C 40’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 2 | ̶Y̶ / N | 163 | (24/7/2024) 10:22-10:25 |
| 4 | ̶Y̶ / N | 183 | (24/7/2024) 13:36-13:39 |

* 45’ External IGH
* POS C 45’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 1 | ̶Y̶ / N | 184 | (23/7/2024) 14:14-14:18 |
| 3 | ̶Y̶ / N | 117 | (23/7/2024) 15:21-15:23 |

* 45’ PSA IGH
* POS C 45’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 2 | ̶Y̶ / N | 170 | (22/7/2024) 14:33-14:36 |
| 4 | ̶Y̶ / N | 188 | (22/7/2024) 15:03-15:06 |

* 45’ CST
* POS C 45’
* Day

|  |  |  |  |
| --- | --- | --- | --- |
| Bay No. | Full Process | | |
| Any MI? | Cycle Time  (in sec) | Date/  Timing |
| 1 | ̶Y̶ / N | 171 | (23/7/2024)12:16-12:19 |
| 3 | ̶Y̶ / N | 180 | (23/7/2024) 13:54-13:57 |

# Safety System Commissioning

## Cabin Door Open Detection System

* 20’ XT
* POS C 20’
* Day
* Bay 2

|  |  |  |
| --- | --- | --- |
| Cabin door open detection triggered? | Date/  Timing | Pass/ Fail? |
| Yes | (23/7/2024) 09:34 | Pass |

## Human in Operating Bay Detection System

* 20’ XT
* POS C 20’
* Day
* Bay 2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Scenario | Human outside of cabin triggered? | Human outside of cabin triggered? | Human outside of cabin triggered? | Date/  Timing | Remarks | Pass/ Fail? |
| Hand | No | Nil | Nil | (23/7/2024) 09:41 |  | Pass |
| Head | Nil | No | Nil | (23/7/2024) 09:41 |  | Pass |
| Walking | Nil | Nil | Yes | (23/7/2024) 09:42 | Stand outside and close to cabin for 5s before walking around | Pass |

## Chassis Lifted Prevention System

The detection shall ensure that the trailer is not lifted more than 600mm.

* Total number of test cases = 24
* Maximum allowable failure = 0

All four corners will be locked and must detect CLPS to pass the test case

* 20’ XT
* POS C 20’
* Day
* All four corners

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bay | Tick (√) the corner with fault triggered | | | | Date/  Timing | Pass / Fail? |
| Corner 1 | Corner 2 | Corner 3 | Corner 4 |
| 1 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 13:59 | Pass |
| 2 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 10:58 | Pass |
| 3 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 12:38 | Pass |
| 4 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 13:47 | Pass |

* 40’ XT
* POS C 40’
* Day
* All four corners

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bay | Tick (√) the corner with fault triggered | | | | Date/  Timing | Pass / Fail? |
| Corner 1 | Corner 2 | Corner 3 | Corner 4 |
| 1 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 10:25 | Pass |
| 2 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 13:20 | Pass |
| 3 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 10:40 | Pass |
| 4 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 12:09 | Pass |

* 45’ XT
* POS C 45’
* Day
* All four corners

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bay | Tick (√) the corner with fault triggered | | | | Date/  Timing | Pass / Fail? |
| Corner 1 | Corner 2 | Corner 3 | Corner 4 |
| 1 | ✓ | ✓ | ✓ | ✓ | (25/7/2024) 09.:34 | Pass |
| 2 | ✓ | ✓ | ✓ | ✓ | (25/7/2024) 10:02 | Pass |
| 3 | ✓ | ✓ | ✓ | ✓ | (25/7/2024) 10:22 | Pass |
| 4 | ✓ | ✓ | ✓ | ✓ | (25/7/2024) 11:10 | Pass |

* 40’ External IGH
* POS C 40’
* Day
* All four corners

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bay | Tick (√) the corner with fault triggered | | | | Date/  Timing | Pass / Fail? |
| Corner 1 | Corner 2 | Corner 3 | Corner 4 |
| 1 | ✓ | ✓ | ✓ | ✓ | (24/7/2024) 09:57 | Pass |
| 2 | ✓ | ✓ | ✓ | ✓ | (24/7/2024) 10:16 | Pass |
| 3 | ✓ | ✓ | ✓ | ✓ | (24/7/2024) 10:37 | Pass |
| 4 | ✓ | ✓ | ✓ | ✓ | (24/7/2024) 13:30 | Pass |

* 45’ External IGH
* POS C 45’
* Day
* All four corners

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bay | Tick (√) the corner with fault triggered | | | | Date/  Timing | Pass / Fail? |
| Corner 1 | Corner 2 | Corner 3 | Corner 4 |
| 1 | ✓ | ✓ | ✓ | ✓ | (23/7/2024) 14:30 | Pass |
| 2 | ✓ | ✓ | ✓ | ✓ | (24/7/2024) 13:53 | Pass |
| 3 | ✓ | ✓ | ✓ | ✓ | (23/7/2024) 15:34 | Pass |
| 4 | ✓ | ✓ | ✓ | ✓ | (24/7/2024) 12:53 | Pass |

* 45’ PSA IGH
* POS C 45’
* Day
* All four corners

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bay | Tick (√) the corner with fault triggered | | | | Date/  Timing | Pass / Fail? |
| Corner 1 | Corner 2 | Corner 3 | Corner 4 |
| 1 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 13:02 | Pass |
| 2 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 14:48 | Pass |
| 3 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 15:40 | Pass |
| 4 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 15:31 | Pass |

## Container Land out Detection System

The system shall ensure that land out containers are detected.

* Total number of test cases = 24
* Maximum allowable failure = 0

All four corners must detect landout to pass the test case.

* 20’ XT
* POS C 20’
* Day
* All four corners

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bay | Tick (√) the corner with fault triggered | | | | Date/  Timing | Pass / Fail? |
| Corner 1 | Corner 2 | Corner 3 | Corner 4 |
| 1 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 13:56 | Pass |
| 2 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 10:54 | Pass |
| 3 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 13:25 | Pass |
| 4 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 13:45 | Pass |

* 40’ XT
* POS C 40’
* Day
* All four corners

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bay | Tick (√) the corner with fault triggered | | | | Date/  Timing | Pass / Fail? |
| Corner 1 | Corner 2 | Corner 3 | Corner 4 |
| 1 | ✓ | ✓ | ✓ | ✓ | (23/7/2024) 10:16 | Pass |
| 2 | ✓ | ✓ | ✓ | ✓ | (23/7/2024) 13.17 | Pass |
| 3 | ✓ | ✓ | ✓ | ✓ | (23/7/2024) 10:32 | Pass |
| 4 | ✓ | ✓ | ✓ | ✓ | (23/7/2024) 12:00 | Pass |

* 45’ XT
* POS C 45’
* Day
* All four corners

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bay | Tick (√) the corner with fault triggered | | | | Date/  Timing | Pass / Fail? |
| Corner 1 | Corner 2 | Corner 3 | Corner 4 |
| 1 | ✓ | ✓ | ✓ | ✓ | (25/7/2024) 09:30 | Pass |
| 2 | ✓ | ✓ | ✓ | ✓ | (25/7/2024) 09:58 | Pass |
| 3 | ✓ | ✓ | ✓ | ✓ | (25/7/2024) 10:19 | Pass |
| 4 | ✓ | ✓ | ✓ | ✓ | (25/7/2024) 11:08 | Pass |

* 40’ External IGH
* POS C 40’
* Day
* All four corners

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bay | Tick (√) the corner with fault triggered | | | | Date/  Timing | Pass / Fail? |
| Corner 1 | Corner 2 | Corner 3 | Corner 4 |
| 1 | ✓ | ✓ | ✓ | ✓ | (24/7/2024) 09:52 | Pass |
| 2 | ✓ | ✓ | ✓ | ✓ | (24/7/2024) 10:13 | Pass |
| 3 | ✓ | ✓ | ✓ | ✓ | (24/7/2024) 10:34 | Pass |
| 4 | ✓ | ✓ | ✓ | ✓ | (24/7/2024) 13:26 | Pass |

* 45’ External IGH
* POS C 45’
* Day
* All four corners

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bay | Tick (√) the corner with fault triggered | | | | Date/  Timing | Pass / Fail? |
| Corner 1 | Corner 2 | Corner 3 | Corner 4 |
| 1 | ✓ | ✓ | ✓ | ✓ | (23/7/2024) 14:24 | Pass |
| 2 | ✓ | ✓ | ✓ | ✓ | (24/7/2024) 13:49 | Pass |
| 3 | ✓ | ✓ | ✓ | ✓ | (23/7/2024) 15:31 | Pass |
| 4 | ✓ | ✓ | ✓ | ✓ | (24/7/2024) 12:33 | Pass |

* 45’ PSA IGH
* POS C 45’
* Day
* All four corners

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bay | Tick (√) the corner with fault triggered | | | | Date/  Timing | Pass / Fail? |
| Corner 1 | Corner 2 | Corner 3 | Corner 4 |
| 1 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 12:58 | Pass |
| 2 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 14:45 | Pass |
| 3 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 15:38 | Pass |
| 4 | ✓ | ✓ | ✓ | ✓ | (22/7/2024) 15:29 | Pass |