Briefing: MRT Orange Line Platform Screen Door Prototype & Life Cycle Test Procedure Review

Executive Summary

This briefing document provides a comprehensive synthesis of Submission No. PSD-40002.B, which details the test procedures for the Functional Prototype and Accelerated Life Cycle of the Platform Screen Doors (PSDs) for the MRT Orange Line Project (Bang Khun Non – Min Buri Section). The submission, dated August 5, 2025, represents a significant revision (Rev. B) of the initial procedure, incorporating detailed feedback from key stakeholders including CH. Karnchang (CK), Bangkok Expressway and Metro (BEM), and the Mass Rapid Transit Authority of Thailand (MRTA).

The core of the revision is a response to a comprehensive Comments Review Sheet containing 47 specific points. The dialogue between the supplier consortium (led by Siemens Mobility and ST Engineering) and the project stakeholders has resulted in a more robust and exhaustive testing protocol. Key themes from the review include a demand for greater documentary rigor, enhancements to test methodologies, an expanded scope for safety and functional checks, and detailed clarifications on the 1-million-cycle endurance test.

Ultimately, the revised procedure incorporates numerous critical updates. These include the addition of previously missing annexes and detailed component drawings, the expansion of test criteria to cover more scenarios and safety features, and the formalization of remote monitoring via CCTV for tests conducted in Singapore. The outcome is a thoroughly vetted test plan designed to validate the PSD system's performance, reliability, and safety prior to the commencement of full-scale manufacturing.

---

1. Project and Document Overview

- **Project:** MRT Orange Line Project, Bang Khun Non – Min Buri (Suwinthawong) Section
- **Contract:** M&E Equipment Contract
- **Subject Document:** Submission No. PSD-40002.B; "Test Procedure - PSD - Functional Prototype and Accelerated Life Cycle" (Document No. ORL-STE-PSD-PRC-40000002_B)
- **Purpose:** To conduct a type test before production to ensure the functionality of both Half-Height (HHPSD) and Full-Height (FHPSD) Platform Screen Doors meets design and contract requirements. The procedure also outlines an accelerated life cycle test to verify the endurance and physical wear of components over one million operational cycles.
- **Test Location:** ST Engineering Urban Solutions Ltd., Singapore.
- **Key Stakeholders:**

- **Supplier Consortium:** Siemens Mobility (SML, SMOG, SMOA, SMT), ST Engineering Urban Solutions (STE (TH)), Bozankaya (BOZ).
- **Client / Reviewers:** CH. Karnchang Public Company Limited (CK), Bangkok Expressway and Metro Plc. (BEM), Mass Rapid Transit Authority of Thailand (MRTA), PCOR.

2. Analysis of Stakeholder Review and Resolutions

The evolution from the initial test procedure (Rev. A) to the current version (Rev. B) was driven by a detailed review process captured in the Comments Review Sheet. The feedback and subsequent actions are categorized below.

2.1. Documentation and Procedural Rigor

Stakeholders requested significant enhancements to the completeness and clarity of the test documentation.

- **Missing Annexes:** The initial submission was missing a "Punch List" and an "Attendance Sheet". These have been added as Annex E and Annex F, respectively.
- **Additional Drawings:** Multiple requests for drawings were fulfilled, including:
  - Detailed drawings of the HHPSD/FHPSD test stands (Annex G).
  - Drawings for the Driver Local Control Panel (DLCP) (Annex G).
  - Layout drawings for the complete prototype setup (Annex G).
  - Detailed drawings for the LCD Enclosure (Annex G).
- **Reference Documents:** It was noted that "PSD-40001 PSD -Subsystem Test Plan" was missing from the reference list. It has been added to the revised document.
- **Software Versioning:** A requirement to record the specific software version of the Portable Test Unit (PTU) used during testing was added to the procedure.
- **Terminology Consistency:** A discrepancy in designating MRTA as an "Observer" in one section and a "Witness" in another was identified. The terminology was aligned, with MRTA now consistently referred to as a "Witness".

2.2. Test Scope and Criteria Enhancement

The scope of testing was expanded to cover additional components and safety criteria.

- **Expanded Functional Tests:** Testing was broadened to include the Driver Local Control Panel (DLCP) and the isolation function of the Emergency Egress Doors (EED).
- **Enhanced Safety & Quality Inspections:** New inspection criteria were added to the visual checks for both HHPSD and FHPSD prototypes:
  - Verification that no abrupt irregularities or sharp edges are present.

    - Confirmation that coating color matches the approved color code and is free of cracks or damage.
    - Measurement of coating thickness to ensure it meets the minimum 60μm requirement.

- **Expanded Dimensional Checks:** Dimension verification was expanded beyond the main doors to include related components such as the Crowd Guide, Anti-Climb features, and Rear Cover.
- **Subcontractor Approval:** It was clarified that written approval from CK/BEM will be sought for the major subcontractor responsible for manufacturing the PSDs before prototype testing begins.

2.3. Test Methodology and Monitoring

Specific methodologies and the means of observation were refined based on stakeholder feedback.

- **Remote Monitoring:** A key requirement was established for the use of surveillance CCTV for remote monitoring of the continuous life cycle testing conducted in Singapore. This was accepted and updated in the procedure.
- **Force Measurement:** A suggestion to use a dual-measurement approach (force gauge plus a pinch force meter) to improve reliability was discussed. The supplier maintained that their standard method using a force gauge is accurate, but agreed to use a gauge with an optional handle to mitigate human error, as discussed in a workshop.
- **Clarified Procedures:** Details were added to clarify specific test actions, such as how to connect the linear encoder to the doors, the precise measurement point for the handheld tachometer, and specific test points for insulation and bonding tests.

2.4. Accelerated Life Cycle Test Protocol

The protocol for the 1-million-cycle endurance test was a focus of several clarifications.

- **Inspection Protocol:** Stakeholders (BEM, CK, MRTA, PCOR) will be formally invited to witness inspections via online remote access at key milestones: 250,000, 500,000, 750,000, and 1,000,000 cycles.
- **Preventive Maintenance (PM):** It was clarified that no scheduled PM tasks will be performed during the endurance test. Maintenance will only be conducted if a component is found to be significantly out of specification during an inspection. Any such activity will be formally recorded in the event log.
- **Component Checks:** The "stopper pin" was explicitly added to the list of Drive Unit and Mechanism components to be checked during inspections.
- **Pass Criteria:** The pass criteria for the event log was defined as the absence of any "fatal alarm" being recorded in the HMI or error log throughout the 1-million-cycle test.

2.5. Clarification of Test Boundaries

Several comments sought to clarify what was included within the scope of this specific test procedure.

- **Power Distribution Panel (PDP):** The PDP is not part of this prototype test. It will be validated during a separate Factory Acceptance Test (FAT), to which participants will be invited.
- **Mechanical Loading:** A request for a Mechanical Loading Test was addressed by clarifying that load conditions (e.g., crowd pressure) are accounted for in a separate structural analysis, with reports to be submitted in "PSD-40004".
- **Weather Tightness:** A Weather Tightness Test is not included; instead, IP rating type-test certificates will be provided under the "PSD-40004" submission.
- **PSI Brightness:** A formal brightness test for the Platform Summary Indicators (PSI) will be conducted during dynamic on-site testing with the actual train and crew, not during this prototype test. A visual check will be performed.

---

3. Key Technical Specifications and Test Parameters

The test procedure document outlines a rigorous set of performance criteria that the HHPSD and FHPSD prototypes must meet.

3.1. Core Performance Requirements

Parameter	Requirement
Door Motion	
Door Opening Time	< 3.0 seconds
Door Closing Time	< 3.5 seconds
Maximum Door Speed	< 0.5 m/s
Maximum Closing Force	< 140 N
Safety & Endurance	
Obstacle Detection	Minimum 10 mm gap
ERM/EED Unlocking Force	≤ 67 N
Manual Door Opening Force	≤ 133 N
Accelerated Life Cycle	1,000,000 cycles
Operational Conditions	
Acoustic Noise Level	≤ 73 dBA (at 1.5m height, 1m distance)
Electrical Insulation	> 5 kΩ per platform (at 500 VDC)
Electrical Bonding Continuity	< 1 Ω

3.2. Maintenance Demonstration (MTTR Targets)

The procedure includes a demonstration of key maintenance tasks to ensure they can be completed within the specified Mean Time To Repair (MTTR).

Component Replacement	Number of Personnel	Target MTTR
DCU (Door Control Unit)	1	< 30 minutes
Belt	1	< 30 minutes
PLC (Programmable Logic Controller)	1	< 30 minutes
One Switch at DLCP	1	< 30 minutes
Motor	2	< 30 minutes
ASD (Automatic Sliding Door) Locking Block	2	< 30 minutes
ASD Glass	2	< 30 minutes
ERM (Emergency Release Mechanism) Housing	2	< 30 minutes

---

4. Notable Directives and Quotes

The following verbatim statements from the Comments Review Sheet highlight critical decisions and requirements.

- **On Remote Monitoring:**
- **On Force Measurement Methodology:**
- **On Life Cycle Test Witnessing:**
- **On Maintenance During Life Cycle Test:**
- **On Subcontractor Approval:**

RE: ORL _ PSD FATs in Nov 2025

Dear p'Tob/Ti,

Please see the list of tentative participants for our PSD FATs in November 2025 as below:

FAT - 500k Stoppage in Singapore on 4-5 Nov 2025
1. Mr. Anat Uamcharoen (BEM)
2. Mr. Kaimin Ngaokrajang (BEM)
3. Mr. Jerome Vendasi (PCOR)
4. TBC (MRTA)

FAT - PSD Structure and Doorway Modules in China on 10-14 Nov 2025
1. Mr. Anat Uamcharoen (BEM)
2. Mr. Kaimin Ngaokrajang (BEM-MNG)
3. Mr. Suphakit Klumjanthuek (BEM-MNG)
4. TBC (MRTA)
5. Mr. Jerome Vendasi (PCOR)
6. Ms. Khommapat Wannamanomai (PCOR)

P.S. We are still waiting for the attendees from MRTA and CK (if any).

N	Syste	Sub-Systems	Activity Name	Location	Invitatio letter from Contractor	Depart BKK	FAT started date	FAT finished date	Depart Factory	Days	Prepare approved memo	VISA require	BEM attendees	MRTA attendees	PCOR attendees	CK attendees
	.															
							19-Aug-25	09-Mar-26		203						
13	PSD	PSD	Type Test - Prototype,1M	SG	Done	18-Aug-25	19-Aug-25	22-Aug-25	23-Aug-25	4	BP/Done					N/A
14		PSD	1M cycle Stoppage and Testing	SG			3-Sep-25	4-Sep-25		2	Kampol		N/A			N/A
15		PSD	FAI - Glass	China - QINGDAO			23-Sep-25	24-Sep-25		2	Kampol					N/A
16		PSD	FAT - Doorway Module	China - SUQian			11-Nov-25	14-Nov-25		4	Kampol					N/A
17		PSD	FAT - Control Module	SG			25-Nov-25	28-Nov-25		4	Kampol					N/A

Itinerary - PSD FAT Doorway Test in China

27-ต.ค.-25

Date	Time	Description	Venue	PIC	Group of People	Vehicle
9 พฤศจิกายน 2025	23:00	Group meet at Suvarnabhumi Airport (BKK).	BKK Airport	Mr. Aphiwut Roekwiang (STE (TH)) Tel : 0927156265 Mr. Herh Peng Leng (STE) Tel : +65 97597194	1. Mr. Anat Uamcharoen (BEM) 2. Mr. Kaimin Ngaokrajang (BEM) 3. Mr. Suphakit Klumjanthuek (BEM-TOT) 4. Mr. Jerome Vendasi (PCOR) 5. Ms. Khommapat Wannamanomai (PCOR) 6. Mr.Tanawut Subwaree (MRTA-FAT) 7. Mr. Chawanakorn Eakaraya (MRTA-TOT) 8. Mr. Parunyu Limtaweeshok (MRTA-TOT) 9. Mr. Jirawat Hongsibpad (MRTA-TOT) 10. Mr. Aphiwut Roekwiang (STE (TH)) 12. Mr. Pongwet Insee (STE(TH)) 13. Mr. Mustorfa Wongtanee (STE(TH)-QA) 14. Ms.Titintorn Yaemnoi (STE(TH)-QA) 13. Mr. Herh Peng Leng (STE)	-
10 พฤศจิกายน 2025	1:10	Departure flight - **TG662**	BKK Airport			-
	6:25	Arrive PVG Shanghai Pudong Intl.T2	PVG Airport (China)			-
	7:00	Transport from Airport to Hotel				TBC
	9:30	Check In Hotel	Recommended : 1. Courtyard by Marriott Pinghu No.288, Wenwei Road, Pinghu, Zhejiang, China 2. Pullman Jiaxing Pinghu Excellence No 777 Fenshou Road, Pinghu City, Pinghu, Zhejiang 314200, China			-
	11:30	Lunch	TBC			
	13:00-17:00	-Transfer of Technology / Workshop Manual - PSD - Phase: Manufacturing, Supply and Delivery	**Zhejiang Rongchen Technology Co., Ltd.** No. 735 Yintan Road, Economic Development Zone, Xitangqiao Town, Haiyan County, Jiaxing City, Zhejiang Province, 314300 Haiyan Jiaxing, China.		1. Mr. Suphakit Klumjanthuek (BEM-TOT) 2. Mr. Chawanakorn Eakaraya (MRTA-TOT) 3. Mr. Parunyu Limtaweeshok (MRTA-TOT) 4. Mr. Jirawat Hongsibpad (MRTA-TOT) 5. Mr. Aphiwut Roekwiang (STE (TH)) 6. Mr. Pongwet Insee (STE(TH)) 7. Mr. Herh Peng Leng (STE)	
	18:30 - 22:00	Dinner	TBC			TBC
11 พฤศจิกายน 2025	8:30	Hotel Pick Up - Meet at Hotel Lobby	Recommended : 1. Courtyard by Marriott Pinghu No.288, Wenwei Road, Pinghu, Zhejiang, China 2. Pullman Jiaxing Pinghu Excellence No 777 Fenshou Road, Pinghu City, Pinghu, Zhejiang 314200, China	Mr. Aphiwut Roekwiang (STE (TH)) Tel : 0927156265 Mr. Herh Peng Leng (STE) Tel : +65 97597194	1. Mr. Anat Uamcharoen (BEM) 2. Mr. Kaimin Ngaokrajang (BEM) 3. Mr. Suphakit Klumjanthuek (BEM-TOT) 4. Mr. Jerome Vendasi (PCOR) 5. Ms. Khommapat Wannamanomai (PCOR) 6. Mr.Tanawut Subwaree (MRTA-FAT) 7. Mr. Chawanakorn Eakaraya (MRTA-TOT) 8. Mr. Parunyu Limtaweeshok (MRTA-TOT) 9. Mr. Jirawat Hongsibpad (MRTA-TOT) 10. Mr. Aphiwut Roekwiang (STE (TH)) 12. Mr. Pongwet Insee (STE(TH)) 13. Mr. Mustorfa Wongtanee (STE(TH)-QA) 14. Ms.Titintorn Yaemnoi (STE(TH)-QA) 13. Mr. Herh Peng Leng (STE)	TBC
	9:00 - 12:30	•Welcome Address •Factory Tour •FHPSD Doorway Module Test -FT 7100	**Zhejiang Rongchen Technology Co., Ltd.** No. 735 Yintan Road, Economic Development Zone, Xitangqiao Town, Haiyan County, Jiaxing City, Zhejiang Province, 314300 Haiyan Jiaxing, China.			
	12:30 - 14:00	Lunch	TBC			TBC
	14:00 - 17:00	•FHPSD Doorway Module Test -FT 7100 (conti.)	**Zhejiang Rongchen Technology Co., Ltd.**			
	18:00	Transport to Dinner				TBC
	19:00 - 21:00	Dinner	TBC			
	21:30	Hotel Drop off	TBC			

Itinerary - PSD FAT Doorway Test in China

27-ต.ค.-25

Date	Time	Description	Venue	PIC	Group of People	Vehicle
12 พฤศจิกายน 2025	8:30	Hotel Pick Up - Meet at Hotel Lobby		Mr. Aphiwut Roekwiang (STE (TH)) Tel : 0927156265 Mr. Herh Peng Leng (STE) Tel : +65 97597194		TBC
	9:00 - 12:30	•FHPSD Structure/Frame/Cladding Test -FT7300	**Zhejiang Rongchen Technology Co., Ltd.**			
	12:30 - 14:00	Lunch				TBC
	14:00 - 17:00	•FHPSD Structure/Frame/Cladding Test -FT7300 (Conti.) •Technical discussion and conclusion	**Zhejiang Rongchen Technology Co., Ltd.**			
	18:00	Transport to Dinner				TBC
	19:00 - 21:00	Dinner				
	21:30	Hotel Drop off				
13 พฤศจิกายน 2025	8:30	Hotel Pick Up - Meet at Hotel Lobby		Mr. Aphiwut Roekwiang (STE (TH)) Tel : 0927156265 Mr. Herh Peng Leng (STE) Tel : +65 97597194		TBC
	9:00 - 12:00	•HHPSD Doorway Module - FT3000	**Zhejiang Rongchen Technology Co., Ltd.**			
	12:30 - 14:00	Lunch				TBC
	14:00 - 17:00	•HHPSD Doorway Module - FT3000 (Conti.)	**Zhejiang Rongchen Technology Co., Ltd.**			
	18:00	Transport to Dinner				
	19:00 - 21:00	Dinner				TBC
	21:30	Hotel Drop off				
14 พฤศจิกายน 2025	8:30	Check Out - Hotel Pick Up - Meet at Hotel Lobby		Mr. Aphiwut Roekwiang (STE (TH)) Tel : 0927156265 Mr. Herh Peng Leng (STE) Tel : +65 97597194		TBC
	9:00-12:00	•HHPSD Doorway Module - FT3000 (Conti.) •Technical discussion and conclusion	**Zhejiang Rongchen Technology Co., Ltd.**			
	12:30 - 14:00	Lunch				
	16:00	•Travel to PVG Shanghai Pudong Intl.T2	PVG Airport (China)			TBC
	17:20	Departure flight **TG665**	PVG Airport (China)			
	21:15	Arrive Bangkok	BKK Airport			

- PSD Functional Prototype and Accelerated Life Cycle Test
  - Project & Document Information
    - Project: MRT Orange Line (Bang Khun Non – Min Buri)
    - Subject: Test Procedure - PSD - Functional Prototype and Accelerated Life Cycle
    - Submission No.: PSD-40002.B
    - Date: 05-Aug-2025
    - Consortium: SML, SMOG, SMOA, SMT, STE (TH), BOZ
    - Test Location: ST Engineering Urban Solutions Ltd., Singapore
  - Test Overview & Requirements
    - Purpose: Ensure function meets design/contract requirements before production (Type Test)
      - Requirement: 1 Million Cycles (Continuous Open/Close)
      - Cycle Time: 12 seconds (6s Open; 6s Close)
      - Duration Estimate: ~4.6 months
      - Inspection Points: Start, 250k, 500k, 750k, 1M cycles
      - Monitoring: Surveillance CCTV for remote monitoring (Singapore)
      - Event Log: Record all stoppages/fatal alarms on HMI
    - Scope: Functional Prototype Test; Accelerated Life Cycle Test (Endurance/Wear)
    - Accelerated Life Cycle Test
    - Pass/Fail Criteria
      - Meet all requirements for each test case
      - Failures require investigation/analysis
    - Test Configuration/Equipment
      - Prototypes: One HHPSD doorway, One FHPSD doorway
      - Control Setup: PDP, PSC (Platform 1/2), DCU, LCP, DLCP, PTU
      - Simulator: Signalling System Simulator (Auto/Manual operation)
      - Measuring Tools: Oscilloscope, Linear Encoder, Force Gauge, Sound Level Meter
  - HHPSD Test Method and Requirements (Half Height)
    - Physical Check (ST-1000)
      - Visual Inspection: Dent/scratch check, cable support, sharp edges
      - Label Check: PSC, LCP, DLCP, DCU labels
      - Dimension Check: Frames (ASD, EED, FS), LCD Enclosure, Rear Cover
      - Coating Thickness Check: Min. 60µm
    - Electrical Check (ST-1010)
      - Insulation Test: > 5 kΩ (500VDC)
      - Continuity Test: < 1 Ω
    - Functional Tests
      - PSC Functional Test (ST-1110): Signalling Interface response (DOI, HMI status)
      - Door Operation Mode Test (ST-1120): LCP/DLCP manual control modes (Auto/Close/Manual Enable)
      - Door Motion Profile (ST-1130)
        - Closing Force: < 140N
        - Open Time: < 3.0s
        - Close Time: < 3.5s
        - Max Speed: < 0.5 m/s
        - Kinetic Energy: Max < 9.5J; Last 150mm < 2J
      - Obstacle Detection (ST-1140): Detect 10mm obstacle, 3 consecutive attempts (Nominal 3 cycles)
      - Portable Test Unit (PTU) (ST-1210): Verify software connection, modify parameters (re-try, reopen distance)
      - Acoustic Test (ST-1310): Max noise level 73 dBA (1m distance)
      - ERM Manual Release (ST-1410): Unlocking force ≤ 67 N, Opening force ≤ 133N
      - EED Test (ST-1510): Panic Bar force ≤ 67 N, Opening force ≤ 133N, Bypass functional
    - Maintenance Demonstration (ST-3000)
      - MTTR < 30 mins: DCU, Belt, Motor, Locking Block, Glass, ERM Housing, PLC, DLCP Switch
  - FHPSD Test Method and Requirements (Full Height)
    - Physical Check (ST-5000)
      - Visual Inspection: General fitting, sharp edges, coating color
      - Dimension Check: Frames (ASD, EED, FS), Anti-Climber, Vertical Gap Filler
      - Coating Thickness Check: Min. 60µm
    - Electrical Check (ST-5010)
      - Insulation Test: > 5 kΩ (500VDC)
      - Continuity Test: < 1 Ω
    - Functional Tests
      - PSC Functional Test (ST-5110)
      - Door Operation Mode Test (ST-5120)
      - Door Motion Profile (ST-5130)
        - Closing Force: < 140N
        - Open Time: < 3.0s
        - Close Time: < 3.5s
        - Max Speed: < 0.5 m/s
        - Kinetic Energy: Max < 9.5J; Last 150mm < 2J
      - Obstacle Detection (ST-5140): Detect 10mm obstacle, 3 consecutive attempts (Nominal 3 cycles)
      - Portable Test Unit (PTU) (ST-5210): Verify functionality and parameter modification
      - Acoustic Test (ST-5310): Max noise level 73 dBA (1m distance)
      - ERM Manual Release (ST-5410): Unlocking force ≤ 67 N, Opening force ≤ 133N
      - EED Test (ST-5510): Panic Bar force ≤ 67 N, Opening force ≤ 133N, Bypass functional
    - Maintenance Demonstration (ST-7000)
      - MTTR < 30 mins: DCU, Belt, Motor, Locking Block, Glass, ERM Housing, PLC, DLCP Switch

🎒 Minimalist 45L Packing List

FAT Doorway Module - Pinghu/Jiaxing, Zhejiang, China

Dates: Nov 9-14, 2025 (5 days, 4 nights)
Weather: Mild autumn (50-65°F / 10-18°C), dry conditions

✈️ FLIGHT DETAILS

- **Depart BKK:** Nov 9, 11:00 PM (TG662)
- **Arrive PVG Shanghai:** Nov 10, 6:25 AM
- **Return PVG:** Nov 14, 5:20 PM (TG665)
- **Arrive BKK:** Nov 14, 9:15 PM

📱 WORK ESSENTIALS

Documents (keep together)

- Passport + China visa
- Flight tickets (TG662/TG665)
- Hotel booking (Pinghu)
- FAT test documents
- Business cards
- Copy of passport (separate location)

Electronics

- Laptop + charger
- Phone + charger
- Power bank (10,000mAh+)
- Universal adapter (China Type A/C/I, 220V)
- Notebook + 2 pens
- Camera (for FAT documentation)

👔 WORK CLOTHING (4 Work Days)

Professional Wear

- 2 business shirts/polos
- 1 smart pants (dark color)
- 1 business shoes (wear on flight)
- 1 belt
- 3 dress socks

👕 CASUAL CLOTHING

Daily Basics

- 2 t-shirts
- 1 casual pants/jeans
- 1 sneakers
- 3 underwear
- 2 casual socks
- 1 sleepwear

Layers (Mild Weather 10-18°C)

- 1 light jacket (wear on flight)
- 1 sweater/fleece
- 1 packable rain jacket (just in case)

Total Clothing: 16 items

🧴 TOILETRIES (Travel Size)

Must-Haves

- Toothbrush + toothpaste
- Deodorant
- Razor + shaving cream (if needed)
- Face wash
- Moisturizer

Medicine Kit

- Pain reliever (headache)
- Stomach medicine (new food)
- Any prescription meds
- Hand sanitizer
- 5 face masks

Skip: Shampoo, soap (use hotel)

💼 DAILY ESSENTIALS

- Sunglasses
- Small umbrella (foldable)
- Water bottle (empty for airport)
- Snack bars (3-4 for long work days)
- Plastic bag (dirty laundry)
- Travel pillow (inflatable)
- Earphones
- Tissues/wet wipes

CN CHINA PREP CHECKLIST

Download Before Flight:

- ✅ VPN app (Google/WhatsApp/Facebook blocked)
- ✅ Google Translate (offline Chinese)
- ✅ WeChat (for local communication)

- ✅ Hotel address saved in Chinese

Money:

- Chinese Yuan (CNY) cash
- Credit cards (Visa/Mastercard - limited acceptance)
- Setup Alipay/WeChat Pay if possible

📋 DAILY SCHEDULE SUMMARY

Nov 10 (Mon):

- Arrive 6:25 AM → Hotel check-in 9:30 AM
- 1:00-5:00 PM: Transfer of Technology Workshop

Nov 11 (Tue):

- 9:00 AM-5:00 PM: FHPSD Doorway Module Test (FT 7100)
- Factory tour included

Nov 12 (Wed):

- 9:00 AM-5:00 PM: FHPSD Structure/Frame/Cladding Test (FT7300)

Nov 13 (Thu):

- 9:00 AM-5:00 PM: HHPSD Doorway Module (FT3000)

Nov 14 (Fri):

- 9:00 AM-12:00 PM: HHPSD Testing (conclusion)
- Check out → 4:00 PM leave for airport
- 5:20 PM flight departs

🏨 ACCOMMODATION

Recommended Hotels in Pinghu:

1. **Courtyard by Marriott Pinghu**
    - No.288, Wenwei Road, Pinghu, Zhejiang
2. **Pullman Jiaxing Pinghu Excellence**
    - No 777 Fenshou Road, Pinghu, Zhejiang 314200

🏭 FAT VENUE

Zhejiang Rongchen Technology Co., Ltd.

- Address: No. 735 Yintan Road, Economic Development Zone
- Xitangqiao Town, Haiyan County, Jiaxing City
- Zhejiang Province, 314300

📦 SMART PACKING

Wear on Flight (Save 30% space):

- Business shoes
- Light jacket
- Smart casual outfit

In Backpack (Bottom → Top):

1. Shoes (stuff socks inside)
2. Rolled clothes (use packing cubes)
3. Electronics + documents (top for easy access)
4. Toiletries (in sealed bag)

Space-Saving Tips:

- Roll t-shirts and casual wear
- Fold business shirts flat
- Use packing cubes (saves 20L)
- Wear bulkiest items during travel

📞 EMERGENCY CONTACTS

Key Contacts:

- Mr. Aphiwut Roekwiang (STE TH): 092-715-6265
- Mr. Herh Peng Leng (STE): +65 9759-7194
- Thai Embassy Beijing: +86-10-8531-8735

China Emergency Numbers:

- Police: 110
- Medical: 120
- Fire: 119

✅ PRE-DEPARTURE CHECKLIST

2 Days Before (Nov 7):

- [ ] Confirm flights (TG662/TG665)
- [ ] Check hotel booking
- [ ] Download VPN + offline maps
- [ ] Notify bank of travel
- [ ] Get Chinese Yuan cash
- [ ] Charge all electronics

Night Before (Nov 8):

- [ ] Print boarding passes
- [ ] Pack documents in carry-on
- [ ] Prepare travel outfit
- [ ] Set 2-3 alarms for airport
- [ ] Check passport validity (6+ months)

Day of Travel (Nov 9):

- [ ] Airport by 8:00 PM (3 hours early)
- [ ] Check flight status
- [ ] Passport + documents ready
- [ ] Phone fully charged

💡 PRO TIPS

For Smooth Trip:

- All meals provided by organizer
- Transport arranged daily (8:30 AM pickup)
- Long work days (9 AM - 5 PM)
- Bring comfortable shoes for factory tours
- Keep snacks for energy during testing

Cultural Notes:

- Exchange business cards with both hands
- Conservative dress for factory visits
- Face masks still common in China
- Cash needed for small purchases

Total Weight: ~8 kg
Space Used: ~28L (17L room left!)
Philosophy: Pack smart, travel light!

Safe travels! 🛫 CN

🎒 45L Backpack Packing List

FAT Doorway Module Trip - Suqian, China

Dates: November 10-14, 2025 (4 days)
Weather: Cool autumn (45-58°F / 7-14°C), low rain chance

📋 PACKING STRATEGY FOR 45L

Space Allocation:

- Clothing: ~18L (40%)
- Work Items: ~12L (27%)
- Electronics & Documents: ~8L (18%)
- Toiletries & Misc: ~7L (15%)

👔 WORK ESSENTIALS (Priority 1)

Documents & Credentials

- ✅ Passport (valid 6+ months)
- ✅ Visa documentation (if required)
- ✅ Flight tickets & hotel confirmation
- ✅ FAT schedule & technical documents
- ✅ Business cards
- ✅ Copy of important documents (separate from originals)
- ✅ Travel insurance documents
- ✅ Company ID badge

Work Gear

- ✅ Laptop + charger
- ✅ Universal power adapter (China uses Type A, C, I - 220V)
- ✅ Notebook & pen
- ✅ USB drives/external storage
- ✅ Camera (for documenting FAT process)

- ✅ Laser pointer (for presentations)
- ✅ Portable phone charger (10,000mAh minimum)
- ✅ Cable organizer pouch

Professional Attire

- ✅ 2x business shirts/polo shirts
- ✅ 1x smart casual pants/trousers
- ✅ 1x business shoes (comfortable for walking)
- ✅ Belt
- ✅ 4x dress socks

👕 CLOTHING (Layering System for 7-14°C)

Base Layers

- ✅ 3x t-shirts/undershirts
- ✅ 4x underwear (3 + 1 spare)
- ✅ 2x casual socks

Mid Layers

- ✅ 1x sweater/fleece jacket
- ✅ 1x long-sleeve casual shirt
- ✅ 1x casual pants/jeans

Outer Layer

- ✅ 1x warm jacket (windproof/water-resistant)
- ✅ 1x light rain jacket (foldable)

Extras

- ✅ Pajamas/sleepwear
- ✅ 1x sneakers/comfortable walking shoes
- ✅ Beanie/cap (for cold mornings)
- ✅ Scarf (optional but recommended)

Packing Tip: Wear bulkiest items (jacket, business shoes) during travel to save space

---

🧴 TOILETRIES & PERSONAL CARE

Essentials (Use travel sizes - max 100ml each)

- ✅ Toothbrush + toothpaste
- ✅ Shampoo & soap (or use hotel amenities)
- ✅ Deodorant
- ✅ Face wash
- ✅ Moisturizer (dry weather)
- ✅ Razor + shaving cream
- ✅ Comb/brush
- ✅ Nail clipper
- ✅ Lip balm

Health & Medicine

- ✅ Prescription medications (in original containers)
- ✅ Pain relievers (headache, muscle pain)
- ✅ Cold/flu medicine
- ✅ Stomach medication (new food environment)
- ✅ Band-aids
- ✅ Hand sanitizer
- ✅ Face masks (still common in China)
- ✅ Vitamins (if you take them)

Packing Tip: Use a hanging toiletry bag to save space and keep organized

---

📱 ELECTRONICS & CONNECTIVITY

- ✅ Smartphone + charger
- ✅ Earphones/headphones
- ✅ Portable WiFi device or SIM card plan
- ✅ All charging cables (USB-C, Lightning, Micro-USB)
- ✅ Power bank (fully charged)

- ✅ Adapter plug converter
- ✅ E-reader/tablet (optional - for entertainment)

Note: Download VPN app before arrival (Google, WhatsApp, Facebook blocked in China)

💼 ADDITIONAL ESSENTIALS

Safety & Security

- ✅ Money belt or neck pouch (for passport & cash)
- ✅ Small TSA-approved lock for backpack
- ✅ Copy of emergency contacts
- ✅ Hotel address in Chinese characters

Comfort & Convenience

- ✅ Reusable water bottle (empty for airport security)
- ✅ Snacks (granola bars, nuts - for long work days)
- ✅ Travel pillow (compact)
- ✅ Eye mask & earplugs
- ✅ Tissues/wet wipes
- ✅ Plastic bags (for dirty clothes/wet items)
- ✅ Small umbrella (compact/foldable)
- ✅ Sunglasses
- ✅ Watch (don't rely only on phone)

Money & Payment

- ✅ Credit/debit cards (Visa/Mastercard may have limited acceptance)
- ✅ Cash (Chinese Yuan - CNY)
- ✅ Setup Alipay or WeChat Pay if possible

🚫 LEAVE AT HOME (Save Space!)

- ❌ Excessive shoes (max 2 pairs)
- ❌ Full-size toiletries (buy there or use hotel amenities)

- ❌ Too many "just in case" items
- ❌ Valuables/expensive jewelry
- ❌ Hairdryer (hotels provide)
- ❌ Heavy books (use e-reader)

📦 PACKING TECHNIQUES FOR 45L

Rolling vs. Folding

- **Roll:** T-shirts, casual clothes, pajamas
- **Fold:** Business shirts, pants (use packing cubes)
- **Bundle wrap:** Prevents wrinkles in dress clothes

Packing Order (Bottom to Top)

1. **Bottom:** Shoes (stuff with socks/underwear)
2. **Middle:** Rolled clothes, toiletries
3. **Top:** Jacket, electronics (easy access)
4. **Outside pockets:** Documents, snacks, water bottle

Space-Saving Tips

- Use packing cubes (compress clothes by 30%)
- Fill dead space (stuff socks in shoes)
- Wear bulkiest items during travel
- Choose multi-purpose items (pants that work for business & casual)

✈️ DAY-OF-TRAVEL CARRY-ON SETUP

Wear on Flight:

- Business casual outfit (saves luggage space)
- Jacket with large pockets
- Comfortable walking shoes

In Backpack - Easy Access:

- Passport & documents (top pocket)

- Laptop & electronics (TSA checkpoint)
- Snacks & empty water bottle
- Entertainment (book, earphones)
- Travel pillow & eye mask

CN CHINA-SPECIFIC TIPS

Communication

- Download translation app (Google Translate offline mode)
- Have hotel address in Chinese
- VPN app installed BEFORE arrival

Cultural Considerations

- Business cards exchanged with both hands
- Conservative dress for meetings
- Cash still widely used (small vendors)

Food & Water

- Bottled water only (avoid tap water)
- Street food with caution
- Bring stomach medication

✅ FINAL CHECKLIST (Night Before)

48 Hours Before:

- [ ] Check weather forecast update
- [ ] Confirm flight times
- [ ] Download offline maps
- [ ] Notify bank of travel dates
- [ ] Charge all electronics

Night Before:

- [ ] Set multiple alarms
- [ ] Print boarding pass
- [ ] Prepare travel outfit

- [ ] Move valuables to hotel safe
- [ ] Double-check passport validity

Morning Of:

- [ ] Check flight status
- [ ] Confirm all documents in bag
- [ ] Lock backpack
- [ ] Leave early for airport

📞 EMERGENCY CONTACTS

Save These Numbers:

- Thai Embassy in China: +86-10-8531-8735
- Hotel contact number
- Company emergency contact
- Travel insurance hotline
- Local emergency: 110 (Police), 120 (Medical)

Total Pack Weight Target: 8-10 kg (well within 45L capacity)
Estimated Space Used: 40-42L (leaving room for items acquired during trip)

Remember: Less is more! You can always buy forgotten items in Suqian. Focus on essentials and work requirements.

Safe travels! 🛫