

UPS Ring Scanner Usability Test Plan

Moderated evaluation of the hands-free wearable Ring Scanner in active delivery conditions

STUDY	UPS Ring Scanner Usability Evaluation	METHOD	Moderated, task-based usability testing
PARTICIPANTS	6-8 UPS delivery drivers	SESSION	45-60 minutes per participant
LOCATION	Package car simulation or warehouse environment	DEVICE	UPS Ring Scanner (Bluetooth wearable)

1. Study Purpose

This study evaluates the usability of the UPS Ring Scanner, a hands-free wearable barcode scanner worn on the finger and used alongside the DIAD during package delivery. The ring form factor is intended to allow drivers to carry packages and interact with the device simultaneously, reducing the need to set packages down or switch between tools.

The study will assess how well the device supports high-volume scanning workflows, whether scan feedback is sufficient to build driver confidence, how the physical form factor performs across a shift, and where the device creates friction in everyday delivery tasks.

2. Research Objectives

1. Can drivers reliably trigger scans while carrying packages or moving through a delivery environment?
2. Is scan confirmation feedback (audio, vibration, LED) clear enough to confirm success without looking at the device?
3. How does the physical form factor affect comfort and dexterity over an extended period?
4. How easily can drivers pair and re-pair the Ring Scanner with the DIAD when needed?
5. Do drivers know when the battery is low, and can they respond before it affects their route?
6. How accurately does the scanner capture barcodes in varied lighting and angles?
7. Does the Ring Scanner meaningfully reduce the effort required to process a high-volume stop?
8. What workarounds do drivers develop when the device fails or underperforms?
9. How well does the Ring Scanner integrate into the broader delivery workflow alongside the DIAD?
10. Which aspects of the device create hesitation, repeated attempts, or task abandonment?

3. Key Workflows to Evaluate

- Device pairing with DIAD at start of shift
- Handling a failed or missed scan

- Wearing and adjusting the ring for comfort
- Scanning a package in transit (while walking)
- Scanning a package in low light (inside package car)
- Scanning at an awkward angle or distance
- Confirming a successful scan without visual feedback
- Processing a high-volume stop (multiple packages)
- Removing and reattaching the device mid-shift
- Responding to a low battery notification
- Re-pairing after a dropped Bluetooth connection
- Switching back to DIAD for tasks the Ring Scanner cannot handle

4. Participants

Recruit 6-8 participants who are current UPS delivery drivers with active experience using the Ring Scanner on their routes. Participants should represent a range of route types and experience levels. Prioritize drivers who use the Ring Scanner regularly rather than occasionally, as infrequent users may not reveal habitual workarounds.

Experience Level	Target Count
Less than 1 year with Ring Scanner	1-2
1-3 years	2-3
3+ years	2-3

5. Test Environment

Testing should take place in an environment that closely resembles an active delivery scenario. A package car simulation, warehouse loading area, or similar space works well. Avoid a clean lab setting — the Ring Scanner is designed for physical, variable conditions and should be evaluated accordingly.

- Ring Scanner device, fully charged and paired
- DIAD device for paired workflow tasks
- Sample packages with scannable barcodes
- Simulated low-light condition (interior of a vehicle or darkened area)
- Multiple package sizes and barcode placements
- Charging cable and spare battery (if available)
- Bluetooth interference simulation where possible

6. Session Structure

1	Introduction Explain the study, obtain consent, and establish rapport.	5 min
2	Background Interview Understand how and how often the participant uses the Ring Scanner, and what their typical route looks like.	5-10 min
3	Task Testing Participants complete realistic scanning scenarios while the moderator observes without intervening.	30-40 min
4	Debrief Discuss overall impressions, workarounds they rely on, and what they wish worked differently.	10 min

7. Measurement Framework

Quantitative Measures

- Scan success rate (first attempt vs. multiple attempts)
- Time to successful scan per package
- Number of missed or false scans
- Number of pairing attempts required
- Time to complete a multi-package stop
- Number of times driver switched to DIAD for a task
- Confidence rating after each task (self-reported)

Qualitative Measures

- Confusion about scan status or confirmation feedback
- Physical discomfort or adjustment behavior
- Hesitation before or during scanning
- Frustration with pairing or connectivity
- Workarounds drivers have developed over time
- Situations where the Ring Scanner is set aside in favor of the DIAD
- Trust in the device (do drivers double-check their scans?)

8. Success Criteria

A task is considered successful when the participant completes the intended scanning outcome without moderator assistance. For the Ring Scanner specifically, a key additional criterion is whether the driver receives and correctly interprets confirmation feedback without needing to visually inspect the device or DIAD.

Rating	Label	Description
0	No issue	Scan completes on first attempt with clear confirmation.
1	Minor	Small hesitation or one retry with no meaningful impact.
2	Moderate	Multiple attempts or uncertainty about scan status, but task completes.
3	Major	Repeated failures, loss of confidence, or reliance on workaround.
4	Critical	Task cannot be completed or error results in a missed or incorrect delivery record.

9. Observation Guidelines

The moderator should observe and note:

- Whether the driver looks at the Ring Scanner or DIAD to confirm a scan
- How many attempts are needed before a barcode registers
- Whether the driver adjusts their hand position, angle, or distance to improve accuracy
- How the driver responds to a missed scan (retry, switch to DIAD, ask for help)
- Whether vibration or audio feedback is sufficient in a noisy or active environment
- Whether the device stays comfortable and secure on the hand over time
- Whether the driver notices low battery warnings before the device loses power
- Any habitual workarounds the driver demonstrates without being prompted

Do not intervene when a scan fails. Allow the driver to attempt recovery independently.

10. Analysis

After testing, group findings into themes. Each finding should document:

- Scan accuracy
- Physical form factor
- Battery awareness
- DIAD integration
- Driver trust
- Confirmation feedback
- Pairing and connectivity
- High-volume stop efficiency
- Error recovery
- Workflow fit

Finding	What happened during the session
Evidence	What participants did or said
Impact	Why it matters to the delivery workflow
Severity	0-4 using the rating scale above
Recommendation	A potential improvement to address the issue

11. Deliverables

- Usability test plan and moderator script
- Participant profile summary
- Task-level success metrics and scan accuracy rates
- Usability findings with severity ratings
- Key participant quotes
- UX recommendations
- Prioritized improvement opportunities
- Executive summary