



SC-17 CAREWING — OEM-Neutral Aircraft Requirements Specification

REVISION	0.1
DATE	21 September 2026
STATUS	reference requirement, not a manufacturing specification

1. Purpose and boundary

This document converts the SC-17 reference concept into a supplier-neutral requirement set for an aircraft used on a Simplycity medical-sample corridor. It is intended to evaluate OEM candidates and integrate the selected aircraft into Simplycity. It does not approve an aircraft, prescribe a certified design, transfer regulatory responsibility, or replace an operator's safety case.

The selected OEM/operator must demonstrate every claimed compliance item with controlled evidence. "Target" values guide early selection; "shall" values are proposed acceptance criteria that must be confirmed in the route-specific ConOps and regulatory assessment.

2. Reference mission and assumptions

Parameter	Requirement / target
Service	Scheduled and on-demand transport of diagnostic samples between controlled care hubs
Reference route	18 km direct corridor; Amsterdam-region urban setting
Mission objective	17-minute door-to-door target, including hub handovers
Cruise segment	18 km at 95 km/h nominal still-air speed
Vertiport interface	Approved rooftop or campus micro-hub; controlled ground zone
Payload	2.5 kg maximum, 7 L minimum useful volume target
Operating crew	Licensed operator's approved remote-operations model
Design condition	Day VLOS/BVLOS only where separately authorised; no autonomous operation implied

3. Aircraft and payload requirements

ID	Requirement	Acceptance evidence
A-01	Aircraft shall transport a secured payload of at least 2.5 kg in an enclosed compartment.	Weighed demonstration; dimensional drawing; retention test.
A-02	Useful payload volume target is at least 7 L.	CAD volume calculation and physical fit check.
A-03	MTOM target shall not exceed 15 kg unless the route safety assessment accepts a different envelope.	Controlled mass report.
A-04	Aircraft shall use vertical take-off and landing from the approved pad envelope.	Demonstrated take-off/landing procedure.
A-05	Aircraft shall have no externally exposed cargo during rotor operation or flight.	Physical inspection and operational procedure.
A-06	Cargo interface shall support tamper indication, unique custody identity and temperature-logger attachment.	Interface control document and trial.
A-07	Payload compartment shall be cleanable and segregated from battery/electronics compartments.	Materials/process documentation.

4. Performance and energy requirements

ID	Requirement	Reference target	Acceptance evidence
P-01	Nominal cruise speed	>=95 km/h	Flight-test data in defined conditions.

P-02	18 km route flight time	<=13 min airborne planning target	Recorded mission data.
P-03	Dispatch range	>=35 km still-air planning envelope with approved reserve policy	Validated energy model and flight data.
P-04	Payload mission energy	Planning target <=0.221 kWh including 30% contingency reserve	Power/energy log, defined route/wind condition.
P-05	Battery usability	OEM shall declare usable energy, ageing assumptions, temperature limits and cycle-life basis.	Battery specification and test evidence.
P-06	Battery turnaround	Swap or charge process shall be compatible with the hub service target.	Time-and-motion trial.
P-07	Wind/weather limits	Operator/OEM shall declare and validate take-off, landing and cruise limits.	Approved operating manual / test evidence.

5. Safety, health and contingency requirements

ID	Requirement	Acceptance evidence
S-01	Aircraft shall provide operator-visible state of charge, energy prediction, propulsion health, navigation health and payload-door state.	Telemetry schema; bench and flight data.
S-02	Aircraft/operator shall implement route containment, geofence and an approved lost-link behaviour.	ConOps, simulation and flight demonstration.
S-03	The flight system shall report critical faults before launch and prevent dispatch when configured release criteria are unmet.	Fault-injection / workflow demonstration.
S-04	Return, hold, divert and landing-contingency behaviours shall be defined for the actual route.	Route-specific safety assessment and drill.
S-05	The OEM/operator shall provide declared failure modes, maintenance limits and inspection intervals.	Controlled manuals and maintenance programme.
S-06	Battery thermal event prevention/response shall be defined for aircraft and hub.	Battery safety documentation; hub emergency plan.
S-07	Any parachute, terminal behaviour, detect-and-avoid or redundancy claim requires route-specific evidence and approval; no such capability is assumed by this specification.	Validated evidence where claimed.

6. Integration requirements: Simplicity data contract

ID	Aircraft/operator shall provide	Minimum cadence / condition
I-01	Mission ID, aircraft ID, operator ID, configuration/version	At mission creation and update
I-02	Position, altitude, groundspeed, heading, route progress and ETA	At least 1 Hz while airborne, subject to approved communications architecture

I-03	State of charge, predicted energy at destination/alternate and battery temperature	At least 0.2 Hz; event-driven alert at limits
I-04	Flight mode, take-off/landing state, link state and critical health flags	State change plus at least 1 Hz airborne
I-05	Payload cassette ID, door/lock state and custody scan events	At every state change
I-06	Route deviation, geofence, weather, fault and human-intervention events	Immediate event record
I-07	Post-flight summary: route adherence, elapsed times, energy, exception codes and available measured-noise data	Within 10 minutes of mission close

Data exchange must use authenticated interfaces, documented ownership/access controls, retention rules and privacy/security review. The exact transport/API format remains implementation-specific.

7. Hub interface requirements

- Controlled clear pad and marked exclusion zone sized from OEM rotor/downwash and operating procedures.
- Positive aircraft identification, pad reservation, arrival/departure status and local emergency stop/interlock where required by the selected system.
- Protected, documented payload transfer process; no operator hand reaches into an active rotor zone.
- Battery swap/charging, storage and fire response designed to OEM requirements and local building/fire rules.
- Weather observation source, communications coverage and safe access/egress verified for each hub.

8. Noise and community requirements

No numerical noise promise is made in this document. The aircraft/operator shall provide a predicted acoustic footprint for the actual route and then measure representative departure, arrival, transition and overflight levels during supervised operations. Simplycity will report the measured method, conditions and result—not an unverified “quiet” claim.

9. Supplier evaluation scorecard

Criterion	Weight	Evidence to score
Safety-case and regulatory maturity	25%	Prior approvals, documentation, failure evidence, operator fit
Route/payload performance	20%	Validated speed, energy and payload data
Hub compatibility	15%	Pad, handling, turnaround and ground-safety design
Data/API integration	15%	Telemetry completeness, security and integration support
Noise/community evidence	10%	Measured data and operating mitigations
Maintainability/service support	10%	Maintenance plan, spares, SLA and training
Commercial fit	5%	Pilot terms, cost transparency and scale pathway

10. Minimum development artifacts before a pilot

1. Route-specific ConOps and operating responsibility matrix.
2. Selected-OEM controlled technical data pack and interface-control document.
3. Initial operational-risk assessment and authority engagement plan.
4. Hub drawings, emergency plans and site approvals.
5. Payload/custody validation with the clinical partner.
6. Integrated pre-flight, dispatch, exception and post-flight workflow tests.
7. Measured energy, noise and reliability demonstrations before service claims.

Change control

Simplycity owns this requirements baseline; the selected OEM owns its aircraft technical baseline; the operator owns the operating manual and safety-management artefacts. Any change affecting payload, route, hub, weather limits, software, aircraft configuration or emergency behaviour triggers a documented impact review before use.