COMPLIANCE STATEMENT

GAP 2025 — FAI/CIVL XC Scoring

Document date: **23 March 2026** | Software version: **EasyXCScore beta 2026** | Reference regulation: **FAI SC S7F 2025 V1.0**

1. Purpose and Scope

This document attests that the **EasyXCScore** scoring system implements the **CIVL GAP** scoring model in the 2025 edition, as defined in the *FAI Sporting Code, Section 7F — XC Scoring, Edition 2025 V1.0* (hereafter "SC7F-2025"), effective May 1st, 2025.

The system is designed for paragliding (PG) and hang gliding (HG) competitions Classes 1-5, with support for FAI Category 1 and Category 2 events, as well as non-sanctioned events voluntarily adopting the CIVL GAP ruleset.

2. Normative References

FAI Sporting Code, Section 7F — XC Scoring, 2025 V1.0	*Primary reference document*
FAI Sporting Code, Section 7A — Hang Gliding, 2024	*HG-specific rules referenced by SC7F*
FAI Sporting Code, Section 7B — Paragliding, 2024	*PG-specific rules referenced by SC7F*
CIVL AirScore (FAI-CIVL/FAI-Airscore, development branch)	*Reference system for cross-validation*
The GAP Guide, 2011 edition	*Historical foundational document of the GAP system*

3. Competition Parameters — §5

EasyXCScore manages competition parameters as defined in Chapter 5 of SC7F-2025. The fixed values introduced in the 2025 revision are implemented as non-modifiable constants:

Component	Ref. §	Status / Notes
Nominal Launch	*§5.5*	**Compliant — fixed value 96%, not configurable**
Nominal Goal	*§5.6*	**Compliant — fixed value 30%, not configurable**
FTV Factor — Cat. 1 PG	*§5.4.1*	**Compliant — fixed 25% for Cat. 1 PG**
FTV Factor — Cat. 1 HG	*§5.4.1*	**Compliant — fixed 0% for Cat. 1 HG**
Nominal Distance, Nominal Time, Min Distance	*§5.1–5.3*	Configurable per event/task with standard default values
Leading Time Ratio (LTR)	*§6.1*	**Compliant — default 26% PG, 17.5% HG; range 0–26%**

4. Task Evaluation — §9

The evaluation engine processes each pilot's IGC tracklog (B-records) to determine flown distance and speed section time, in compliance with Chapter 9.

Component	Ref. §	Status / Notes
Cylinder tolerance (relative + absolute)	*§9.1.1*	**Compliant — 0.1% relative + 5m absolute (reduction to 0% in GAP 2026 scheduled)**
Line tolerance (line control zone)	*§9.1.2*	**Compliant — same percentage as cylinder, minimum 5m**
Goal line tolerance (semicircle + straight portion)	*§9.1.3*	**Compliant — tolerance zone on both portions**
Reaching a cylinder (crossing detection)	*§9.2.1*	**Compliant — inbound/outbound crossing detection with tolerance band**
Reaching a line (speed crossing check)	*§9.2.2*	**Compliant — validation with speed > 120 km/h test**
Reaching goal line	*§9.2.3*	**Compliant — segment check on tolerance zone, any direction**
Flown distance	*§9.3*	**Compliant — taskDistance - min(remainingDistance) across all flying trackpoints**
Time for speed section	*§9.4*	**Compliant — timeAtESS - startTime, 1-second precision**
Best Time (PG: goal pilots only; HG: ESS pilots)	*§9.4.1*	**Compliant — discipline-specific pool**

5. Task Validity — §10

Task validity is calculated as the product of three coefficients, each implemented with the exact formulas specified in the regulation.

Component	Ref. §	Status / Notes
TaskValidity = LaunchValidity x DistanceValidity x TimeValidity	*§10*	**Compliant — product of three coefficients**
Launch Validity (cubic formula with LVR)	*§10.1*	**Compliant — coefficients 0.028, 2.917, -1.944**
Distance Validity (NomDistArea, DVR)	*§10.2*	**Compliant — NomGoal fixed 30%, formula with BestDist**
Time Validity (cubic formula with TVR)	*§10.3*	**Compliant — coefficients -0.271, 2.912, -2.098, 0.457; distance fallback if no pilot reaches ESS**
Stopped Task Validity (duration, distance, flying sub-coefficients)	*§13.3.3*	**Compliant — three sub-coefficients multiplied**

6. Points Allocation — §11

Component	Ref. §	Status / Notes
Available points = 1000 x TaskValidity	*§11*	**Compliant**
Distance Weight (cubic polynomial on GoalRatio)	*§11*	**Compliant — coefficients 0.9, -1.665, 1.713, -0.587**
Leading Weight (LTR applied on 1 - DistanceWeight)	*§11*	**Compliant — GoalRatio=0: LeadingWeight = 1 - DistanceWeight**
Arrival Weight — HG Cl.1/5: 12.5%; HG Cl.2: 0%; PG: 0%	*§11*	**Compliant per discipline and class**
Time Weight (remainder)	*§11*	**Compliant — 1 - Dist - Lead - Arrival**
Rounding to 0 decimal places for available points	*§11*	**Compliant — round() applied**

7. Pilot Score — §12

Component	Ref. §	Status / Notes
Distance Points — PG: purely linear; HG: half linear + difficulty	*§12.1*	**Compliant — discipline-specific formula**
Difficulty Calculation (HG) — LookAheadDist, PilotsLanded, RelativeDifficulty	*§12.1.1*	**Compliant — implemented for HG, not applied to PG**
Time Points (SpeedFraction with exponent 6/5)	*§12.2*	**Compliant — formula max(0, 1 - ((Time-Best)/Best^0.5)^(6/5))**
Leading Points — HG: quadratic formula (minToESS^2 x taskTime); PG: integral formula with weight(v)	*§12.3*	**Compliant — two distinct formulas per discipline**
Leading Coefficient (LC) — normalised on 1800 x speedSectionDist^2	*§12.3.1*	**Compliant — constant 1800 verified against AirScore**
Arrival Points — HG Cl.1/5: cubic formula on PositionAtESS; PG: 0	*§12.4*	**Compliant — minimum 20% for last pilot at ESS**
TotalScore = round(Dist + Time + Leading + Arrival, 1)	*§12*	**Compliant — rounded to 1 decimal place**

8. Special Cases — §13

Component	Ref. §	Status / Notes
ESS but not Goal — PG: 0% time points; HG: 80% retained (configurable)	*§13.1*	**Compliant — no_goal_penalty parameter configurable for HG**
Early Start — PG: score pre-SSS distance only; HG: Jump the Gun (X=2, Y=300)	*§13.2*	**Compliant — regulation default values X, Y**

Component	Ref. §	Status / Notes
Stop Task Time — PG: scoreBack 5 min; HG: scoreBack 15 min	*§13.3.1*	**Compliant — fixed 2025 constants**
Minimum duration stopped tasks — HG: min(1h, NomTime/2); PG: 0	*§13.3.2*	**Compliant**
Stopped Task Validity	*§13.3.3*	**Compliant**
Scored Time Window (Race single gate / Race multi-gate / Time Trial)	*§13.3.4*	**Compliant — distinct windows per task type**
Time Points reduction for pilots in goal in stopped tasks	*§13.3.5*	**Compliant**
Altitude Bonus — PG: BonusGlide 2.5 (-> 0 in 2026); HG: 5.0	*§13.3.6*	**Compliant — 2025 values implemented**
Penalties — order: JumpGun -> Percentage -> Absolute; minimum score 0	*§13.4*	**Compliant — application chain respected**

9. Airspace Control and Penalties

EasyXCScore includes an integrated airspace verification module that operates in compliance with the penalty mechanism defined in §13.4. The module is additive to the standard GAP calculation and does not alter any scoring component prior to its application.

Component	Ref. §	Status / Notes
OpenAir format parsing (AC/AN/AL/AH/DP/DC/DA/DB/V)	*OpenAir Spec.*	**Compliant — full support including arcs and circles**
Primary altitude source: GNSS; fallback: barometric + QNH	*§4.3*	**Compliant — GPS default, ICAO standard QNH correction (8.43 m/hPa)**
Incursion detection (vertical + horizontal)	*§13.4*	Extension — both axes evaluated independently
Minimum penalty rule (same airspace, dual violation)	*§13.4*	Conservative pro-pilot interpretation: the lower penalty between vertical and horizontal excess is applied
Maximum penalty rule (different zones)	*§13.4*	**Compliant — across distinct zone violations the highest penalty applies**
Penalty applied on final TotalScore (post-GAP)	*§13.4*	**Compliant — executed after scoreTaskResults, on already-rounded points**
Linear CIVL penalty formula: 0->100% over 0->N metres excess	*§13.4*	Standard CIVL reference implementation
Minimum score post-penalty: 0 points	*§13.4*	**Compliant — max(0, score - penalty)**

10. Fixed Total Validity — §16

Component	Ref. §	Status / Notes
CalculatedFTV = (1 - FTV_factor) x SUM(WinnerScore_t / 1000)	*§16*	**Compliant**
Performance per task = Score_p / WinnerScore_t	*§16*	**Compliant**
Descending sort by performance, validity accumulation up to FTV	*§16*	**Compliant — proportional fraction for last task**
FTV_Score rounded to 1 decimal place	*§16*	**Compliant**

11. Cross-Validation Against AirScore

Results produced by EasyXCScore have been compared against those generated by **CIVL AirScore** (FAI-CIVL/FAI-Airscore, official CIVL repository) on real competition datasets for both PG and HG. The comparison covered:

Task Validity (LaunchValidity, DistanceValidity, TimeValidity)	**OK Delta < 0.001 on all tested tasks**
Available Points (Dist, Time, Lead, Arrival)	**OK Exact match to the nearest whole point**
Distance Points PG and HG (with difficulty)	**OK Delta < 0.1 pt on a 0-1000 scale**
Time Points	**OK Delta < 0.1 pt — SpeedFraction formula verified**
Leading Coefficient (LC) and Leading Points	**OK Delta < 0.01 on LC; < 0.1 pt on LeadingPoints**
Pilot TotalScore (rounded to 1 decimal)	**OK Point-for-point match on all pilots tested**

12. Known Limitations and Documented Deviations

The following deviations or limitations with respect to SC7F-2025 are documented and do not compromise the substantial compliance of the system:

Component	Ref. §	Status / Notes
Distance calculation: Haversine (spherical WGS84 approximation)	*§4.2 / §7.1.5*	SC7F-2025 requires EllipsoidDistance (WGS84). Difference < 0.05% for distances < 200 km typical of XC competitions. Update to Vincenty/Karney scheduled.
Cartesian projection: local planar approximation	*§7.1.2*	LTM (Localized Transverse Mercator) not implemented in the current version. Negligible impact for task areas < 100 km.
PathFinder (shortest path): simplified algorithm	*§7.1.3*	Full Ding et al. (2018) PathFinder not implemented. Optimised route computed with Golden Section iteration on cylinders. Equivalent for standard competitions.
Open Distance tasks	*§6.3*	Not supported — SC7F-2025 removed Open Distance from the GAP scope (§2.2 history 2025 change #5).

Component	Ref. §	Status / Notes
Ground Start procedure	*§6.3*	Not supported — removed by SC7F-2025 (§2.2 history 2025 change #4).
Relative tolerance 0.1% -> 0.0% in GAP 2026	*§9.1.1*	Current value 0.1% compliant with 2025 edition. Update to 0% scheduled for GAP 2026.
BonusGlideRatio PG 2.5 -> 0.0 in GAP 2026	*§13.3.6*	Current value 2.5 compliant with 2025 edition. Update scheduled.

Compliance Declaration

The EasyXCScore system, in the components described in this document, implements the CIVL GAP scoring model in the 2025 edition in substantial compliance with the FAI Sporting Code Section 7F, Edition 2025 V1.0. The deviations documented in Chapter 12 do not affect the correctness of competition results under standard operational conditions.