DIRECT ANSWER

A runway edge lights inspection measures every fixture in the row rather than counting which ones are lit. TarmacView flies the row by drone and records, for each unit, its intensity relative to its neighbours, its colour, its beam shape and its surveyed position, then returns a protocol in ICAO, EASA or FAA format the same day.

RUNWAY LIGHTING SYSTEM · ICAO ANNEX 14

Runway edge lights, measured unit by unit

A row of edge lights fails one fixture at a time, and a walking check only tells you which ones are lit. We fly the row and measure every unit: intensity against its neighbours, colour, beam shape and surveyed position. The dark unit and the unit running at half its neighbours both come back named.

Scope a lighting inspection

How the visit works

30+	CIE x,y

measurements per light	chromaticity + colour temperature
±15°	RTK ±1 cm
horizontal coverage sector	position and spacing survey

FIT

Who this is for

This service is bought by the person who has to sign the runway lighting rows of the visual aids protocol and knows that a count of lit units is not a measurement. It fits the electrical manager with a periodic protocol due, the operator pricing an LED conversion who wants to know what the existing row actually does, and the aerodrome answering a pilot report about a row that looked uneven on the approach.

FOR

- ✓ Airfield electrical and maintenance managers who owe their authority a periodic visual aids protocol for the runway lighting and currently produce it from a walk along the row.
- ✓ Aerodrome operators planning a relamping or an LED conversion who want a measured baseline of the existing row before the budget is committed.
- ✓ Aerodromes where a pilot report or an inspection finding has raised a question about the uniformity of the row and a

count of lit units cannot answer it.

NOT FOR

- × Certified absolute photometry of individual fixtures, which is done with a calibrated photometer at the unit or in a laboratory rather than from the air.
- × Electrical faults in the circuit, regulators or cabling, which the protocol can point to through the units that misbehave but does not diagnose.
- × Taxiway and apron lighting, which is a different mission profile and is scoped separately.

JUDGED ON DELIVERY

Outcomes and acceptance criteria

Three outcomes are what the service is judged on, and each has a state you can check on delivery rather than a promise you have to trust.

01

A record for every unit in the row

02

A row ranked for maintenance

Each fixture comes back with its relative intensity, its chromaticity and colour temperature, its beam width and symmetry, its surveyed position and its spacing to the next unit, scored against the standard and against its neighbours.

ACCEPTANCE

Pick any unit, and its figures, its verdict and the frames they came from are there.

Units are ordered by how far they sit from the row, so the fixtures to relamp, re-aim or replace before the next inspection are listed in the order the work should be done.

ACCEPTANCE

Every unit on the list carries the figure that put it there, not just a rank.

03

A protocol the authority recognises as evidence

The runway lighting rows of the visual aids protocol in ICAO, EASA or FAA wording, with the flight record and the source frames attached to every finding.

ACCEPTANCE

The document files as the periodic check without being retyped into another form.

What the service does not undertake to produce is a diagnosis of the circuit. A unit that reads low may be a lamp, a lens, an aiming error or a regulator, and the protocol says which units misbehave and how, not why. Nor is it certified absolute photometry, which needs a calibrated

instrument at the fixture. Where the question is the whole airfield's lighting rather than one row, the airfield lighting inspection page sets out how the systems fit into one visit.

One row, three ways past it

Which pass we fly depends on what the row has to prove. Most inspections use more than one, in a single sortie.

Over the row, alongside it, and from the approach

A fly-over tracks directly above the lights end to end, so each unit is measured looking down its own beam. A parallel side sweep runs offset outboard of the row at a fixed standoff, which is how beam shape across the horizontal sector gets sampled. An observation arc sits out on the approach at the glide path height and looks back down the runway, which is the pattern the crew actually sees. Every pass is generated from your surveyed light positions, so the drone frames each unit rather than hunting for it.

Each light carries its own record, and its neighbours

Every unit is tracked across the footage and scored on its own: intensity at fixed reference distances, how fast the beam rises and falls, beam

width and symmetry, CIE chromaticity and colour temperature, halo and edge sharpness, plus its spacing and alignment against the surveyed row. Because the whole row is measured in one pass, each unit is also scored against its neighbours, which is what catches the fixture still lit but running well under the rest of the row. A gap where a unit should be is reported as a missing light, not as silence.

VERIFIED PARAMETERS

What the protocol answers

The runway lighting rows of the visual aids protocol, each with the tolerance it is judged against.

9 PARAMETERS | ICAO ANNEX 14 VOL I

01 Pattern configuration

The runway light pattern is the correct shape for the runway and its category.

TOLERANCE Per ICAO Annex 14

02 Chromaticity

Every unit emits the correct colour for its position in the pattern, and no red filter has faded out of specification.

TOLERANCE Per ICAO Annex 14

03 Intensity

Threshold, edge and end light intensity, and the ratio between the parts of the system, are correct along the whole runway.

TOLERANCE ≥ 85% of nominal

04 Horizontal coverage

The pattern stays visible across the sector either side of the runway axis.

TOLERANCE `min ±15°`

05 Vertical coverage

The pattern stays visible through the approach sector as the aircraft descends.

TOLERANCE `0° to 15°`

06 Dimming steps

Every unit changes intensity together and by the commanded step, and the runway system tracks the approach system without visually vanishing beside it.

TOLERANCE `3 of 3 steps`

07 Spacing and alignment

Each unit sits at its surveyed position along the row, and any gap left by a dark unit is reported against the light it belongs to.

TOLERANCE `RTK ±1 cm`

08 Standby power

The pattern is unchanged when the airfield transfers to its standby supply.

TOLERANCE `No change`

09 **Misleading lights**

No light near the runway can be mistaken for the runway system, and none dazzles the crew.

TOLERANCE None recorded

- Tolerances per ICAO Annex 14 Vol I and ICAO Doc 9157 Part 4. Protocols are issued in your authority's format for ICAO, EASA or FAA.

DELIVERY · 6 STEPS

From surveyed row to ranked maintenance list

01

Scoping call

You name the runways, whether threshold, end and centre line lights are in scope, and whether a surveyed layout of the units exists. We agree the intensity steps to be checked and the protocol template your authority wants. Output is a scope note. If the layout does not exist, the first visit produces it.

02

Mission build

The fly-over, the side sweep and the observation arc are generated from the unit positions, the row length and the camera optics, so every unit is framed at the distance and angle the measurement needs. Output is a validated mission and a capture window request to your tower, plus a request to your

lighting control room for the steps to be commanded.

03

Capture

Flown between aircraft movements, about an hour on site per runway. The row is flown end to end at each intensity step in scope, and the transfer to standby power is watched where it is part of the protocol. If a movement interrupts a pass, the pass is reflown unchanged rather than stitched.

04

Measurement

Each unit is tracked through the footage and its intensity, colour, beam shape and position are extracted. Every figure is then set against the row, so a unit is scored both against the standard and against its neighbours. Frames the tracker is not confident about are held for review rather than dropped.

05

Protocol

The runway lighting rows of the visual aids protocol are filled in your authority's wording, with a figure and a verdict per unit and a ranked list of the units to attend to. Delivered the same day, with the flight record and the source frames attached.

06

Delivery and walkthrough

We walk your electrical manager through the units that moved since the last visit and the ones that sit furthest from the row. Anything disputed is re-examined against the retained footage rather than re-flown.

EVIDENCE AND CAPABILITY

The claim worth checking is the uniformity

An edge light row is specified as a pattern, and a pattern degrades in a way that no single fixture reveals. A unit at three quarters of its neighbours is invisible on a night walk and obvious on an approach. The inspection therefore measures every unit from the same set of

positions, down its beam from above, across its beam from the side and along the row from the approach, and sets each figure against the rest of the row. The light intensity of a unit is reported as a ratio to its neighbours and to its own dimming steps, which is exactly what the uniformity and dimming rows of the protocol ask for.

That framing is honest about what an airborne camera is. It is not a calibrated photometer, so it does not produce candela on its own. What it produces is a consistent relative measurement of every unit in the row on every visit, at one detection threshold, which a walked check cannot. An absolute value needs an external reference, and where an authority requires one it is arranged at scoping and the protocol marks which figures are absolute.

The chromaticity of every unit comes from the same footage, which is how a faded filter on the red section over the last part of the runway is caught, and the light pattern as a whole is checked from the observation arc, which is the view a crew has. Each unit's position is fixed by RTK positioning , so spacing and alignment are measured against the surveyed row and a dark unit is reported against the position it should occupy rather than as a shorter row. A runway edge light that has been knocked off its aiming shows up in the beam symmetry figure before it shows up as an outage.

Retained footage is what makes a disputed figure checkable. If your electrical manager questions a unit's ratio, the frames it was read from are still there with their positions, and the figure can be recomputed in front of them. That is also what lets the next visit report change, unit by unit, rather than a fresh opinion of the row.

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ROW VS FIXTURE
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100 %

of the row measured, at the same distances and angles

relative

intensity, unit against the row and against its own steps

per unit

position, so a gap is reported against the light it belongs to

HOW THE PRICE IS BUILT

Four things move the quote

There is no published rate for this service, because a single 1,200 metre row and two 3,000 metre runways with threshold, end and centre line lights are different days of work off the same method. The quote gives your figure, and the pricing page describes the combined visit.

EUR | PER AERODROME PER VISIT | EXCL. VAT | EU

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Cost driver 01

Runways and row length

Cost driver 02

Systems in scope

Capture time and processing both scale with the number of units. Two runways share the setup and the tower coordination.

Threshold and end lights ride along with the row. Centre line and touchdown zone lights are a line item where the runway has them.

Cost driver 03

Combined visit

Measuring the PAPI and the approach lights, or scanning the pavement, in the same visit costs less than buying each separately, because the travel and the access are paid once.

Cost driver 04

Travel

Shows up as travel and not as a different inspection.

Tell us the aerodrome and the runways and you get a figure and a date back. The pricing page sets out the shape of a visit that covers every light and every surface, which is the cheaper way to buy the lighting protocol as a whole.

EACH WITH AN OWNER

Risks and dependencies

Three things can stop or degrade an inspection, and each has an owner.

OWNER · WEATHER

Visibility and wind

Fog, precipitation and wind above the drone's limit stop the capture, and a wet runway changes the way a unit reads from above. The mission is flown when the window opens rather than measured through the weather. This is the most common reason a date moves.

OWNER · OPERATOR

Access and lighting control

The capture needs tower coordination, at most aerodromes an escort, and a control room that can command the intensity steps and the standby transfer while the drone is in position. All three sit with the aerodrome operator and are worth confirming before travel is booked.

OWNER · BOTH, AT SCOPING

The layout

A unit is scored against its surveyed position and its neighbours. If units were moved, added or removed since the layout was made, the scoring is against the wrong row. We agree at scoping whose layout is used, and a first visit without one produces it.

Accountability sits with TarmacView for the capture, the measurement and the protocol, and with the aerodrome operator for access, for the lighting control and for what is done with the maintenance list. Nothing

on this page is a compliance statement. Whether a given protocol satisfies a particular authority is a question for that authority.

Frequently Asked Questions

What does a drone add over walking the row at night?

A walk tells you which units are lit. It cannot tell you that unit 14 is running at half the output of its neighbours, that unit 21 has drifted off its aiming, or that the red section over the last part of the runway has faded toward orange. The drone measures every unit from the same distances and angles, so each one has a figure that can be compared with its neighbours and with its own figure from the last visit. The result is a row you can rank for maintenance rather than a list of outages.

Is the runway closed for the inspection?

No. The passes are flown between aircraft movements in coordination with the tower, and the drone clears the strip when asked. Budget about an hour on site per runway for setup, the passes and a repeat if a movement interrupts one. The edge lights have to be on at the intensity steps being checked, which is a request to your lighting control room rather than to the tower. Processing and the protocol happen afterwards, off site.

Which passes do you fly?

Usually more than one, in a single sortie. A fly-over tracks directly above the row so each unit is seen down its own beam. A parallel sweep runs outboard of the row at a fixed standoff, which is how the beam shape across the horizontal sector is sampled. An observation arc sits out on the approach at the glide path height and looks back along the runway, which is the view a crew actually has. Every pass is generated from the surveyed unit positions, so the drone frames each unit rather than hunting for it.

How is intensity reported?

As a figure per unit relative to the row and relative to the commanded dimming step, which is what the uniformity, dimming and section rows of the protocol ask for. A unit that reads well under its neighbours is named with the ratio. An absolute value in candela needs an external reference, because an airborne camera is not a calibrated photometer. Where your authority requires absolute values, the reference is arranged at scoping and the protocol says which figures are absolute and which are relative.

Do you cover threshold, end and centre line lights too?

Threshold and runway end lights are part of the same passes and appear in the protocol with the edge lights, because the row is flown end to end and the bar at each end is in frame. Runway centre line and touchdown zone lights are covered where the runway has them, from the fly-over, and are scoped as a line item. Taxiway lighting is a different mission profile and is not included in this service.

What comes back if the layout was never surveyed?

The survey. Every unit's position comes from the passes with RTK positioning, so the first inspection produces the surveyed layout the next one is generated from. Spacing and alignment along the row are then checked against that layout, and a gap left by a missing unit is reported against the position it should occupy. If you already have a surveyed layout, we use it and report any unit that is not where it should be.

What happens if the inspection finds an outage?

A dark unit or a section of the row that is out is reported on the day of capture rather than held for the protocol, because it is a serviceability finding the aerodrome may want to act on at once. The protocol follows on the normal schedule and records the unit as unserviceable with its position. Whether the outage puts the runway lighting below the serviceability level your authority sets is a decision for the operator, made from the count and the positions the report gives.

References

`icao-annex-14-v1` Annex 14 to the Convention on International Civil Aviation, Volume I: Aerodrome Design and Operations
International Civil Aviation Organization

`icao-doc-9157-p4` Doc 9157, Aerodrome Design Manual, Part 4: Visual Aids
International Civil Aviation Organization

`easa-cs-adr-dsn-7` Certification Specifications and Guidance Material for Aerodrome Design, CS-ADR-DSN Issue 7
`(https://www.easa.europa.eu/en/document-library/certification-specifications/cs-adr-dsn-issue-7)`
European Union Aviation Safety Agency

faa-ac-150-5340-26	AC 150/5340-26, Maintenance of Airport Visual Aid Facilities (https://www.faa.gov/airports/resources/advisory_circulars/index.cfm/go/document.current/documentnumber/150_5340-26) Federal Aviation Administration
tarmacview-pricing	Pricing: one visit, every light and every surface (https://www.tarmacview.com/pricing/) TarmacView

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https://www.tarmacview.com/products/runway-edge-lights/ · 2026-08-03