

PORTABLE NIR ANALYSIS FOR CANNABIS

Grow. Exactly.

Potency, terpenes, plant nutrition and water activity — measured where the material is. Flower, leaf and extract, in seconds, with no sample sent anywhere.

INSTRUMENT

Valenveras Portable Lab

PLATFORM

NeoSpectra





VOL. 01 — DOCUMENT INDEX

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A portable FT-NIR analyser and four cannabis calibration models: what the instrument measures, how it is used, how the models perform, and what the hardware is certified to do.

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01 Accurate analysis of critical cannabis parameters

Real-time compositional analysis across the full cultivation cycle.

FOUR FAMILIES OF PARAMETERS, ONE MEASUREMENT

Flower

Leaf

Extract

Potency

Neutral and acid forms, so the result reflects the material as it is, not as it will be after decarboxylation.

THC

THCa

CBD

CBDa

CBG

Terpenes

The individual compounds that define aroma, effect and market value — not just a total.

β -Myrcene

Limonene

β -Caryophyllene

α -Pinene

β -Pinene

Linalool

α -Humulene

Terpinolene

γ -Elemene

Eudesma

α -Bisabolol

Nutrients & plant health

Macro and micro-nutrients read directly from leaf tissue, while the crop is still standing.

MACRO

Nitrogen

Phosphorus

Potassium

Calcium

Magnesium

MICRO

Iron

Manganese

Zinc

Drying & curing control

The two numbers that decide when a lot is ready and how long it will keep.

Dry matter

Water activity

ONE INSTRUMENT ACROSS THE WHOLE CYCLE

Most quality tools answer one question at one moment. This one follows the plant: nutrient status during cultivation, potency and terpenes at harvest, water activity through drying and curing, and potency again on the extract. The same instrument, the same account, one continuous record.



02 Unlock the power of NIR analysis anywhere, anytime

Rapid material analysis outside the confines of a laboratory.

In a market where every decision is a quality decision, the Valenveras Portable Lab puts compositional analysis in the hands of the people who need it: growers, breeders, processors and quality teams. Results in seconds, on site, with no sample shipping and no waiting for a laboratory slot.

Precision & accuracy

The widest spectral coverage among portable NIR devices — 1,350 to 2,550 nm — for accurate performance across cannabis matrices and parameters.

Ergonomic handheld design

Designed for one-handed operation. Comfortable to use and requires minimum training.

Rugged build

Engineered to work in uncontrolled conditions — in the lab, on the processing floor or out in the field.

Battery operated

Rechargeable, user-replaceable cells and up to 800 scans per charge for long sessions wherever you go.



THE INSTRUMENT AND ITS OPTICAL COVER

1,350–2,550

nanometre spectral range

2,000:1

typical signal-to-noise ratio

1 kg

total instrument weight

800

scans per battery charge



02 · THE INSTRUMENT

One system, four components

The analyser is only the part you hold.

Handheld NIR analyser

Instant, in-field measurements on flower, leaf and extract.

Sampling accessories

Powder dish, sample holder and sample weights for a constant optical path on ground material.

Mobile applications

Step-by-step guidance, immediate results, full offline operation.

Cloud portal

Model access, data management, trends and collaboration across sites.

INSTRUMENT → MOBILE APP → CLOUD PORTAL

CAPTURE

Instrument

Up to 999 spectra held on the instrument when working without a connection.



Bluetooth
V4.2 BLE

MEASURE

Mobile app

Step-by-step guidance, immediate results, full offline operation.



Auto
sync

CONSOLIDATE

Cloud portal

Model access, data management, trends and collaboration across sites.



Versioned
APIs

INTEGRATE

ERP · LIMS

APIs allow portal data to be integrated with your ERP, LIMS or seed-to-sale infrastructure.

Instant results in the field

Accurate NIR analysis right where you work — in the grow, on the line, in the warehouse. Quality control becomes something you do continuously rather than occasionally.

Effortless operation

Mobile apps and a cloud platform simplify multi-sample, multi-parameter analysis. Measure and verify conformity against your own specification, connected or offline.

Precision you can trust

Operating at the higher end of the NIR spectrum, the instrument quantifies several parameters in a single measurement, with repeatable spectra across devices.



03 Who does what

Hardware, platform, models and support — and who is responsible for each.

The Valenveras Portable Lab is not a rebadged instrument. It is the meeting point of two specialisations: precision instrumentation built by a Swiss laboratory-equipment group, and cannabis calibration models developed by the team that does nothing else.

BÜCHI Labortechnik AG

HARDWARE AND PLATFORM

Manufactures the analyser and operates the NeoSpectra platform — mobile applications, cloud portal, firmware and the security framework behind them, maintained across the group's entire instrument range.

Valenveras

CANNABIS MODELS AND SUPPORT

Owns, develops and maintains the cannabis calibration models running on the platform. Valenveras handles model subscriptions, sample-preparation guidance and technical support for cannabis users.

BÜCHI

Hardware

Manufactures the analyser.

BÜCHI

Platform

Mobile applications, cloud portal, firmware and the security framework behind them.

VALENVERAS

Models

Owns, develops and maintains the cannabis calibration models running on the platform.

VALENVERAS

Support

Model subscriptions, sample-preparation guidance and technical support for cannabis users.

WHY THIS MATTERS TO YOU

The group behind the instrument maintains hundreds of application software lines across food, feed, pharma and chemistry. Cannabis is not one of them — it is ours. The analyser you buy is backed by an industrial manufacturer with ISO/IEC 27001:2022 certification, and the numbers it gives you come from a team that works on cannabis and nothing else.

TECHNICAL SUPPORT

Technical support for cannabis users is handled by Valenveras, at support@valenveras.com.



04 How it works

A laboratory FT-NIR spectrometer, in a compact portable form.

The Valenveras Portable Lab operates on the same principles as a laboratory FT-NIR spectrometer, in a compact and portable form thanks to the MEMS interferometer at the core of the NeoSpectra sensor.

It uses near-infrared light, invisible to the human eye, to analyse materials based on their unique spectral response. That response is a fingerprint of the chemical composition of the sample — which is what makes it possible to quantify cannabinoids, terpenes, nutrients and moisture without solvents, without consumables and without destroying the sample.

Why the higher end of the spectrum matters

Working up to 2,550 nm covers the overtones and combination bands of the functional groups that carry the information you need. More usable bands per parameter means more data behind each model, and models that are more robust to the natural variability of plant material.

Multi-parameter analysis

The spectral range covers the overtones and combination bands of the functional groups required for informed decisions on cannabis material. Operators quantify several parameters — potency, terpenes, nutrients, moisture, water activity — from a single measurement on a single device.

1,350–2,550

nanometre spectral range

1,099

samples behind the Total THC model

Improved accuracy of results

The combination of a wide spectral range and highly repeatable spectra allows calibration models that reach accuracy levels comparable, in many applications, to those achieved by benchtop laboratory NIR instruments.

2,000:1

typical signal-to-noise ratio

3

instruments cross-verified against SC Labs



MEMS FT-NIR ENGINE IN A 1 KG HANDHELD BODY



05 Instant results for in-field decisions

Analyse your samples without the lab.

Lab-grade precision in the palm of your hand, at your production site or in the field. Make immediate, data-driven decisions without delays. Three benefits you can realise from day one.

1

Increased testing frequency

Test more often and verify quality at every stage — from incoming biomass to finished product — without the delays and costs of sending samples to a laboratory. Testing stops being a gate at the end and becomes a control you run continuously.

2

Cost and time savings

Quantify key parameters on site to identify waste, detect inefficiencies and optimise formulations — enabling proactive decisions that prevent costly losses before the material moves to the next stage.

3

Enhanced productivity

Instant, accurate analysis enables rapid decision-making: better product consistency, smoother processing and higher resource utilisation across the operation.



CULTIVATION — NUTRIENT STATUS WHILE THE CROP IS STANDING



GREENHOUSE — MEASURE WHERE THE PLANT IS



CURING CONTROL IN THE DRYING ROOM



DRY FLOWER



06 Four models, four materials

Developed and maintained by Valenveras, delivered through your subscription.

The Home tab lists every analysis model available to your account. Select the one matching the material in front of you; each is built for a specific presentation of the plant.

Cannabis Analysis

Express

Plant Tissue

Solids Extracts

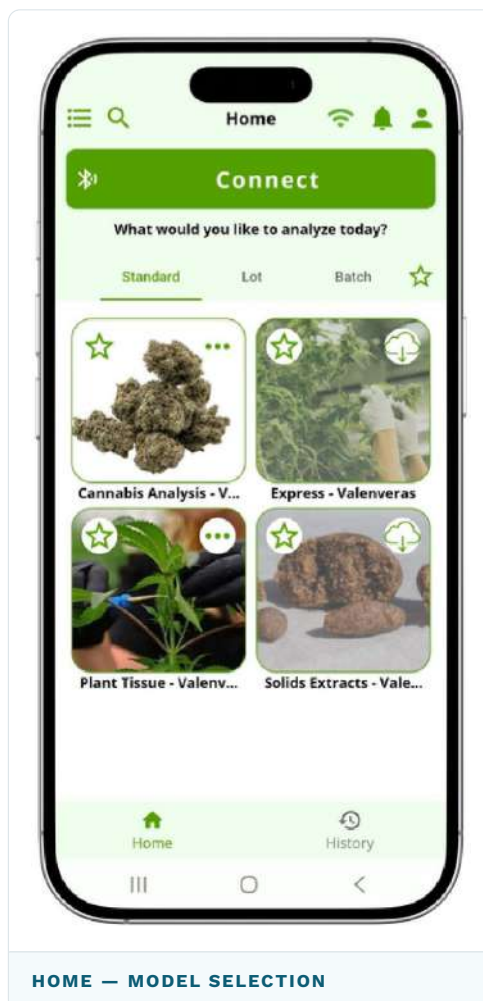
PARAMETERS RETURNED · CANNABIS ANALYSIS

Cannabinoids	THC Total · THCa · CBD Total · CBDa · CBG Total — %
Terpenes	Total Terpenes — % · individual profile for Limonene, Linalool, β -Myrcene, β -Caryophyllene, γ -Elemene, α -Humulene, Eudesma, β -Pinene, α -Pinene, α -Bisabolol, Terpinolene
Drying & curing	Moisture — % · a_w

Parameter list taken from a measurement report issued by the platform for the material "Cannabis Analysis — Valenveras". The full report is reproduced in Section 11.

MODELS TRAVEL WITH THE ACCOUNT

Models are distributed through LabStore subscriptions and cached on the device after the first sign-in, so a full session runs offline and synchronises later. Adding a second instrument does not mean rebuilding calibrations.



HOME — MODEL SELECTION



07 Sample on top

How a cannabis sample is presented to the optical window.

Instrument flat, window facing up. Large solid items sit centred on the window; ground or loose material — milled flower, dried plant tissue, crumbled extract — goes in the powder dish.

APPLIES TO EVERY MEASUREMENT

The sample must be in direct contact with the optical window, and a current calibration is required before the first measurement of each session.



**POWDER DISH ASSEMBLY
MOUNTED ON THE INSTRUMENT**



**A — POWDER DISH · B —
INSTRUMENT**



**GROUND MATERIAL AT A
CONSTANT OPTICAL PATH**

GOOD PRACTICE FOR REPEATABLE RESULTS

- Recalibrate at the start of every session, and whenever the ambient temperature changes noticeably.
- Fill the powder dish evenly and always use the sample weight, so the optical path stays constant.
- Clean the dish and the sample stage between materials to avoid cross-contamination of the spectra.



08 From power-on to result in six steps

The full measurement cycle, start to finish.



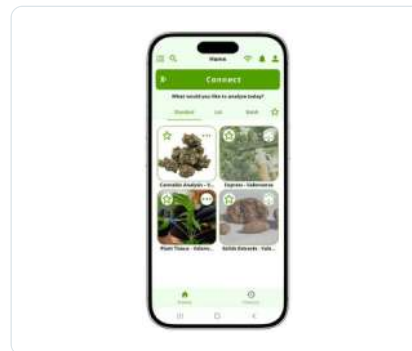
1 Turn the instrument on

Press the Power button until the screen displays.



2 Connect your device

Press "Connect" in the app and select your unit. If it is not listed, press the Power button briefly.



3 Choose the material

Select the model matching the material. If a model is missing, verify your subscriptions on LabStore.



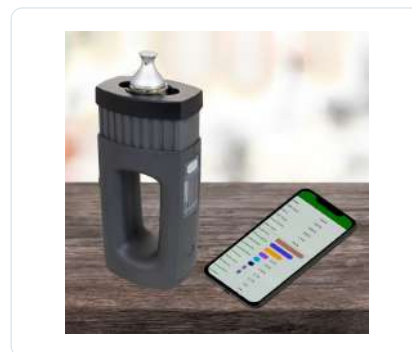
4 Prepare the calibration

Remove the cap from the calibration tile once the instrument is turned on.



5 Calibrate

Place the tile in the clean powder dish and press "Calibrate". Replace the cap when done.



6 Take the measurement

Load the dish, fit the sample weight and press "Scan". The result appears on screen.

MEMORY MANAGEMENT

The stored-scan counter matters in the field: the local memory holds 999 spectra, and when it fills, no further measurement can be recorded until the data is synchronised with the app.



09 The Powder Analysis Kit

Everything a full measurement session needs, in one case.

The powder dish assembly turns the instrument into a bench-top analyser for ground material: milled dry flower, dried plant tissue and solid extracts, held at a constant optical path over the window.

What is in the case

- Instrument, with two rechargeable 18650 cells installed
- Cover with lanyard, containing the white reference tile
- Sample holder for ground material
- Three powder sample dishes and the dish holder
- Powder sample dish weight
- Calibration tile for the powder analysis kit
- USB-C PD power adapter with NA / EU plugs
- Alcohol wipes, microfibre cloth, brush and squeegee



POWDER ANALYSIS KIT, AS DELIVERED



A — POWDER DISH · B — INSTRUMENT

How to assemble



STEP 1 — ATTACH THE HOLDER TO THE SAMPLE STAGE



STEP 2 — INSERT THE SAMPLE DISH

BEFORE EACH SERIES

Check that the dish is dry and free of residue: material left from a previous sample shifts the baseline of the spectrum. Keep the white reference tile clean — any contamination on the reference propagates into every subsequent calibration. The case contains rechargeable Li-ion batteries: observe the applicable transport regulations when shipping the kit.



10 Three instruments, one laboratory

Verification against SC Labs reference data · dry and ground flower · June 2026.

Calibration statistics describe a model. This describes what three different instruments actually returned on the same set of commercial samples, measured against an accredited third-party laboratory.

One example among several. The study reproduced here is one of the verification exercises Valenveras runs against accredited laboratories — shown as an example of the method, not as the only data available. Further verification data can be supplied on request.



AGREEMENT WITH THE REFERENCE LABORATORY · % W/W

INSTRUMENT	SAMPLES	R ²	SLOPE	BIAS	RMSEP
Total THC · unit 23010058	23	0.80	1.06	+0.24	1.73
Total THC · unit 2408021	25	0.80	1.17	+0.81	2.14
Total THC · unit 24080026	24	0.87	1.11	+0.40	1.60
Total terpenes · unit 23010058	25	0.68	1.02	+0.69	0.81
Total terpenes · unit 2408021	26	0.67	1.04	+0.77	0.88
Total terpenes · unit 24080026	26	0.66	1.04	+0.70	0.81

THE RESULT THAT MATTERS: THE INSTRUMENTS AGREE WITH EACH OTHER

Across three separate units the slopes fall between 1.06 and 1.17 for THC and between 1.02 and 1.04 for terpenes. An operation running five instruments across five sites gets comparable numbers from all of them, without recalibrating each unit. Model transferability, not a single headline R², is what makes portable NIR usable at scale.

Study conducted by BÜCHI Global NIR Applications, 1 June 2026. Reference values from SC Labs. Statistics recomputed from the paired data; samples without a reported laboratory value are excluded.



11 Your data, under control

Hassle-free data lifecycle management, on a platform run to an industrial standard.

Every measurement taken by every instrument in your organisation is transferred and synced to the cloud portal, where the data is stored, evaluated and shared. Decentralised operations, centralised data.

Auto-synced results

Every measurement uploads automatically for traceability and reporting. Up to 999 spectra are held on the instrument when working without a connection.

Advanced analytics

Trend charts, CV, average and standard deviation per parameter, material and lot — so drift is visible before it becomes a rejection.

Centralised management

Manage licences and update the models on every instrument your organisation owns, from one place.

Remote access

Field data is instantly available to quality staff at another site, so approvals no longer wait for someone to travel.

One version of the truth

Teams across sites work from the same records, without reconciling parallel logs.

Secure integration

Versioned APIs allow portal data to be integrated with your ERP, LIMS or seed-to-sale infrastructure.

What the platform is certified to do

Cannabis operations are regulated operations. An analytical result is only useful if it is traceable, auditable and protected — which is why the platform is run to the same standard as the rest of an industrial instrumentation group, not as an app bolted onto a device.

Certification

Covered by BÜCHI Labortechnik AG's ISO/IEC 27001:2022 certification, valid 5 January 2026 to 4 January 2029. Delivered as a SaaS solution hosted on AWS.

Access control

SSO via SAML, OAuth2 or OpenID Connect through Okta; MFA enforced for administrative access; role-based access control with differentiated roles and session controls.

Encryption

TLS 1.2 or higher in transit, encryption at rest on AWS-managed services, encrypted periodic backups with documented recovery procedures.

Audit and monitoring

Security-relevant logging at application and infrastructure level, protected against tampering, with real-time monitoring and alerting. Audit logs exportable on formal request.

Integration

Versioned APIs with backward compatibility and rate limiting, so an existing integration is not broken by a platform update. Integration access is separated from end-user permissions.

Development practice

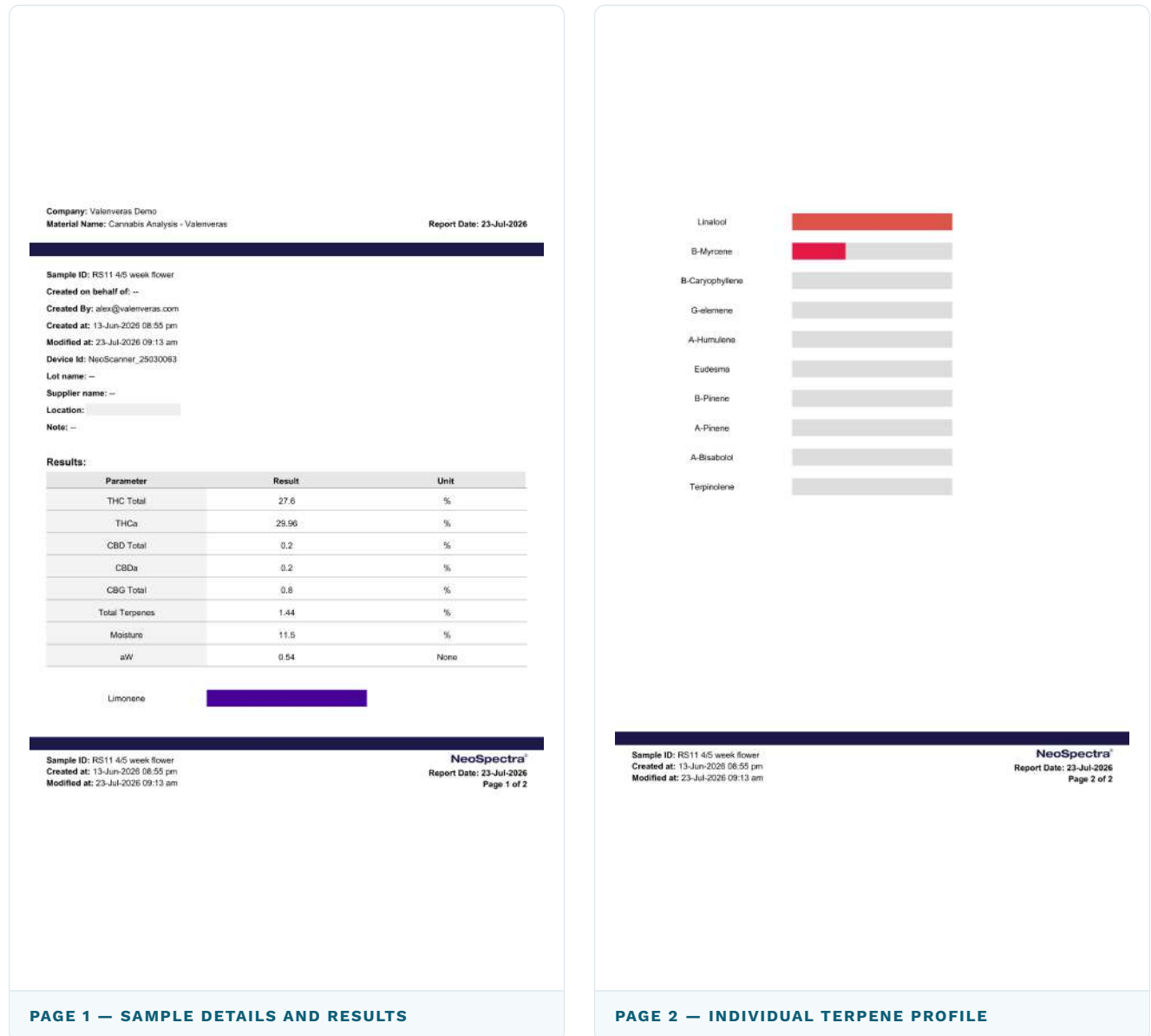
Separated development, test, acceptance and production environments; secure coding practices, OWASP Top 10 testing and independent penetration testing.



11 · DATA, PLATFORM AND SECURITY

The measurement report

What comes out of the platform when a result is printed.



Measurement report issued by the platform for the material "Cannabis Analysis — Valenveras". GPS coordinates redacted for publication.



12 Certified hardware, approved markets

What the manufacturer is audited for, and where the instrument is cleared to operate.

The Valenveras Portable Lab runs on hardware built by BÜCHI Labortechnik AG (Flawil, Switzerland). Each document below is issued by an independent certification body or a national authority, carries a registration number and an expiry date, and can be verified directly by the customer.

THE MANUFACTURER · AUDITED MANAGEMENT SYSTEMS

STANDARD	SCOPE	REGISTRATION	VALID TO
ISO 9001:2015 — Quality	Development, manufacturing, distribution and service of laboratory equipment and glass parts. Certified without interruption since 1994.	H11224	21.08.2029
ISO/IEC 27001:2022 — Information security	Scope extended to associated software solutions, held against the current 2022 revision of the standard.	46992	04.01.2029
ISO 14001:2015 — Environmental	Same scope and same sites as ISO 9001: Flawil (Switzerland) and the production plant in Sachin Surat, India.	H61573	30.04.2029

Every ISO certificate is issued twice: once by SQS, an accredited Swiss certification body, and once by IQNET, the international network that extends recognition of the same certificate to more than thirty countries.

THE INSTRUMENT · CONFORMITY AND RADIO APPROVALS

MARKET	DOCUMENT	REFERENCE	ISSUED BY
European Union	EC Declaration of Conformity	11084847A	Manufacturer's declaration
China	Radio transmission type approval	2026-9214	SRRC / MIIT
India	Equipment type approval registration	ETA-SD-20250907894	WPC / DoT

TWO NOTES ON WORDING

The management system certificates are held by BÜCHI Labortechnik AG, the manufacturer of the hardware — not by Valenveras. The correct reading is that the hardware behind the Valenveras Portable Lab is manufactured under certified management systems. The EC Declaration of Conformity is a manufacturer's declaration, not a third-party certification.

ONE INSTRUMENT, TWO DESIGNATIONS

The instrument is supplied by Valenveras as the Valenveras Portable Lab. In the manufacturer's certification and approval documents it appears under its factory model designation, NEO1001. Both refer to the same hardware, and the designation is given here so that any document can be located and checked at source.

Every document listed above is reproduced in full, page by page, in the **Valenveras Certifications Dossier** — available on request at info@valenveras.com.



13 Performance meets durability

Built for the places where cannabis is actually handled.

Drying rooms, greenhouses, reception docks and processing floors are dusty, humid and busy. The instrument is engineered to perform in all of them, and to keep performing after the first time it is dropped.



IP65 — PROTECTED AGAINST DUST AND WATER JETS



RATED TO MIL-PRF-2800 CLASS 2

Dust and water protection

IP65-rated protection against water jets and dust infiltration, enabling frequent, reliable measurement in challenging environments.

Rugged reliability

Meets MIL-PRF-2800 Class 2, built to withstand shocks, drops and vibration. Durability minimises downtime and maintenance cost.

Power and endurance

Two user-replaceable cells

Two rechargeable 18650 cells of 3,400 mAh nominal capacity, installed for out-of-the-box operation and replaceable by the user in the field.

Up to 800 scans per charge

Enough for a full working day of routine measurement. Fast charging reaches 100 % in about six hours at 1 A.

Scan while charging

The 15 V / 2.4 A USB-C PD adapter powers the instrument while it charges, irrespective of battery status.

WORKING IN THE FIELD

The adapter can power the instrument while it charges, so a full session can be run from a power bank or a vehicle inverter with USB-C PD output. A second pair of charged cells is the fastest way to keep working when no power source is available.

BATTERY SAFETY

Risk of explosion if the battery is replaced by an incorrect type. Use flat-top 18650 cells of the specified type and dispose of used batteries according to the battery manufacturer's instructions.



14 Technical specifications

Valenveras Portable Lab · NeoSpectra platform.

OPTICAL SPECIFICATIONS

Wavelength range	1,350 – 2,550 nm (7,400 – 3,920 cm ⁻¹)
Resolution at $\lambda = 1,550$ nm, FWHM criterion	16 nm (66.6 cm ⁻¹)
Typical SNR' (rms), scan time 2 s, $\lambda = 2,350$ nm	2,000 : 1
Sample coverage (diameter of collected light beam)	≈ 10 mm (≈ 0.4 in)
Bulb lifetime	> 10,000 h

GENERAL SPECIFICATIONS

Dimensions	178 × 91 × 62 mm (7 × 3.6 × 2.5 in)
Weight	1 kg (2.2 lb)
Operating temperature	–5 to +40 °C (23 to 104 °F)
Ingress protection rating	IP65
Ruggedness	MIL-PRF-2800 Class 2
Battery type	Two rechargeable 18650 cells, 3,400 mAh nominal, user replaceable
Operating battery life (2 s scans)	800 scans
Battery charge time (1 A charging current)	6 h on fast charging to reach 100 %
Power adapter	15 V / 2.4 A USB-C PD, 36 W min — powers the instrument while charging
Local memory	999 spectra stored on the instrument
Wireless connectivity	Bluetooth V4.2 BLE
Charging port	USB-C
Regulatory	CE (EC Declaration of Conformity 11084847A) · FCC Part 15 Class B · SRRC/MIIT · WPC/DoT
Software	NeoSpectra Scan App — iOS, Android · Sync App — Windows
Hardware	ProxiScout™, manufactured by BÜCHI Labortechnik AG · factory model designation NEO1001

Technical data are subject to change without notice. Model performance figures are given in Section 10.



15 Instrument overview

Controls, screen and connection states.



PARTS OVERVIEW

Parts

a	Light window	b	Bluetooth
c	Power button	d	Calibration tile
e	Screen	f	Scan button
g	Cover	h	USB-C port
i	Lanyard		

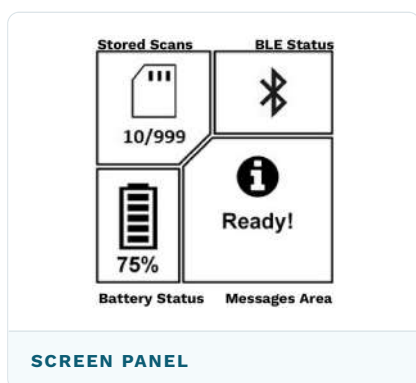
Buttons

Power — a short press turns the instrument on; when on, a short press returns it to “Ready to connect” and a long press turns it off.

Scan — a short press takes a sample measurement; a long press takes a calibration measurement.

Connection states

Power Off · Ready to Connect · Connected · Disconnected. The instrument stays discoverable for two minutes after power-on, then drops to Disconnected to save battery; a brief press of the Power button brings it back.



SCREEN PANEL

Reading the screen

The four areas of the screen report everything that can stop a measurement before it starts: how many spectra are held locally, how much charge remains, whether the app is connected, and whether the instrument is ready.

The stored-scan counter matters most in the field. When the internal memory fills, no further measurement can be recorded until the data are synchronised with the app.

FULL OPERATING INSTRUCTIONS

Detailed procedures — unboxing, firmware, error codes, precautions and the first measurement — are covered in the **Quick Start Guide · Valenveras Portable Lab**, supplied with every instrument and available at support@valenveras.com.

Research that grows with you.

Research and development in the cultivation of cannabis — NIR technology for quality control at every stage of the crop.



ONLINE

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INSTRUMENT

Valenveras Portable Lab
NeoSpectra platform
Manufactured by BÜCHI Labortechnik
AG