



THE PICO LASER BUYER'S GUIDE

An Independent Guide to Technology, Clinical Capability & Purchasing Decisions

For physicians, practice owners and aesthetic businesses actively evaluating a picosecond laser purchase.

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Rock Bottom Lasers

This guide is a purchasing and technical decision aid, not a clinical treatment protocol. FDA-cleared indications, configurations, specifications and pricing should be verified for the exact device being purchased.

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Chapter 1 — Pico Lasers in 5 Minutes

A pico pulse is a technology. A pico platform may be much more.

A picosecond laser delivers energy in pulses measured in trillionths of a second. The short pulse can generate strong photoacoustic or photomechanical effects in an optical target while limiting the time available for heat to diffuse into adjacent tissue.

But the modern market contains both focused picosecond systems and broader multi-mode platforms. Collectively, FDA-cleared systems in the category address tattoos, benign pigmentation, melasma or selected dyschromia, acne scars, wrinkles and fractional applications. Certain multi-mode platforms also carry FDA-cleared indications for vascular lesions, hair reduction, inflammatory acne and other applications using pulse structures other than conventional picosecond operation.

That distinction is fundamental: not everything treated by a platform marketed in the pico category is necessarily treated with a picosecond pulse.

The buyer's first seven questions

- What wavelengths does the exact configuration deliver?
- What pulse durations and modes are actually available?
- How much pulse energy is available at each wavelength?
- What spot sizes and fluence ranges are selectable?
- How uniform and stable is the output?
- Which treatment indications are FDA cleared for the exact model, wavelength, handpiece and mode?
- What clinical, engineering, reliability and service evidence supports the system?

BUYER'S RULE: Separate technical capability, FDA-cleared treatment breadth and clinical validation. They are related, but they are not the same thing.

Chapter 2 — What Can You Actually Treat?

The pico category now reaches well beyond tattoo removal — but treatment breadth is platform-specific.

Tattoo removal helped establish the modern picosecond category, but it no longer describes the full economic potential of many platforms. Depending on the exact device, wavelength, handpiece, pulse mode and FDA-cleared labeling, today's systems can participate in a much broader treatment universe.

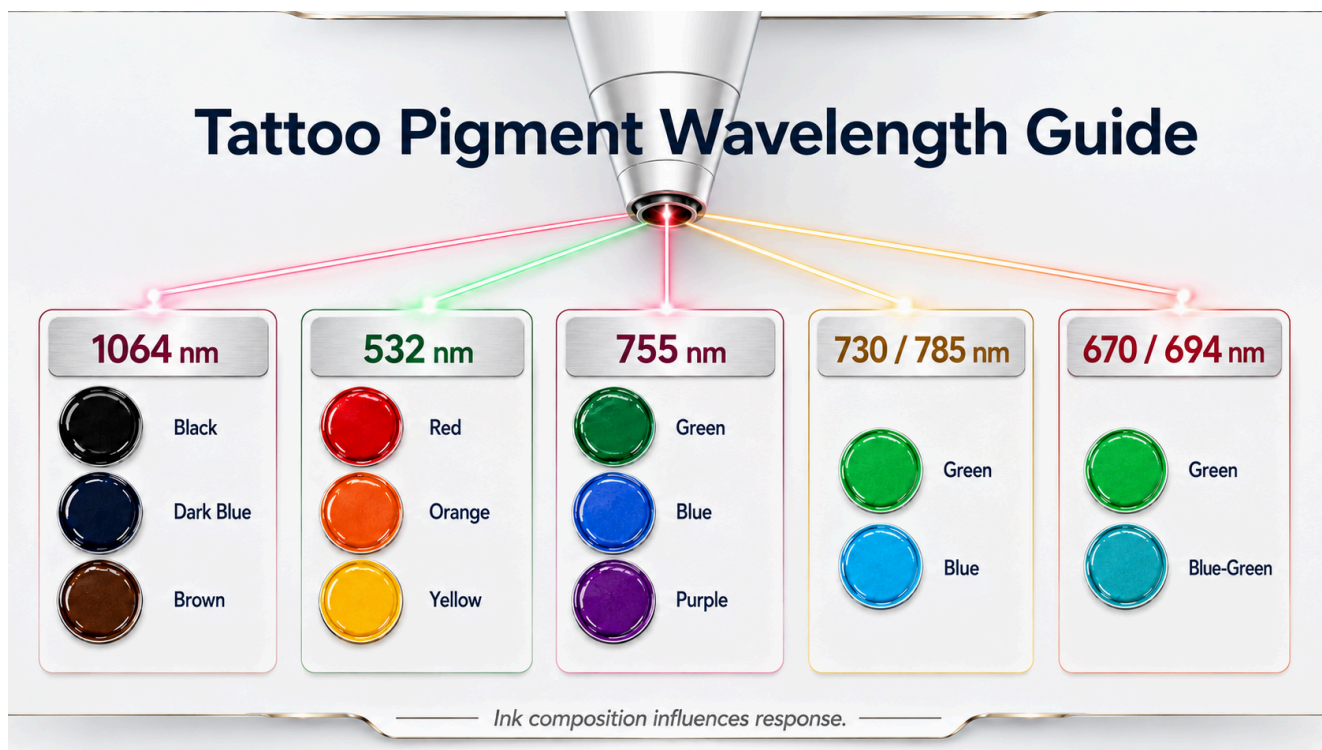
1. Tattoo removal

Tattoo pigment is not a single optical target. Different colors interact differently with different wavelengths, making wavelength selection a central purchasing issue.

Wavelength	Common treatment relevance
1064 nm	Black, brown and other dark tattoo pigments
532 nm	Red, orange, yellow and selected lighter pigments
755 nm	Selected dark, blue and green pigments
730 / 785 nm	Specialty blue/green targeting on certain platforms
670 / 694 nm	Specialty colored-ink applications on certain platforms

How to interpret this table

This wavelength table is a quick orientation tool rather than a treatment prescription. It shows why a buyer should resist evaluating a tattoo platform only by its maximum energy. A system centered on 1064 and 532 nm can cover a large share of common dark and warm-colored inks, while 755 nm and specialty wavelengths can add useful options for selected blue, green and other difficult pigments. The practical value of an additional wavelength depends on more than whether it appears on the specification sheet: the wavelength must be available at clinically useful energy, through an appropriate handpiece or delivery system, and within the FDA-cleared labeling for the exact configuration being purchased.



2. Benign pigmented lesions

Several pico platforms carry FDA-cleared benign-pigment indications. Depending on labeling, the treatment universe can include selected lentigines, ephelides/freckles, café-au-lait lesions, nevus of Ota and other benign epidermal or dermal pigment conditions.

3. Melasma and dyschromia

Melasma and selected dyschromias deserve their own category because evidence, recurrence risk, skin type and labeling are more nuanced than a generic 'pigment' claim. Certain established platforms have specific cleared or studied applications, but the exact device and handpiece must be verified.

4. Acne scars and scar remodeling

Fractional or focused picosecond delivery expanded the category into acne-scar treatment and tissue remodeling. These applications depend on the fractional architecture and labeling of the exact system, not simply on the presence of a picosecond source.

5. Wrinkles, fine lines and fractional skin applications

Certain platforms have FDA-cleared wrinkle and fractional applications. This can materially expand the addressable patient population beyond tattoo removal, especially in aesthetic practices focused on rejuvenation and skin quality.

6. Vascular lesions and facial veins

Facial veins belong in the broader platform discussion, but they are not a universal picosecond indication. Selected multi-mode platforms carry vascular indications using Q-switched, free-running or longer thermal pulse structures. Examples can include telangiectasias, spider angiomas, venous lakes, rosacea, leg veins or spider veins depending on the exact cleared mode.

7. Hair reduction

Hair reduction is likewise not a universal pico application. Certain multi-mode platforms in the category carry FDA-cleared hair-reduction indications using non-picosecond pulse architectures. A machine containing a long-pulse mode should not be credited with hair-removal capability unless its labeling supports that indication.

8. Active inflammatory acne

Active acne should be separated from acne scars. Selected multi-mode platforms have cleared inflammatory-acne applications under specific thermal modes; this does not mean conventional pico pulses universally treat active acne.

9. Additional selected dermatologic and soft-tissue indications

Some broad multi-mode platforms extend into additional dermatologic or soft-tissue indications. These may be irrelevant to many aesthetic buyers, but they demonstrate why 'pico platform' and 'pico pulse' should not be treated as synonyms.

The expanded treatment universe

Treatment category	Present among cleared platforms in this guide?	Typical technology	Universal pico capability?
Tattoo removal	Yes	Pico / Q-switched; wavelength dependent	Common, indications vary
Benign pigmented lesions	Yes	Pico / Q-switched	Common, indications vary
Melasma / selected dyschromia	Selected platforms	Platform/wavelength dependent	No
Acne scars	Yes	Fractional/focused pico	No
Wrinkles	Yes	Fractional pico / other cleared modes	No
Fractional skin applications	Yes, platform dependent	Fractional/microbeam delivery	No
Facial veins / vascular lesions	Selected multi-mode platforms	Usually non-pico thermal/QS modes	No
Hair reduction	Selected multi-mode platforms	Usually longer-pulse 1064 nm	No
Inflammatory acne	Selected platform/mode	Thermal/free-running mode	No
Additional soft-tissue uses	Selected platform/mode	Non-pico surgical/thermal modes	No

What this treatment map means for a buyer

The treatment universe is broader than the traditional 'tattoo and pigment' description of pico technology, but the table also shows why treatment claims must be separated by mechanism. Tattoo removal, benign pigmentation, acne scars and fractional applications are common reasons practices investigate pico systems. Facial veins, hair reduction and inflammatory acne appear only on selected multi-mode platforms and generally rely on non-picosecond pulse structures. In other words, a broad platform menu can improve capital utilization, but only when the applicable modes and indications are actually cleared and clinically useful. A buyer should therefore translate every checkmark or claimed application into a specific model, wavelength, handpiece, pulse mode and FDA-cleared indication.

BUYER'S RULE: Ask how much of your actual patient population the exact FDA-cleared configuration can address — not how many menu items appear in a marketing brochure.

Chapter 3 — The Six Specifications That Actually Matter

Technical specifications define the operating envelope. They do not define the treatment menu.

1. Wavelength

Determines which optical targets can be addressed efficiently. More wavelengths can create potential versatility, but only if the wavelength is sufficiently powered, usable and relevant to cleared applications.

2. Pulse Duration

Describes how quickly the pulse energy is delivered. Shorter pulses can increase calculated peak power at the same energy, but shorter is not automatically clinically superior.

3. Pulse Energy

Measured in millijoules. Ask for energy by wavelength, pulse duration, spot size, repetition rate and operating mode.

4. Spot Size & Fluence

Fluence is energy per unit area. Energy without spot size is incomplete information, and maximum energy may not be available at maximum spot size.

5. Beam Profile

Describes energy distribution across the spot. If uniformity is a major selling point, request measured beam-profile data.

6. Output Stability

Pulse-to-pulse variation, repetition-rate stability, thermal behavior and long-term output matter because a clinical laser must reproduce performance consistently.

Specification #7 that is not a specification: FDA-cleared treatment breadth

A machine can have extraordinary engineering specifications and still have a relatively narrow FDA-cleared treatment menu. Conversely, a less dramatic specification sheet may sit behind a broad and mature regulatory and clinical footprint.

Ask two separate questions: What can the machine physically produce? What is the machine cleared to treat?

The operating envelope

Wavelength + Pulse Duration + Pulse Energy + Spot Size + Fluence + Repetition Rate + Beam Quality + Output Stability

Chapter 4 — Major Pico Platforms Compared

Compare engineering, cleared treatment breadth and commercial fit separately.

Table 4A — Engineering snapshot

Platform	Core wavelengths / architecture	Representative pico characteristics	Fractional / delivery	Evidence maturity
Cynosure PicoSure Pro	Native 755 nm; optional 532/1064 delivery	755 nm ~500–900 ps; ~300 mJ ±20% native	Platinum Focus	Very high
Candela PicoWay	1064 / 532 / 730 / 785 nm	450 / 375 / 250 / 300 ps; energy varies by wavelength	Resolve / Resolve Fusion	Very high
Cutera enlighten III	1064 / 532 / 670 nm	~750 / 750 / 660 ps; pico + 2 ns	Micro Lens Array	High
Quanta System Discovery PICO Family	1064 / 532; 694 nm on Plus	~450 ps @1064; ~370 ps @532; multiple pulse modes	OptiBeam / fractional configurations	Moderate-high
Lutronic PICOPLUS	1064 / 532 + specialty handpieces	~450 ps + 2 ns; configuration dependent	Focused / dual-focused options	Moderate
Aesthetika PicoTech	1064 / 755 / 532 / 585 / 650 nm	350 ps nominal; 800 mJ @1064/755; 400 mJ @532; 250 mJ @585/650	755 Honeycomb MLA 1064 Fractional DOEs	Developing

Interpretation of the engineering snapshot

This table demonstrates that there is no single technical architecture that defines a modern pico platform. PicoSure Pro emphasizes a mature 755-nm Alexandrite heritage; PicoWay emphasizes wavelength breadth and a developed fractional ecosystem; enlighten III combines pico and nanosecond operation; Discovery PICO emphasizes high energy and multiple pulse structures; and PicoTech emphasizes a broad stated wavelength set with short nominal pulses and high stated energy at 1064 and 755 nm. PICOPLUS occupies a multi-mode Nd:YAG position but requires careful configuration-level verification. These differences are meaningful, but they should not be converted directly into a clinical ranking. Engineering specifications establish available tools and operating headroom; clinical evidence, clearance, reliability and practitioner technique determine how useful those tools become in practice.

Table 4B — Technical Capability vs. FDA-Cleared Treatment Capability

This table separates what each platform is technically capable of delivering from what has been established as FDA-cleared for the specific treatment or applicable operating mode. This prevents engineering capability from being mistaken for an FDA-cleared indication while still giving buyers a complete view of the platform.

Treatment / modality	Cynosure PicoSure Pro	Candela PicoWay	Cutera enlighten III	Quanta System Discovery PICO Family	Lutronic PICOPLUS	Aesthetika PicoTech
Tattoo removal	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes*
Benign pigmented lesions	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes*
Melasma / specified dyschromia	Yes Yes (selected labeling)	Yes Yes (selected configurations)	Yes Verify exact indication	Yes Mode/configuration dependent	Yes Verify exact indication	Yes No established clearance
Fractional / focused delivery	Yes Yes (Focus Array)	Yes Yes (Resolve / Fusion)	Yes Yes (MLA)	Yes Yes (specified configurations)	Yes Verify exact handpiece/indication	Yes No established clearance
Acne scars	Yes Yes (Focus Array)	Yes Yes (Resolve)	Yes Yes (MLA)	Yes Yes (specified configuration)	Yes Verify exact current labeling	Yes No established clearance
Wrinkles / fractional rejuvenation	Yes Yes (Focus Array)	Yes Yes (Resolve)	Yes Clearance depends on exact configuration	Yes Yes (specified configuration)	Yes Verify exact current labeling	Yes No established clearance
Q-switched / nanosecond operation	No conventional QS N/A	No conventional QS N/A	Yes - 2 ns Yes for applicable cleared uses	Yes - QS/ns Yes for applicable cleared uses	Yes - 2 ns Yes for applicable cleared uses	Yes Technical mode present** No additional clearance established
PTP / multi-pulse mode	No N/A	No N/A	Different pulse architecture Not treated as PTP clearance	Yes Clearance depends on indicated mode/use	Mode dependent Verify	Yes No additional clearance established
Long-pulse / photothermal mode	No N/A	No N/A	No conventional long-pulse mode established N/A	Yes Yes for specified non-pico indications	Not established in current comparison Verify	Yes No additional clearance established
Facial veins / vascular lesions	No dedicated vascular modality No	No dedicated vascular modality No	No dedicated vascular modality established No in current comparison	Yes Yes - specified non-pico modes	Potential technical capability depends on configuration Verify	Yes - long-pulse capability No
Hair reduction	No dedicated modality No	No dedicated modality No	No dedicated modality established No	Yes Yes - specified non-pico mode	Not established Verify	Yes - long-pulse capability No
Inflammatory acne	No dedicated modality No	No dedicated modality No	Not established No in current comparison	Yes Yes - specified non-pico mode	Not established Verify	Thermal capability present No
Additional soft-tissue / surgical uses	No No	No No	Configuration/labeling dependent Verify	Yes Yes - specified modes	Labeling dependent Verify	Technical capability not sufficient to claim No established clearance

How to read Table 4B: each cell is shown as Technical Capability | FDA Clearance. “Technical capability” means the platform can physically provide the relevant wavelength, pulse structure, fractional delivery, or treatment-enabling modality. “FDA clearance” means the report has established FDA-cleared labeling for that specific application or applicable mode. A technically available but uncleared application may be used off-label by an appropriately licensed practitioner when clinically appropriate, but it should not be represented as an FDA-cleared indication.

This statement means that a medical laser may be physically capable of performing a treatment even though the FDA has not reviewed or cleared that particular treatment indication. For example, a legally marketed laser might contain a wavelength or handpiece that a physician believes could be clinically useful for treating a particular pigment color or skin condition. If that treatment is not included in the device’s FDA-cleared labeling, it is an off-label use—even if the wavelength is scientifically plausible, commonly used on similar devices, or supported by published literature.

The key distinction is between clinical use and commercial promotion. A qualified healthcare practitioner may generally use a legally marketed medical device outside its cleared labeling when the practitioner independently determines that the use is medically appropriate for an individual patient. This is part of the practice of medicine, which is primarily governed by state law and professional licensing boards.

However, the practitioner remains responsible for:

- Acting within their professional scope of practice
- Following applicable state supervision and delegation rules
- Having sufficient training and competency
- Evaluating the available clinical evidence
- Selecting appropriate treatment parameters
- Obtaining adequately informed patient consent
- Documenting the clinical rationale
- Meeting the applicable professional standard of care
- Managing complications and adverse events

Off-label does not automatically mean illegal, experimental, or improper. But it also does not mean the FDA has determined that the treatment is safe and effective for that particular purpose. A function can be technically available because the system contains the necessary wavelength, pulse mode, energy range, or handpiece. That establishes technical capability, not regulatory clearance.

Interpretation of FDA-cleared treatment breadth

This is one of the most important tables in the guide because it prevents technical features from being mistaken for treatment indications. Established platforms such as PicoSure Pro, PicoWay and enlighten III show how specific fractional handpieces can expand cleared applications into acne scars, wrinkles or other skin treatments. Discovery PICO stands out for broader multi-mode treatment breadth, but several of those additional indications are associated with non-picosecond modes and should not be interpreted as proof that pico pulses treat hair, veins or inflammatory acne. PicoTech is intentionally treated conservatively: the guide credits the cleared tattoo and benign-pigment uses established for the configuration being evaluated and does not award treatment credit to its additional engineering modes where corresponding FDA clearance has not been established.

Table 4C — Advantages, tradeoffs, price and best fit

Platform	Primary strength	Primary tradeoff	Estimated acquisition range*	Standard Warranty Length	Potential best fit
Cynosure PicoSure Pro	Clinical heritage; native 755-nm pedigree; mature evidence	Core architecture centered on 755 nm; premium economics	~\$150k–\$220k	1 year standard	Evidence-first premium buyer
Candela PicoWay	Wavelength breadth; mature fractional ecosystem	Lower max full-beam energy than some competitors; configuration complexity	~\$150k–\$210k	1 year standard	Tattoo/pigment practice wanting wavelength flexibility
Cutera enlighten III	Multi-wavelength; pico + 2 ns; MLA acne-scar capability	Longer pico pulses than several competitors	~\$140k–\$195k	1 year standard	Broad dermatology/aesthetic practice
Quanta System Discovery PICO	High energy; technical flexibility; unusually broad cleared multi-mode treatment menu	Configuration complexity; some added uses are not pico-pulse indications	~\$120k–\$170k	1 year standard	Buyer valuing multi-mode treatment breadth
Lutronic PICOPLUS	Established multi-mode Nd:YAG alternative	Exact current U.S. labeling/specifications require configuration verification	~\$70k–\$120k provisional	1 year standard	Buyer wanting established alternative
Aesthetika PicoTech	Broad wavelength set; short nominal pulses; high stated 1064/755 energy; value proposition	Newer evidence/field history; additional PTP/long-pulse modes are not credited as treatment capabilities	~\$60K	2 years standard	Value-conscious buyer willing to validate a newer platform

Interpretation of advantages, tradeoffs and price

The commercial comparison highlights a recurring tradeoff between maturity and acquisition economics. Premium platforms command higher estimated acquisition costs in part because buyers are purchasing more than hardware: they may also be purchasing a larger installed base, established protocols, published evidence, service infrastructure, brand recognition and potentially stronger resale familiarity. A newer or lower-cost platform can still offer compelling value, particularly when its technical operating envelope is broad, but the buyer assumes more responsibility for validating service, reliability, training and real-world performance. Estimated price should therefore be evaluated as one component of risk-adjusted value rather than as a stand-alone ranking. Actual quotes can also vary substantially with handpieces, warranty, training, financing, promotions and service agreements.

**Estimated acquisition ranges are not verified universal MSRPs and should be refreshed before publication.*

Chapter 5 — Operating Envelope & Fluence Comparisons

These tables compare engineering output, not clinical effectiveness.

Maximum J/cm² indicates available fluence under specified conditions. It does not establish that the maximum should be used clinically, that different wavelengths are biologically equivalent, or that higher fluence produces a better outcome.

1064 nm / 2-mm spot

Rank	Platform	Pulse duration	Max energy	2-mm fluence	Evidence status
1 tie	Aesthetika PicoTech	350 ps	800 mJ	25.46 J/cm ²	Documented for project
1 tie	Quanta System Discovery PICO	~450 ps	800 mJ	25.46 J/cm ²	Theoretical; exact 2-mm combination requires verification
1 tie	Lutronic PICOPLUS	~450 ps	800 mJ	25.46 J/cm ²	Theoretical; requires verification
4	Cutera enlighten III	750 ps	600 mJ	19.10 J/cm ² theoretical	Published max fluence is lower; do not treat as selectable 2-mm setting
5	Candela PicoWay	450 ps	400 mJ	12.73 J/cm ² theoretical	Full energy at 2 mm should be verified
6	Cynosure PicoSure Pro	≤900 ps	60 mJ	1.91 J/cm ²	Documented 2-mm value

What the 1064-nm fluence comparison tells us

At a standardized 2-mm spot, the calculation makes large differences in theoretical energy density easy to see. PicoTech, Discovery PICO and PICOPLUS occupy the top of this table based on the maximum-energy figures assembled for the report, while PicoWay and PicoSure Pro show lower calculated values under the same mathematical condition. The important limitation is that a theoretical calculation is not automatically a selectable device setting. Maximum pulse energy, minimum spot size and other operating limits may not be available simultaneously. This table should therefore be read as an operating-envelope comparison, not as a treatment recommendation or outcome ranking. A buyer should ask the manufacturer to document the exact energy available at the exact 2-mm spot and pulse mode before relying on the calculated fluence.

532 nm / 2-mm spot

Rank	Platform	Pulse duration	Max energy	2-mm fluence	Evidence status
1	Aesthetika PicoTech	350 ps	400 mJ	12.73 J/cm ²	Documented for project
2 theoretical	Quanta System Discovery PICO	~370 ps	300 mJ	9.55 J/cm ²	2-mm pico setting not established
2 theoretical	Lutronic PICOPLUS	~450 ps	300 mJ	9.55 J/cm ²	2-mm pico setting not established
4	Candela PicoWay	375 ps	200 mJ	~6.25 J/cm ²	2-mm maximum documented in project research
5	Cutera enlighten III	750 ps	300 mJ	≤2.5 J/cm ² platform max	Do not infer theoretical 9.55 as available
6	Cynosure PicoSure Pro	≤750 ps	20 mJ	~0.64 J/cm ²	Calculated from documented energy and 2-mm handpiece

What the 532-nm fluence comparison tells us

The 532-nm table reinforces the same lesson while focusing on a wavelength commonly relevant to red, orange and other selected superficial pigment targets. PicoTech's current project specification produces the highest calculated 2-mm value in this comparison. Discovery PICO and PICOPLUS also show high theoretical values, but the exact 2-mm maximum-energy combinations require verification. The enlighten III row is especially instructive: dividing its maximum pulse energy by the area of a 2-mm spot would produce a much larger theoretical number than the published platform maximum fluence, demonstrating why simple arithmetic can overstate a real selectable setting. Buyers should prefer manufacturer operating-range documentation over extrapolation whenever the two differ.

755 / specialty wavelength / 2-mm spot

Rank	Platform	Closest wavelength	Pulse duration	Max energy	2-mm fluence	Status
1	Aesthetika PicoTech	755 nm	350 ps	800 mJ	25.46 J/cm ²	Current project specification
2	Cynosure PicoSure Pro	755 nm	500–900 ps	300 mJ ±20%	9.55 J/cm ² theoretical	Verify full nominal energy at 2 mm
3	Candela PicoWay	730 / 785 nm	250 / 300 ps	100 mJ	3.18 J/cm ²	Calculated; 2-mm spots documented
—	Cutera enlighten III	670 nm	~660 ps	Configuration dependent	Verify	Not wavelength-identical
—	Discovery PICO Plus	694 nm	Ruby architecture	Configuration dependent	Not ranked	Not directly comparable
—	Lutronic PICOPLUS	660 nm	Handpiece dependent	Configuration dependent	Verify	Exact envelope not established

What the specialty-wavelength comparison tells us

Specialty wavelengths can be strategically important because tattoo colors and pigment targets do not all respond equally to 1064 or 532 nm. The comparison shows substantial stated 755-nm energy for PicoTech and the established native 755-nm architecture of PicoSure Pro, while PicoWay approaches selected blue/green targets with 730- and 785-nm wavelengths. Other systems use nearby but not identical wavelengths, such as 670 or 694 nm. Those wavelengths should not be treated as interchangeable simply because they occupy a similar region of the spectrum. Absorption characteristics, pulse duration, beam delivery, energy, spot size and labeling all matter. The buyer's objective should be to determine whether the specialty wavelength adds a clinically and economically useful capability for the patient mix the practice expects to treat.

Higher available fluence is headroom, not a clinical prescription and not evidence of clinical superiority.

Chapter 6 — How Much Confidence Should You Place in the Machine?

Specifications tell you what may be possible. Evidence tells you what you should believe.

The three levels of a treatment claim

Level	Question	What it means
1 — Technically Possible	Can the machine physically produce the wavelength, pulse structure or energy?	Engineering capability
2 — FDA Cleared	Does the exact device/configuration have labeling supporting the intended use?	Regulatory status
3 — Clinically Validated	Does meaningful platform-specific evidence support safety and effectiveness?	Clinical confidence

How to use the three-level evidence framework

This framework is designed to stop three very different claims from collapsing into one. 'Technically possible' means the hardware or software can generate a mode or output. 'FDA cleared' means the applicable device configuration has regulatory labeling supporting a specified intended use. 'Clinically validated' asks a different question: how much meaningful evidence supports safety and effectiveness in the relevant population and application? A sophisticated purchasing review should move through all three levels. Engineering capability without clearance should not be marketed as a cleared treatment. Clearance without a substantial evidence base may still leave clinical uncertainty. And even a well-studied platform must be evaluated for service, reliability and economics. The strongest purchasing case is built when all three levels align.

TECHNICALLY POSSIBLE ≠ FDA CLEARED ≠ CLINICALLY VALIDATED

Read the FDA clearance at the configuration level

Do not stop at 'Is this laser FDA cleared?' Ask for the FDA documentation for the exact model, wavelength, handpiece, operating mode and indication. This prevents a platform-level clearance from being stretched into claims about modes or applications that were not part of the cleared labeling.

For PicoTech, this means the additional PTP, Multi Pulse, Long Pulse and Long Pulse Pro modes may be described as engineering modes where documented, but they are not credited in this guide as hair-removal, vascular or other treatment capabilities without applicable FDA clearance.

Evaluate the depth of clinical evidence

- How many platform-specific studies exist?
- Were they peer reviewed and independently assessed?
- How many subjects were included and which Fitzpatrick skin types were represented?
- Was the exact commercial device and handpiece used?
- What treatment parameters were studied?
- How long was follow-up?
- What adverse events and recurrence rates were reported?

A before-and-after gallery can be useful for illustration, but it is not equivalent to a controlled or independently assessed clinical study.

Engineering validation answers a different question

- Pulse energy accuracy
- Pulse duration
- Beam profile / homogeneity
- Pulse-to-pulse variation
- Wavelength accuracy
- Output at different repetition rates
- Thermal stability

- Long-term output over cumulative pulse count

The supplied PicoTech FieldMax II meter test is useful evidence that the tested unit produced energy above its nominal 800-mJ rating, with visible readings around 823–830 mJ. That observation supports energy output under the conditions tested. It does not independently validate pulse duration, every wavelength, beam uniformity, long-term stability or clinical outcomes.

Reliability: the specification nobody advertises

- Mean time between failures / service-call frequency
- Average service-response time
- Parts availability
- Preventive-maintenance requirements
- Warranty duration and exclusions
- Post-warranty service cost
- Loaner-machine policy
- Handpiece replacement and consumable costs

A technically powerful laser that is frequently unavailable can be economically inferior to a less dramatic system with high uptime and dependable service.

The evidence premium

An established platform's higher acquisition cost may partly purchase reduced uncertainty: clinical history, protocol maturity, physician familiarity, service infrastructure, installed-base experience and resale recognition. A newer platform may still represent superior value if its acquisition savings are large enough and performance, service and support can be independently validated.

Risk-adjusted economics

Monthly ownership cost ÷ contribution margin per treatment = treatments required each month to cover equipment cost

Illustrative monthly ownership cost	Contribution margin per treatment	Treatments/month to cover equipment cost
\$3,000	\$375	8
\$5,000	\$375	14
\$8,000	\$375	22

How to interpret the break-even examples

The break-even table converts capital cost into an operational question a practice can manage: how many incremental treatments are needed each month to cover the equipment's monthly ownership burden? The examples are intentionally illustrative, because actual contribution margin depends on local pricing, consumables, labor, marketing, financing, maintenance and treatment mix. Still, the relationship is useful. At a \$375 contribution margin, moving from \$3,000 to \$8,000 in monthly ownership cost increases the illustrative requirement from 8 to 22 treatments per month. A lower acquisition price can therefore materially reduce utilization pressure. The calculation should be repeated using the practice's own financing terms and conservative treatment-volume assumptions rather than optimistic manufacturer projections.

The cheapest laser is not automatically the best value, and the most established laser is not automatically worth any premium. The purchasing question is how much capability and confidence the practice receives for each dollar of total ownership cost.

Chapter 7 — Final Assessment, Conclusions & Buyer Checklist

The pico market should be evaluated as a spectrum of platforms, not a single-purpose tattoo-removal category.

What the full report tells us

- Picosecond technology remains foundational to tattoo and pigment treatment, but the modern platform category extends into fractional acne-scar and wrinkle applications and, on selected multi-mode systems, additional FDA-cleared vascular, hair and acne applications.
- Not every treatment available on a pico-category platform is performed with a picosecond pulse. Pulse architecture and cleared labeling must be identified.
- Treatment breadth varies materially among models. It should therefore be considered alongside wavelength, pulse duration, energy and fluence when evaluating capital value.
- The correct technical comparison is the operating envelope, not the largest number on a brochure.
- The correct clinical comparison is the evidence base, not the operating envelope alone.
- The correct regulatory comparison is the exact model/wavelength/handpiece/mode/indication — not simply whether the overall platform is 'FDA cleared.'
- Established premium systems retain meaningful advantages in publication history, installed-base maturity, protocol familiarity and reduced uncertainty.
- PicoTech's current strongest defensible proposition is specification-level breadth and value, not a claim of broader FDA treatment clearance or proven clinical superiority.
- Higher available fluence represents operating headroom, not a treatment recommendation.
- The final capital decision should be based on risk-adjusted value: capability + confidence + economics.

Final platform assessment

Platform	Primary strength	Primary tradeoff	Estimated acquisition range*	Standard Warranty Length	Buyer profile
Cynosure PicoSure Pro	Clinical heritage; native 755-nm pedigree; mature evidence	Core architecture centered on 755 nm; premium economics	~\$150k–\$220k	1 year standard	Evidence-first premium buyer
Candela PicoWay	Wavelength breadth; mature fractional ecosystem	Lower max full-beam energy than some competitors; configuration complexity	~\$150k–\$210k	1 year standard	Tattoo/pigment practice wanting wavelength flexibility
Cutera enlighten III	Multi-wavelength; pico + 2 ns; MLA acne-scar capability	Longer pico pulses than several competitors	~\$140k–\$195k	1 year standard	Broad dermatology/aesthetic practice
Quanta System Discovery PICO	High energy; technical flexibility; unusually broad cleared multi-mode treatment menu	Configuration complexity; some added uses are not pico-pulse indications	~\$120k–\$170k	1 year standard	Buyer valuing multi-mode treatment breadth
Lutronic PICOPLUS	Established multi-mode Nd:YAG alternative	Exact current U.S. labeling/specifications require configuration verification	~\$70k–\$120k provisional	1 year standard	Buyer wanting established alternative
Aesthetika PicoTech	Broad wavelength set; short nominal pulses; high stated 1064/755 energy; value proposition	Newer evidence/field history; additional PTP/long-pulse modes are not credited as treatment capabilities	~\$60k	2 years standard	Value-conscious buyer willing to validate a newer platform

How to interpret the final platform assessment

The final assessment should be read as a fit matrix, not a declaration of a universal winner. PicoSure Pro and PicoWay are attractive when evidence maturity, brand history and established workflows carry significant weight. enlighten III offers a broad dermatology-oriented architecture, while Discovery PICO combines high energy with unusually broad multi-mode cleared capabilities. PICOPLUS can represent an established alternative but requires configuration-specific verification. PicoTech's strongest current case is different: a broad stated wavelength and energy envelope paired with a value-oriented acquisition proposition, offset by a younger evidence base and less mature field history. The best choice therefore depends on the buyer's patient mix, risk tolerance, service expectations, desired treatment portfolio and required return on invested capital. Warranty also changes early ownership risk: Cynosure, Candela and Cutera document approximately one year of standard coverage, while the current Aesthetika PicoTech offering provides two years of parts-and-labor coverage. For Quanta System Discovery PICO and Lutronic PICOPLUS, this draft recommends verifying the exact current U.S. warranty in the purchase quotation rather than assuming a universal term.

What This Report Does Not Cover

This report compares technical specifications, treatment capabilities, FDA-clearance status, clinical evidence, acquisition cost, warranty coverage and other factors that can be reasonably documented. It does not, however, provide a complete comparative analysis of long-term reliability or total cost of ownership because consistent, independently verifiable data are not publicly available across all platforms reviewed.

- Reliability rates - comparative failure rates over a defined ownership period.
- Breakdown frequency - average service events, downtime or mean time between failures.
- Repair costs - typical post-warranty costs for laser sources, power supplies, optics, handpieces, cooling systems, electronics, labor and technician travel.
- Maintenance costs - scheduled preventive maintenance, calibration, consumables and recurring service expenses.

These omissions matter. A lower-priced laser can become more expensive to own if failures, repairs or downtime are frequent; a higher-priced system may justify part of its premium through superior uptime, parts availability or service support. Accordingly, the acquisition-price comparisons in this report should not be interpreted as total-cost-of-ownership comparisons.

The report therefore cannot determine which platform has the lowest long-term total cost of ownership because comparable independent data on reliability, breakdown frequency, repair expense, maintenance cost and downtime were not available for all systems evaluated.

Before purchase, buyers should request written information on warranty exclusions, preventive-maintenance costs, post-warranty service-contract pricing, typical repair charges, parts availability, service-response times and loaner-system policies.

The seven questions to answer before signing

1. Does this platform have the wavelengths and treatment capabilities my practice will actually use?
2. Which of those treatments are FDA cleared for the exact configuration I am purchasing?
3. Which capabilities are merely technically possible versus clinically and regulatorily supported?
4. Can the manufacturer document the complete operating envelope rather than only headline maximums?
5. What independent clinical and engineering evidence supports the exact system?
6. What happens when the machine needs service, and what does downtime cost my practice?
7. How many treatments must I perform each month for the investment to make financial sense?

FINAL BUYER'S RULE: Do not buy the most impressive brochure. Buy the combination of FDA-cleared treatment breadth, engineering capability, clinical evidence, reliability, service and economics that best matches your practice.

Notes & Source Qualifications

1. PicoTech specifications used in this draft reflect the current project knowledge base: 350 ps nominal pulse duration; 800 mJ at 1064 and 755 nm; 400 mJ at 532 nm; 250 mJ at 585 and 650 nm; 2–10 mm adjustable spot; 1–10 Hz; flat-top beam profile.

2. The Aesthetika PicoTech additional PTP, Multi Pulse, Long Pulse and Long Pulse Pro modes are shown as technical capabilities in Table 4B, but they are not represented as FDA-cleared hair-removal, vascular, acne or other additional treatment indications because applicable clearance for those uses has not been established in this project.

3. The supplied PicoTech FieldMax II test video showed visible readings above the nominal 800-mJ rating, approximately 823–830 mJ. It is described as an independent energy-output observation rather than comprehensive laboratory validation.

4. PicoSure Pro, PicoWay, enlighten III, Discovery PICO and PICOPLUS specifications and indications vary by configuration, generation, wavelength and handpiece. The final publication should cite the exact current U.S. manufacturer and FDA documents for each table entry.

5. Discovery PICO family treatment breadth includes applications associated with non-picosecond operating modes. Those capabilities should not be described as proof that picosecond pulses themselves treat hair, vascular lesions or inflammatory acne.

6. Estimated acquisition ranges are market estimates, not verified universal manufacturer list prices. Replace with documented current quotes where possible before publication.
7. Fluence calculations use $\text{area} = \pi r^2$. A 2-mm diameter spot has an area of approximately 0.031416 cm². Theoretical values are not represented as selectable clinical settings unless the exact operating combination is documented.
8. Warranty comparison: Cynosure current U.S. terms specify the shorter of 12 months from installation or 15 months from receipt; Candela current product terms specify one year from shipment unless sales documents provide otherwise; Cutera states a one-year standard system warranty. The current Aesthetika PicoTech project offering specifies two years parts and labor.
9. This guide is a capital-equipment decision aid and does not provide treatment parameters or medical advice.