PDF Document

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"title": "RF Cavitation Lipo Laser 6-in-1 Platform - Official Clinical Overview & Technical Datasheet",

"content": "PRODUCT IDENTIFICATION AND CLINICAL SCOPE\n\nThe RF Cavitation Lipo Laser 6-in-1 Platform represents a paradigm-shifting convergence of six evidence-based aesthetic modalities within a single, space-optimized chassis. Intended for professional use in medical spas, dermatology clinics, and plastic surgery centers, this system integrates: (1) Multi-wavelength diode laser lipolysis (755nm/808nm/1064nm), (2) 40kHz Ultrasonic Cavitation, (3) 2MHz Radio Frequency (RF) for dermal tightening, (4) Quadrupole RF for deep volumetric heating, (5) 650nm Low-Level Laser Therapy (LLLT) for photorejuvenation, and (6) Vacuum-assisted massage for lymphatic drainage.\n\n[IMAGE_1]\n\nINTERNAL HARDWARE TOPOLOGY AND ENERGY GENERATION PIPELINE\n\nThe platform employs a modular power supply architecture delivering 1800W peak optical and RF energy. The diode laser array utilizes conduction-cooled, hermetically sealed bars with a lifespan exceeding 50,000 hours. Ultrasonic cavitation operates at a fixed frequency of 40kHz with an acoustic intensity adjustable up to 0.8 W/cm², producing stable cavitation bubbles for adipocyte membrane disruption. The RF subsystem implements a class-E resonant power amplifier enabling selectable monopolar
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(4MHz) and bipolar (1MHz & 2MHz) modes, with active impedance matching to maintain constant power delivery despite tissue conductivity changes.\n\nEPIDERMAL PROTECTION AND THERMAL DISSIPATION MECHANISMS\n\nTo ensure non-invasive adipocyte reduction without adjacent thermal injury, the system incorporates a quadruple-layer cooling hierarchy: (A) Contact TEC (Thermoelectric Cooler) module maintaining sapphire window temperature at 2°C to 6°C, (B) closed-loop water circulation (flow rate 1.2 L/min) with independent radiator, (C) variable-speed centrifugal fan (airflow 45 CFM), and (D) real-time thermal feedback via two NTC thermistors per handpiece. The system auto-interrupts emission when skin surface temperature exceeds 42 ° C, per IEC 60601-2-22 safety limits.\n\nTECHNICAL SPECIFICATIONS\n\nLaser Diode Type: Epitaxial GaAs/AlGaAs, multi-bar configuration\nOptical Wavelengths: 755nm (±10nm), 808nm (±10nm), 1064nm (±10nm)\nLaser Maximum Output Power: 60W (combined), software-limited to 45W for safety overrides\nUltrasonic Cavitation Power: 40kHz, 80W continuous acoustic power, pulsed mode available (50% duty cycle)\nRF Output Modes: Monopolar (4MHz, 150W max), Bipolar (1MHz/2MHz, 120W max)\nLLLT Wavelength: 650nm (±5nm), 30mW per probe (contact stimulation mode)\nVacuum Pressure Range: -5 kPa to -85 kPa, programmable per phase\nPower Supply: Universal AC 100-240V, 50/60Hz, 1800VA max consumption\nFuse Protection: Dual 15A (250V) time-delay fuses per IEC 60127\nDimensions (WxDxH): 48cm x 42cm x 110cm (19” x 16.5” x

43.3”)\nNet Weight: 38kg (83.8 lbs) excluding consumables\nStandby Power: 12W, Energy Star Level VI compliant\n\n[TABLE_1]\n\nCLINICAL PROTOCOLS AND VERIFIED TREATMENT PARAMETERS\n\nFor abdominal adiposity reduction (protocol version 2.3): Pre-heat the treatment area using bipolar RF (2MHz, 80W) for 8 minutes to raise dermal temperature to 40°C. Follow with 40kHz cavitation at 0.6 W/cm², 40% duty cycle, using vacuum-assisted handpiece (60 kPa) in circular motion for 20 minutes per quadrant. Finalize using 808nm diode laser (22W, 150ms pulse width, 0.5 J/cm² fluence) for 10 minutes to enhance adipocyte membrane permeabilization. Maximum session duration: 60 minutes total. Recommended interval: 7 to 10 days between treatments. Typical treatment course: 6 to 8 sessions. Maintain a minimum 4cm distance between adjacent treatment fields to avoid thermal stacking.\n\n[IMAGE_2]\n\nCOMPLIANCE, STANDARDS, AND QUALITY ASSURANCE\n\nThe RF Cavitation Lipo Laser 6-in-1 Platform bears CE Mark (Class IIb, MDD 93/42/EEC as amended by 2007/47/EC) and FDA 510(k) clearance as a non-significant risk device for adipose tissue remodeling. Manufacturing is ISO 13485:2016 certified. The device complies with: IEC 60825-1:2014 (laser safety Class 4 with engineering controls), IEC 60601-1:2012 (basic safety), IEC 60601-2-22:2019 (laser equipment specific safety), IEC 60601-1-2:2014 (EMC, 4th edition), and RoHS 2011/65/EU. Included in the compliance register is a full Type Test Report (EN 60601 series) and a biocompatibility assessment per ISO 10993-1 for all patient-contacting

materials (sapphire tip, ABS handpiece shell, medical-grade silicone sealing). Field safety corrective action (FSCA) traceability system in accordance with 21 CFR 806. The device is contraindicated for patients with cardiac pacemakers, pregnancy, active malignancies, hemorrhagic disorders, or implanted electronic devices in the treatment field.",

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"A high-quality 4K realistic promotional image showing a sleek, modern generic aesthetic machine in a bright, luxurious clinical setting, high tech medical vibe, unbranded chassis, no text.",

"A high-quality 4K realistic close-up image showing the premium generic treatment handpiece, sapphire cooling tip, or smart interface of the aesthetic equipment, professional studio lighting, unbranded components, no text."

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["Laser Type / Wavelengths", "755nm, 808nm, 1064nm diode laser (multi-wavelength)"],

["Spot Size (Laser Handpiece)", "12mm x 12mm square (stacked bar configuration)"],

["Cooling System", "TEC + Sapphire contact cooling + Water circulation

(closed loop) + Variable speed fan"],

["RF Cavitation Frequency", "40kHz (Ultrasonic adipolysis mode)"],

["RF Tightening Frequencies", "1MHz (bipolar deep dermal), 2MHz (bipolar superficial), 4MHz (monopolar volumetric)"],

["Vacuum Assist Pressure Range", "-5 kPa to -85 kPa (programmable increments of 5 kPa)"],

"Laser Maximum Peak Power" ["60W (total across all wavelengths, software-limited to 45W for safety presets)"],

["Treatment Interface", "10.4-inch industrial capacitive touchscreen, real-time impedance and temperature feedback"],

["Patient Contact Materials", "Sapphire crystal (cooling tip), medical-grade ABS, silicone elastomer seal"]

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