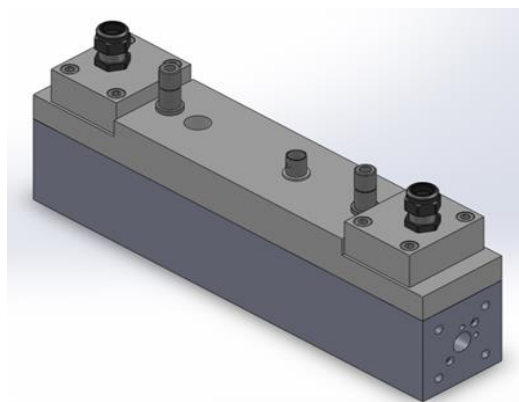


30 Watt 2.94 μm SOLID-STATE RESONATOR

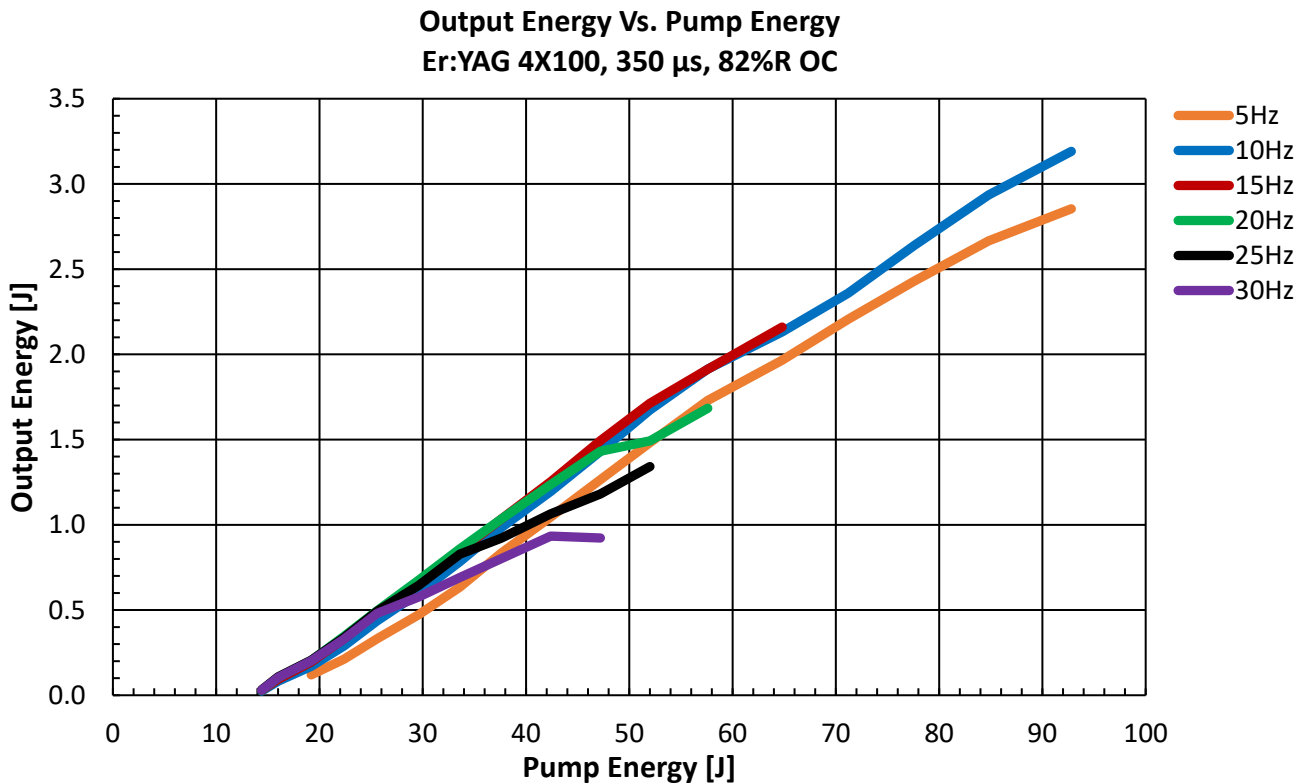
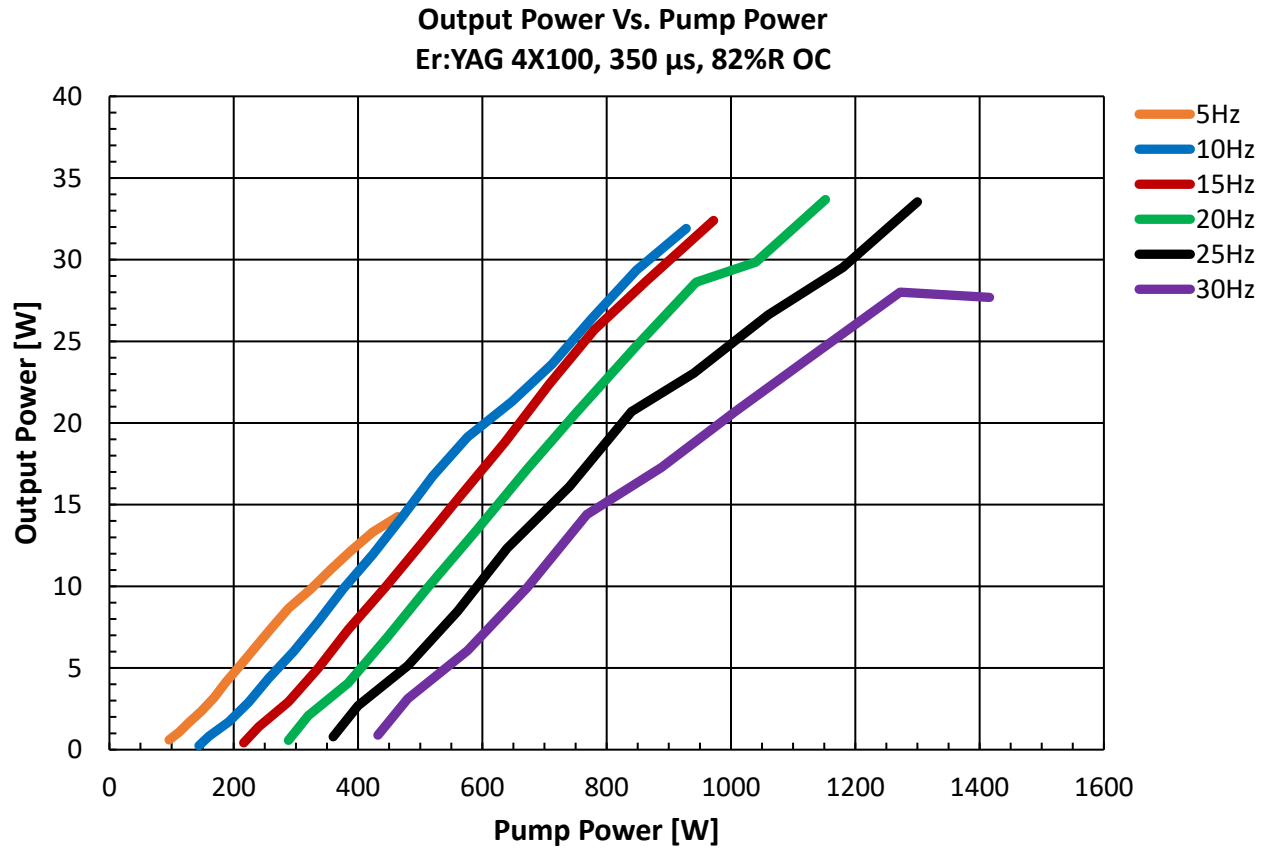


Erbium	
68	167.259
Er	
[Xe] 4f ¹² 6s ²	
175 pm	589.3 kJ·mol ⁻¹
3	9066 kg·m ⁻³
1.24	1529/2868 °C

Compact, Room-Temperature Water-Cooled, Flashlamp-Pumped Er:YAG Resonator Assembly

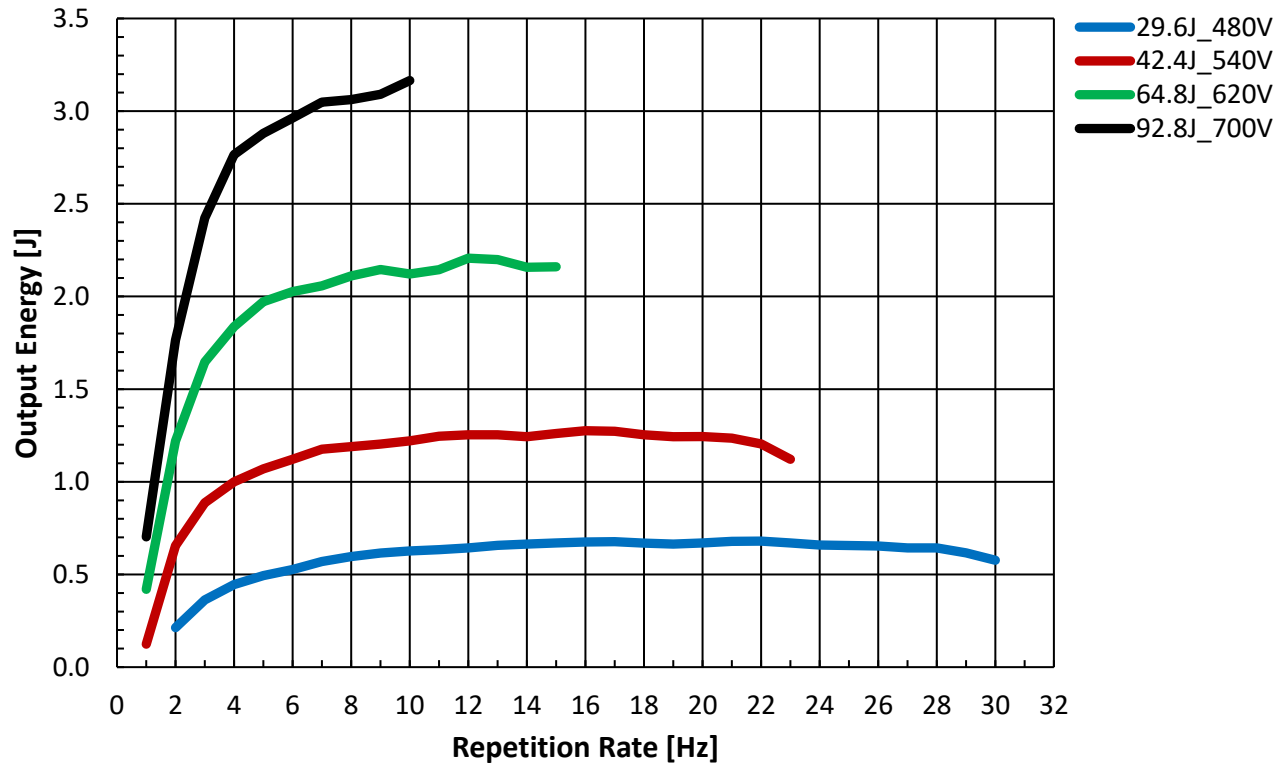
MegaWatt Lasers is pleased to offer off-the-shelf laser resonator assemblies. These resonators are intended for OEM's or R&D applications. Resonator assemblies include pump chamber, flashlamp, laser rod, trigger electronics, and resonator optics tailored for the specific application. This resonator assembly is perfectly suited as a laboratory laser which can easily transform into an OEM design. Also available are resonator assemblies using other solid-state laser media, such as CTH:YAG, Er:Glass, Nd:YAG, Nd: Glass, Ruby, and Alexandrite. MegaWatt Lasers also offers custom resonators with higher average powers 40 W (2.09 μm) and 200 W @ (1.06 μm) as well as turnkey systems. Our Engineering department has considerable experience assisting OEM customers with custom as well as complete system designs.

Table of Standard Specifications			
Parameter	Value	Unit	Notes
Wavelength	2.94	μm	
Resonator Output	30	W	10 – 30 Hz
Lamp Voltage	Nominal: 380 – 700	V	Typical range
Pulse Width	Nominal: 100 – 500	μs	350 μs Typical
Coolant Temp	25	°C	Deionized or Distilled H ₂ O, Free from organic contamination
Coolant Flow Rate	8 – 10	Liters/min	2 Gallons/min
Coolant Resistivity	0.2 – 1	M Ω ·cm	Coolant Conductivity: 1 – 5 $\mu\text{S}/\text{cm}$
Pressure Drop	200 – 240	kPa	Return pressure should be < 35 kPa
Repetition Rate	5 – 30	Hz	Typical range
Recommended Pump Parameters Limits			
Energy	≤ 100	Joules	Pump energy is manually measured or the flash lamp driver has internal circuitry to measure.
Power	≤ 1300	Watts	Pump Energy * Repetition Rate
Peak Power	≤ 265	kW	Pump Energy / Pulse Width

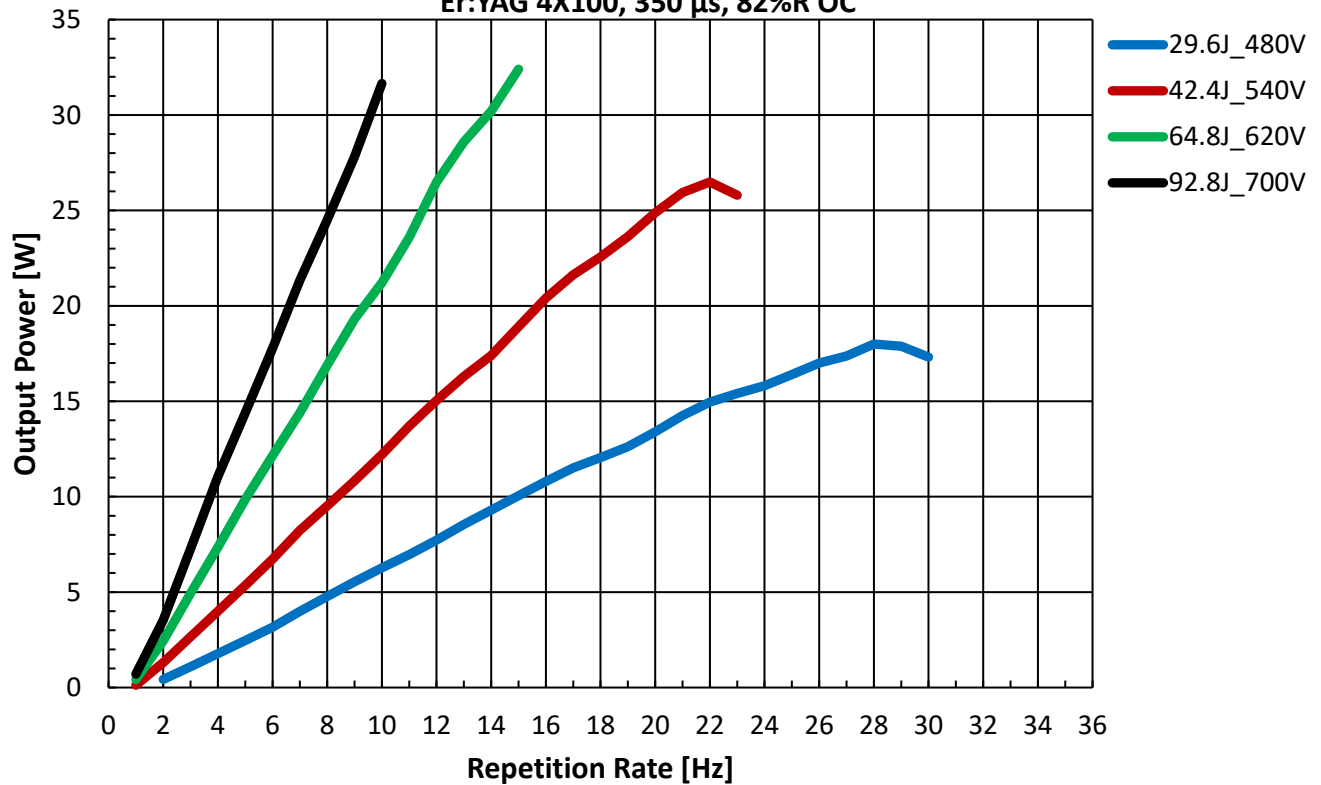




Output Energy Vs. Repetition Rate
Er:YAG 4X100, 350 μ s, 82%R OC

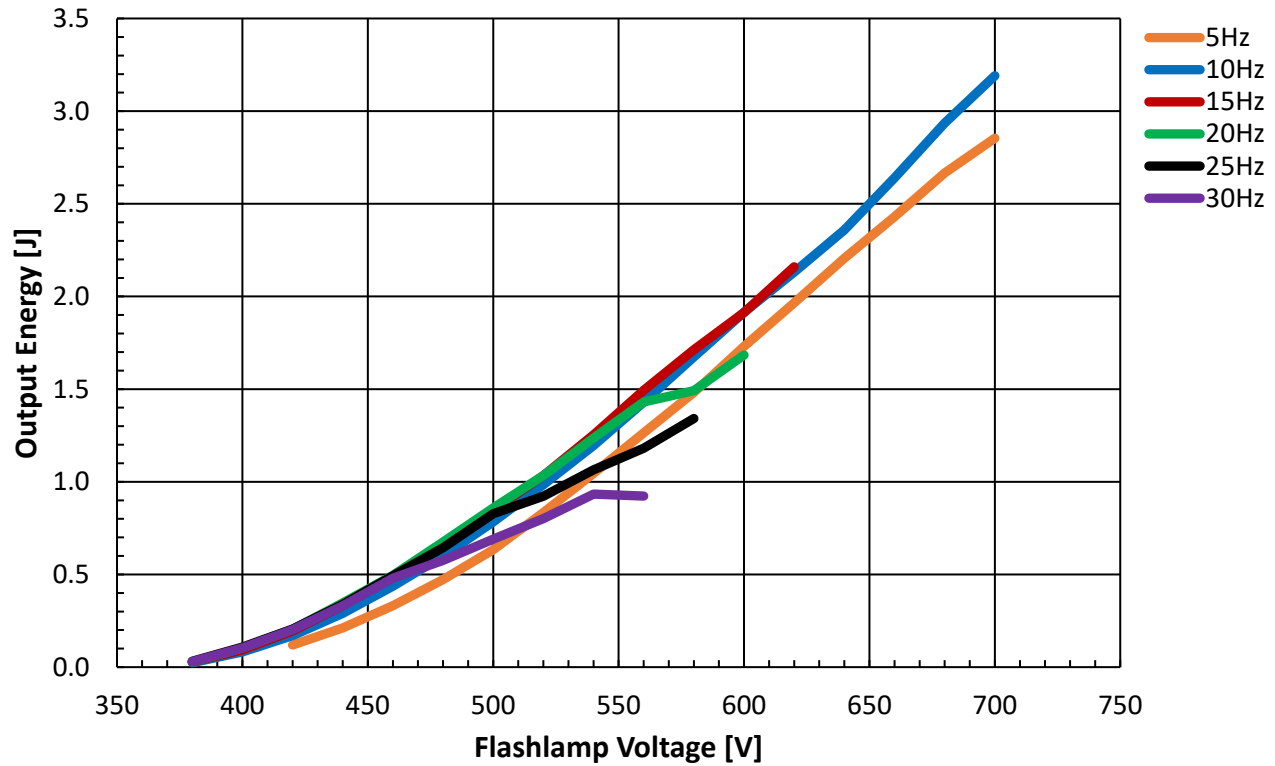


Output Power Vs. Repetition Rate
Er:YAG 4X100, 350 μ s, 82%R OC

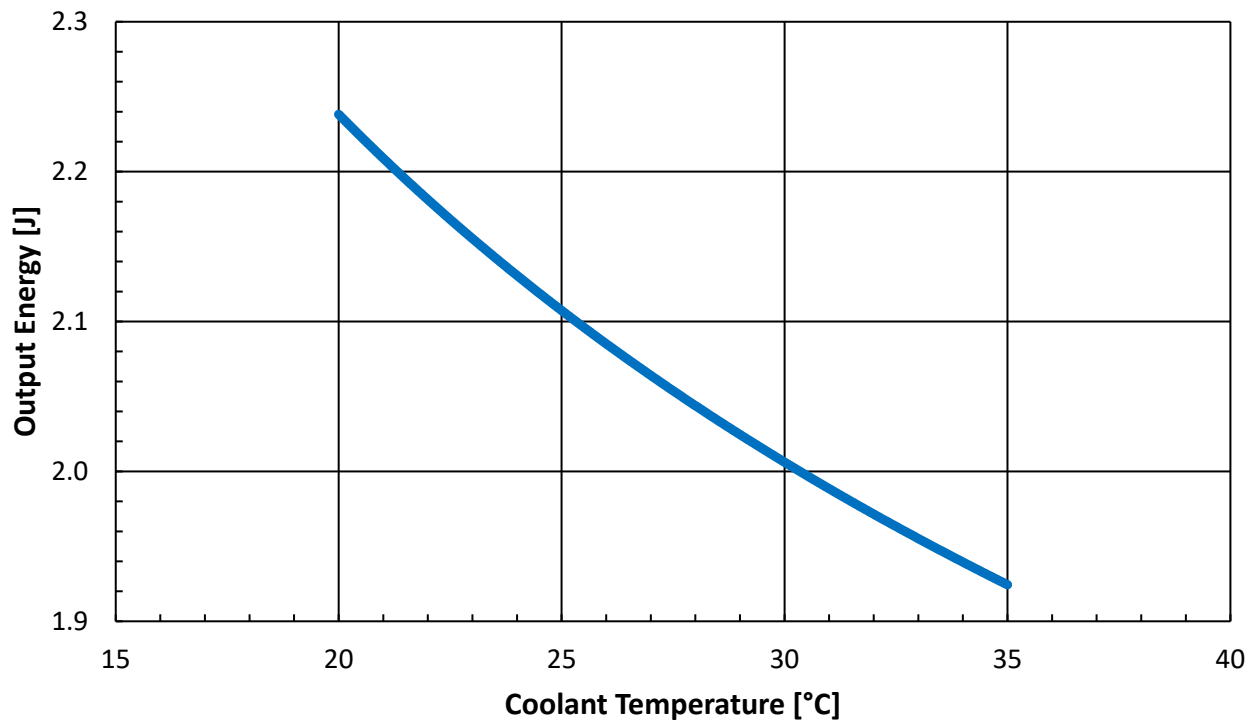




Output Energy Vs. Flashlamp Voltage
Er:YAG 4X100, 350 μ s, 82%R OC

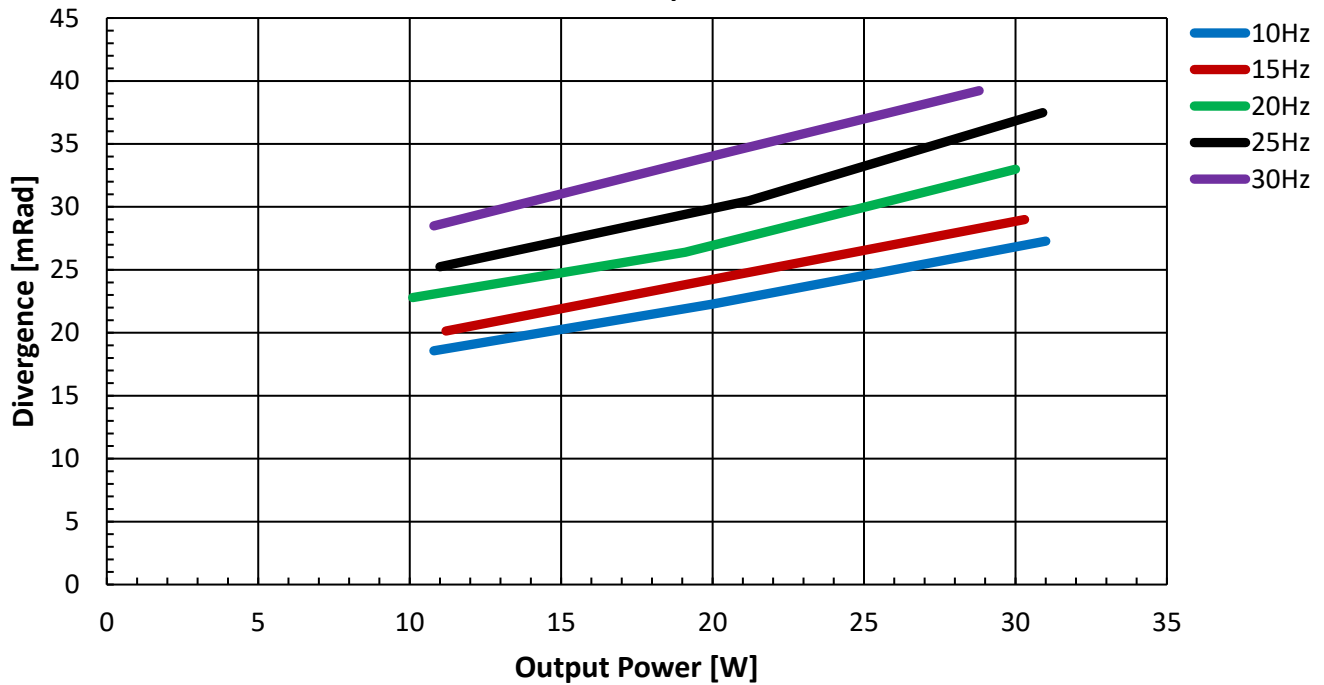


Output Energy Vs. Coolant Temperature
Er:YAG 4X100, 350 μ s, 10 Hz, 82%R OC, 8 l/min

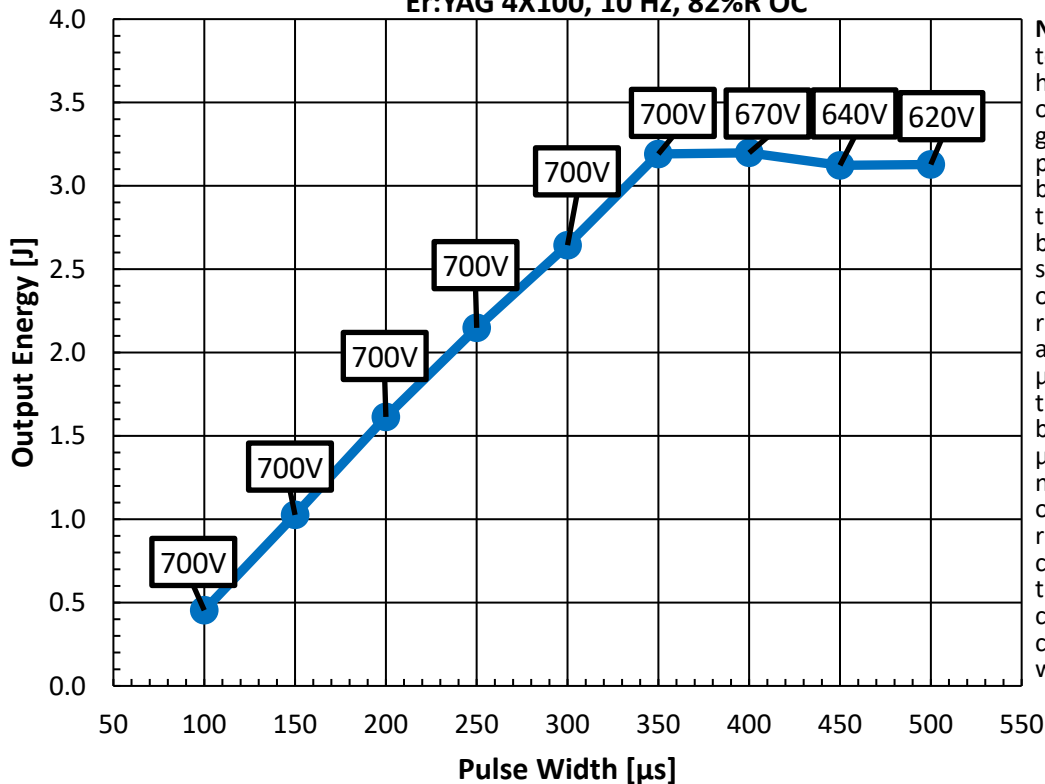




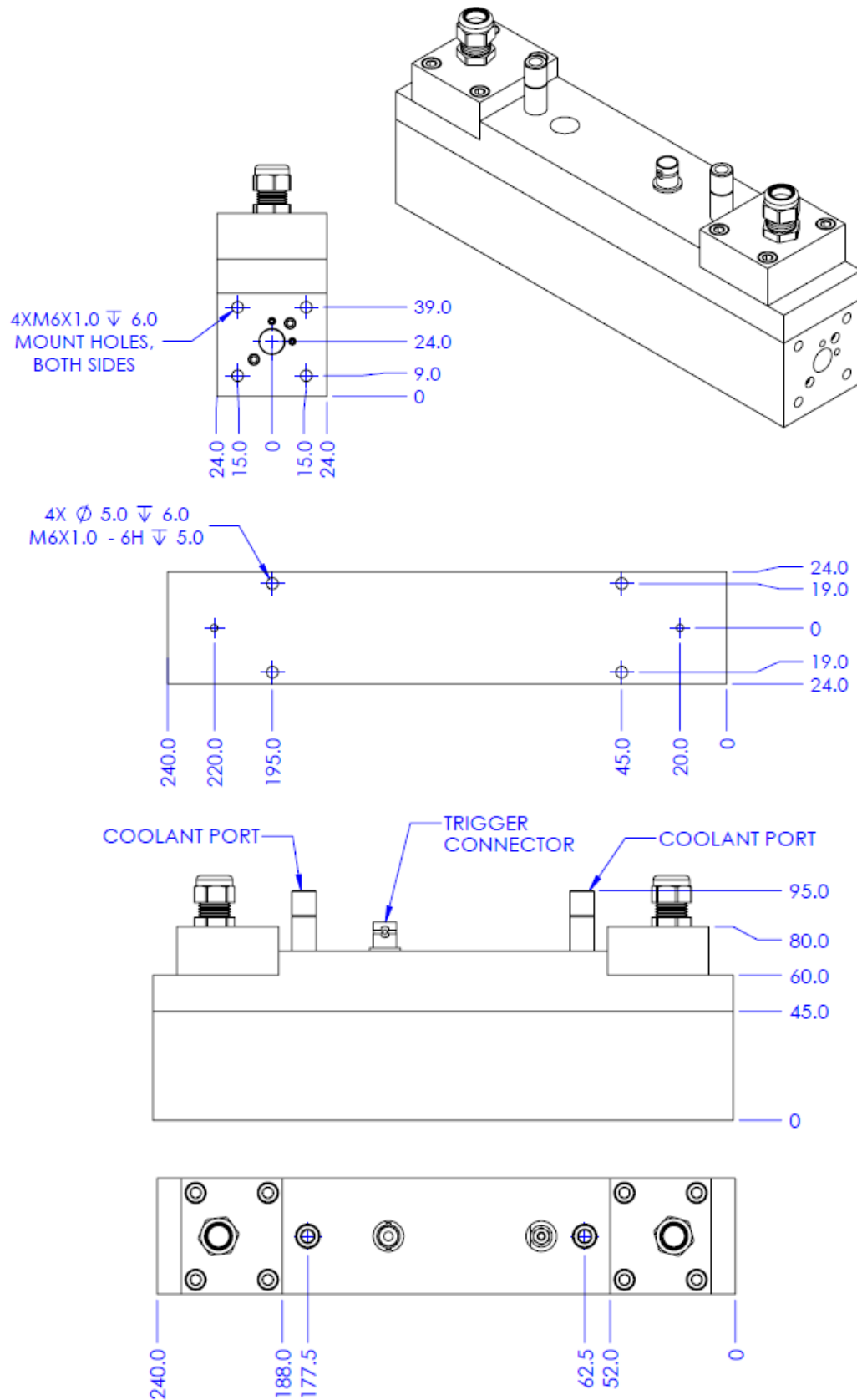
Divergence Vs. Output Power
Er:YAG 4X100, 350 μ s, 10 Hz, 82%R OC

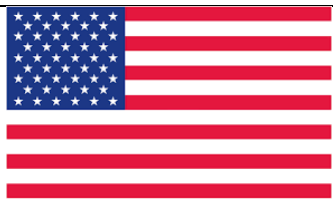


Recommended Limits
Output Energy Vs. Pulse Width
Er:YAG 4X100, 10 Hz, 82%R OC



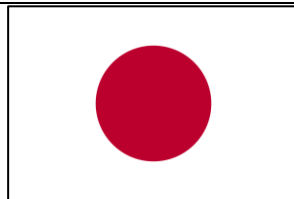
NOTE: The voltages next to the data points are the highest recommended operating voltage for a given pulse width. For a pulse width setting between 100 – 350 μ s, the resonator is limited by peak power and should not be operated over 700 V. The resonator will not achieve 30 W below 350 μ s. Between 350 - 500 μ s, the resonator is limited by average power. At 400 μ s, the voltage should not exceed 670V and so on. Exceeding the recommended limits will cause optical damage to the resonator components, which is not covered by MWL's warranty.





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