



**HawkEye Technologies, LLC**

We are your **SOURCE** for **INFRARED**

[www.hawkeyetechnologies.com](http://www.hawkeyetechnologies.com)

**Distributed by  
Boston Electronics Corporation**

91 Boylston St, Brookline MA 02445 USA  
(800)347-4554 or (617)566-3821

[irsource@boselec.com](mailto:irsource@boselec.com) \* [www.boselec.com](http://www.boselec.com)

## Introducing the New Collimated-Energy Pulsable IR-55!!

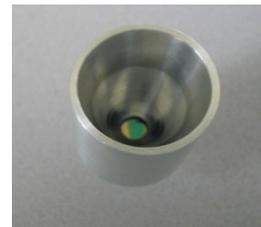
The IR-55 is a MEMS technology electrically modulated infrared emitter built into a HawkEye parabolic optic. The source is based on patented technology, utilizing a thin film of diamond-like carbon as the active element for faster electric modulation. The parabolic package collimates the energy for greater on-axis intensity.

This source is significantly better, watt for watt and Hz for Hz than any competing non-mechanical modulation technology.

**The IR-55 is truly in a class of its own!**

**Excellent Modulation to 100 Hz and beyond!!**

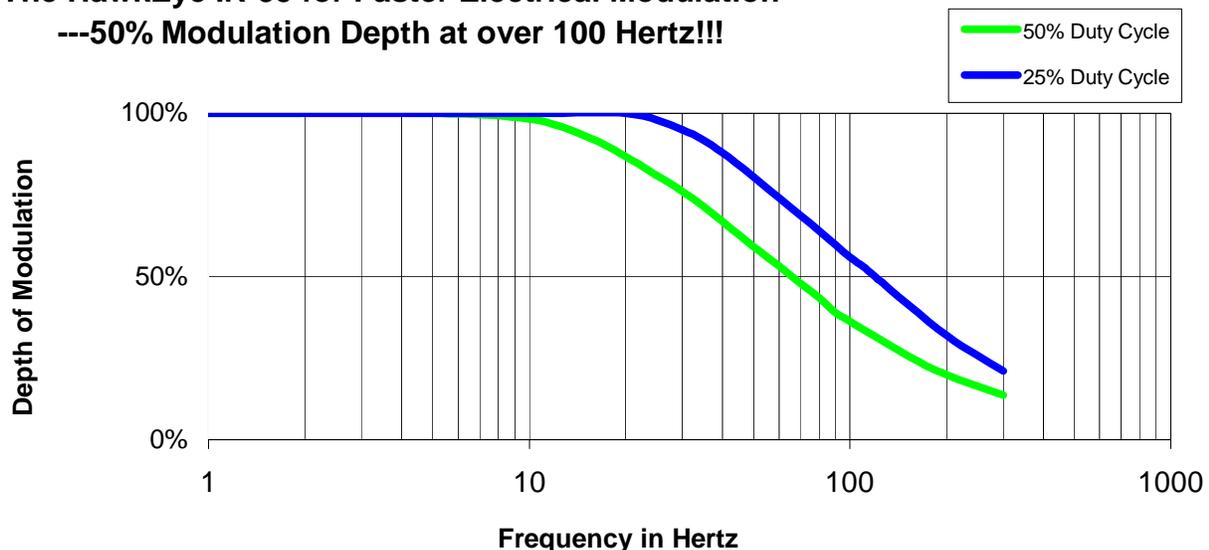
**Collimation provides 10x the Intensity!!**



This new source has an active area of 2.25 mm<sup>2</sup> and is supplied in a TO-5 style package. The normal working range is 500° to 750° C with peak short term heating up to 850° C possible. Calculated lifetime is approximately three years.

### The HawkEye IR-55 for Faster Electrical Modulation

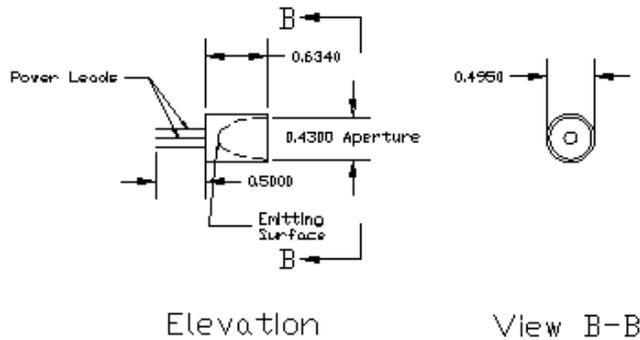
**---50% Modulation Depth at over 100 Hertz!!!**



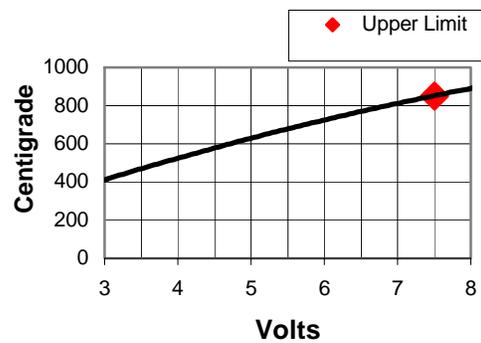
### IR-55 Nominal Parameters:

Voltage*	6.4 volts (AC or DC)
Temperature*	750° C
Resistance in the Hot state*	50 ohms
Current	135 milliamps
Input Power	0.9 watts
Cooling Time Constant	11.5 milliseconds
Heating Time Constant	35 milliseconds
Modulation Depth	50% at 110 Hz, 25% Duty Cycle
Active area	1.5 mm X 1.5 mm
Life	3+ years at 750° C typical

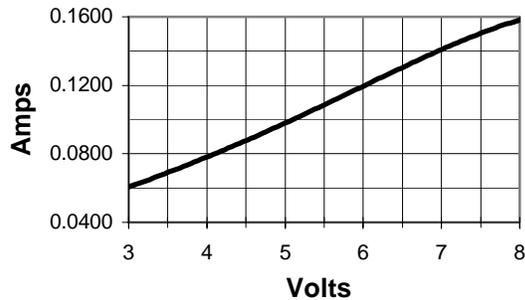
\*Measured at 5 Hz frequency, 50% duty cycle



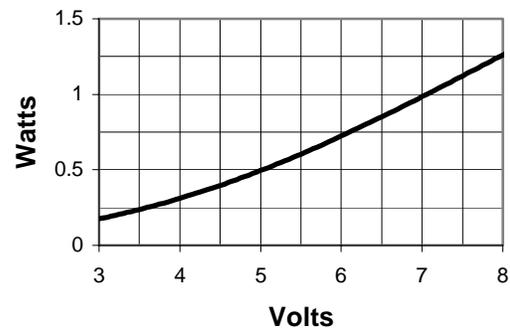
### Temperature vs Voltage



### Current vs Voltage



### Power vs Voltage



**HawkEye Technologies LLC** is a custom fabricator of IR sources including products. We will customize our existing products to your design specifications. We would be pleased to quote a new custom IR source, including engineering, that will meet your requirements.



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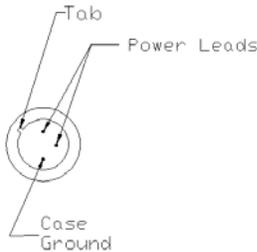
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## The HawkEye Technologies IR-50 and IR-55 Operational Guidelines - Application Data

The HawkEye IR-50 Series utilizes a thin thermoresistive conducting film of amorphous (diamond-like) carbon. Infrared radiation is the result of heating this film by passing an electric current through it.

The maximum temperature of the film should not exceed 750°C in continuous operation. A faint red luminescence of the film is observed during continuous operation at temperatures near 750°C. Short term heating up to 850°C is possible but will reduce the lifetime of the unit.

The specifications shown below assume an infrared source operating without a radiator and at ambient temperature and pressure. A rectangular voltage pulsed at a frequency of 5 hertz and with a duty cycle of 50% is used for heating. Two power leads and a ground are provided per the sketch below. Bi-polar drive voltage may be used.

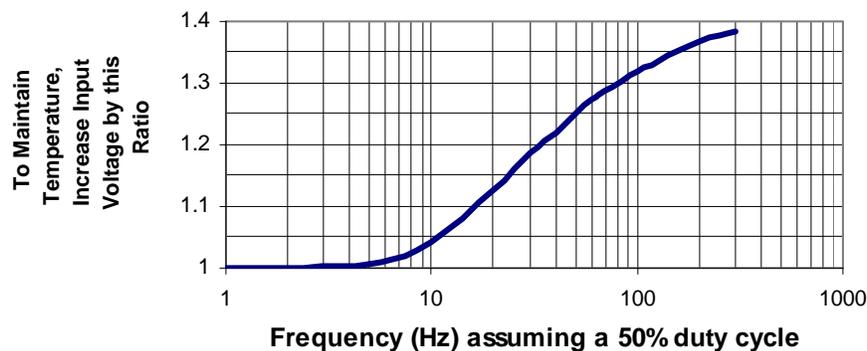


<b>Nominal Parameters (750°C)</b>	Resistance in Hot State (Ohms)	50
	Current (mAmps)	135
	Voltage (volts)	6.4
	Input Power (Watts)	0.9
<b>Maximal Parameters (750°C)</b>	Resistance in Hot State (Ohms)	50
	Current (mAmps)	150
	Voltage (volts)	7.5
	Input Power (Watts)	1.1

The HawkEye IR-50 Series is the perfect solution for an application that requires fast electrical modulation. However, it can also be used in a steady state (DC) mode. In applications where steady state power is used (or if used with electrical modulation but with a duty cycle of greater than 50%), it is recommended that the nominal input power specifications not be exceeded in order to avoid overheating of the membrane.

On the other hand, by reducing the length of the heating pulse or by increasing the frequency of modulation, the membrane will not have sufficient time to reach 750°C. In this case, the pulsed power can be increased to allow 750°C to be maintained. The chart below shows the factor by which the voltage can be increased as frequency is increased. This chart assumes a 50% duty cycle.

**Use this Voltage Ratio  
to maintain constant temperature.**



Using a 50% duty cycle and the appropriate power factor as determined above, a 50% modulation depth is achievable at modulation frequencies of more than 60 hertz. This modulation depth can be achieved at even higher frequencies (more than 100 hertz) if a 25% duty cycle were used along with a correspondingly higher power factor (sufficient to maintain the membrane temperature at 750°C). Please contact **HawkEye Technologies LLC** for assistance in determining the proper power factor for the duty cycle to be used in your application.

**HawkEye Technologies LLC** is a custom fabricator of IR sources. We will customize our existing products to your design specifications. We would be pleased to quote a new custom IR source, including engineering, that will meet your requirements.

**By Hawkeye Technologies LLC**  
Producers of TomaTech Products

Milford, CT. 06460

## INFRARED SOURCE SERIES 50

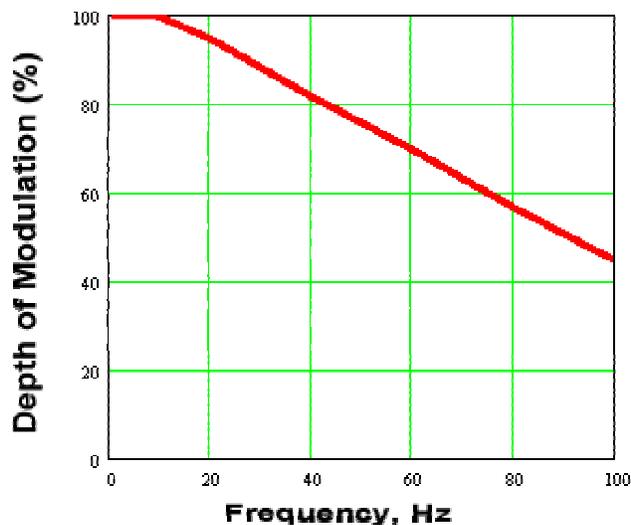
### Fast Electrically Modulated IR-50 Thermal Source

Announcing a **NEW** electrically modulated thermal source for 2 to 20<sup>+</sup> microns. This new source is based on patented new technology that utilizes a thin film of diamond-like carbon as the active element. It can be modulated up to 100<sup>+</sup> Hz. It is therefore suitable for use with quantum detectors like photoconductive PbS and PbSe, which otherwise would require a chopper to avoid excess low frequency "flicker" (1/f) noise.

What distinguishes this new source from others is its high frequency of operation. That is, an electrically modulated thermal source that exhibits good modulation depth, or contrast between the on and off states. This source is significantly better, watt for watt and Hz for Hz, than any competing non-mechanical modulation that technology offers.

This new source has an active area of approximately 1.5 mm<sup>2</sup> and is supplied in a TO-5 style package. The normal working range is 500° to 750° C with peak short term heating up to 850° C possible. Calculated lifetime is approximately three years.

**Modulation Depth, Diamond-Like Thermal Source**  
Duty Cycle of 25 on, 75 off



#### Typical Operating Parameters

R [ $\Omega$ ] in hot state	50
I <sub>amplitude</sub> [mA]	145
V <sub>amplitude</sub> [V]	6.9
Input power [mW]	991

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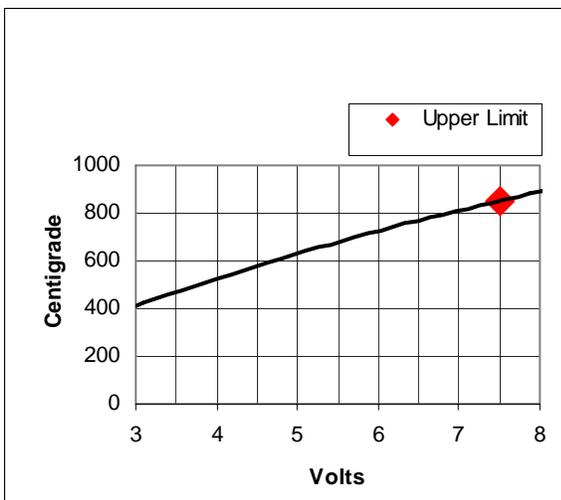
[irsource@boselec.com](mailto:irsource@boselec.com)

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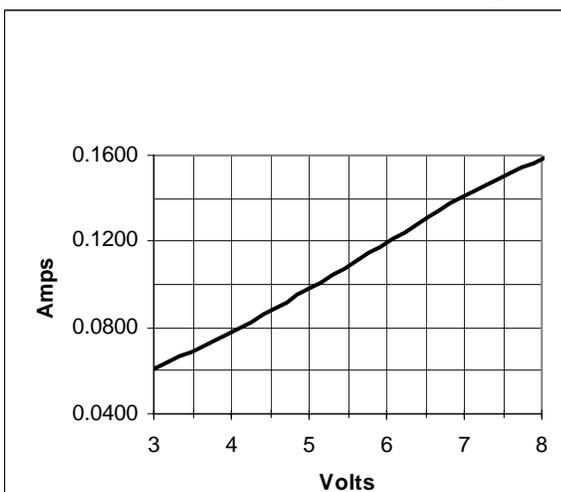
## IR-50 Pulsable Infrared Emitter

### ENGINEERING DATA (data collected with steady state voltage)

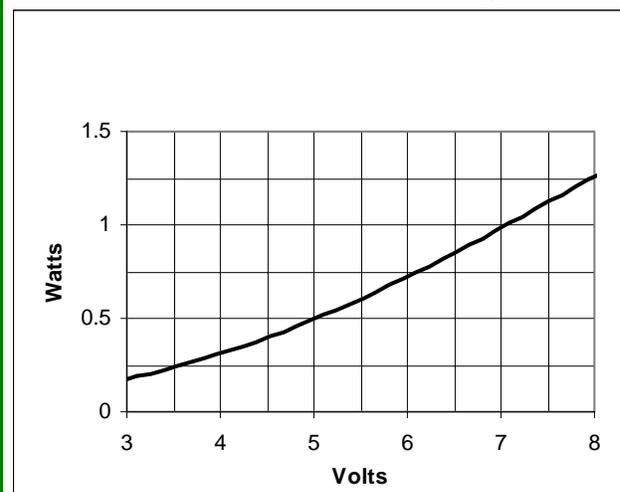
#### Temperature vs Voltage



#### Current vs Voltage

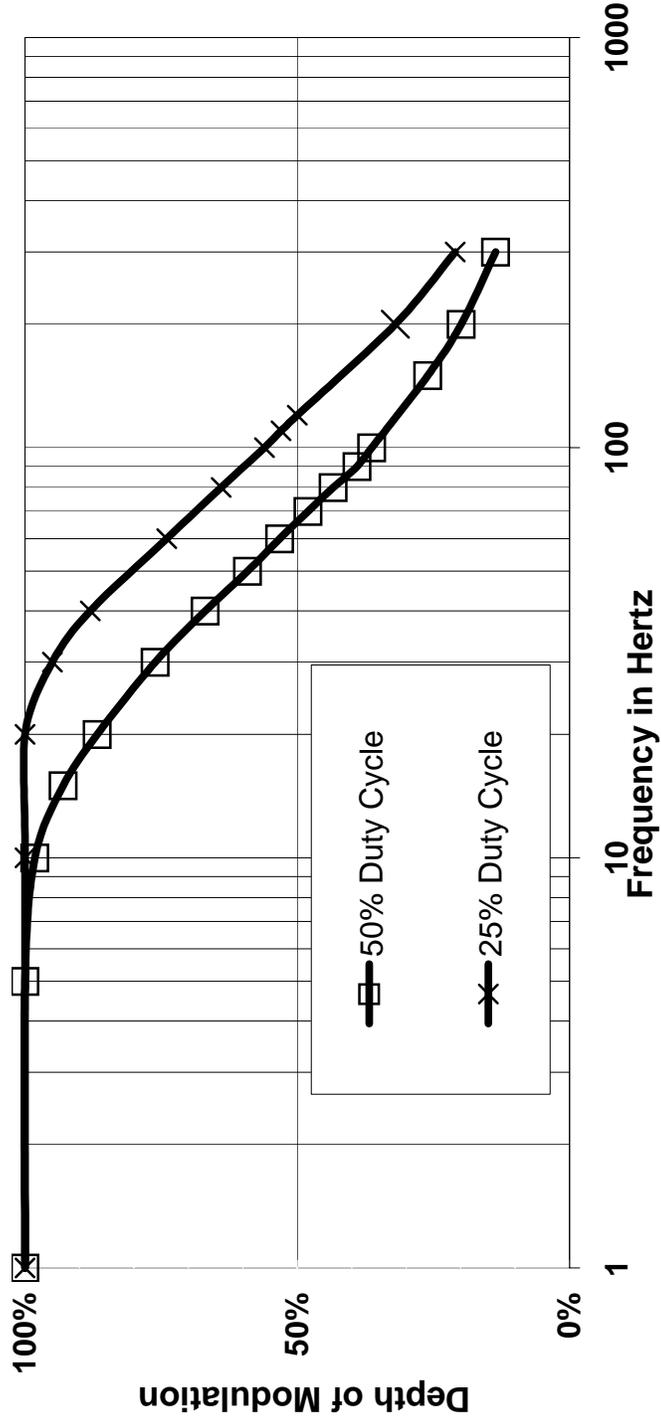


#### Power vs Voltage

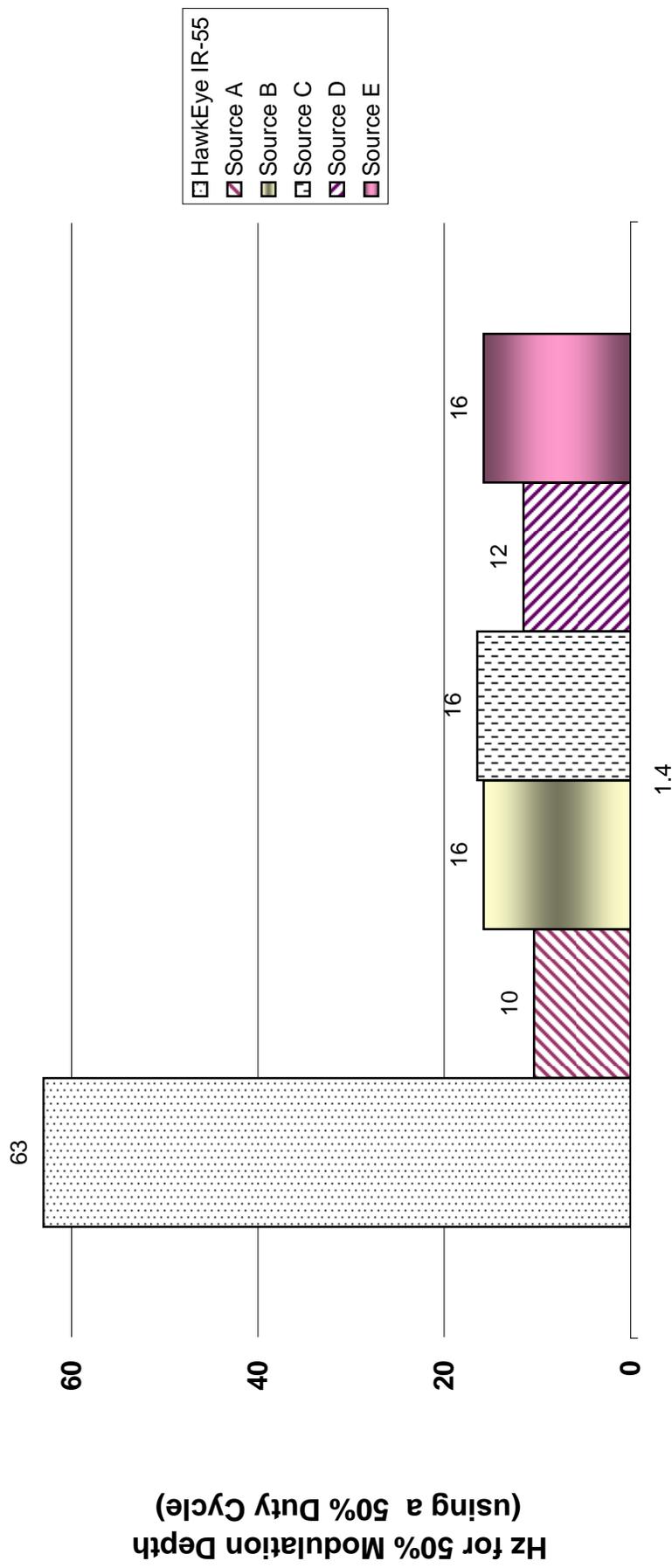


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# The IR-5x-series for >50% Modulation Depth at over 100 Hertz

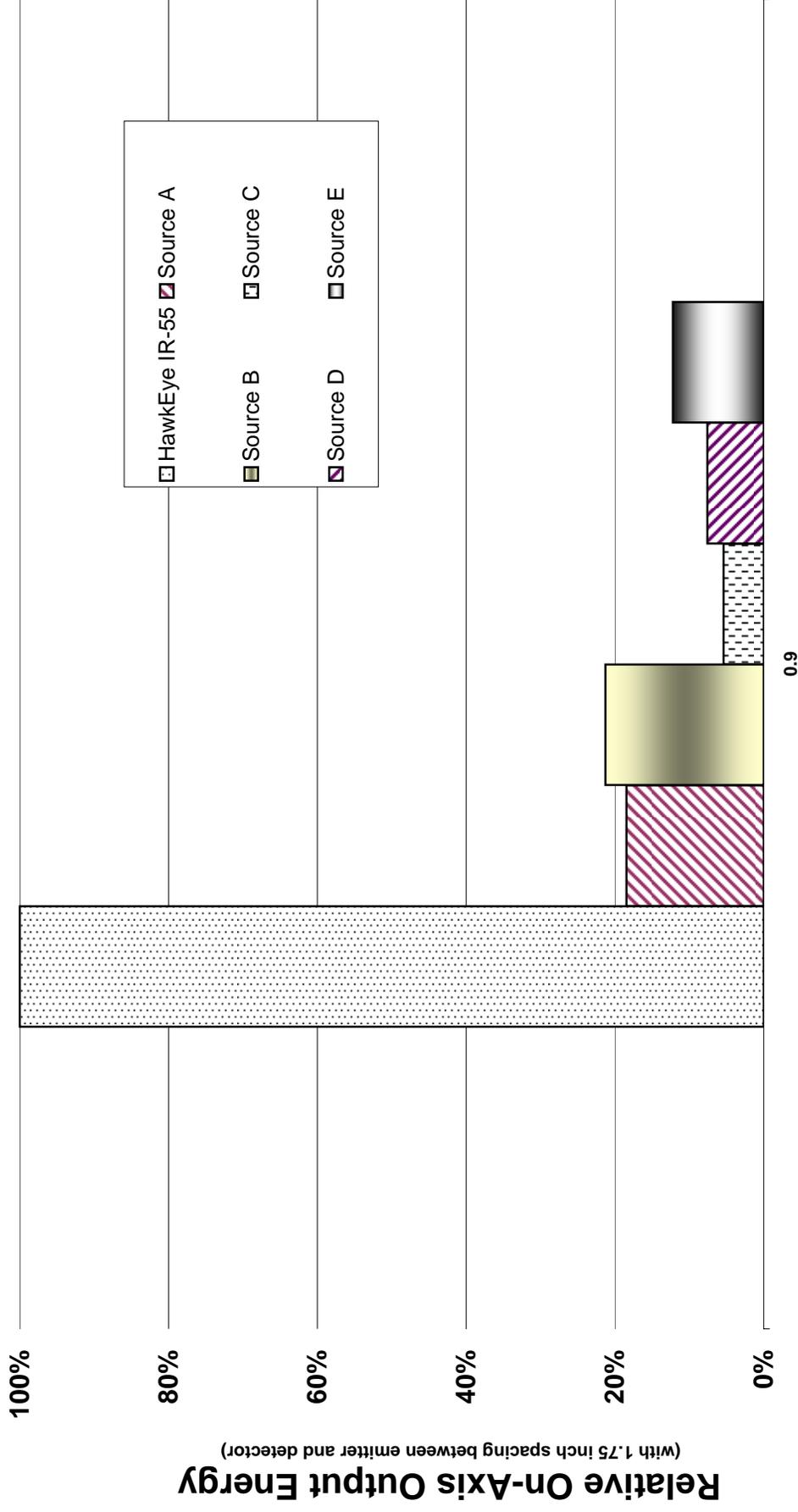


### The IR-5x-series has greater modulation depth than other products



Other Pulsating Sources in the Marketplace do not come close to the IR-55 Modulation Depth!!

# The HawkEye IR-55 has Greater On-Axis Output by Far



**Input Power Required**  
(in Watts per Manufacturer's Specs)

0.9