Snake Basking Bulb Selection Guide

Tl:DR quick good bulb list- Incandescents: Reptizoo(amazon), Zoomed or Exo Terra(petstore). Halogens: Reptile Systems Eco Halogen (online - Pangea or Chewy)

Quick takeaways

- For most snakes, a wider / gentler beam is typically safer.
- Pick a bulb that hits your target surface temperature while running near full output (not dimmed more than 10-20%).
- Always confirm surface temps with a temp gun (multiple points), then use a dimming thermostat as a safety net (optional but good practice).
- There are A LOT of light bulb choices out there. For the sake of simplicity this guide will recommend one brand of halogen style bulb and three brands of incandescent bulbs that I have charts for and know that are safe and good bulbs. As always you are welcome to do your own research on a specific bulb if you have more questions. The "Reptile Lighting" group on Facebook is a good place to start and they have more light beam charts there under their guide section and is where all the lighting charts were sourced from.
- Yes this guide looks like its very long due to the number of pages, but each basking bulb chart takes up one page so that is why.

A link to all my guides (UVB, thermostats, RHPs etc.) can be found here:
https://darkcelbii.github.io/snake-guides/

1. Halogen vs incandescent - what's the difference?

A halogen bulb is basically just a type of incandescent bulb. The "halogen" part mostly means it runs the filament (the part that lights up) much hotter and often puts more usable heat out for the same wattage in a more focused beam than an "incandescent" bulb does.

The important thing to consider when choosing between the two basking bulb types is the individual bulbs **beam/spread**. Much like UVB bulbs, no two basking bulb lights are alike. **Two bulbs can both be 50W and still act totally different**: one might make a tight "laser beam" hot spot (like your normal off the shelf arcadia golden sun halogens) that's easy to overheat your basking surface, while another spreads the heat out wider and gives you a safer, more natural gradient (incandescents). There are also good halogens that have a gentler beam as you will see later in the guide.

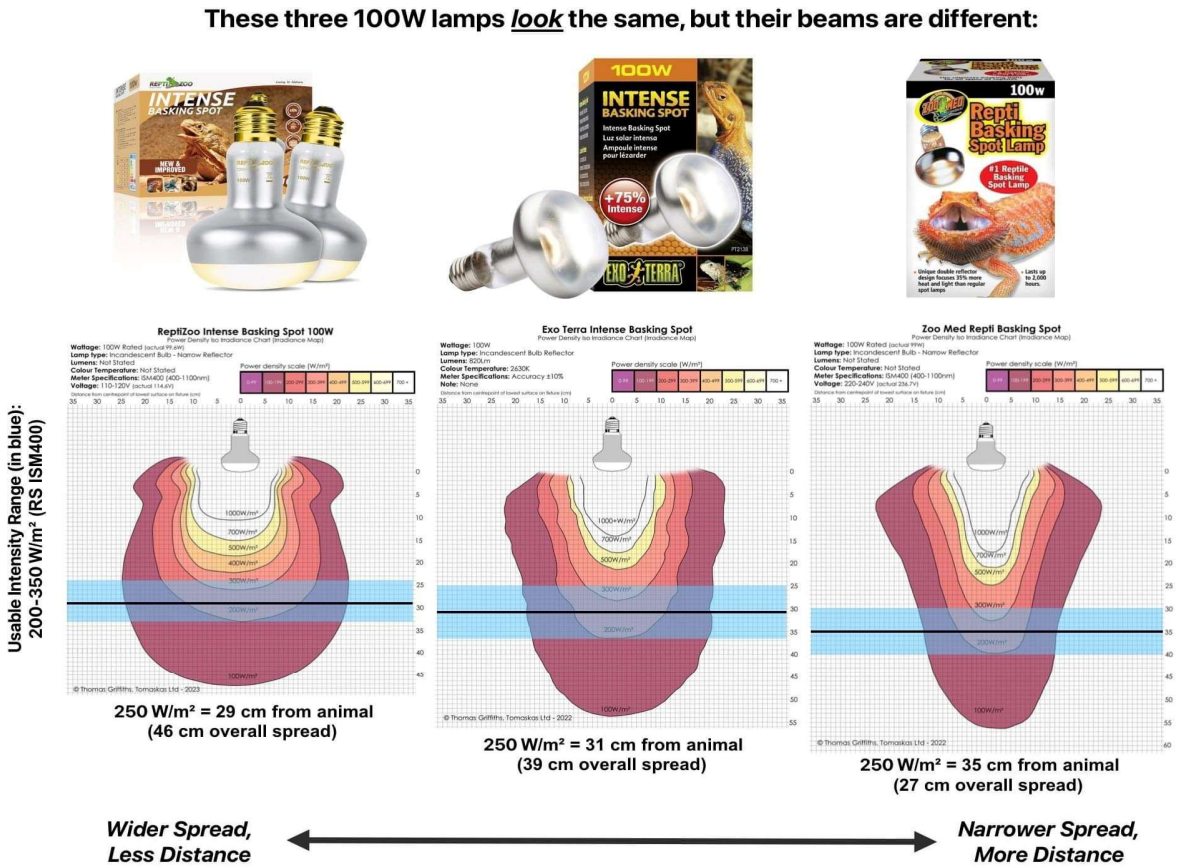
Now that being said, that does not make one bulb better or one bulb worse, like everything in snake keeping it very much just simply depends on your enclosure setup, temp requirements, and the distance your lights are from your basking surface. Halogens typically excel when you have a higher ceiling and incandescents likewise excel when the bulb needs to be placed closer to the snake/basking area. Halogens will give you a hotter hot spot, and incandescents will typically be gentler. (as always bulb dependent). If you look at my 6x2x4 setup example at the end of the guide, you'll see where this rule is not always a concrete rule though and heavily depends on the specific bulb and wattages.

2. Beam spread & power density matters more than watts

Think of basking bulbs like flashlights: the tighter the beam, the higher the energy per square inch at the center. That's why some bulbs feel like a "laser beam" (I.e. Arcadia halogens) in which the center hot spot is narrow and extremely focused, whereas other bulbs with a wider less focused beam will give your snake a larger safer basking area.

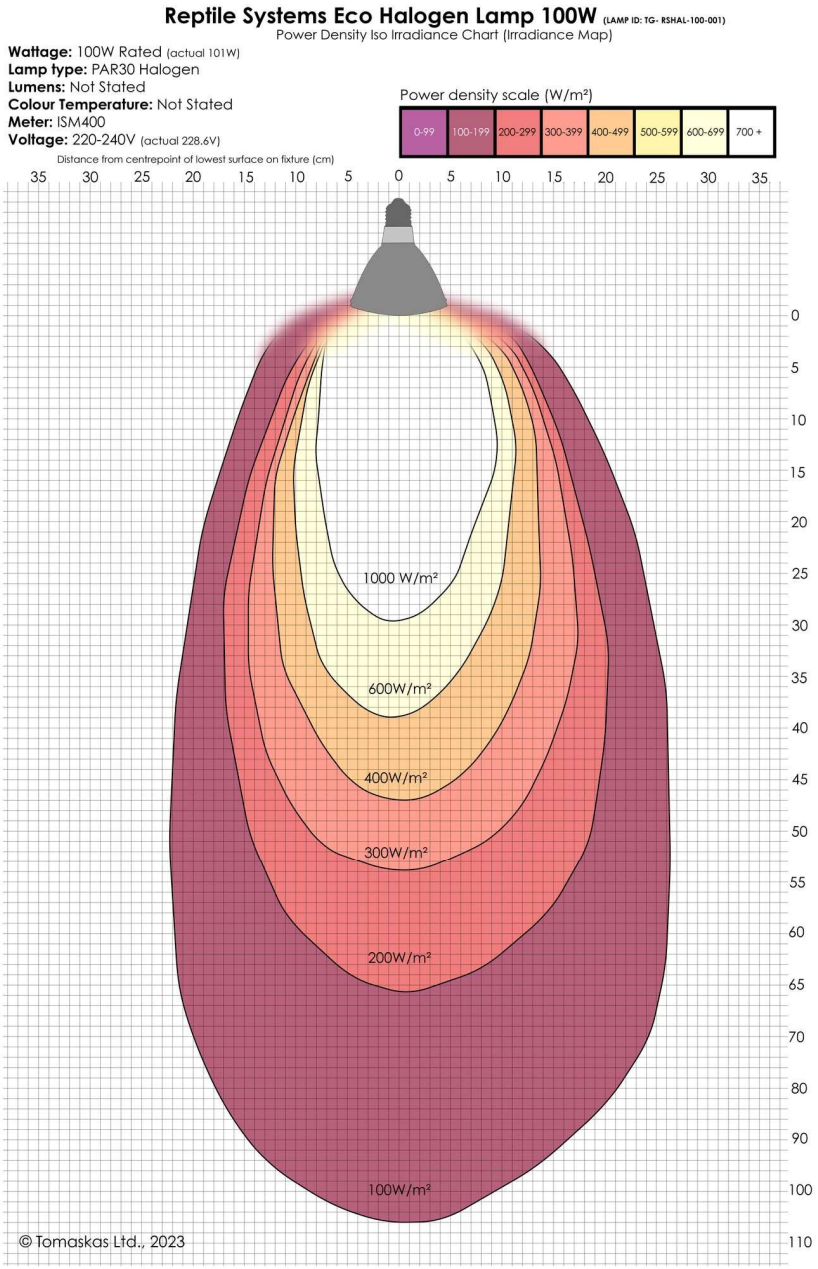
Our goal for zone 2 snakes is to set up our basking spot so our snakes roughly receive ~250W/m2 of irradiance from the bulb. Much like in our "choosing UVB" guide this is done by measuring the distance from our bulb to our basking spot. As you can see in the chart below that sweet spot is highlighted in all three bulbs (these are all good choices of bulbs by the way) with various distances of ~29cm(11.4 inches) to 35cm(13.7 inches) away. Compared to a (good) halogen of the same 100wattage of these three incandescent bulbs right below this image you can see its sweet spot is roughly ~60cm(23.5 inches) away. With this info you could see how if you had no elevated basking surface in a 24" high enclosure, then maybe a halogen would be preferable over an incandescent.
Its important to note that beam changes as wattage changes. I will attach an example of this by listing 25/50/75/100/150w charts for both the reptizoo incandescent bulb and the reptile systems eco halogen bulbs at the end of the guide.

Three good incandescent brands, showing how to read the light chart to find the 250W/m2 zone



Quentin Dishman (2024). Iso-irradiance charts © Thomas Griffiths, Tomaskas Ltd - used with permission.

A good halogen bulb, reptile systems eco halogen 100w.



3. Step-by-step: how to pick the correct basking bulb

1. Pick the basking surface (top of hide / shelf / branch) and research the target basking surface temperature & ambient temps for your snake. Remember things like Slate/resin/black plastic etc will hold a lot more heat than other surfaces. Adjust accordingly.

2. Measure the distance from bulb to that surface.
3. Choose wattage for distance - smaller enclosure/shorter distance usually = lower wattage bulb.
4. Test properly: let the setup run 2-4 hours, then temp-gun the surface in multiple points (center + edges + nearby areas). Thermometer on the cold side and the hot side (ideally in shade so its reading true ambient and not heat soaking too much from the bulb's light) Ideally you want to let an enclosure run a full 24 hours to truly see its heat cycle.
5. Fine tuning: adjust bulb type or wattage until the basking zone is correct without dimming the bulb past 80% (preferably not dimming it at all). I recommend purchasing lighting from places you can return it to if it's your first time setting stuff up because you may need to experiment with wattage to get it correct. Everything from your ambient room temp to your own unique enclosure will influence your wattage need.
   I can't really recommend a specific wattage, up close lower temp snake basking in some branches in a 4x2x2? Might need a 50w, a higher temp snake like a bp further away in a 4x2x2 might need a 100w. You just must personally experiment to fit your own specific needs, enclosure, and snake.

4. Dimming, thermostats and why "oversize then dim" is wrong in light bulbs

A dimming thermostat is great for safety but using an oversized wattage bulb and dimming it hard can defeat the reason you chose a basking bulb in the first place, for the IR-A output. Once you're dimming a bulb more than ~80% power, you're reducing the IR-A output to the point of losing the benefits of it.

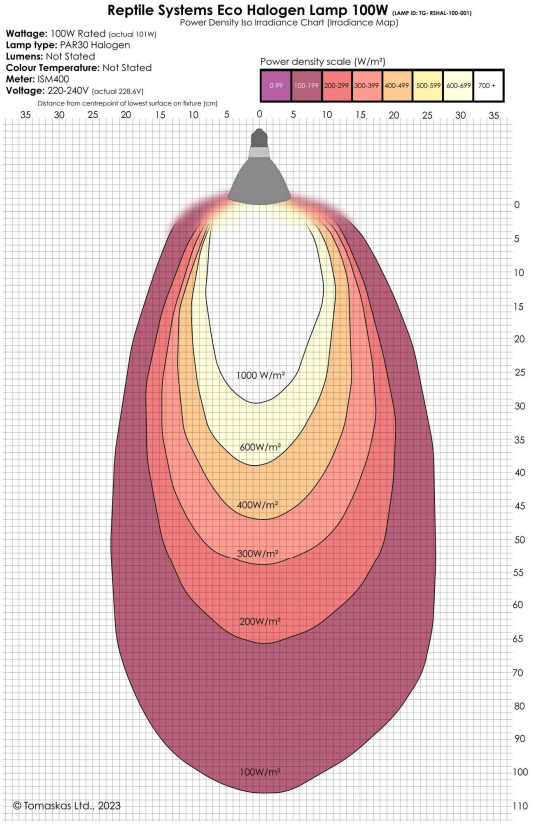
If you routinely must run a basking bulb well below full power, it usually means the bulb/wattage/beam doesn't match the distance/temps you need it to. You'll generally get a better result by choosing the right beam/wattage, so the bulb runs closer to full power 100% of the time. This may mean having two sets of bulbs on hand, a higher wattage for winter and a lower wattage for summer.

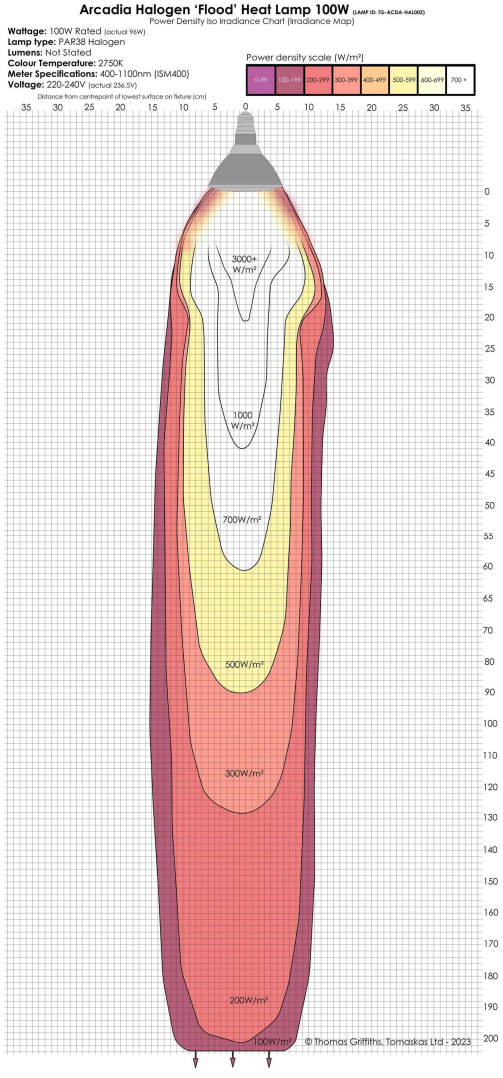
5. Fixture + safety checklist

- Use a ceramic socket and a fixture/dome rated above/for your bulb wattage. It does not have to be a reptile specific dome, but most reptile specific domes take out this guess work.
- If the bulb is inside the enclosure, use a proper light cage guard so the snake cannot wrap around the light bulb itself and get burns (Yes a cage will get slightly hot but much less hot than the bulb itself).
- Secure the fixture inside the enclosure(no gaps in the cage), check hotspots under black surfaces/slate/resin etc as they can easily overheat, and route cords so the snake can't climb on them.
- Confirm temps with a temp gun and keep at least one reliable thermometer for ambient monitoring.

6. Example: a good halogen spread vs a bad halogen spread

Below is an example of two halogen bulbs both at 100watts. To the untrained eye you would think these bulbs would perform exactly the same but that is far from the truth and the whole point of the guide. Even at the same wattage, you can see how the usable zone and distance shift based on the individual bulbs characteristics. As we looked at the 100W reptile systems eco halogen bulb's sweet spot earlier in the guide, we know it is around ~60cm (23.5 inches) +-. **On the other hand, the typical off-the-shelf arcadia halogen from your local petstore that most people buy has a desired usable range of ~150CM(60 inches) away to hit our 250W/m2 goal!** I'll let you do your own math to figure out how you can properly use that in a 24-inch-tall enclosure (hint, you can't). You can also see the Eco halogen has a coverage area width of around ~20-25cm and the arcadia bulb is only ~10-15cm width spread. More area coverage = more basking coverage for the snake = good.



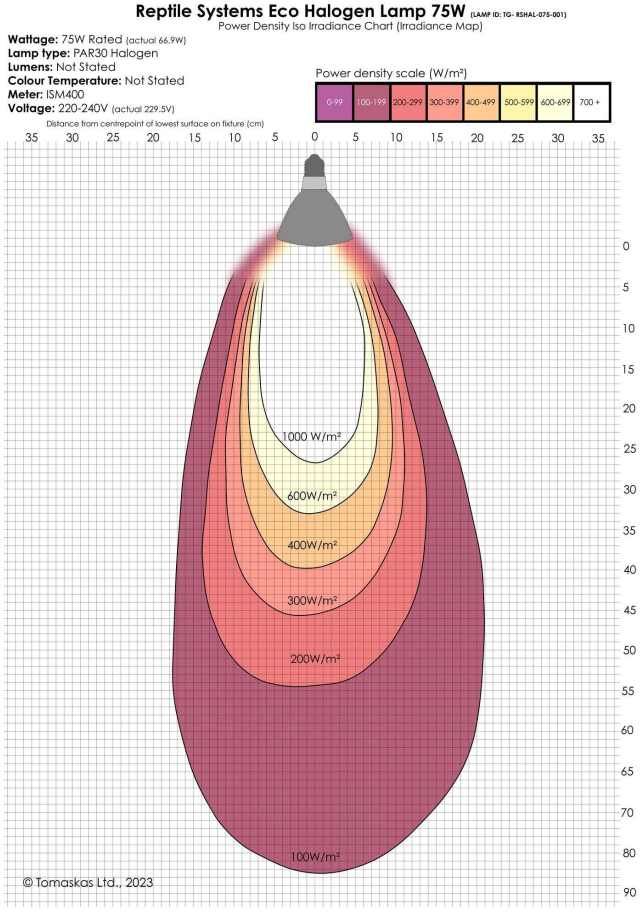


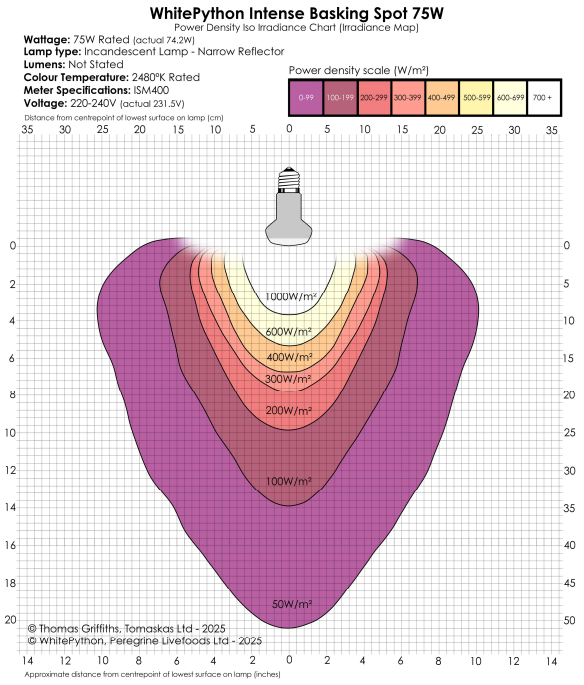
7. Example: a wider spread(incandescent) vs a tighter spread(halogen)

For this example, we will compare a good halogen and a good incandescent, both 75w, just to see how they differ. Once again, we will use the reptile systems eco halogen and the Reptizoo bulb from the first image in the guide (Whitepython is the UK brand of Reptizoo). Even at the same wattage, you can see how the usable zone and distance shift based on the bulb's characteristics.

Right off the bat you can see the 75w halogen has a much deeper beam than the incandescent. The 75w halogen's usable sweet spot of 250W/m2 is ~45-50cm (17.7in-19.5in) and the 75w incandescent is ~22cm (8.5inches) away. Once again, we can see that there's quite a big difference in the desired basking area for two bulbs of the same wattage, but of different types.

How would this apply in the real world? If you offered your snake climbing branches closer to the ceiling of the enclosure placed the appropriate distance under your basking bulb then you might want to consider using the incandescent, if you didn't offer any climbing enrichment under your basking area you would probably want to use the halogen.





8. Final note

There's no one perfect "best bulb" list because of enclosure height, room temperature, screen tops/mounted inside, ledges, and species targets all change the result. Just pick a bulb based off your rough distance from the charts and call it a day if it hits your desired temps and rough basking distance.

It is important to remember you don't have to get these distances 100% correct and stress over them, they aren't as much of a worry as say over exposure to UVB burns. Just do the best you can and you're already doing a great job just by simply knowing the beam of the bulb you're choosing. Just getting as close as possible even if its 3/4/5 inches off is fine at the end of the day.

Also consider that you can put two lower wattage bulbs side by side to increase heat as well if you find one bulb isn't heating your enclosure enough etc.

Reccomended bulb list

is below this example of how changing from two 50w incandescent bulbs to two 25w eco halogens improved the basking area in a 6x2x4.

Example of a full spectrum lighting setup with uvb/led/halogens in a 6x2x4 where the basking area is in the top right of the enclosure for a semi-arboreal ratsnake. Originally this setup was using two 50W Reptizoo incandescent bulbs but I was finding the surface temps were getting a little hotter than I liked (around 100F in some areas/small surfaces, not a big deal in itself as this particular snake doesn't just sit in one spot and bask for long periods of time, it usually cryptic basks by just placing a small part of its body in the basking area, or simply crawling over it, or only basking for a few minutes at a time so there are no risks of burns even with some small 100F+ hotspots).

That being said, with the 50W Reptizoo bulbs they still fell short of beam output, only putting out our desired 250W/m2 at ~15cm/6 inches away as we can see in the chart attached at the end of the guide. This left the desired basking zone just kind of floating in the empty air where there is nothing for the snake to bask on. To fix both this basking zone issue and as well to lower my hotspots just so I would be more comfortable with them, I switched the 50w Reptizoo incandescents out for two 25W Reptile Systems Eco Halogen bulbs.

In doing this I increased my basking sweet spot to almost 12 inches away instead of 6 inches away thus covering the branches/corkbark/and shelf under the basking lights, as well as lowered my hotspots to be mid 80's to mid 90's, a much preferable outcome.

This is a good example of playing with both wattages and light bulb types to get your desired outcome. I will also note for this specific setup rather than having a horizontal left/right coldside/hotside this enclosure being so tall works with more of a vertical up/down hot/cold gradient. The snake in this enclosure spends most of its time in the top left side in the skyhides where the ambient is a mix between the hot and cold side.

Top view

Rhp used for night time ambient.

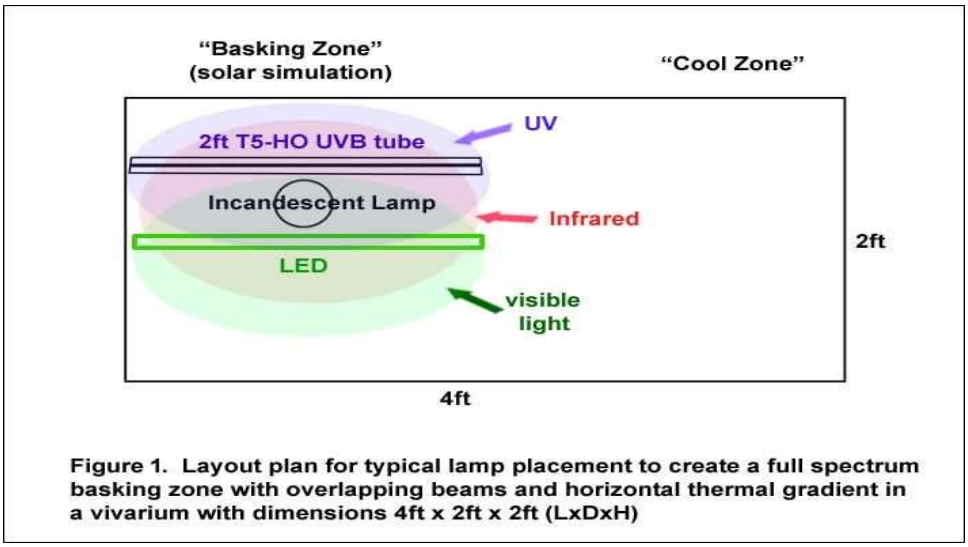
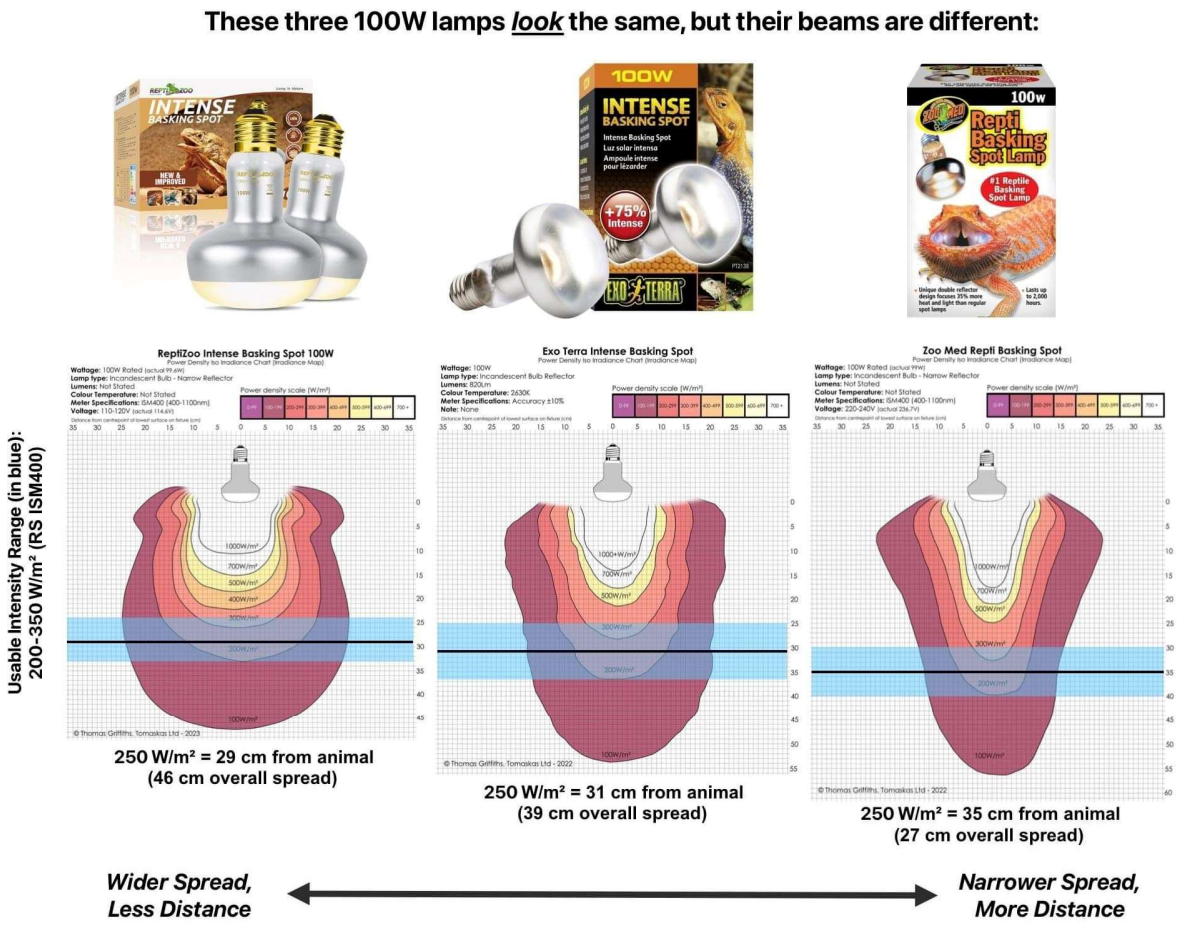


Figure 1. Layout plan for typical lamp placement to create a full spectrum basking zone with overlapping beams and horizontal thermal gradient in a vivarium with dimensions 4ft x 2ft x 2ft (LxDxH)

9. Recommended bulb list

Bulb charts – The three bulbs in the first chart are all good incandescent bulbs to use with good spread, Reptizoo can be purchased on amazon, Exo Terra and Zoo Med at your local petstores usually.

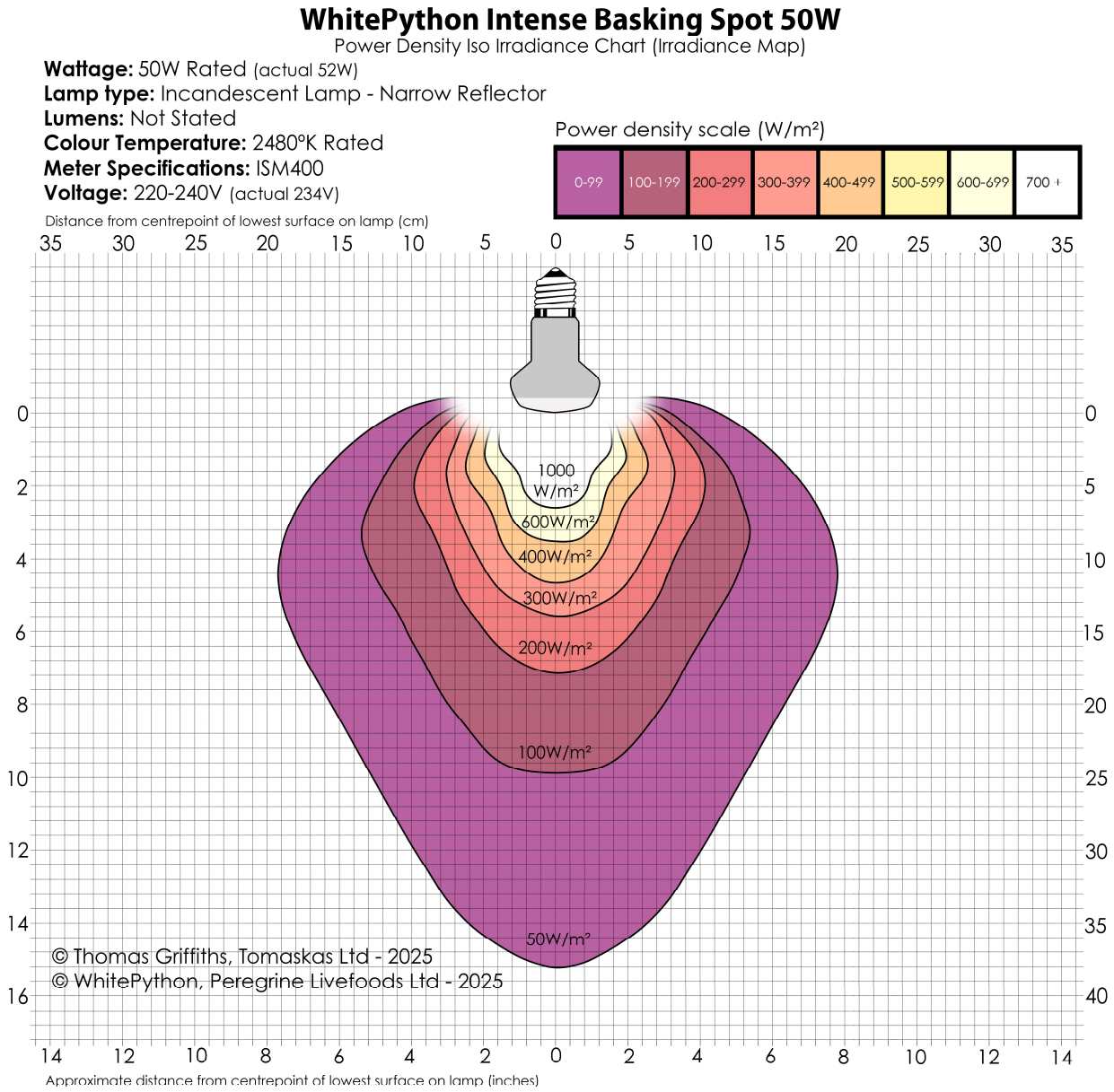
Reptile Systems Eco Halogens are the best halogen bulbs we can get spread wise without being completely overpowering for most common enclosure heights (i.e. if you're not using a 4-6 ft tall enclosure you probably don't need the arcadia halogen) and use a removeable filament so when it burns out you just take the bulb apart and replace only the filament for cheaper than buying a whole new bulb. I personally buy these on the Pangea website but you are welcome to shop around.
The whitepython (reptizoo uk brand) charts listed below show you how vastly an incandescent bulbs beam and range can change based on wattages. This is good info to study. I will first include all the incandescent bulb charts, then the Reptile Systems Eco Halogen charts after them at the bottom.



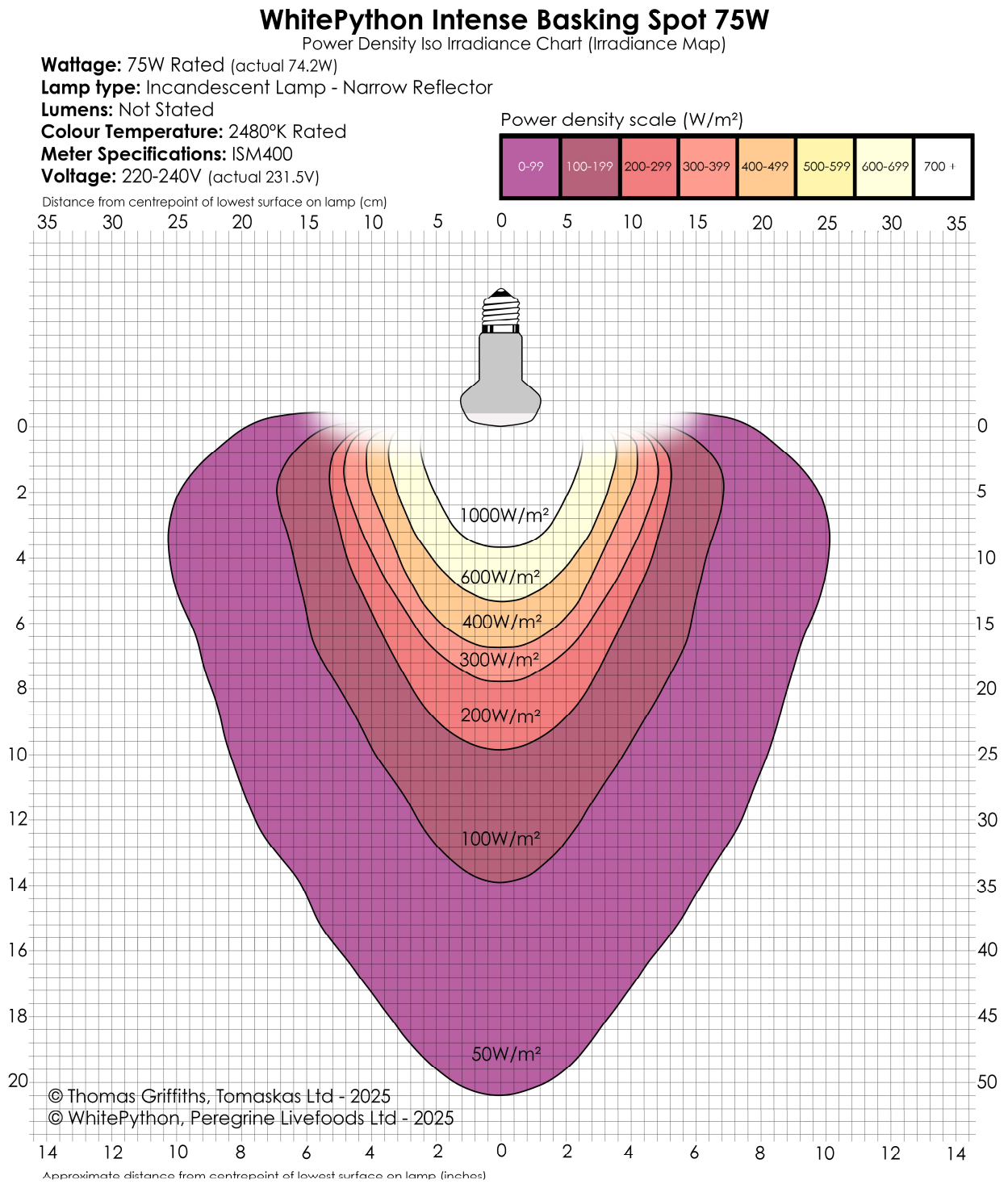
Quentin Dishman (2024). Iso-irradiance charts © Thomas Griffiths, Tomaskas Ltd - used with permission.

All sweet spot estimates for these guides are my best guess, you may come up with slightly different numbers and that's fine, I came up with them roughly by using the image directly above this to read the charts. Once again you do not have to get the sweet spots perfect and do not stress over them if you are a few inches off. It's not the end of the world and does not need to be perfect.

Reptizoo 50W bulb chart (WhitePython is UK brand) -Sweet spot ~15CM/6inches.



Reptizoo 75W bulb chart (WhitePython is UK brand) -Sweet spot ~20CM/7.8inches.

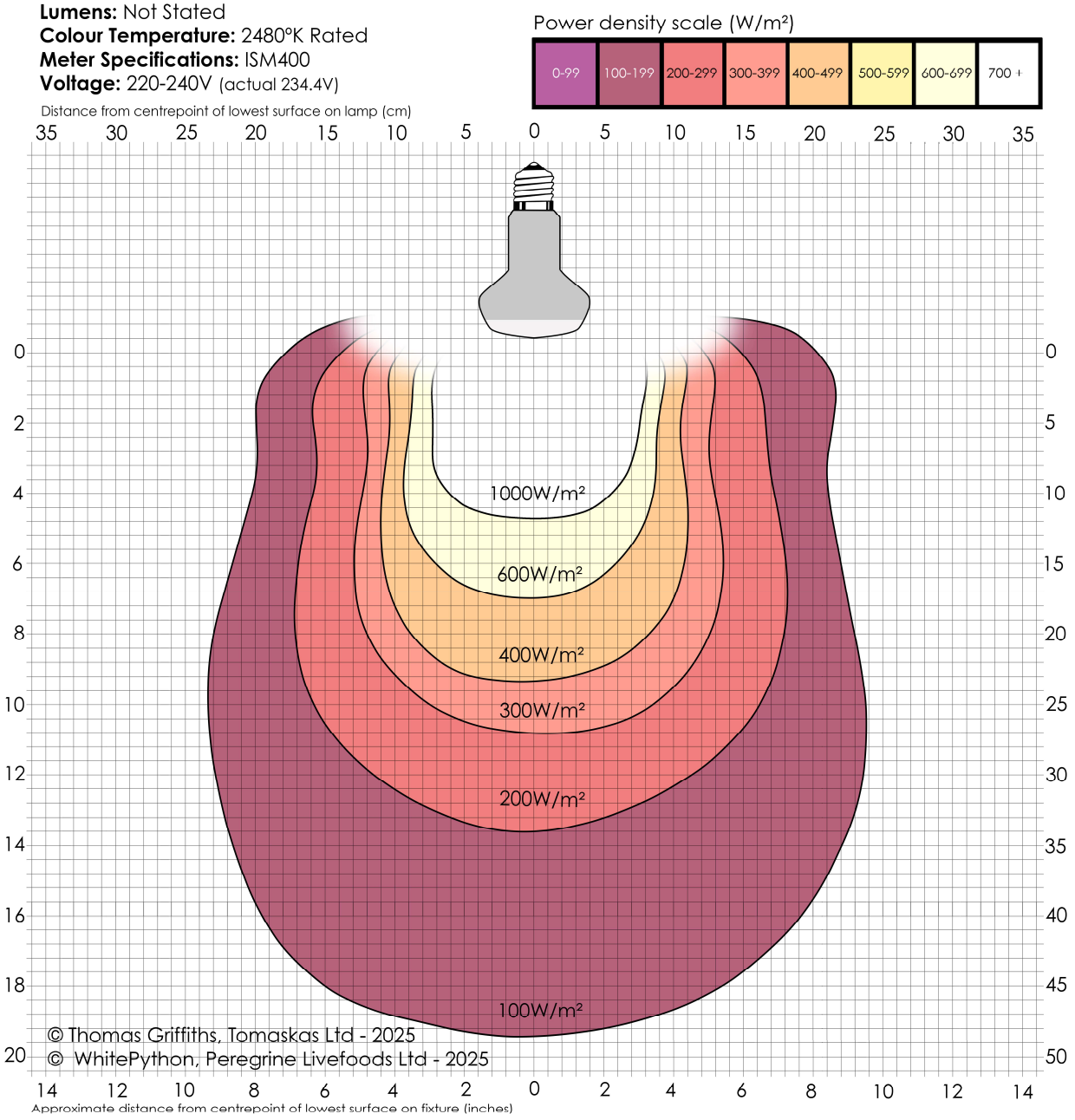


Reptizoo 100W bulb chart (WhitePython is UK brand) -Sweet spot ~30CM/12inches.

WhitePython Intense Basking Spot 100W

Power Density Iso Irradiance Chart (Irradiance Map)

Wattage: 100W Rated (actual 98.7W)
Lamp type: Incandescent Lamp - Narrow Reflector
Lumens: Not Stated
Colour Temperature: 2480°K Rated
Meter Specifications: ISM400
Voltage: 220-240V (actual 234.4V)

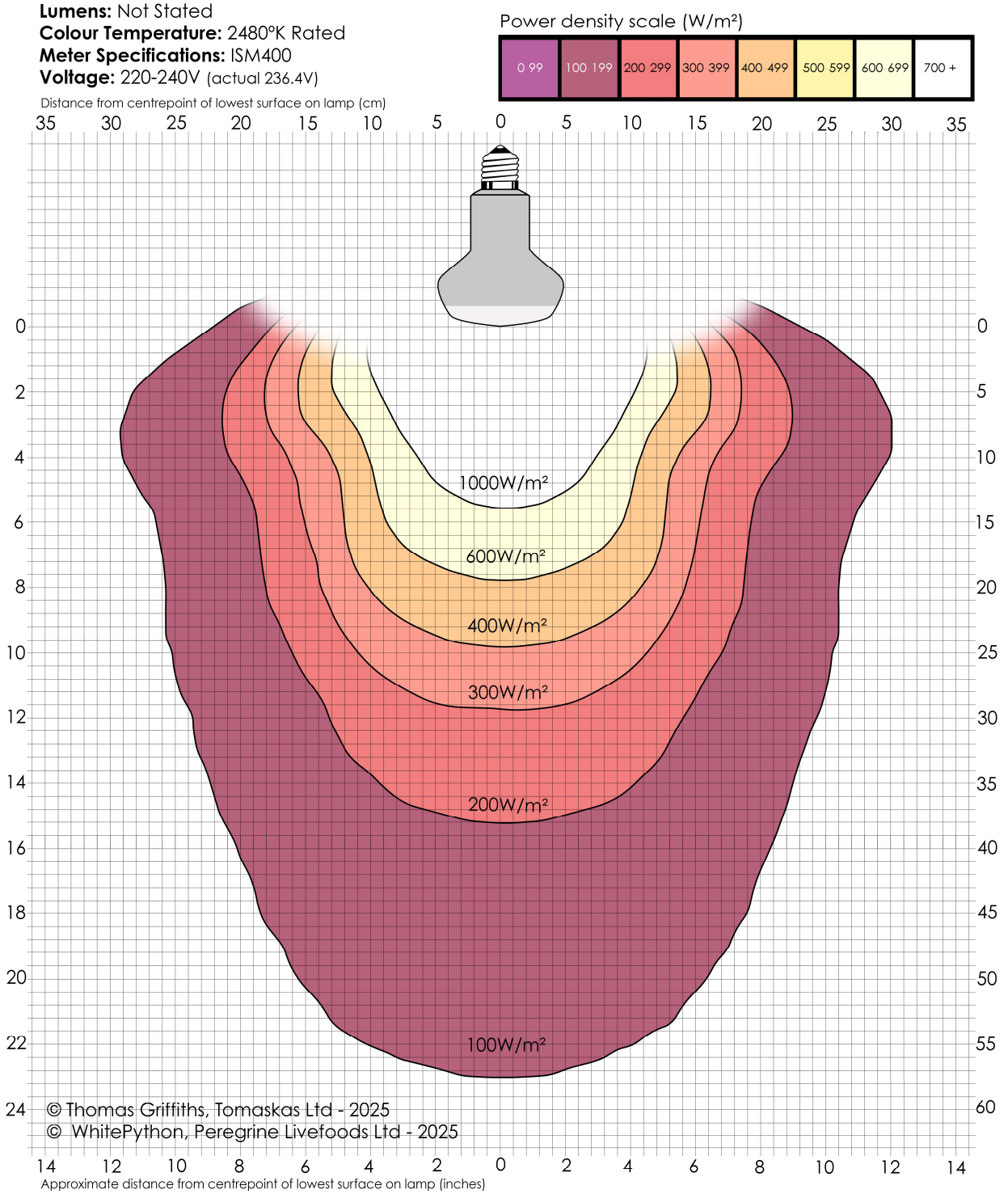


Reptizoo 150W bulb chart (WhitePython is UK brand) -Sweet spot ~33CM/13inches.

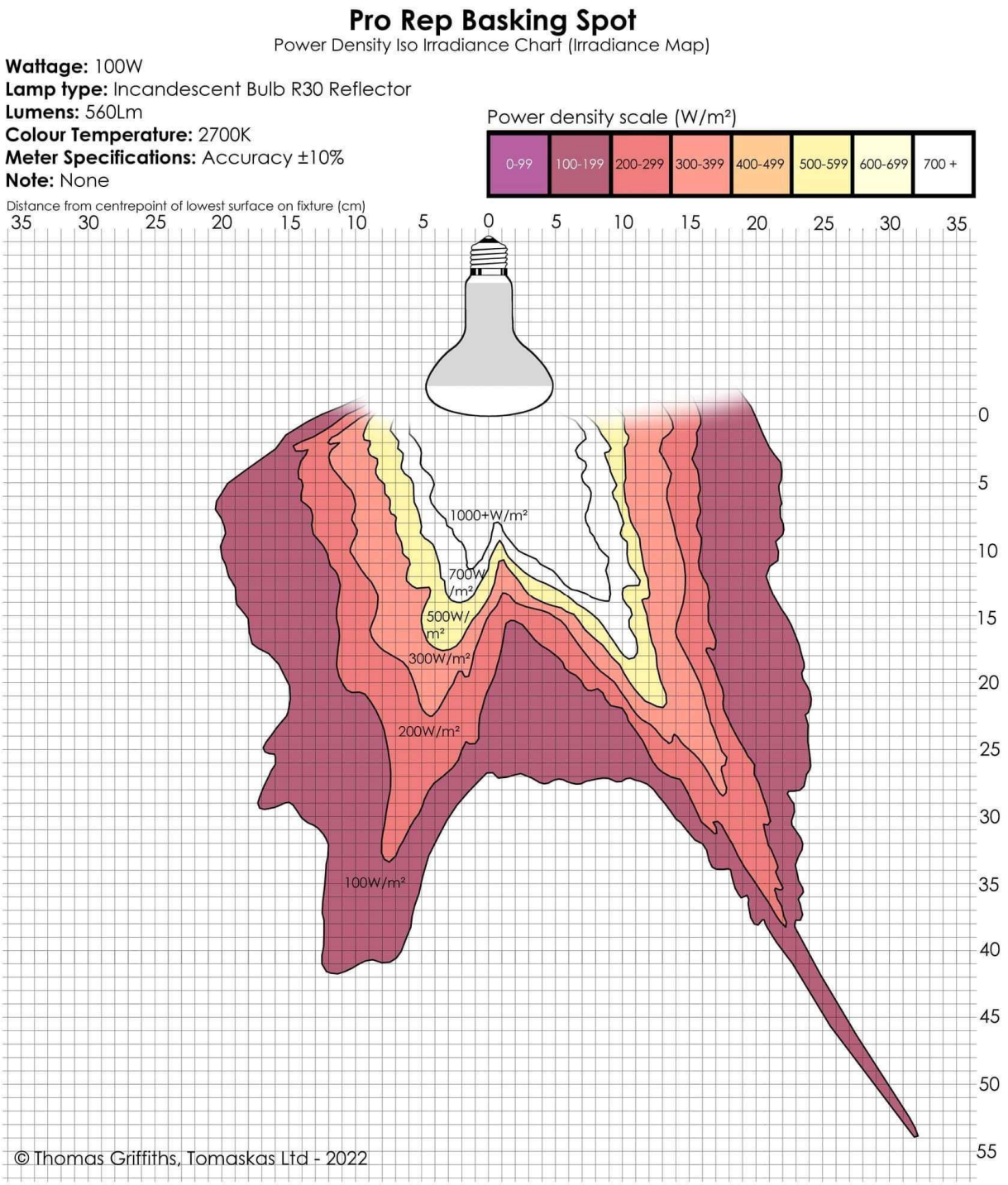
WhitePython Intense Basking Spot 150W

Power Density Iso Irradiance Chart (Irradiance Map)

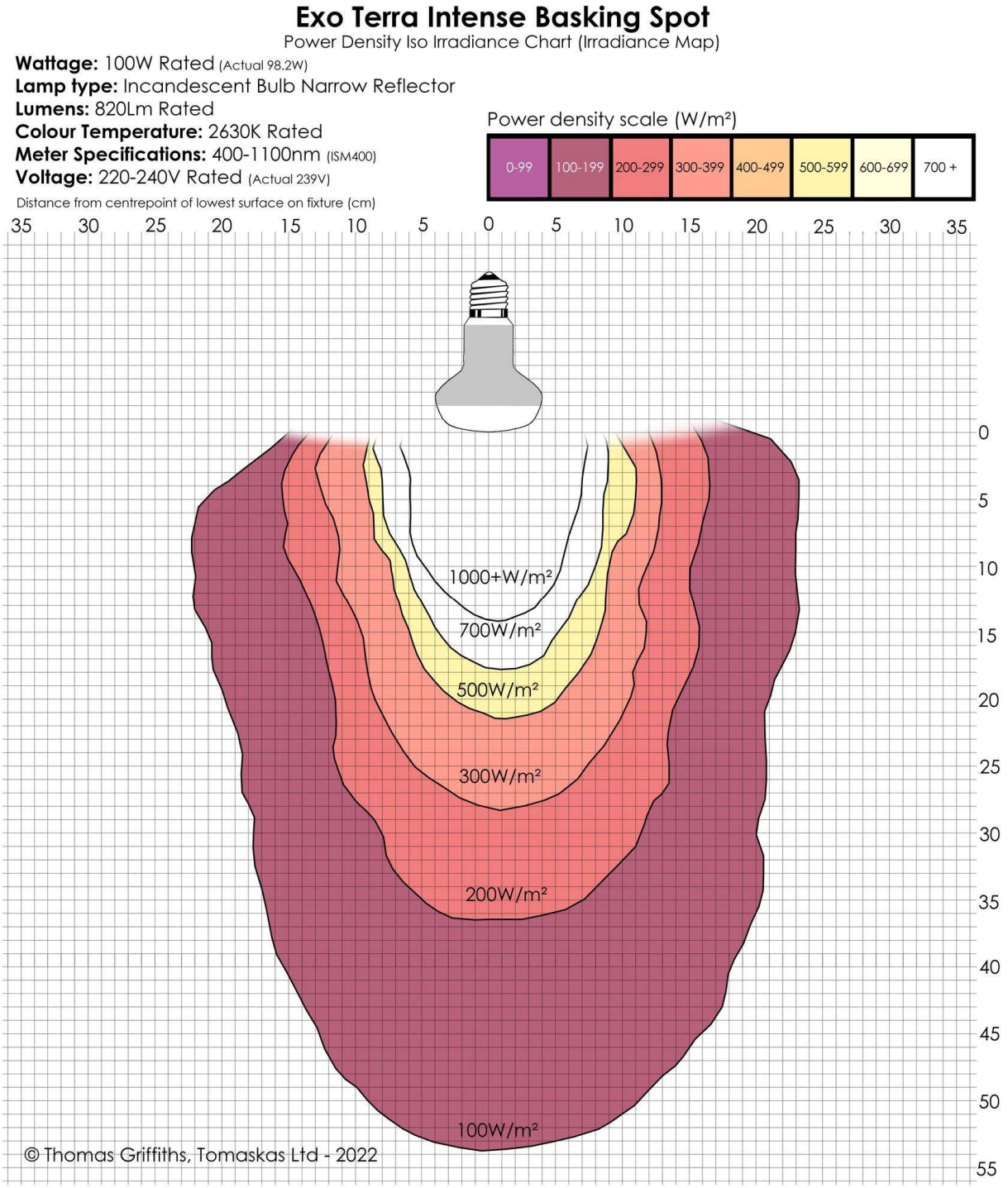
Wattage: 150W Rated (actual 148.9W)
Lamp type: Incandescent Lamp - Narrow Reflector
Lumens: Not Stated
Colour Temperature: 2480°K Rated
Meter Specifications: ISM400
Voltage: 220-240V (actual 236.4V)



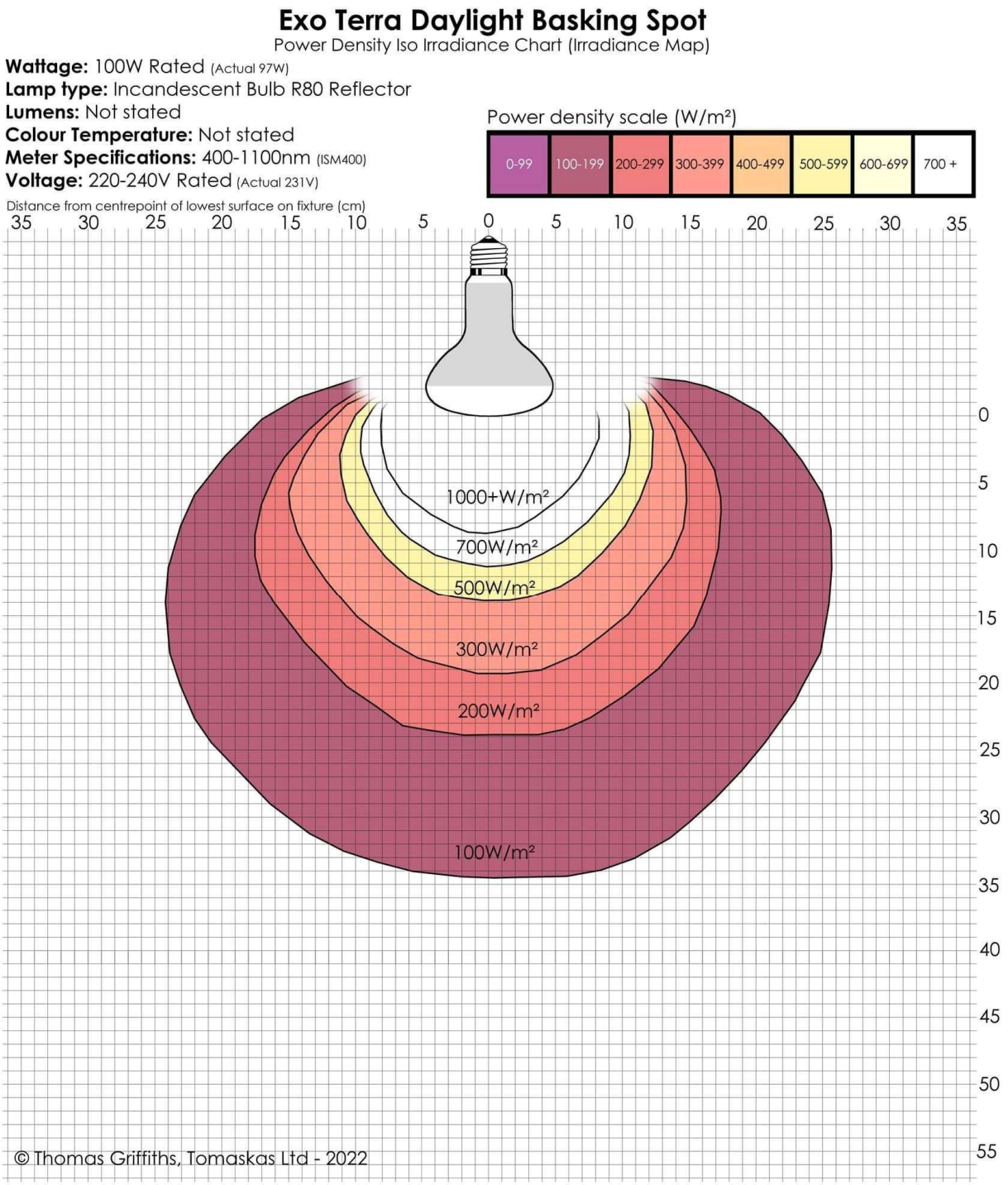
Pro Rep 100W bulb chart – A good example of how some incandescents can have wild beams! Sweet spot - don't use this bulb.



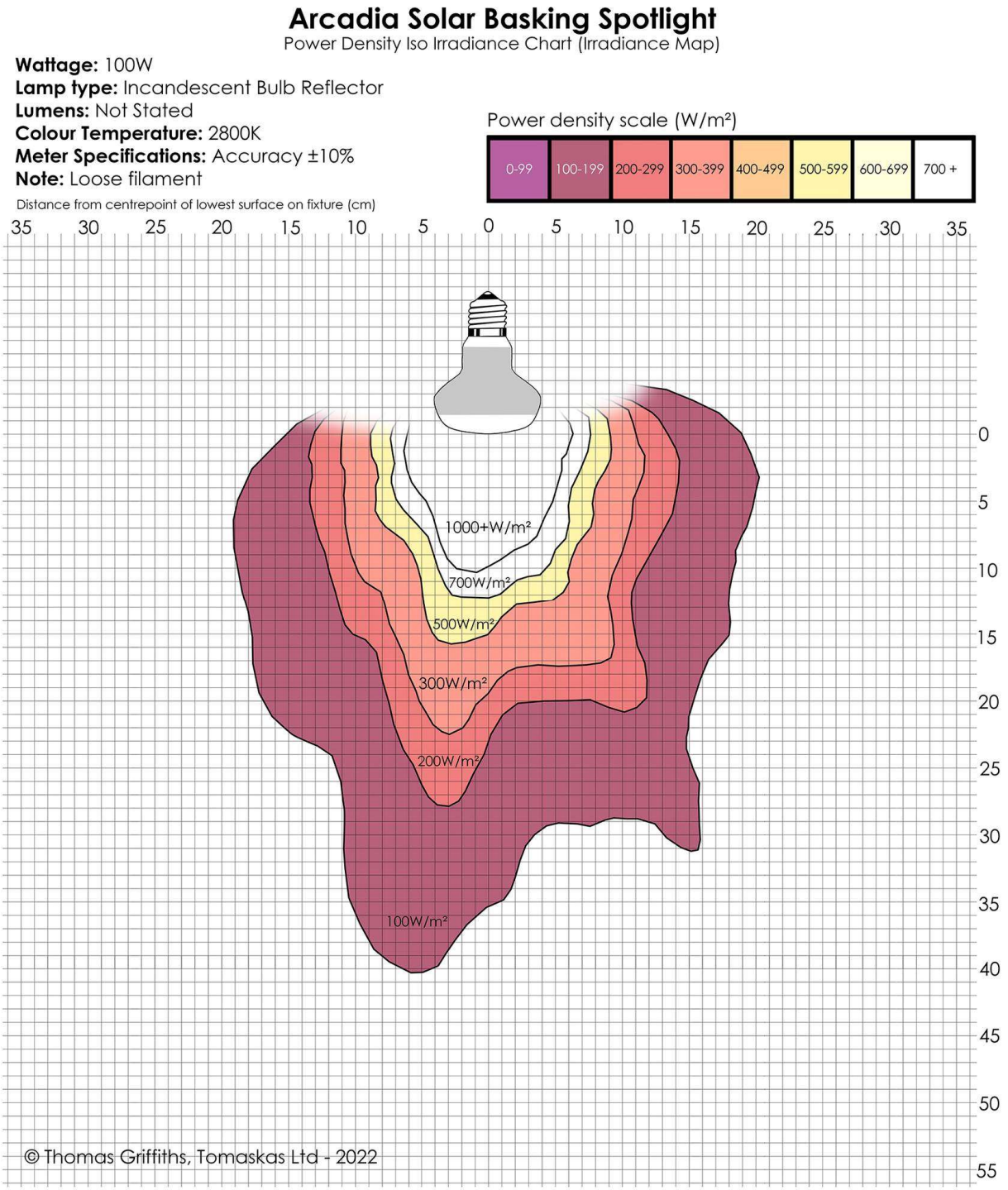
Exo Terra 100W bulb chart – see how two different Exo Terra incandescent bulbs have different beams- Sweet spot ~30CM/12inches.



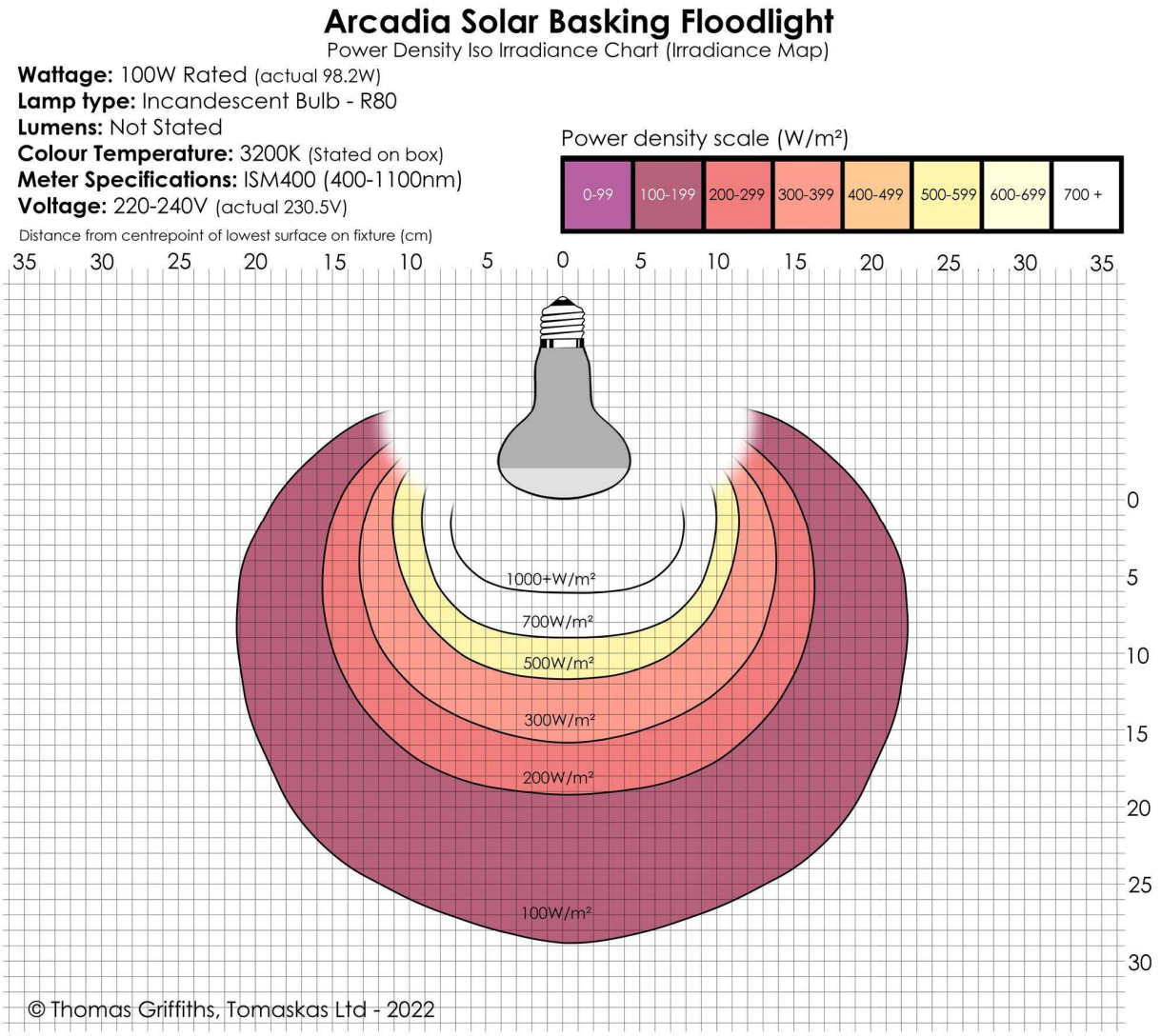
Exo Terra 100W bulb chart – see how two different Exo Terra incandescent bulbs have different beams -Sweet spot ~20CM/7.8inches.



Arcadia 100W bulb chart – see how two different Arcadia incandescent bulbs have different beams - Sweet spot ~20ishCM/7/8inches. Poor beam spread however.

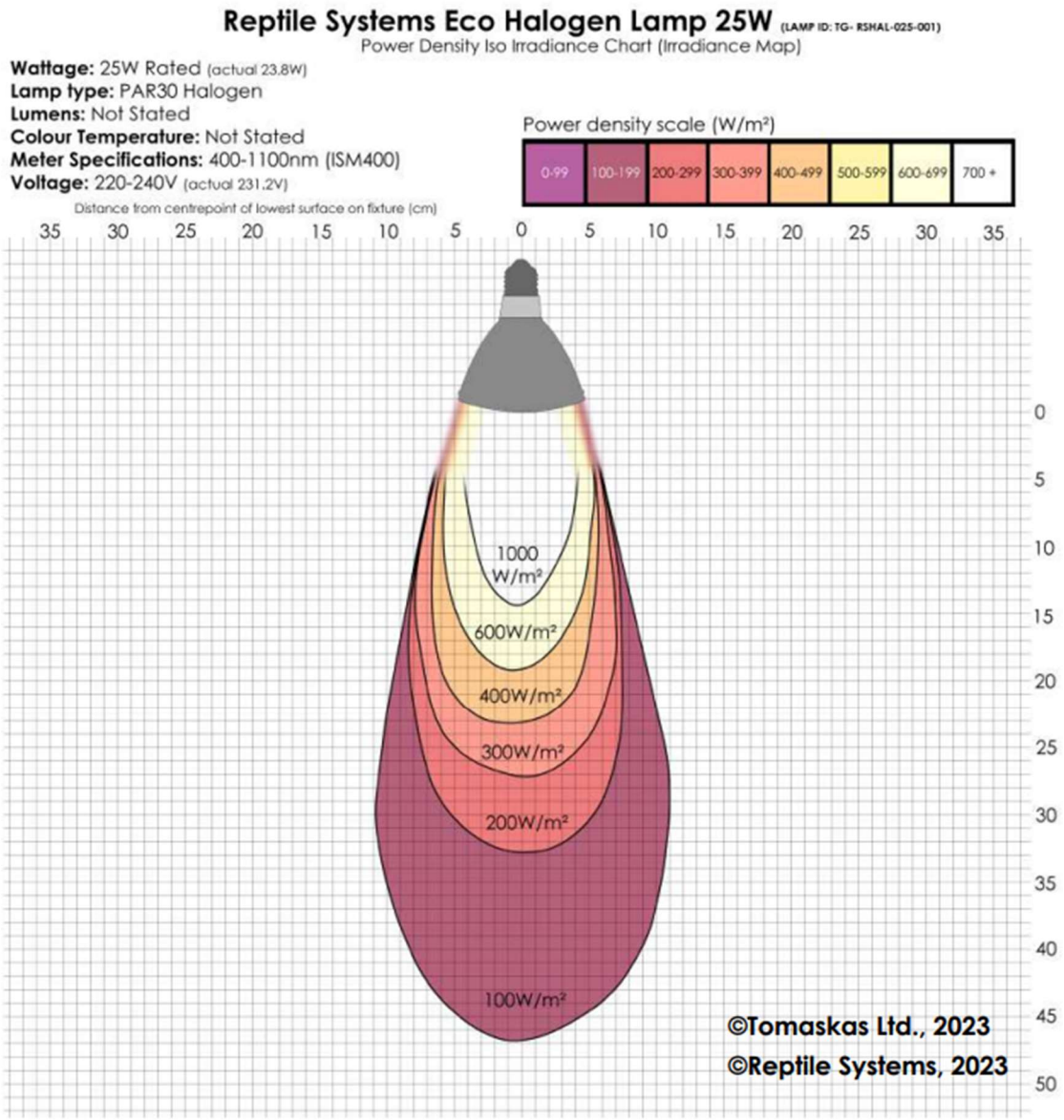


Arcadia 100W bulb chart – see how two different Arcadia incandescent bulbs have different beams - Sweet spot ~17CM/6.7inches.

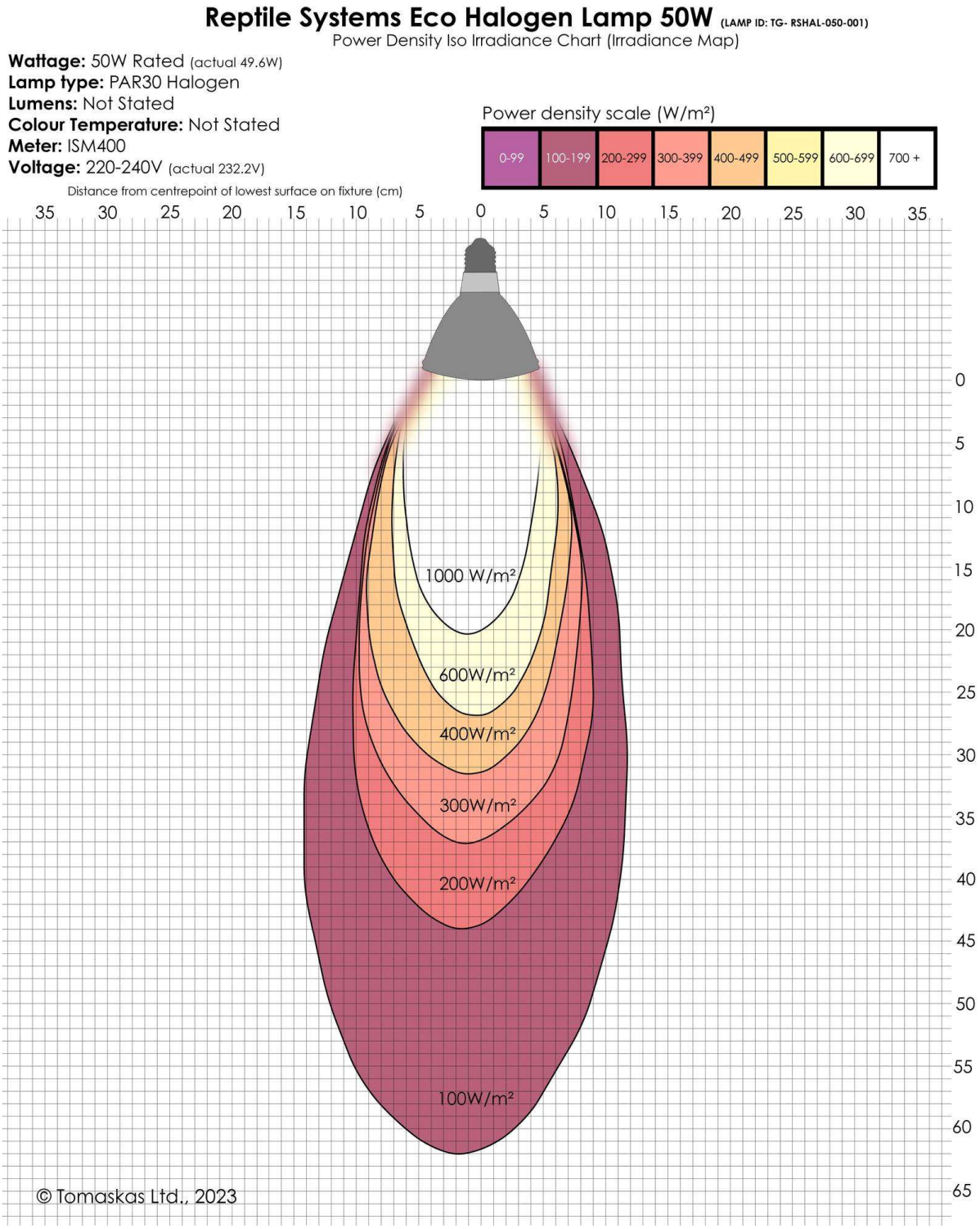


Reptile Systems Eco halogen Bulb 25W. (Arcadia 100W halogen at last page for comparison) -Sweet spot ~27CM/10.6inches.

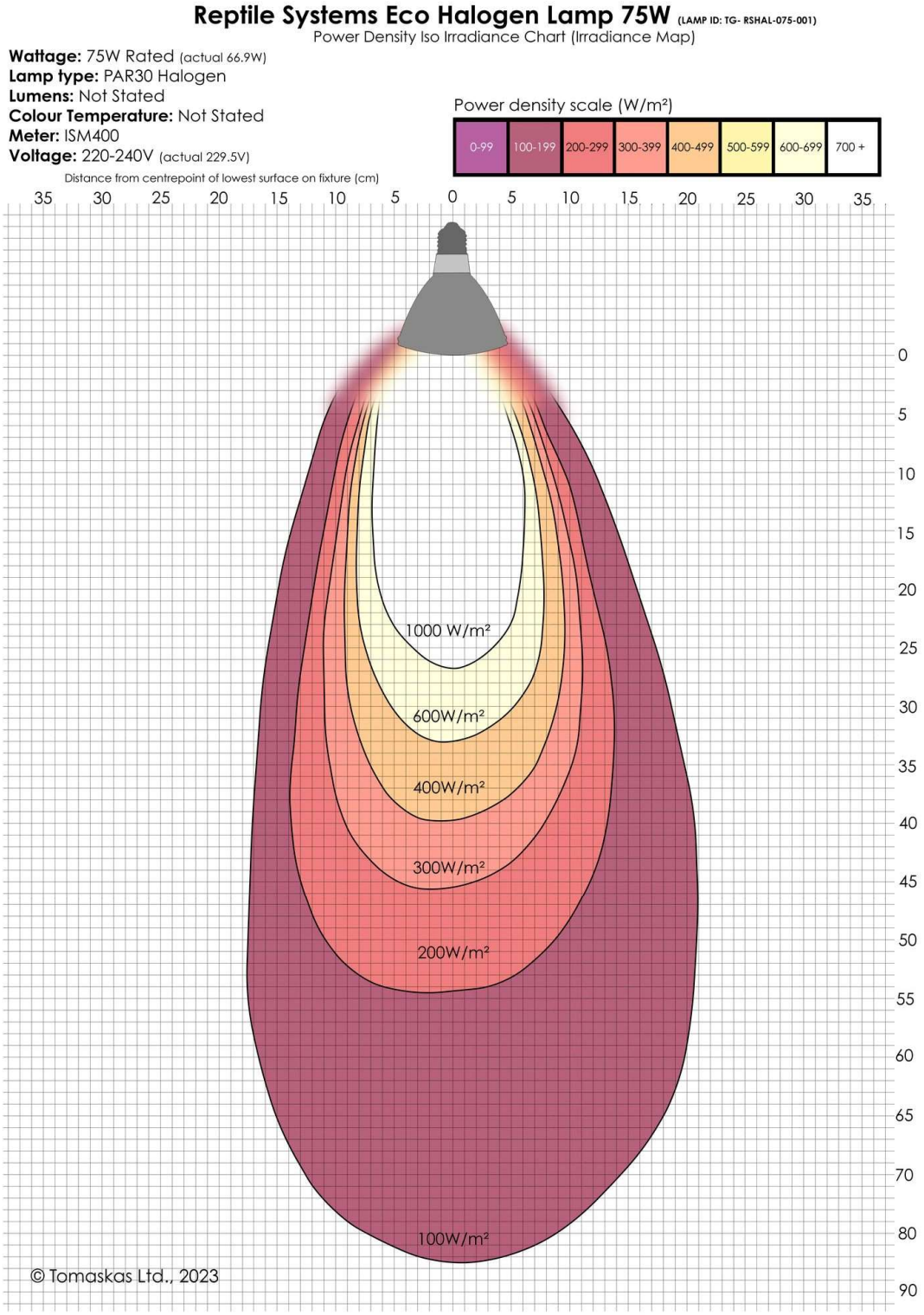
240V 25W WHITE



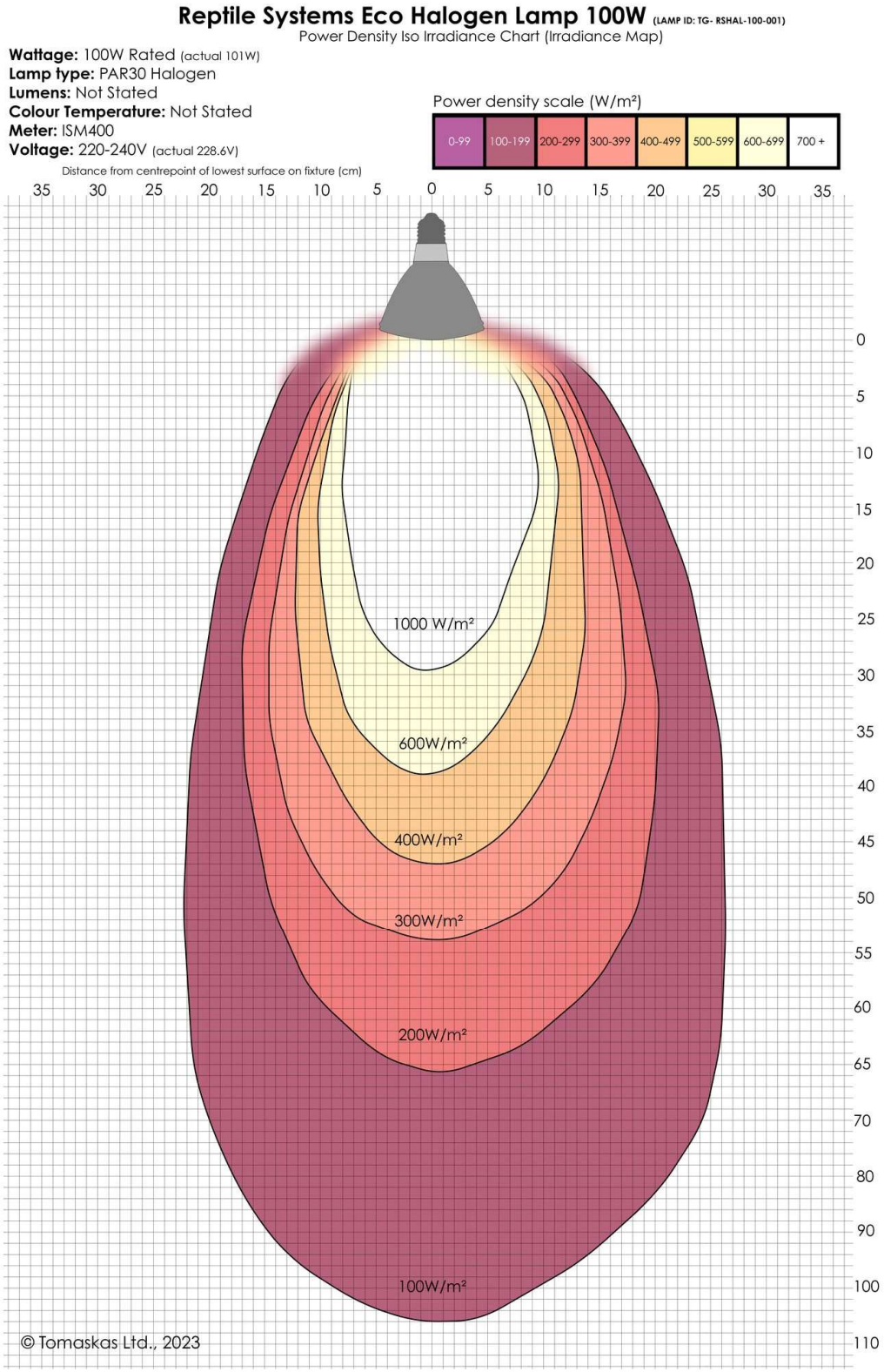
Reptile Systems Eco halogen Bulb 50W. -Sweet spot ~37CM/14.5inches.



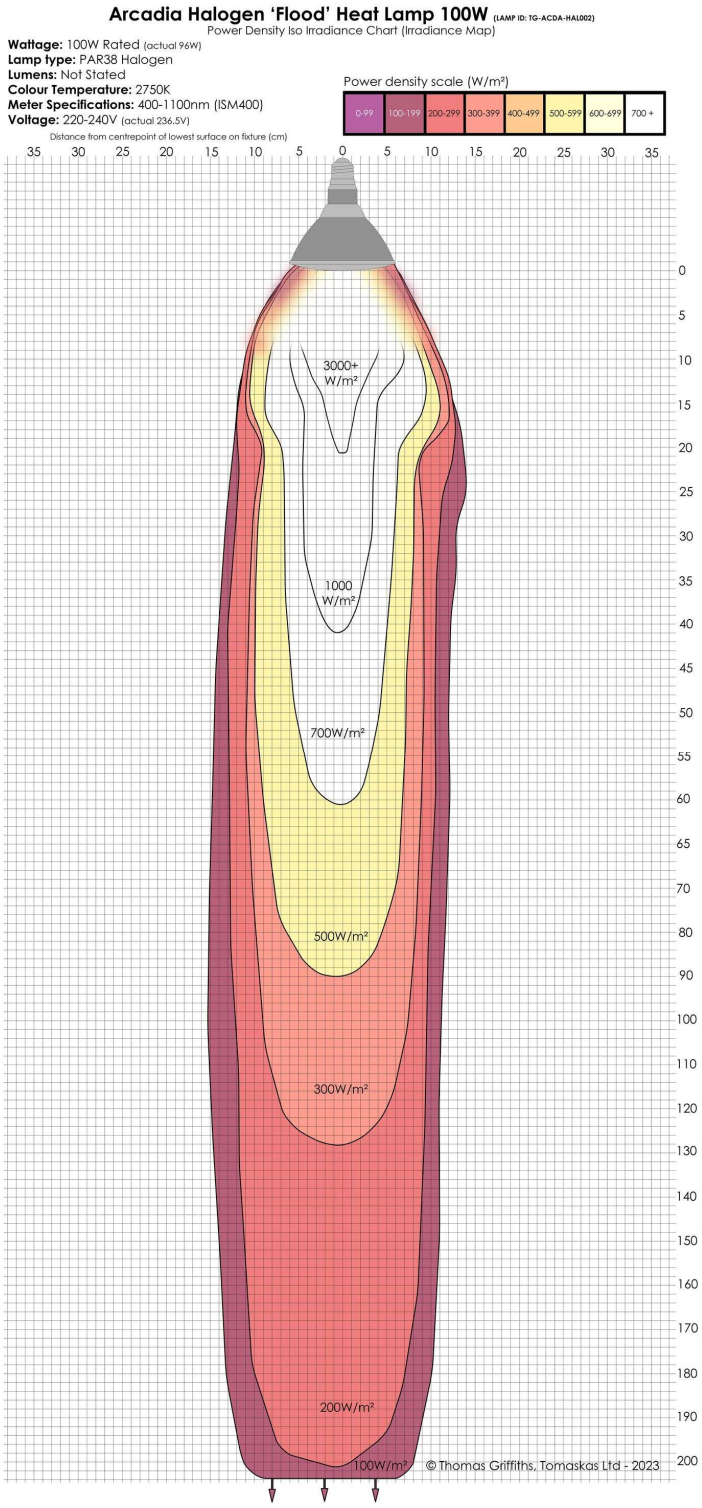
Reptile Systems Eco halogen Bulb 75W. -Sweet spot ~49CM/19.25inches.



Reptile Systems Eco halogen Bulb 100W. -Sweet spot ~60CM/23.5inches.



Arcadia Halogen 100W “laser Beam” -Sweet spot ~160CM/63inches.

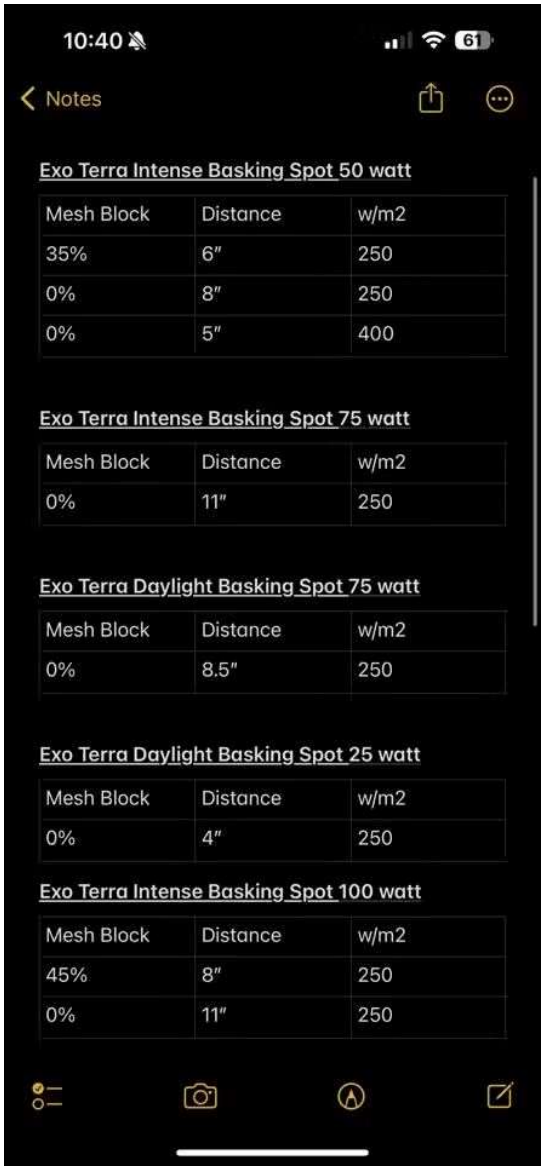


All guides
https://darkcelbii.github.io/snake-guides/

Thermostat Comparison Guide:
https://darkcelbii.github.io/snake-guides/ThermostatComparisonGuide.pdf

Choosing UVB Guide:
https://darkcelbii.github.io/snake-guides/ChoosingUVBGuide.pdf

RHP Comparison guide:
https://darkcelbii.github.io/snake-guides/RadiantHeatPanelGuide.pdf



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Notes

Exo Terra Intense Basking Spot 50 watt

Mesh Block	Distance	w/m2
35%	6″	250
0%	8″	250
0%	5″	400

Exo Terra Intense Basking Spot 75 watt

Mesh Block	Distance	w/m2
0%	11″	250

Exo Terra Daylight Basking Spot 75 watt

Mesh Block	Distance	w/m2
0%	8.5″	250

Exo Terra Daylight Basking Spot 25 watt

Mesh Block	Distance	w/m2
0%	4″	250

Exo Terra Intense Basking Spot 100 watt

Mesh Block	Distance	w/m2
45%	8″	250
0%	11″	250