Mitochondriak® Office infrared panel

Spectral measurement, pulsing, flicker and EMF · 29 October 2026 · Protocol **ML-2026-10-OFFICE**

Measurement date	29 October 2026
Performed by	Mitochondriak® Lab, Easy Light s.r.o., Slovakia
Device	Mitochondriak® Office infrared panel · 70 LEDs (3 W) · 7 wavelengths 630–940 nm · touch screen
Mode	RED and NIR on, full intensity, continuous mode; pulsing measured separately at 10 and 100 Hz
Instruments	certified OHSP-350UVF spectrometer (230–900 nm, 1 nm steps), second certified spectrometer UPRtek CV600 with calibration certificate (380–780 nm, 1 nm steps), TES 1333 solar meter (400–1,100 nm), Cornet ED88 electrosmog meter and GQ Multifield EMF meter (commonly called a 3-meter: electric field, magnetic field and radio-frequency radiation)
Distances from the device face	15, 30, 50 and 70 cm (recommended distance 50 to 60 cm)
Power supply	mains 230 V / 50 Hz
Units	irradiance in mW/cm² (1 mW/cm² = 10 W/m²), spectral irradiance in mW/m²/nm

Summary

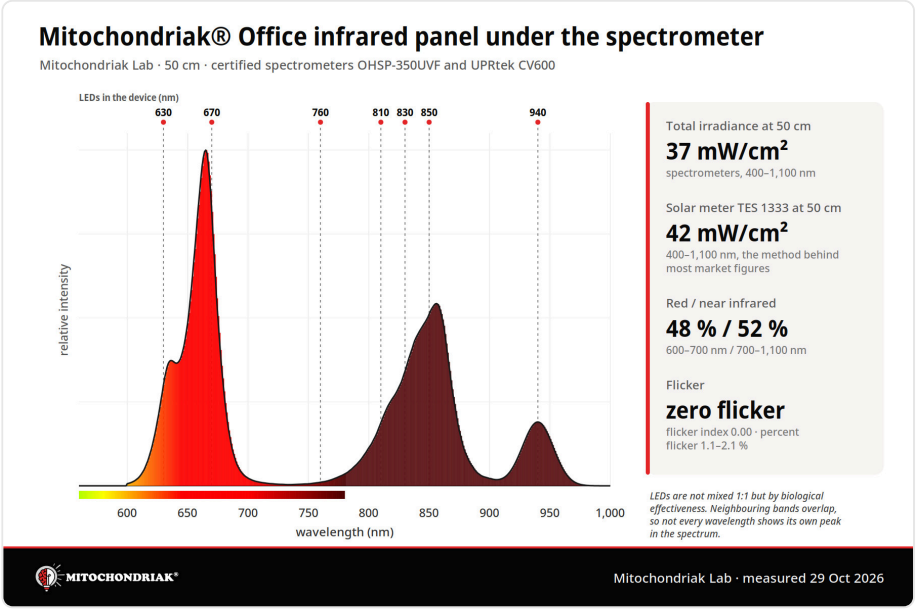
The Mitochondriak® Office infrared panel has 7 LED types (wavelengths) in the red and near-infrared range: 630, 670, 760, 810, 830, 850 and 940 nm. The LEDs are distributed by biological effectiveness, not 1:1, so neighbouring bands overlap and not every wavelength has its own peak in the spectrum; the 940 nm band is determined from the spectrum and the solar meter. At 50 cm the total irradiance is 37.2 mW/cm² (certified spectrometers, 400–1,100 nm) and the TES 1333 solar meter reads 41.7 mW/cm². Of this, 18.0 mW/cm² is red (600–700 nm) and 19.2 mW/cm² near infrared (700–1,100 nm), a ratio of 48 % to 52 %. At 30 cm the total irradiance is 47.3 mW/cm² (solar meter 77.3 mW/cm²). Below 600 nm it emits nothing – there are no blue or green LEDs. The light does not actually flicker – zero flicker (flicker index 0.00, percent flicker 1.1–2.1 %, similar to sunlight), the optional pulsing at 0–10,000 Hz genuinely switches the LEDs on and off, and at 30 cm the electromagnetic field is at background level (0.1 µT, 0 V/m).

Key results

Parameter	15 cm	30 cm market reference point	50 cm recommended distance	70 cm
Total irradiance 400–1,100 nm certified spectrometers OHSP-350UVF and UPRtek CV600; the part above 900 nm determined from the spectrum and the solar meter	**59.2 mW/cm²**	**47.3 mW/cm²**	**37.2 mW/cm²**	**8.4 mW/cm²**
TES 1333 solar meter, 400–1,100 nm the method behind most irradiance figures on the market	**113.5 mW/cm²** 1,135.0 W/m²	**77.3 mW/cm²** 772.9 W/m²	**41.7 mW/cm²** 416.7 W/m²	**14.0 mW/cm²** 139.7 W/m²
Red 600–700 nm	**20.9 mW/cm²**	**23.3 mW/cm²**	**18.0 mW/cm²**	**4.4 mW/cm²**
Near infrared 700–1,100 nm	**38.3 mW/cm²**	**24.0 mW/cm²**	**19.2 mW/cm²**	**4.0 mW/cm²**
of which the 940 nm band (925–955 nm)	**5.2 mW/cm²**	**4.1 mW/cm²**	**3.2 mW/cm²**	**0.7 mW/cm²**
Ratio red : near infrared	**35 : 65 %**	**49 : 51 %**	**48 : 52 %**	**52 : 48 %**
Below 600 nm (blue, green) no blue or green LEDs	**0 mW/cm²**			
Flicker two independent certified spectrometers, repeated measurements – does not actually flicker	**zero flicker · flicker index 0.00 · percent flicker 1.1–2.1 %**			
Pulsing (optional) LEDs genuinely switch on and off (PWM); mean irradiance roughly halved	**0–10,000 Hz · at 10 and 100 Hz modulation 96–100 %, index 0.46–0.47**			
Magnetic field (30 cm) Cornet ED88, LF600	**0.1 µT (1 mG) – background level**			
Electric field · radio-frequency radiation (30 cm) Cornet ED88	**0 V/m · 0.0001 mW/m² – background level**			

MITOCHONDRIAK® LAB

Spectrum at 50 cm



Spectrum at 50 cm, OHSP-350UVF, 560–1,000 nm, normalised; zero below 600 nm.

Wavelengths (LED types)

The LEDs are not distributed 1:1 but in proportion to their biological effectiveness: more LEDs where the body absorbs light best, fewer at the complementary wavelengths. Every LED is semi-monochromatic – it emits a band about 20 to 30 nm wide. Neighbouring bands therefore overlap, and the less represented wavelengths have no separate peak in the spectrum; their light is part of the shared band and fully included in the measured irradiance. The measured peaks below are a supplement, not a list of wavelengths.

LED type	Range	In the measured spectrum (OHSP-350UVF)
630 nm	red	own peak at 636 nm
670 nm	red	own peak at 665 nm
760 nm	near infrared	overlaps with the neighbouring LED bands, no separate peak
810 nm	near infrared	overlaps with the neighbouring LED bands, no separate peak
830 nm	near infrared	overlaps with the neighbouring LED bands, no separate peak
850 nm	near infrared	own peak at 856 nm
940 nm	near infrared	own band 925–955 nm, the part above 900 nm determined from the spectrum and the solar meter

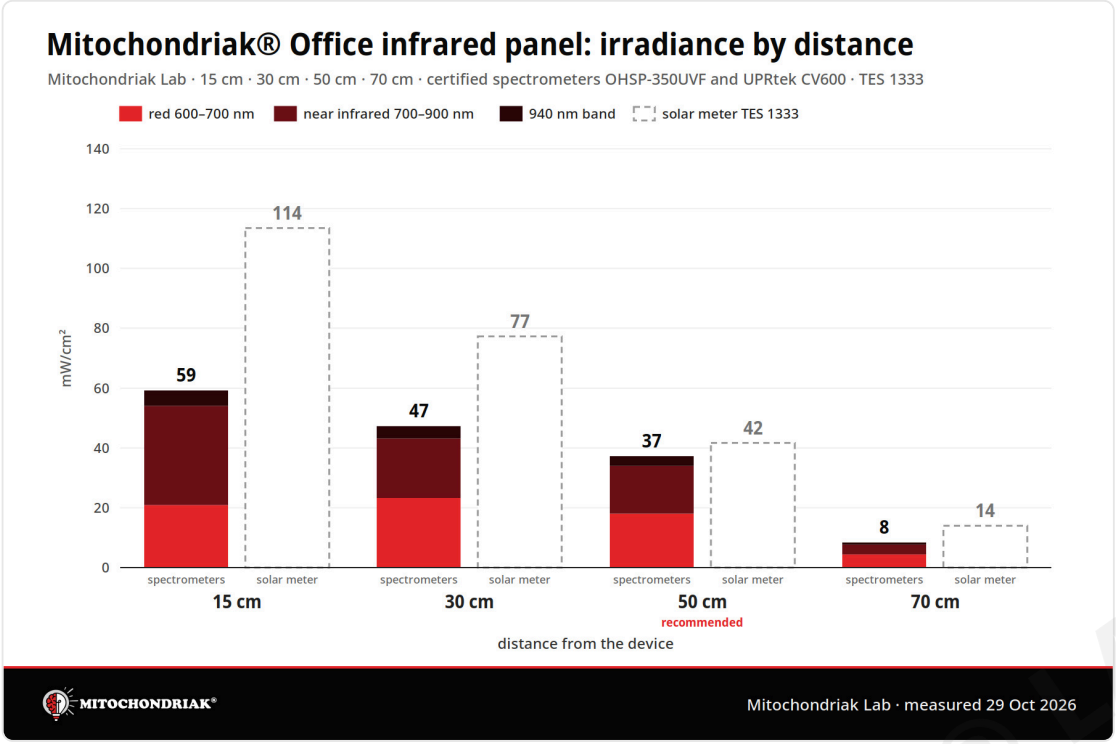
Supplement: measured spectral peaks at 50 cm

Band	Measured peak (OHSP-350UVF)	Full width at half maximum	Share of total irradiance
red	**636 nm**	**overlaps with the neighbouring 810–850 nm LEDs**	14.5 %
red	**665 nm**	**26 nm**	34.6 %
near infrared	**856 nm**	**overlaps with the neighbouring 810–850 nm LEDs**	41.9 %
near infrared	**940 nm (from spectrum and solar meter)**	**30 nm**	8.7 %

MITOCHONDRIAK® LAB

© 2026 Mitochondriak® · www.mitochondriak.com · citation with attribution permitted

Irradiance by distance



Total irradiance by distance: coloured bars = certified spectrometers (split into bands), dashed bars = TES 1333 solar meter.

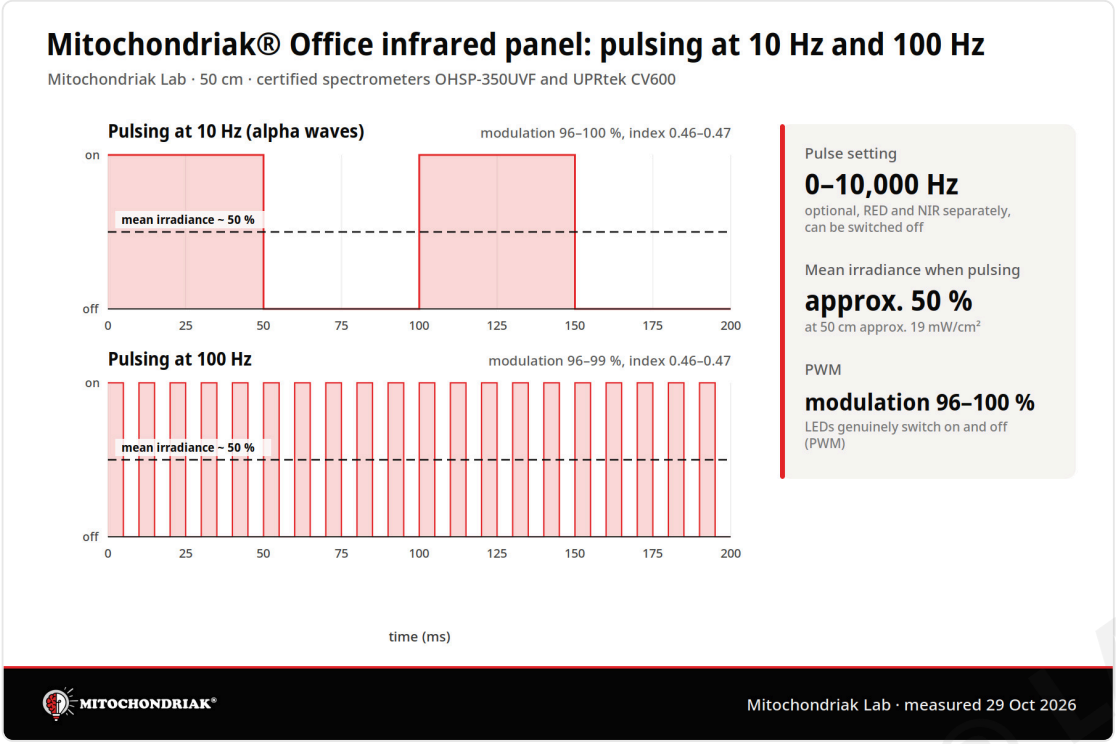
Quantity	15 cm	30 cm	50 cm	70 cm
UPRtek CV600 / OHSP-350UVF, 600–780 nm (mW/cm²)	27.6 / 21.7	21.6 / 24.0	18.2 / 18.5	5.1 / 4.5
Mean irradiance when pulsing (mW/cm²)	29.6	23.6	18.6	4.2

Both certified spectrometers measure the same level in the shared 600–780 nm range; the differences reflect the sensor position in front of individual LEDs.

MITOCHONDRIAK® LAB

© 2026 Mitochondriak® · www.mitochondriak.com · citation with attribution permitted

Pulsing at 10 Hz and 100 Hz



Pulse waveform based on the measured values: the LEDs switch on and off, mean irradiance is roughly halved.

Pulsing is optional: it can be switched off or set anywhere from 0 to 10,000 Hz, including decimals, for RED and NIR separately. At 10 Hz (the alpha-wave frequency) and at 100 Hz both spectrometers measured a modulation of 96–100 % and an index of 0.46–0.47. The LEDs genuinely switch on and off (PWM) – this is not a brightness ripple. Mean irradiance when pulsing is roughly halved – approx. 18.6 mW/cm² at 50 cm. For the highest dose, use continuous mode; to work with the frequency of light, you have it under precise control.

MITOCHONDRIAK® LAB

© 2026 Mitochondriak® · www.mitochondriak.com · citation with attribution permitted

Flicker and electromagnetic field

0.00
flicker index

1.1–2.1 %
percent flicker

Our devices are flicker-free – zero flicker. Repeated measurements with two independent certified spectrometers confirm it (see the display photographs in this protocol). In flicker mode the UPRtek CV600 shows a frequency of 1 Hz because it cannot display zero; the OHSP-350UVF shows 0 Hz and a flat line with a modulation depth of 0.0 % (50 kHz sampling). Percent flicker is 1.1–2.1 % – a very small fluctuation, similar to sunlight – and the flicker index is 0.00. Conclusion: our infrared panels do not actually flicker. This is the result of driver quality that we tested and selected repeatedly.

0.1 µT
magnetic field at 30 cm

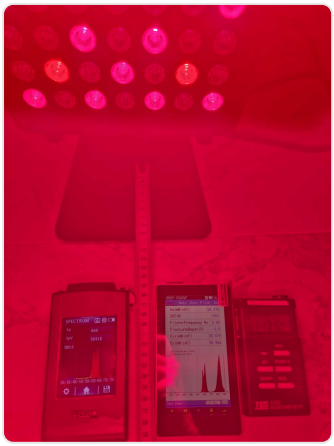
0 V/m
electric field

At 30 cm the Cornet ED88 electrosmog meter (LF600) showed a magnetic field of 0.1 µT (1 mG), an electric field of 0 V/m and radio-frequency radiation of 0.0001 mW/m². The GQ Multifield EMF meter (commonly called a 3-meter: electric field, magnetic field and radio-frequency radiation) showed, even at 10 cm, a magnetic field of 0.4 mG, an electric field of 0 V/m and radio-frequency radiation of 0.000 mW/cm². All values are at the normal background level of a household.

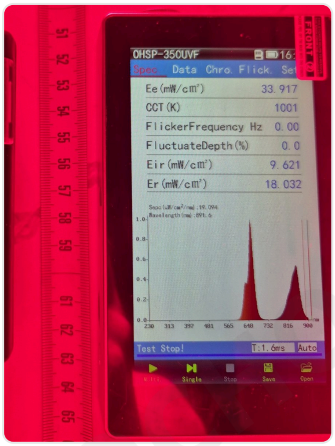
Comparison with the sun

On 29 October 2026 at around 15:00 the same TES 1333 solar meter measured 915.6 W/m² (91.6 mW/cm², 400–1,100 nm) in direct sunlight. Based on the shape of the ASTM G173 reference solar spectrum, approx. 56.5 mW/cm² of this falls in the 600–1,100 nm range (red 16.7, near infrared 39.6 mW/cm²). The Office delivers 37.2 mW/cm² in the same range at 50 cm – 66 % of that dose, without UV and without blue light. The comparison is a calculation from the measurement.

Display photographs



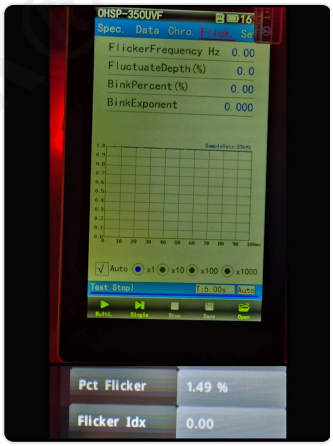
Measurement setup: Office and the Mitochondriak® Lab instruments (15 cm).



OHSP-350UVF at 50 cm.



TES 1333 at 50 cm: 416.7 W/m².



Flicker: OHSP-350UVF 0 Hz, modulation depth 0.0 %; UPRtek CV600 flicker index 0.00.

Data and citation

Full data in 1 nm steps (CSV and XLSX, both spectrometers, all distances):
https://mitochondriak-media.fsn1.your-objectstorage.com/products/office/measurements/mitochondriak-office-spectrum-data.csv
https://mitochondriak-media.fsn1.your-objectstorage.com/products/office/measurements/mitochondriak-office-spectrum-data.xlsx

Citation: Mitochondriak® Lab (2026). Mitochondriak® Office infrared panel – measurement protocol ML-2026-10-OFFICE, 29 October 2026. www.mitochondriak.com. Citation with attribution permitted.

© 2026 Mitochondriak® · www.mitochondriak.com · citation with attribution permitted

Methodology

- **Spectra:** certified OHSP-350UVF spectrometer (230–900 nm) and a second certified spectrometer, UPRtek CV600, with calibration certificate (380–780 nm), both in 1 nm steps, sensor perpendicular to the device face on its axis. Both spectrometers are equivalent.
- **Band irradiance:** $E = \Sigma\, E(\lambda) \cdot \Delta\lambda$, $\Delta\lambda = 1$ nm (red 600–700 nm, near infrared 700–1,100 nm, total irradiance 400–1,100 nm).
- **Below 600 nm:** the device has no blue or green LEDs; in the spectra, totals and data the range below 600 nm is zero.
- **Part above 900 nm:** the tail of the 850 nm LEDs from the exponential course of the spectrum between 860 and 880 nm; the 940 nm LED band (30 nm full width at half maximum) determined from the 600–900 nm spectrum and the 400–1,100 nm solar meter via the solar meter/spectrometer ratio of a panel without 940 nm, verified at all distances.
- **The TES 1333 solar meter** is calibrated to the solar spectrum. With narrow LED bands it reads higher than the spectral integral of the spectrometers (1.6 to 1.8 times for devices without 940 nm); we give both values so they can be compared with market figures and with the spectral reality.
- **Flicker and pulsing:** UPRtek CV600 (flicker index and percent flicker), OHSP-350UVF in flicker mode (50 kHz sampling); flicker in continuous mode, pulsing at the 10 Hz and 100 Hz settings.
- **EMF:** Cornet ED88 electrosmog meter (LF600 magnetic field in µT/mG, electric field in V/m, radio-frequency radiation in mW/m²); GQ Multifield EMF meter (3-meter) at 10 cm.

Spectral table (5 nm steps, mW/m²/nm)

nm	OHSP 15 cm	OHSP 30 cm	OHSP 50 cm	OHSP 70 cm	UPRtek 50 cm
600	108.9	90.6	32.9	5.2	81.6
605	194.7	158.9	68.2	12.0	153.4
610	355.1	293.2	141.9	26.1	285.7
615	670.0	559.7	299.8	57.6	522.8
620	1,219.9	1,019.2	585.9	117.4	890.1
625	2,139.6	1,771.1	1,037.9	215.7	1,387.1
630	3,346.3	2,765.9	1,610.8	343.0	1,874.1
635	3,913.6	3,413.1	1,987.5	435.3	2,069.8
640	3,181.5	3,096.5	1,959.6	448.1	2,087.9
645	2,688.2	2,896.5	2,080.3	494.9	2,363.3
650	2,835.1	3,308.6	2,595.0	631.9	3,119.2
655	3,587.7	4,345.7	3,570.0	883.1	4,188.3
660	4,528.6	5,573.7	4,697.1	1,172.2	5,066.6
665	4,872.0	6,164.4	5,360.3	1,359.4	4,877.5
670	3,685.7	4,841.7	4,373.6	1,138.6	3,376.8
675	2,191.8	2,950.3	2,709.1	707.5	1,685.6
680	1,182.7	1,640.3	1,507.6	386.9	716.8
685	593.3	856.3	777.6	195.1	306.4
690	301.0	443.3	385.9	95.1	137.2
695	172.2	248.3	205.8	48.8	69.1
700	115.0	160.0	122.7	28.3	37.9
705	86.3	116.1	80.1	18.5	24.0
710	70.3	91.3	56.7	12.4	14.6
715	60.9	75.4	42.1	9.2	10.1
720	54.5	66.3	32.7	6.8	11.4
725	50.4	59.6	25.1	5.3	9.2
730	49.1	57.3	21.8	4.4	12.1
735	52.4	57.2	19.2	3.6	16.3
740	59.1	60.3	22.4	4.2	23.0
745	68.4	66.4	26.8	4.4	35.8
750	83.5	75.8	31.3	6.1	49.0
755	99.4	87.6	42.6	7.8	66.8
760	125.0	101.7	56.1	10.3	93.1
765	149.4	118.6	74.0	13.1	125.1
770	191.9	146.7	102.9	18.1	172.5
775	248.2	186.1	142.8	25.1	230.8
780	326.9	239.4	188.3	34.3	259.9
785	438.7	305.5	253.9	45.5	
790	597.0	399.6	342.6	62.5	
795	819.2	525.7	458.8	83.8	
800	1,107.6	679.9	605.8	109.7	
805	1,472.0	873.4	772.5	140.2	
810	1,952.9	1,118.9	1,004.5	180.2	
815	2,443.3	1,393.8	1,237.4	223.9	

MITOCHONDRIAK® LAB

© 2026 Mitochondriak® · www.mitochondriak.com · citation with attribution permitted

nm	OHSP 15 cm	OHSP 30 cm	OHSP 50 cm	OHSP 70 cm	UPRtek 50 cm
820	2,893.0	1,630.0	1,405.7	257.2	
825	3,426.4	1,874.0	1,576.7	288.1	
830	4,096.5	2,233.5	1,829.6	333.3	
835	4,731.7	2,615.5	2,138.3	392.2	
840	5,170.0	2,896.9	2,397.0	452.5	
845	5,567.8	3,037.2	2,562.6	512.9	
850	6,074.7	3,195.2	2,740.3	588.4	
855	6,217.4	3,316.2	2,903.9	653.8	
860	5,468.0	3,067.8	2,742.5	642.8	
865	3,918.9	2,352.6	2,124.9	505.5	
870	2,469.3	1,619.6	1,418.5	337.3	
875	1,473.5	1,078.3	877.3	203.2	
880	967.3	763.8	527.5	120.6	
885	716.7	598.5	331.4	70.4	
890	588.2	515.7	205.2	41.4	
895	524.6	490.9	145.8	22.9	
900	506.5	484.4	115.4	11.3	
905	357.0	365.0	98.6	12.5	
910	302.9	312.7	112.6	18.9	
915	362.9	348.5	180.0	36.3	
920	551.1	486.8	316.9	68.4	
925	857.6	720.9	521.1	115.2	
930	1,217.7	999.6	754.7	168.3	
935	1,514.1	1,229.1	945.5	211.6	
940	1,626.2	1,313.2	1,018.7	228.3	
945	1,501.8	1,209.9	942.1	211.3	
950	1,190.7	958.5	747.4	167.7	
955	809.9	652.3	508.5	114.1	
960	472.5	381.4	296.7	66.5	
965	236.5	191.8	148.4	33.3	
970	101.7	83.3	63.7	14.3	
975	37.6	31.5	23.5	5.3	
980	12.0	10.7	7.5	1.7	
985	3.4	3.5	2.1	0.5	
990	0.9	1.2	0.5	0.1	
995	0.2	0.6	0.1	0.0	
1000	0.1	0.3	0.0	0.0	

MITOCHONDRIAK® LAB

© 2026 Mitochondriak® · www.mitochondriak.com · citation with attribution permitted