February 28, 2024

Barometer of mobile Internet connections in Portugal.

01/01/2023 - 31/12/2023

Agenda

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1. Introducing nPerf

Expert in the telecom network optimization

nPerf is an independent French company based in Lyon (France). For over a decade, nPerf has been a trusted partner for both fixed and mobile operators, providing comprehensive network testing solutions and analysis. Our mission is to accurately measure, evaluate, and enhance the understanding of Internet connectivity around the world.

300k+ tests daily worldwide.

26Md+ coverage scans in total.

3k+ servers all around the world.

Test your Internet connection with nPerf!

nPerf allows you to test the quality of your fixed, mobile, or Wi-Fi Internet connections up to 10 Gb/s!
Dowload our app or visit our website!

Available on the App Store

GET IT ON Google Play

Test your connection on nPerf.com

The subscribers of NOS enjoyed the best mobile Internet performances in Portugal during 2023.

Cellular Internet connections in Portugal

	MEO	NOS	Vodafone
▼ Download bitrates (Mb/s)	125.66	194.04	100.83
▲ Upload bitrates (Mb/s)	22.16	27.16	20.07
◀▶ Latency (ms)	36.55	29.15	34.62
🌐 Web browsing (%)	62.03	64.41	63.43
▶ Youtube streaming (%)	86.29	86.93	85.25
nPerf Score (nPoints)	91 192	102 684	89 012

Source : nperf.com

Best mobile Internet performance in 2023

No.1 MOBILE NETWORK PERFORMANCE — nperf AWARDS

Source : nperf.com

MEO — NOS — vodafone

Source : nperf.com

The subscribers of NOS and MEO enjoyed the best 5G mobile connections in Portugal during 2023.

5G mobile connections in Portugal

		MEO	NOS	Vodafone
▼	Download bitrates (Mb/s)	309.92	351.60	193.83
▲	Upload bitrates (Mb/s)	47.51	42.78	33.79
◀▶	Latency (ms)	29.32	24.65	27.56
🌐	Web browsing (%)	73.37	72.92	73.39
▶	Youtube streaming (%)	92.10	92.08	88.11
n	nPerf Score (nPoints)	121 914	125 297	111 837

Source : nperf.com

Our research rigorously assessed the Portugal mobile broadband market based on nPerf scores and various performance metrics such as download and upload bitrates, latency, and efficiency in web browsing and streaming. This analysis provides a detailed examination of how major ISPs like MEO, NOS, and Vodafone stack up against each other, offering insights into their service quality and user experience.

NOS: setting the benchmark in mobile broadband

NOS emerges as the clear leader in Portugal's mobile broadband sector, showcasing an impressive download speed of 194 Mb/s and an upload speed of 27 Mb/s. Its low latency of 29 ms significantly enhances the user experience, which is further evidenced by web browsing and streaming success rates of 64% and 87%, respectively. These exceptional metrics contribute to NOS's leading nPerf score of 102,684 nPoints, indicating its premium service quality in the mobile broadband landscape.

MEO: 5G co-leader

MEO demonstrates strong performance with a download speed of 126 Mb/s and an upload speed of 22 Mb/s. A latency of 37 ms pairs with web browsing and streaming scores of 62% and 86%, respectively, culminating in an nPerf score of 91,192 nPoints. MEO users enjoyed very high 5G broadband performances with a browsing score of 73% and an incredible streaming score of 92%. MEO's service is robust, ensuring a high-quality user experience.

Vodafone: a solid third

Vodafone offers competitive services with a download speed of 101 Mb/s and an upload speed of 20 Mb/s. With a latency of 35 ms and web browsing and streaming scores of 63% and 85%, respectively, Vodafone achieves an nPerf score of 89,012 nPoints. These figures reflect a reliable and efficient service offering.

Conclusion:

NOS stands out as the top performer in Portugal's mobile broadband market, thanks to its unparalleled download and upload speeds, low latency, and exceptional performance in web browsing and streaming. MEO and Vodafone also present strong capabilities, each with unique strengths in speed, latency, and overall performance.

nPerf provides a **free tool to assess Internet connection quality** via its website and mobile apps (Android, iOS). Daily, thousands of people rely on nPerf for speed tests in their country, contributing to a comprehensive crowdsourced database covering all operators.

The study employs a strong filtering method to reflect real customer experiences on a specific network (mobile or fixed line). Measures are taken to prevent probes and measurement robots from affecting the results.

For mobile connections, we assess:

▼ Download bitrate :

Indicates the amount of data your connection can receive in one second from the nPerf server. The highest the measured value, the best is the bitrate of your connection.

▲ Upload bitrate :

Indicates the amount of data your connection can send in one second from the nPerf server. The highest the measured value, the best is the bitrate of your connection.

◀▶ Latency (ping) :

It indicated the delay a small packet of data requires to make a round-trip from your computer to the nPerf server. The shorter the delay, the most reactive your connection is. The main is the minimum value.

🌐 Browsing performance :

The browsing test assesses the load time of the fully loaded pages, including images, JavaScript, CSS, and fonts, for the five most popular sites. This indicator reflects the user's perceived quality of the Internet network.
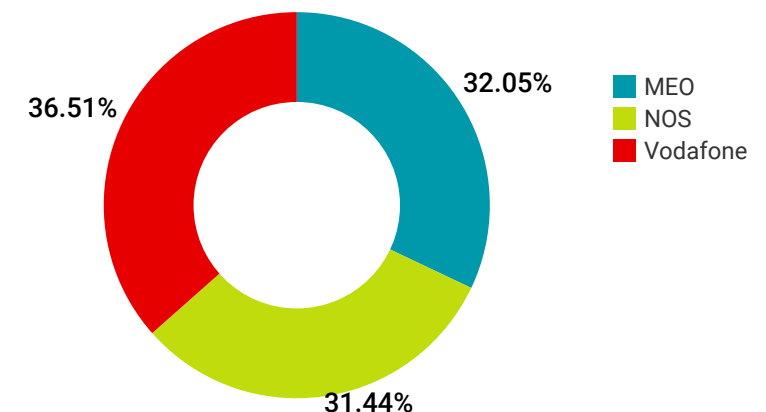
▶ Streaming performance :

The video streaming test gauges the load time of a fully loaded video in three resolutions on YouTube, considering stalls during playback. This indicator reflects the user's perceived quality of the Internet network.

Statistical precision is crucial in accurately determining winners. At nPerf, we prioritize test quality, precise reporting, and transparency. Analyzing a large volume of tests in this study, we've achieved 3 % precision for absolute values and 1 point for percentage-based results, highlighting the reliability and accuracy of our data.

For a more comprehensive understanding of the user experience, our report features test results during both Busy hours (6 PM to 11 PM) and Idle hours (the rest of the day). Busy hours, marked by network strain, can impact user experience through congestion. This approach helps in understanding how network performance fluctuates throughout the day.

We only include national Internet service providers with test share above 5% share. The chart below shows the overall test distribution for each service provider.

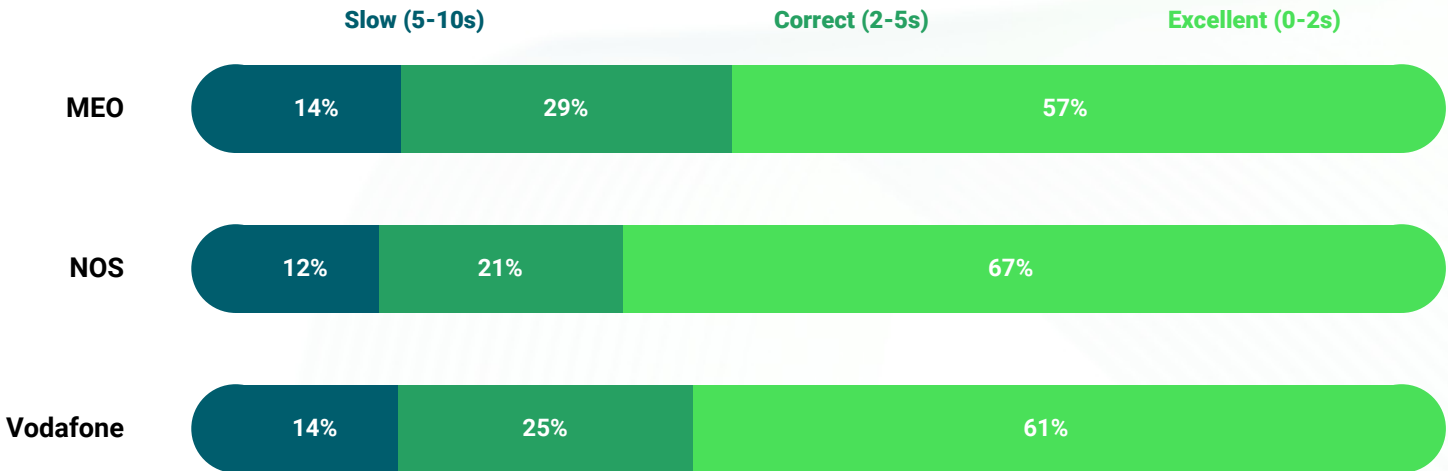**Overall distribution of the tests per provider (ISPs Share)**

- 32.05% MEO
- 31.44% NOS
- 36.51% Vodafone

Source : nperf.com

Browsing Performance rate (average)

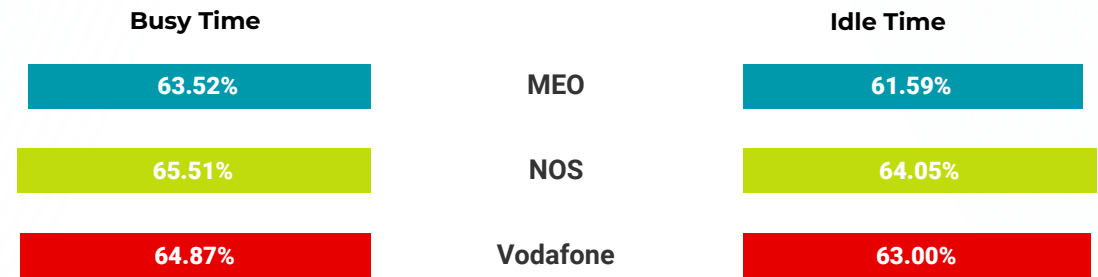|	
MEO	62.03%
NOS	64.41%
Vodafone	63.43%

Source : nperf.com

The subscribers of NOS and Vodafone enjoyed the best mobile Internet browsing performance in 2023.
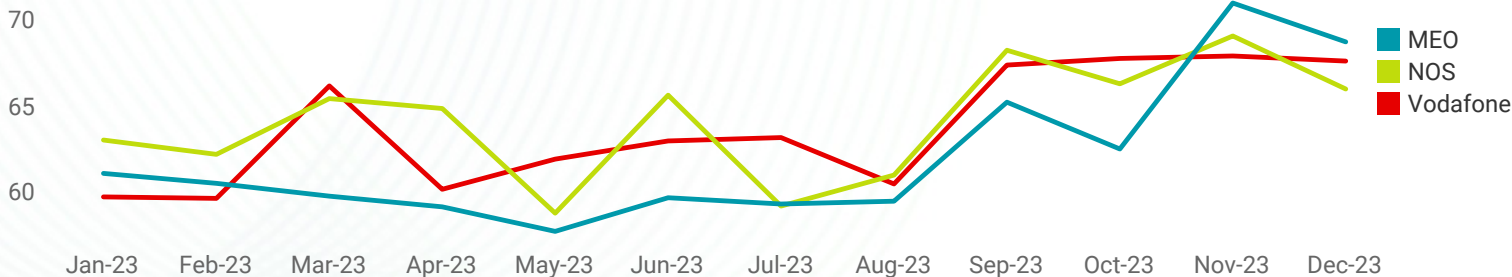
Browsing Performance results ventilation (average)

	Slow (5-10s)	Correct (2-5s)	Excellent (0-2s)
MEO	14%	29%	57%
NOS	12%	21%	67%
Vodafone	14%	25%	61%

Source : nperf.com

Browsing Performance rate (average)

Busy Time		Idle Time
63.52%	MEO	61.59%
65.51%	NOS	64.05%
64.87%	Vodafone	63.00%

Source : nperf.com

Browsing performance rate (average) evolution over the year

Legend: MEO, NOS, Vodafone

Source : nperf.com

Quality of Experience : Streaming

Streaming Performance rate (average)

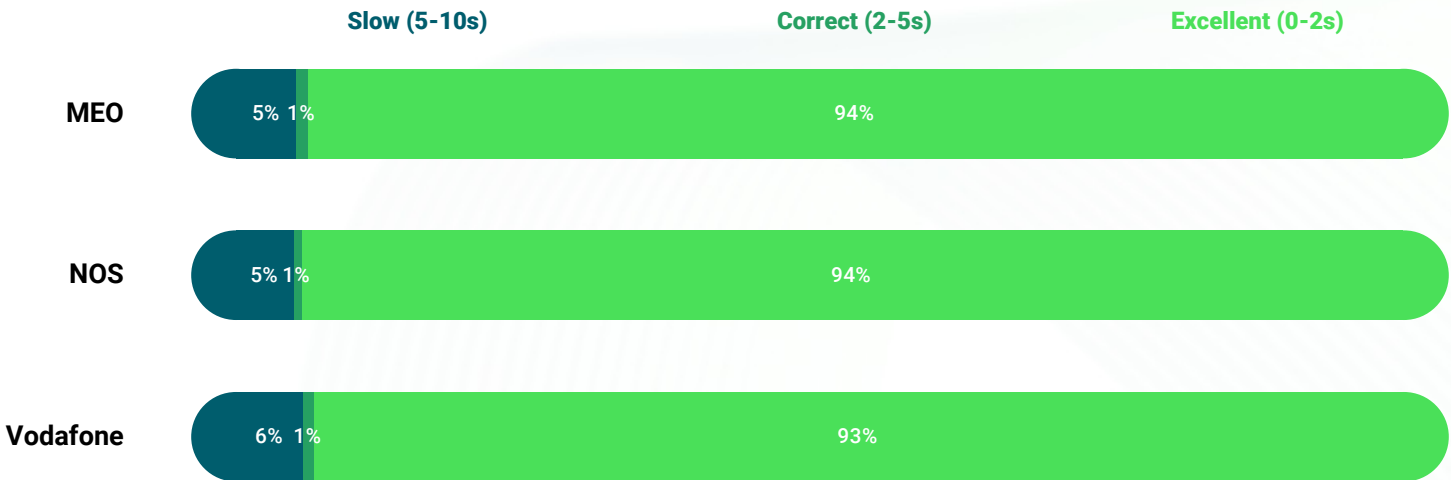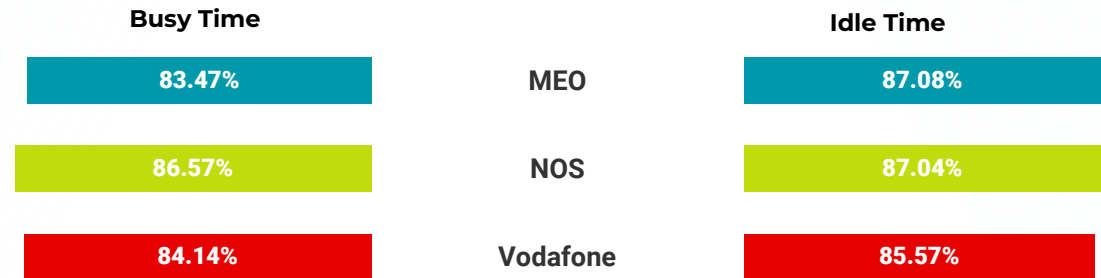|	
MEO	86.29%
NOS	86.93%
Vodafone	85.25%

Source : nperf.com

The subscribers of NOS and MEO enjoyed the best mobile Internet streaming performance in 2023.

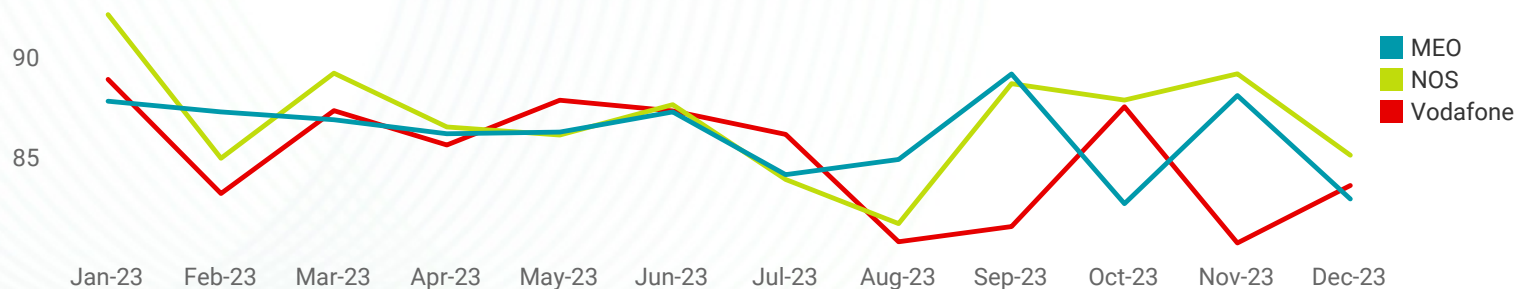## Streaming Performance results ventilation (average)

	Slow (5-10s)	Correct (2-5s)	Excellent (0-2s)

	Slow / Correct	Excellent
MEO	5% 1%	94%
NOS	5% 1%	94%
Vodafone	6% 1%	93%

Source : nperf.com

Streaming Performance rate (average)

Busy Time		Idle Time
83.47%	MEO	87.08%
86.57%	NOS	87.04%
84.14%	Vodafone	85.57%

Source : nperf.com

Streaming performance rate (average) evolution over the year

Legend: MEO, NOS, Vodafone

Jan-23, Feb-23, Mar-23, Apr-23, May-23, Jun-23, Jul-23, Aug-23, Sep-23, Oct-23, Nov-23, Dec-23

Source : nperf.com

Download Speed (average)

Operator	Speed
MEO	125.66 Mb/s
NOS	194.04 Mb/s
Vodafone	100.83 Mb/s
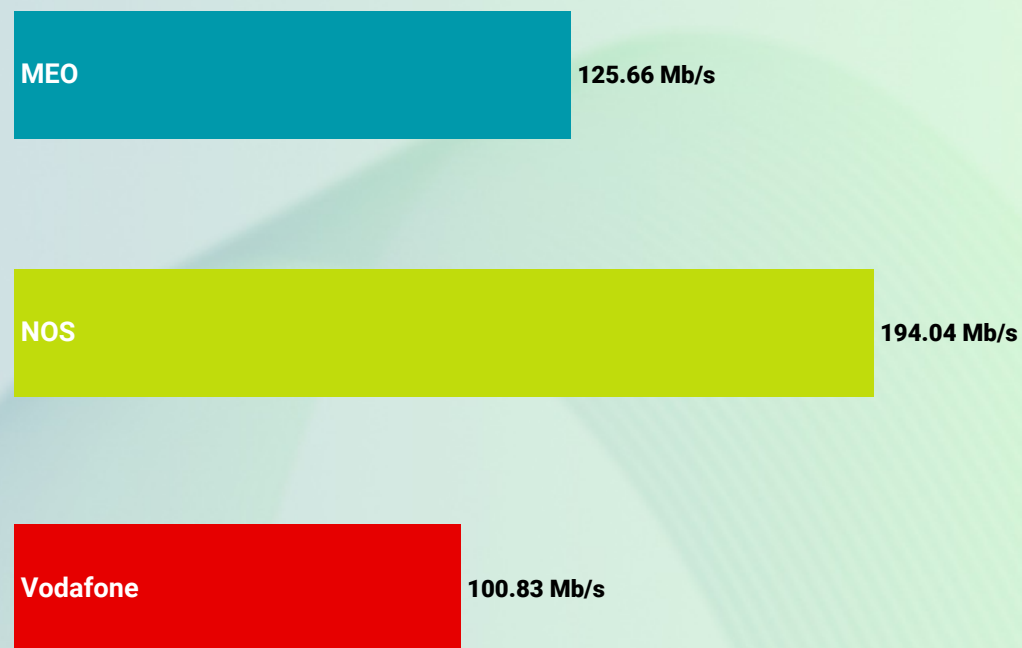
Source : nperf.com

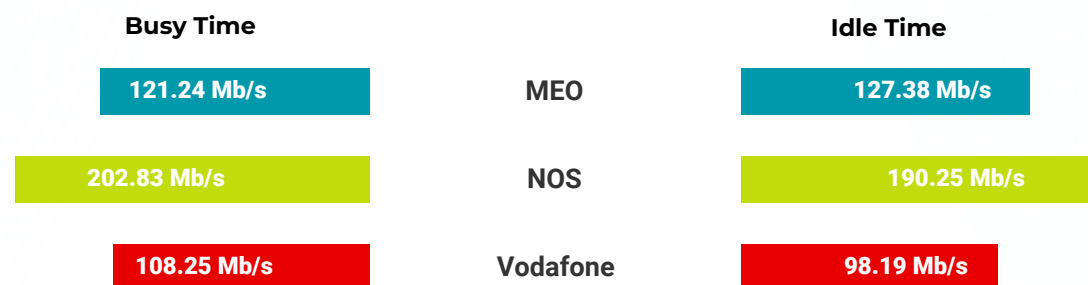**The subscribers of NOS enjoyed the best average mobile Internet download speed in 2023.**

Download Speed results ventilation (average)

	Low (0-10 Mb/s)	Correct (10-25 Mb/s)	Excellent (25+ Mb/s)
MEO	23%	14%	63%
NOS	16%	10%	73%
Vodafone	19%	22%	59%

Source : nperf.com

Download Speed (average)

	Busy Time		Idle Time
MEO	121.24 Mb/s		127.38 Mb/s
NOS	202.83 Mb/s		190.25 Mb/s
Vodafone	108.25 Mb/s		98.19 Mb/s

Source : nperf.com

Download Speed evolution over the year (average)

Legend: MEO, NOS, Vodafone

Source : nperf.com

Speed : Upload

Upload Speed (average)

Operator	Speed
MEO	22.16 Mb/s
NOS	27.16 Mb/s
Vodafone	20.07 Mb/s
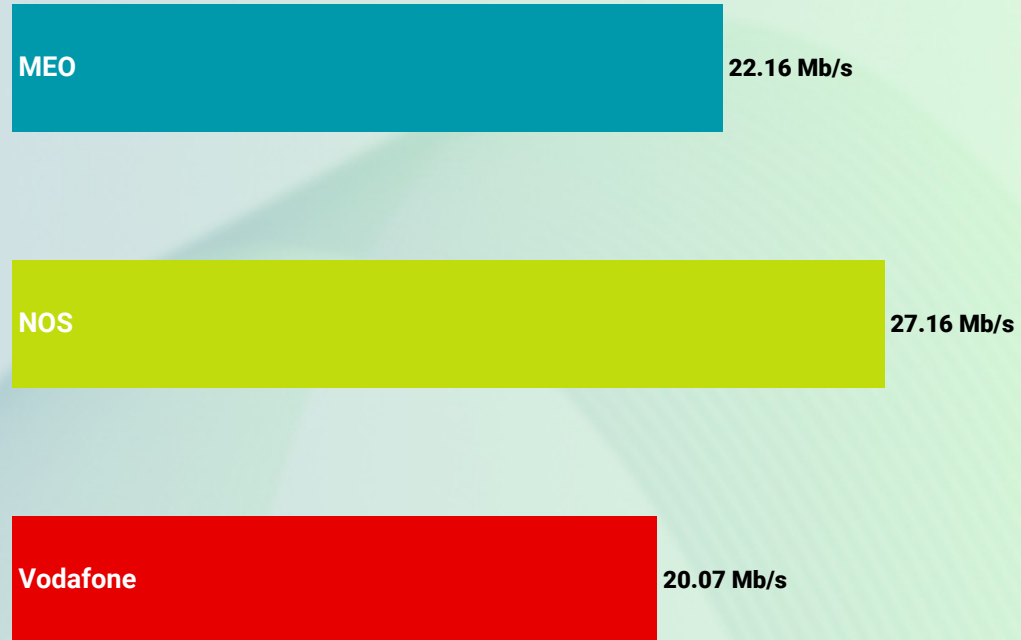
Source : nperf.com

The subscribers of NOS enjoyed the best average mobile Internet upload speed in 2023.
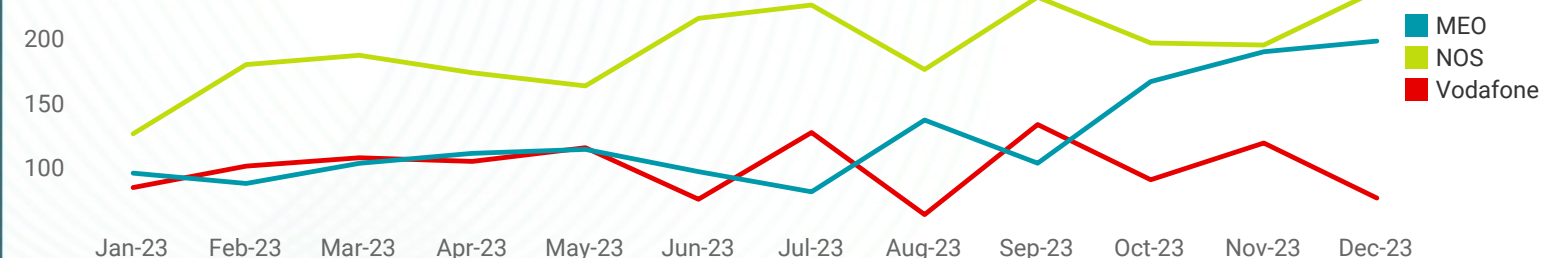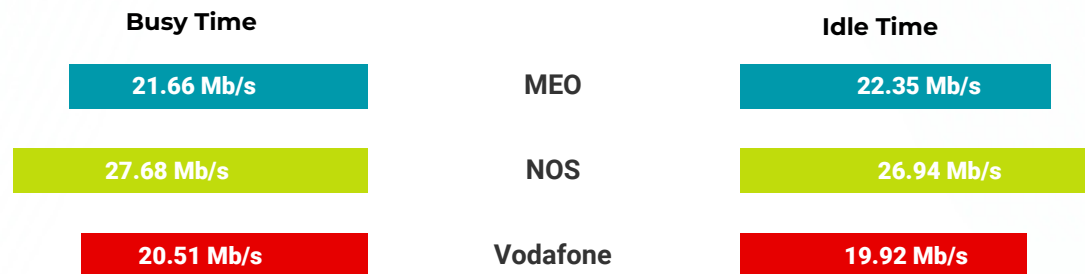
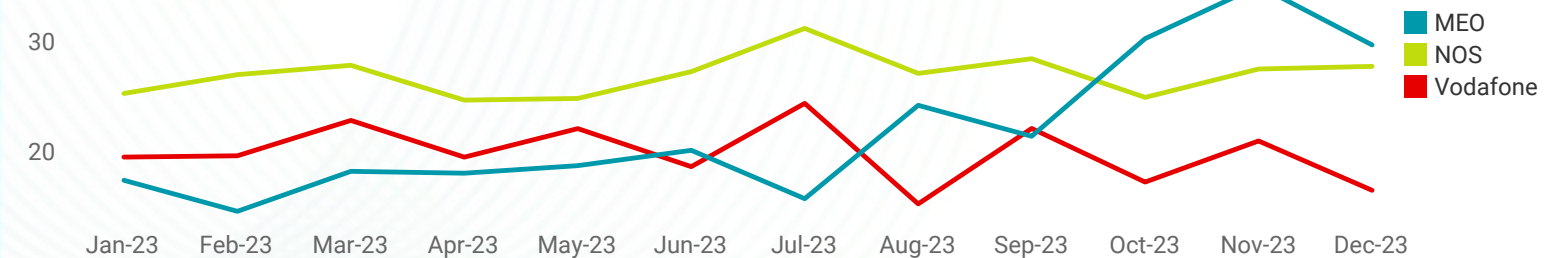## Upload Speed results ventilation (average)

	Low (0-5 Mb/s)	Correct (5-10 Mb/s)	Excellent (10+ Mb/s)
MEO	34%	13%	53%
NOS	28%	11%	61%
Vodafone	31%	15%	54%

Source : nperf.com

Upload Speed (average)

	Busy Time		Idle Time
MEO	21.66 Mb/s		22.35 Mb/s
NOS	27.68 Mb/s		26.94 Mb/s
Vodafone	20.51 Mb/s		19.92 Mb/s

Source : nperf.com

Upload Speed evolution over the year (average)

Legend: MEO, NOS, Vodafone
X-axis: Jan-23, Feb-23, Mar-23, Apr-23, May-23, Jun-23, Jul-23, Aug-23, Sep-23, Oct-23, Nov-23, Dec-23

Source : nperf.com

Speed : Latency

Latency Speed (average)

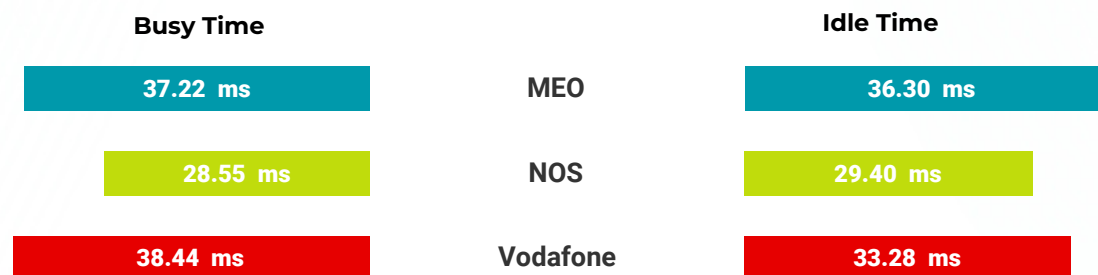| Operator	Latency
MEO	36.55 ms
NOS	29.15 ms
Vodafone	34.62 ms
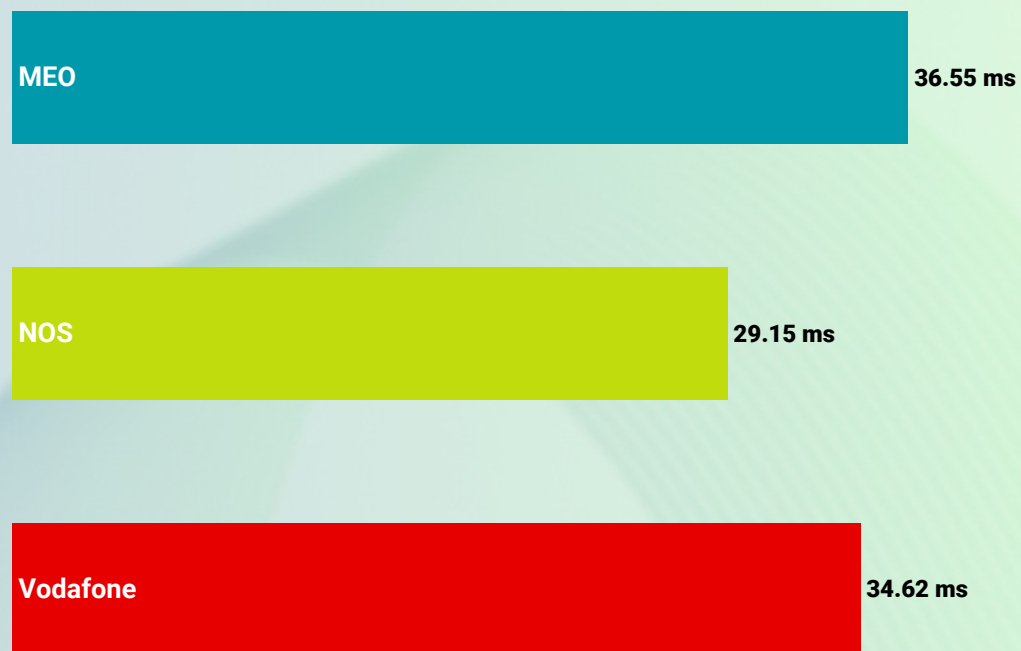
Source : nperf.com

The subscribers of NOS enjoyed the best average mobile Internet latency speed in 2023.
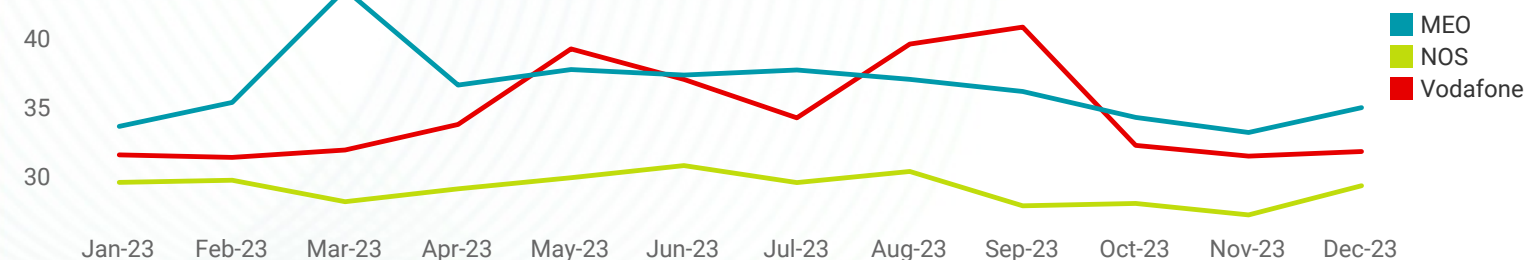
Latency Speed results ventilation (average)

Slow (100+ ms)   **Correct (30-100 ms)**   **Excellent (0-30 ms)**

Operator	Slow	Correct	Excellent
MEO	8%	56%	37%
NOS	7%	31%	62%
Vodafone	6%	42%	52%

Source : nperf.com

Latency Speed (average)

	Busy Time		Idle Time
MEO	37.22 ms		36.30 ms
NOS	28.55 ms		29.40 ms
Vodafone	38.44 ms		33.28 ms

Source : nperf.com

Latency Speed evolution over the year (average)

Legend: MEO, NOS, Vodafone

Source : nperf.com

5G nPerf score (average)

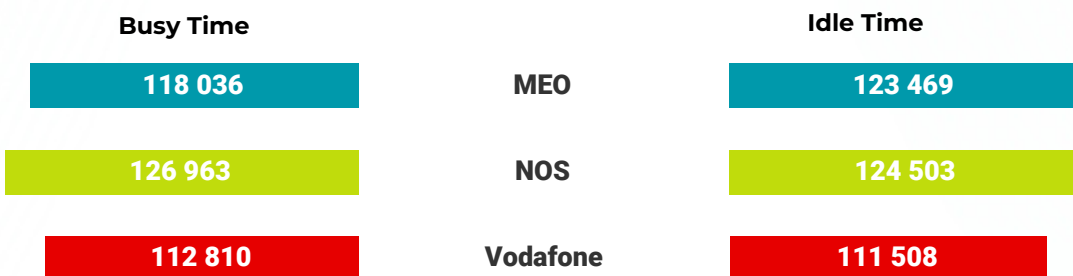MEO **121 914**

NOS **125 297**

Vodafone **111 837**

Source : nperf.com

The subscribers of NOS and MEO enjoyed the best 5G mobile connections in Portugal during 2023.

- Best 5G Mobile Performance : NOS (125 297 nPoints) and MEO (121 914 nPoints)

- Best 5G Mobile Download speed : NOS (351.60 Mb/s)

- Best 5G Mobile Upload speed : MEO (47.51 Mb/s)

- Best 5G Mobile Latency speed : NOS (24.65 ms)

- Best 5G Mobile Browsing experience : Vodafone (73.39 %), MEO (73.37 %) and NOS (72.92 %)

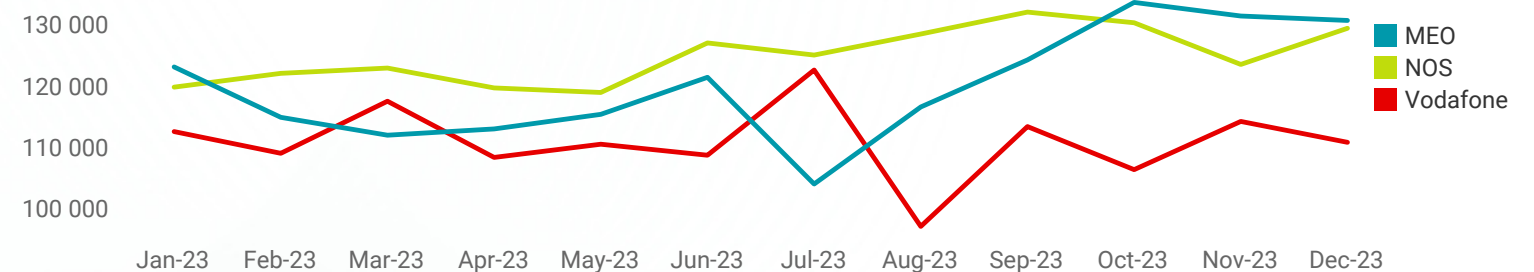- Best 5G Mobile Video experience : MEO (92.10 %) and NOS (92.08 %)

Source : nperf.com

5G nPerf score (average)

Busy Time		Idle Time
118 036	MEO	**123 469**
126 963	NOS	**124 503**
112 810	Vodafone	**111 508**

Source : nperf.com

nPerf score evolution over the year (average)

Source : nperf.com

Mobile Internet performance in Portugal

nPerf Score (nPoints)

MEO 91 192

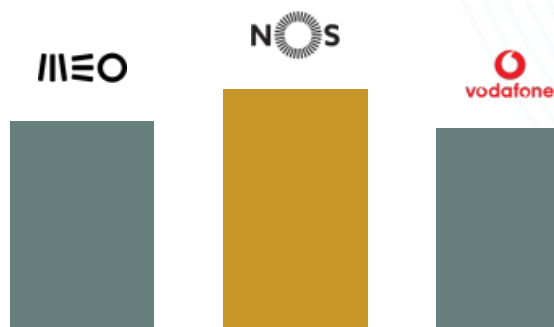**NOS** 102 684

Vodafone 89 012

Source : nperf.com

The subscribers of NOS enjoyed the best mobile Internet performances in Portugal during 2023.

The nperf score takes into account the measured bitrates, the latency and the Qoe tests. The value of the points for the rates and the latency is calculated on a logarithmic scale, to better represent the perception of the user.

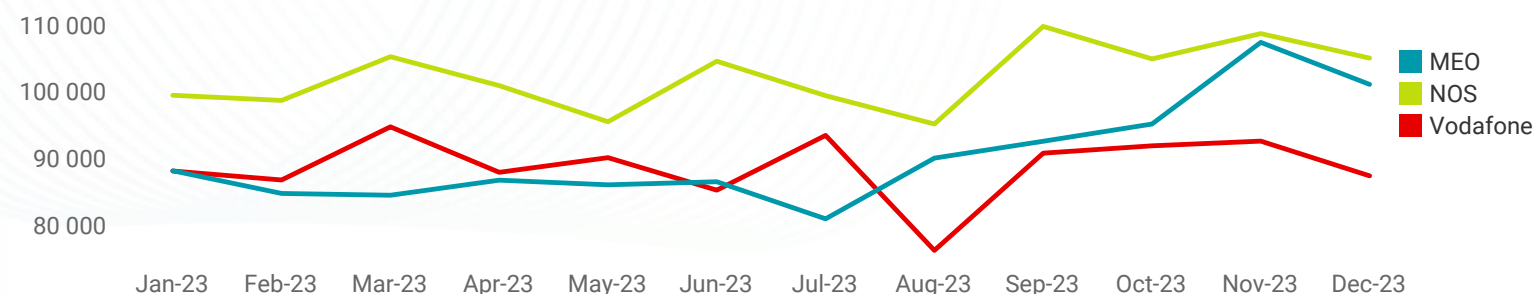Thus, this score reflects the overall quality of the connection experienced by the user.

Source : nperf.com

Best mobile Internet performance in 2023

MOBILE NETWORK No.1 PERFORMANCE

Source : nperf.com

nPerf score evolution over the year (average)

— MEO
— NOS
— Vodafone

Source : nperf.com