# Barometer of fixed Internet connections in Bulgaria

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## 2022 Report

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# 1 Summary

## 1.1 KPIs and nPerf scores


**Vivacom provided the best broadband Internet performances in Bulgaria in 2022.**

## 1.2 Our analysis

This study is based on the tests carried out by users of the nPerf website. During the last year, users in **Bulgaria** completed, after filtering, **58.810 tests.**

**Vivacom is sacred champion** of Bulgarian broadband Internet.

In 2022 the download speed in the country reached in average 70 Mb/s and the upload speed 50 Mb/s.

**Vivacom** is far ahead of its competitors on speeds and also provided the best latency close to 28 ms on annual average.

Regarding **the focus on the fiber**, **Vivacom** is still in the lead by offering a high download speed up to 300 Mb/s and a latency close to 20 ms !

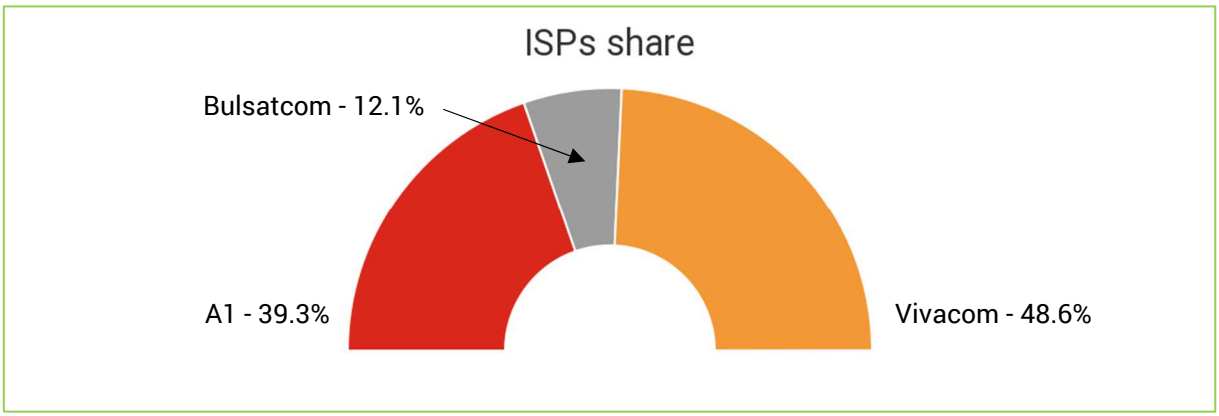
A1, in second position, however, doesn't have to be ashamed of the FTTH Internet performance it has provided to its subscribers.

Bulgarians can be delighted with these fine fiber Internet performances.

# 1 Global results

## 1.1 Data volume and distribution

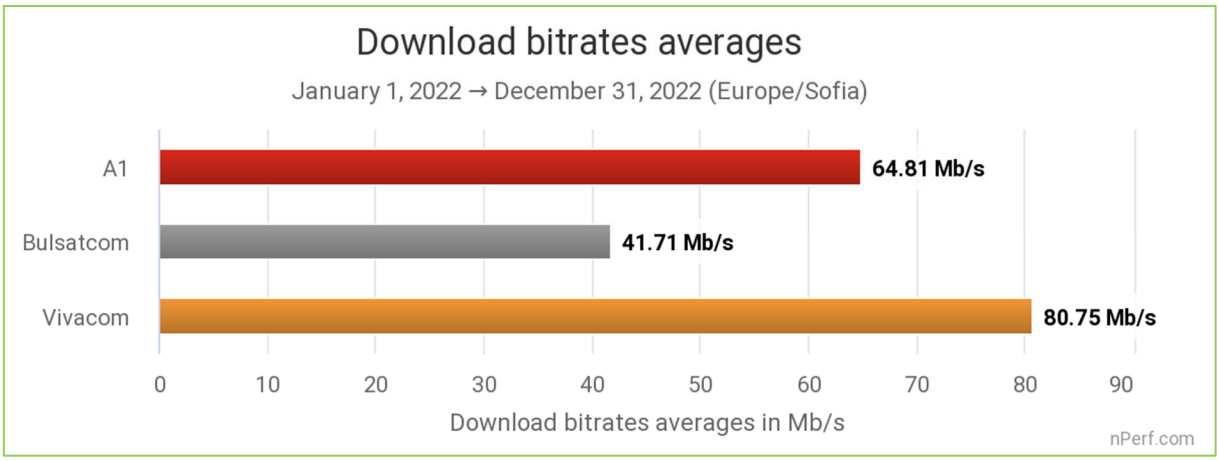
Between **January 1st, 2022** and **December 31st, 2022** we counted in Bulgaria 71.781 speed tests through the main broadband national networks. After filtering (see § 5.4), **58.810 tests** have been retained, and their overall distribution per provider is as follows :




While Vivacom accounts for almost half of the selected tests, A1 is the main competitor in terms of representativeness, with almost 40% of them. Bulsatcom is clearly in the minority, with only 12% of the tests considered.



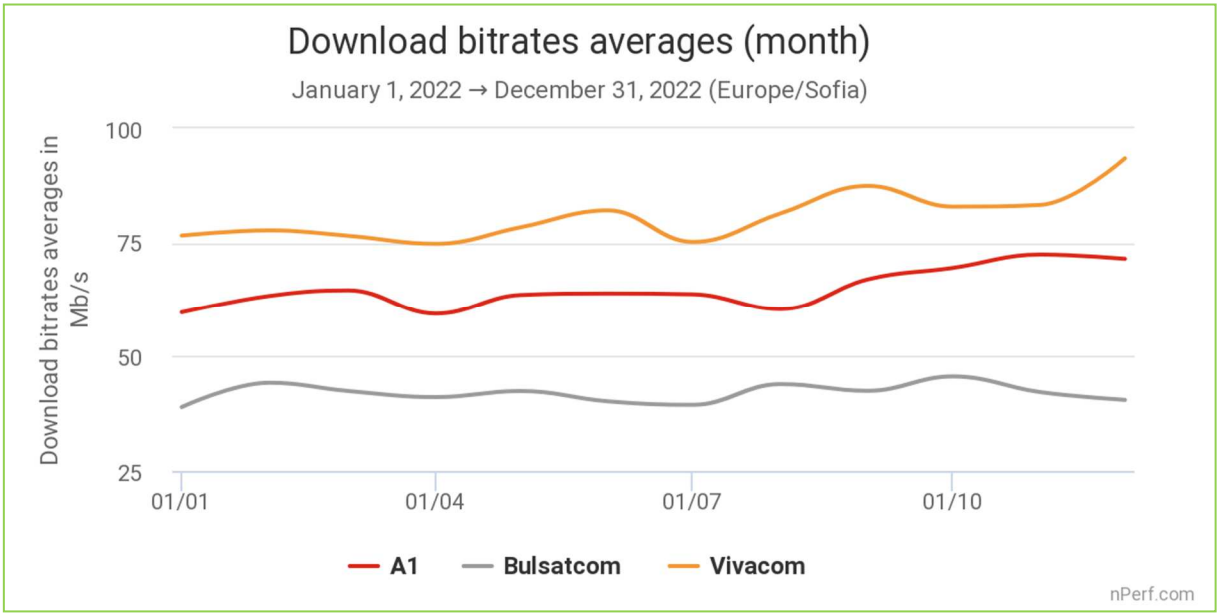
## 1.2 Download speed




*The highest speed is the best.*

**Vivacom subscribers enjoyed the best average broadband download speed in 2022.**

The results obtained look somewhat scaled: Vivacom dominates with an average of more than 80 Mb/s, while A1 finishes second, one step below, at around 65 Mb/s. Bulsatcom is one step lower, with an average of just under 42 Mb/s.

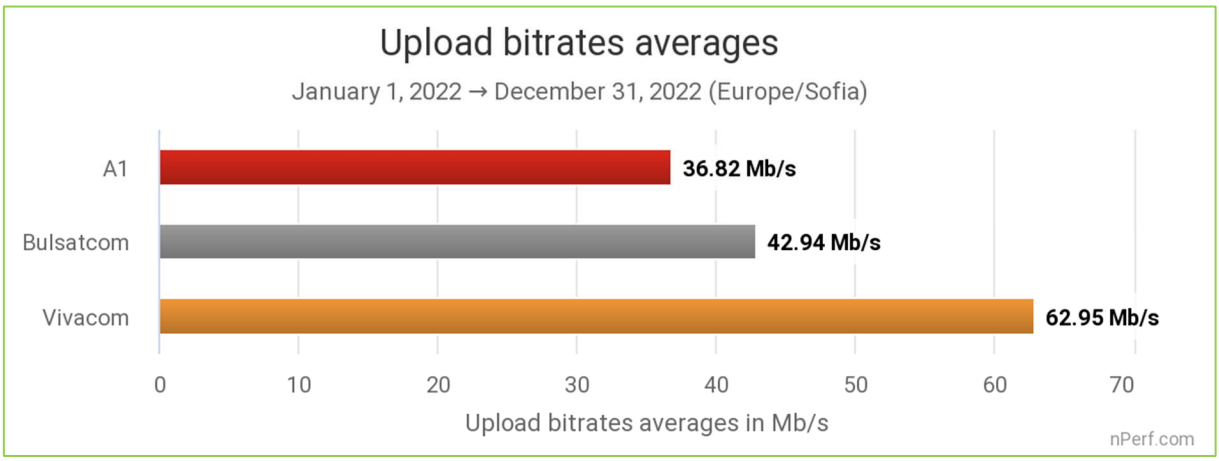



The graph above shows the evolution of the *monthly* average bitrates throughout the period.

The ranking of operators remained stable through the months of 2022. However, Vivacom and A1 improved slightly in the second half of the year.

## 1.3 Upload speed



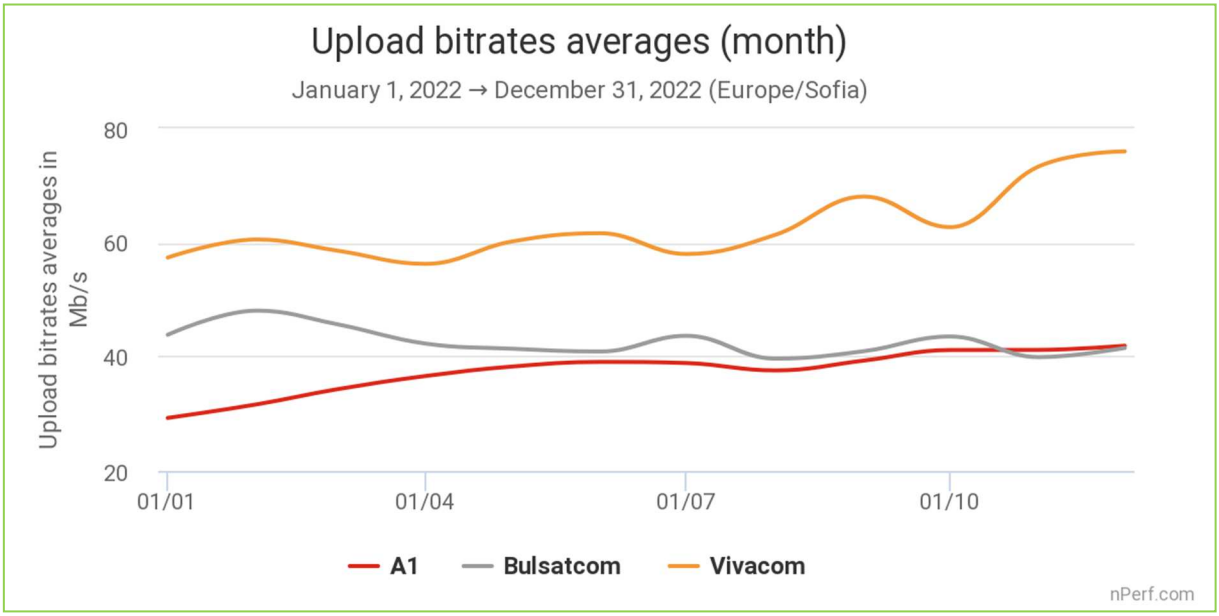



*The highest speed is the best.*

**Vivacom subscribers enjoyed the best average broadband upload speed in 2022.**

Vivacom thus reaffirms its superiority in the speed field in Bulgaria, with almost 63 Mb/s.

Unlike download speed, the gap between the first and second place is more pronounced in this field: Bulsatcom, which is now in second place, is closer to the bottom of the ranking, occupied by A1, than to the top of the ranking, owned by Vivacom: exactly 20 Mb/s separate the leader from its closest rival.

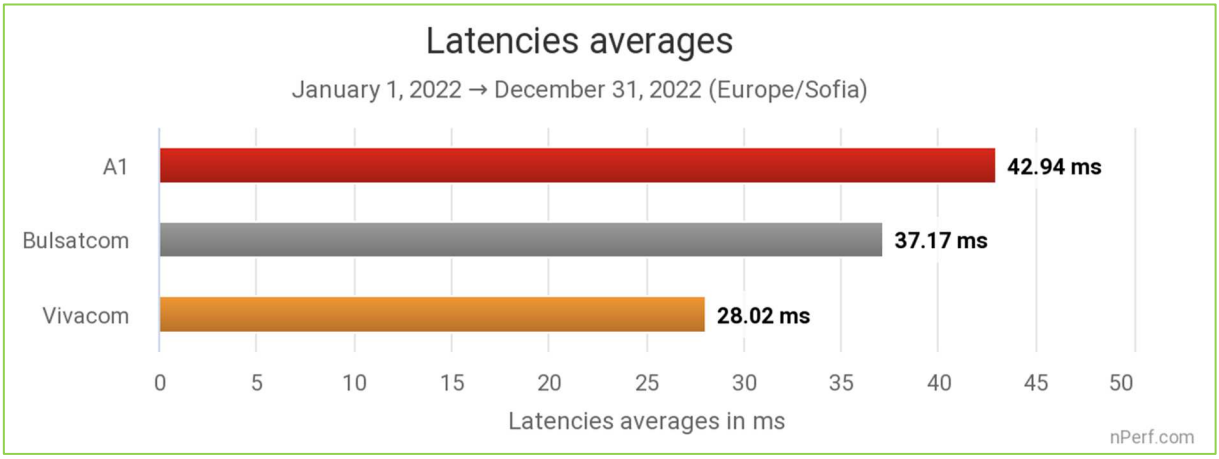



The graph above shows the evolution of the *monthly* average bitrates throughout the period.

In addition to Vivacom's victory and its more pronounced increase from the last third of 2022, it can be seen that A1 has steadily increased its level month by month until it overtook its competitor Bulsatcom in last November. The latter did not show any significant improvement over the period. What does 2023 hold in store for this indicator?



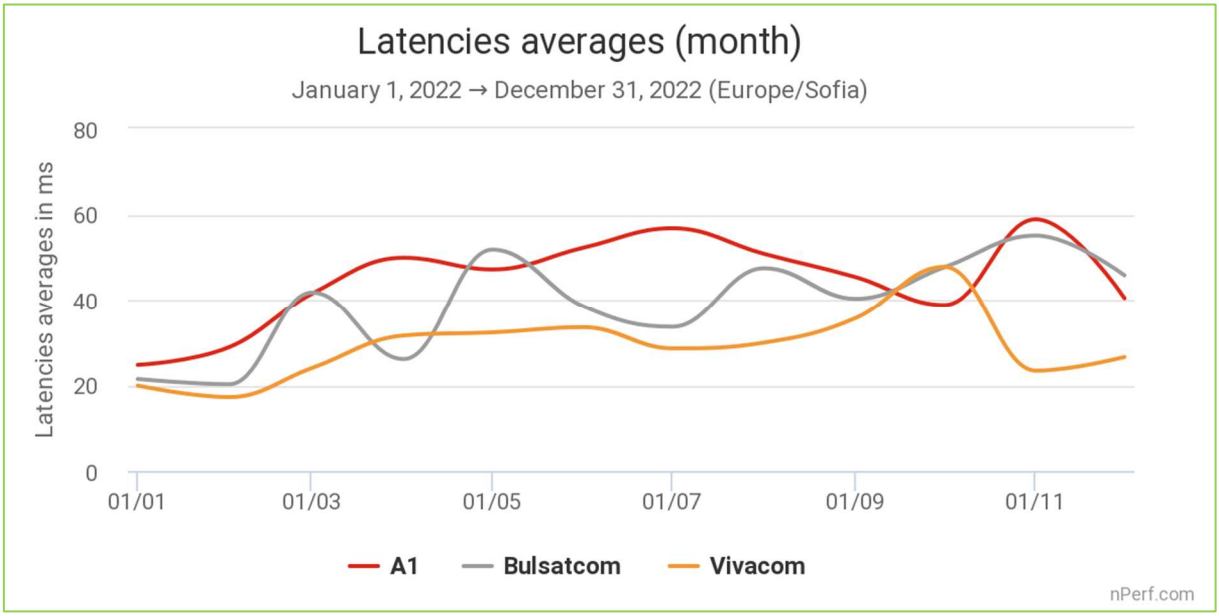
## 1.4 Latency




*The shortest time is the best.*

**Vivacom subscribers enjoyed the best average broadband latency in 2022.**

Vivacom is the only one under 30 ms on average to make a difference in this measurement. Bulsatcom is second, ahead of A1 which finishes in last place, almost 7 ms behind.




The graph above shows the evolution of the *monthly* average latency throughout the period.

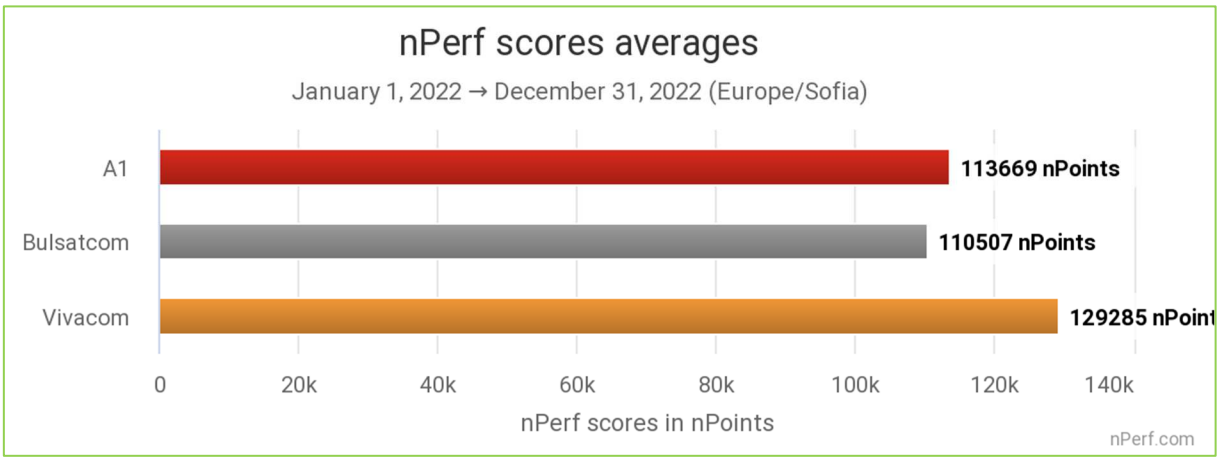
The results recorded by the various operators seem to have been better at the very beginning of the period, until February. Overall, Vivacom led the way, and A1 closed the ranking, both framing Bulsatcom's performance. A1 turned the corner in October and December, while Vivacom has done so since November.

## 1.5 nPerf scores

The nPerf score, expressed in nPoints, gives an overall picture of the quality of a connection. It takes into account the measured bitrates (2/3 Download + 1/3 Upload) and the latency. These values are calculated on a logarithmic scale to better represent the perception of the user.

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

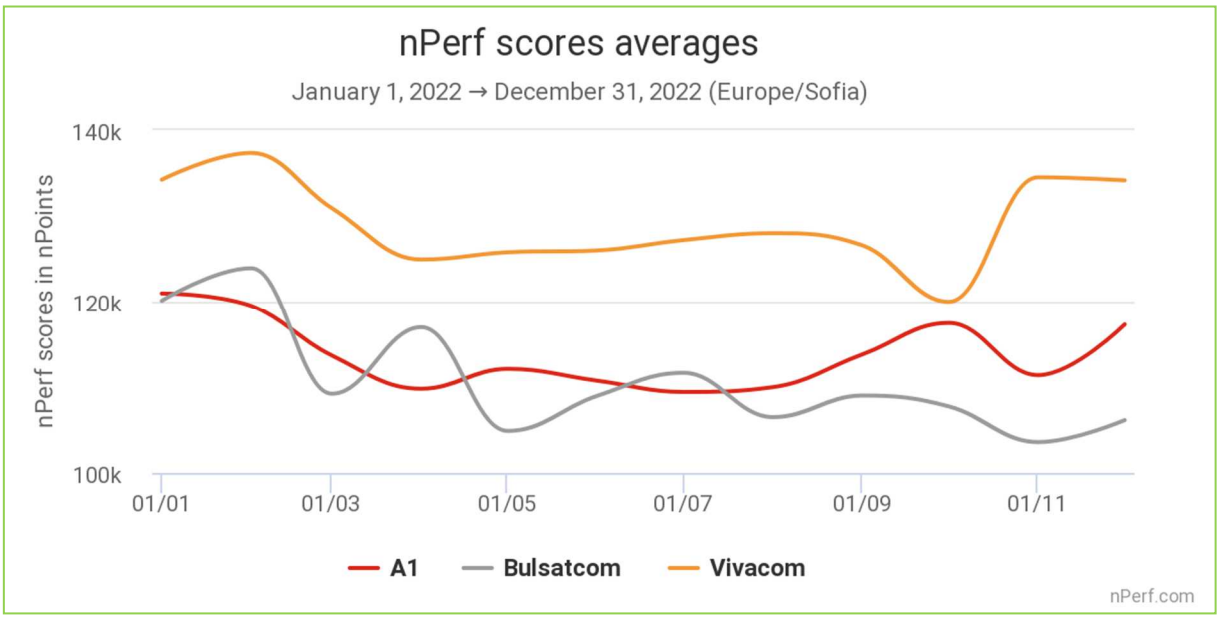
The results below consider all the previous indicators and therefore all the tests carried out. As technologies are grouped together, the proportion of tests in different technologies strongly impacts this global trend.




*The highest value is the best.*



### Vivacom subscribers enjoyed the best broadband Internet performances in 2022.




The graph above illustrates the evolution of the *monthly* average scores throughout the period.

Thanks to a year full of solo victories, Vivacom has no difficulty in taking the crown of the first nPerf barometer of fixed connections in Bulgaria. Indeed, it stands out for its higher average speeds, ahead its competitors. On latency too, the historical operator shows a clear superiority

over its opponents, A1 and Bulsatcom, respectively second and third in the general ranking. Besides the leader, A1 does better than Bulsatcom when it comes to downloading, whereas in uploading and latency, Bulsatcom records better figures.

Thus, Vivacom is set to dominate the fixed Internet landscape in Bulgaria in the short term. At the moment, more than 15.500 nPerf points separate it from the second classified, A1.

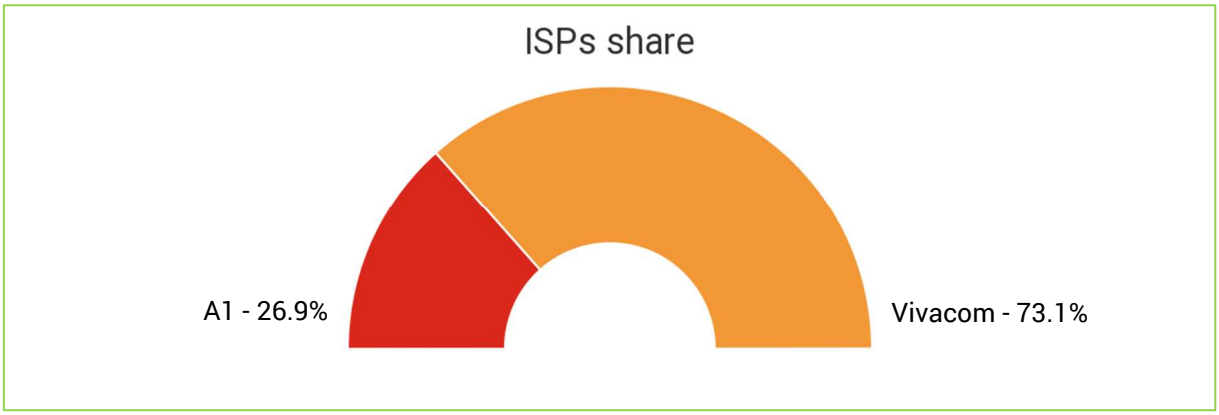
The average performance of broadband connections in the country is rather good.

Find this global indicator directly in the website, or on your mobile device, via the « Compare » function at the end of the (full) test. It is updated in real time over 14 rolling days.

# 2 Results - fibre optics (FTTH)

## 2.1 Data volume and distribution

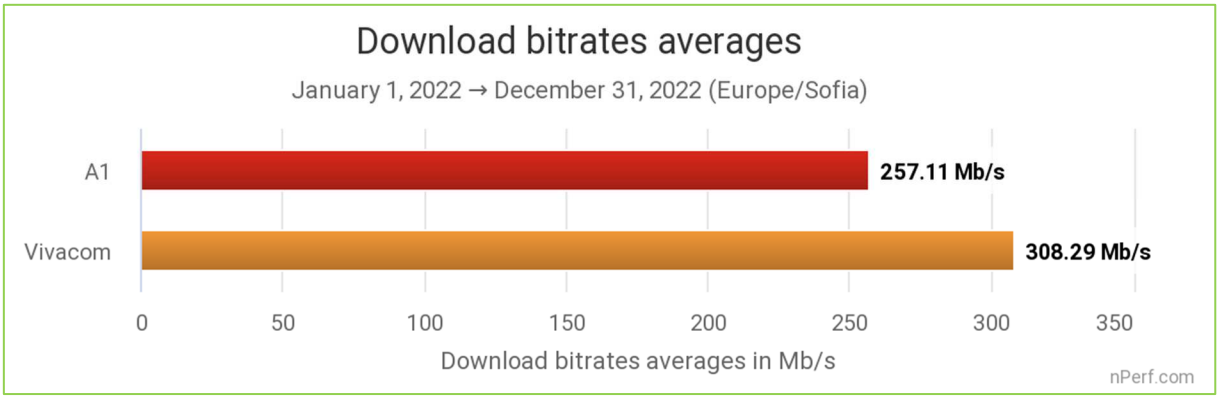
Between **January 1st, 2022** and **December 31st, 2022** we counted in Bulgaria 6.669 speed tests through the main fibre optics national networks. After filtering (see § 5.4), **5.485 tests** have been retained, and their overall distribution per provider is as follows :




In this FTTH approach, the results of Bulsatcom haven't been included, as its number of FTTH trials is statistically insufficient at the national level.

The indicators that follow in this section relate only to the FTTH technology (Fiber to the home) proposed by the carriers. In order to isolate the FTTH tests for the comparison, we have chosen to filter on an upload bitrate greater than or equal to 100 Mb/s. Thus, only the FTTH results stand out, the technologies like FTTLA / FTTB, G-Fast or VDSL are discarded. However, this filter also eliminates "bad" FTTH tests, at least those that have a bitrate below 100 Mb/s. This filtering is identical for all operators, it does not put into question the comparison.

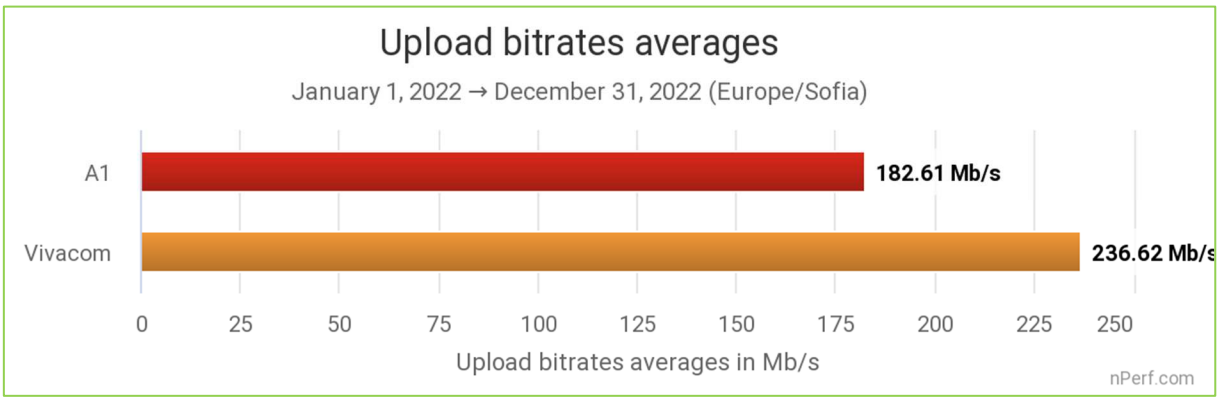
## 2.2 Download speed (FTTH)




*The highest value is the best.*

**Vivacom subscribers enjoyed the best average FTTH download speed in 2022.**

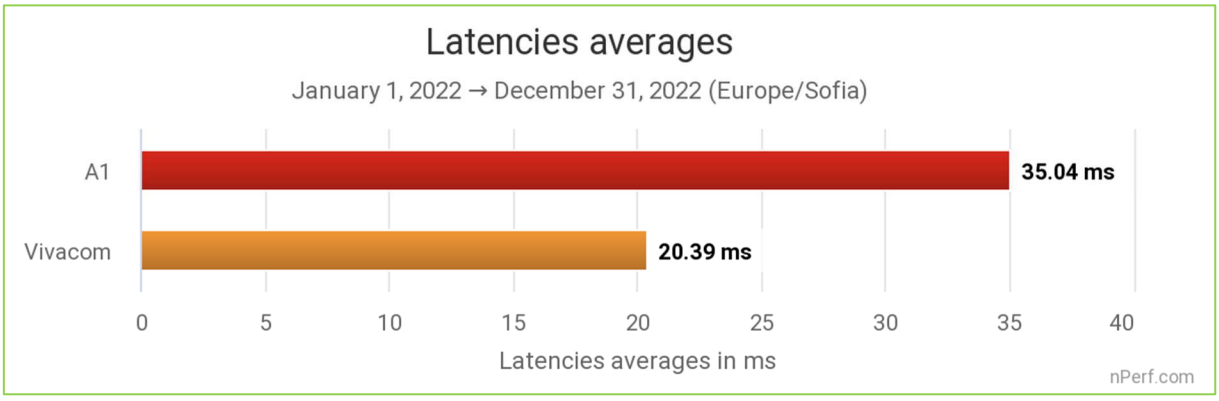
## 2.3 Upload speed (FTTH)




*The highest value is the best.*

**Vivacom subscribers enjoyed the best average FTTH upload speed in 2022.**

## 2.4 Latency (FTTH)



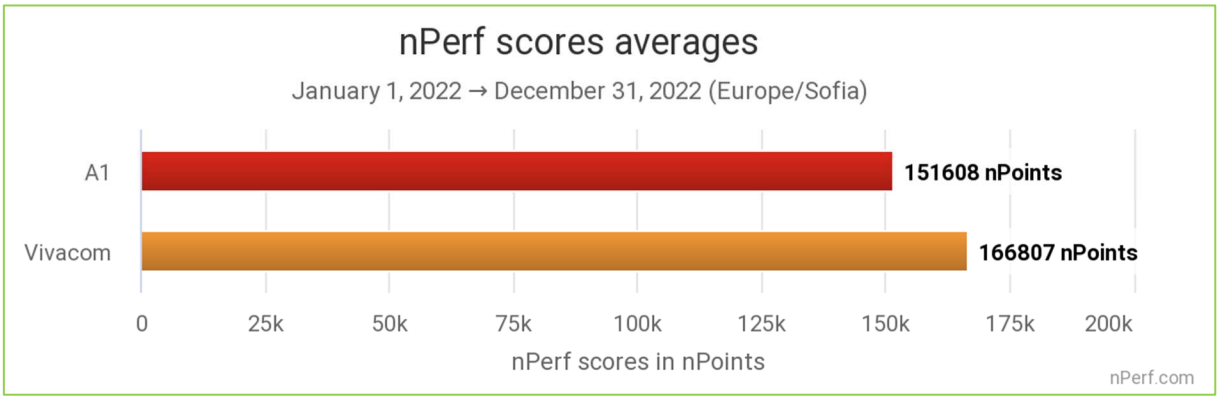

*The shortest time is the best.*

**Vivacom subscribers enjoyed the best average FTTH latency in 2022.**

## 2.5 nPerf score (FTTH)

The nPerf score, expressed in nPoints, gives an overall picture of the quality of a connection. It takes into account measured bitrates (2/3 Download + 1/3 Upload) and latency. These values are calculated on a logarithmic scale to better represent the perception of the user.

Thus, this score reflects **the overall quality** of the connection for mainstream consumer use.




*The highest value is the best.*

### Vivacom subscribers enjoyed the best 2022 Internet performances on FTTH networks.

In this category, the situation is quite similar as for the general results, with Vivacom leading every single indicator, and its main challenger (and so far, the only) being A1. These results are not far to those observed in the main countries of western Europe.

# 3 You too, participate in the nPerf panel!

To participate in the panel, simply test your connection on the website www.nperf.com.

For mobile Internet, you can also use the nPerf app, available for free on the Apple AppStore for iPhone and iPad and on Google Play for Android devices.

# 4 Custom analysis & contact

Do you need further studies, or want to get the raw data, punctually or automatically, to compile it yourself?

You can contact nPerf via www.nperf.com through the "Contact Us" section, or directly from the mobile app.

**Phone contact: +33 482 53 34 11**

**Address: nPerf SAS, 87 rue de Sèze, 69006 LYON, France**

**Stay in touch with us, follow us!**



# 5 Methodology

## 5.1 The panel

nPerf offers an Internet speed test application, which can be used for free at www.nPerf.com.

Everyone is free to use nPerf to measure the quality of their Internet connection. The panel of this study is formed by its users **in Bulgaria**. In addition, the results from the nPerf speed tests integrated on our partner websites are also included in the panel.

Thus, the nPerf study is based on the **thousands of tests** carried out monthly, exclusively by the operators' end customers, which makes it the "crowdsourced" study based on **one of the largest panels of the country.**

These tests reflect the **actual experience of the general public** on the various Internet networks.

## 5.2 Speed and latency tests

The purpose of the nPerf Speed Test is to measure the maximum capacity of the data connection in terms of data rates and latency.

To achieve this, nPerf establishes multiple connections simultaneously to saturate the bandwidth to accurately measure it. The speed used for the barometer is the average speed measured by the application.



Speed measurements thus reflect **the maximum capacity** of the data connection. This rate may not be representative of the user experience experienced during normal use of the Internet, as it is measured only on nPerf servers.

The measured bit rate can be impacted by the quality of the user's local network, especially since the expected flow is high. Thus, for an optical fiber internet connection, a local Wi-Fi or Power-Line connection can greatly reduce performance. However, since these constraints are identical to all market operators, they do not bias the comparison. In addition, the user is made aware of these constraints and invited to use a wired local connection for testing very high speed.

## 5.3 nPerf servers

To ensure maximum user bandwidth at all times, nPerf relies on a network of servers dedicated to this task. These servers are hosted in the country and abroad. Indeed, nPerf has also installed dedicated servers directly at some providers' facilities, to maximize measurement reliability. **Local carriers are welcome** to install nPerf servers, that's free !

The total bandwidth available for Bulgaria is **21 Gb/s**, and reaches more than **12 Tb/s** worldwide**,** with more than **2.560** active nPerf servers!

## 5.4 Filtering of test results

The results obtained are subject to automatic and manual checks to avoid duplication and to rule out possible abusive or fraudulent use (massive tests, robots...).

The exclusive nPerf algorithm retains only the relevant tests, thus eliminating biases related to the overrepresentation of certain terminals, users or test locations.

The results are classified by provider. Tests performed on cellular connections (2G, 3G, 4G & 5G), or on business/wholesale/military/academic/public/private networks are also excluded from this barometer.

## 5.5 Statistical accuracy

With regard to the total volume of unit tests, the statistical precision used in this publication is:

| Category | Number of tests (filtered) | Absolute values | Percentages |
|---|---|---|---|
| Global | 58.810 | 3% | 1 point |
| FTTH | 5.485 | 3% | 1 point |

If, for a given indicator, one or more operators have results very close enough to the best, in the confidence interval defined above, these will **share the first place**.