



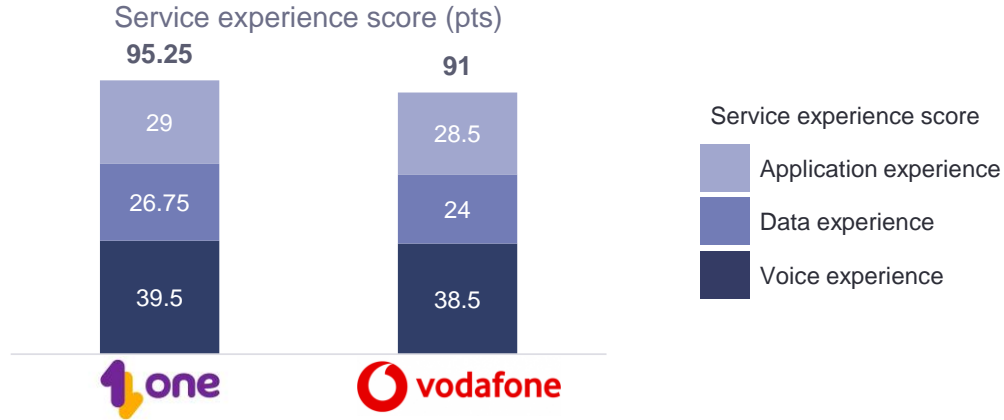
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Albanian mobile network
benchmark, February 2024

Report, 26 February 2024



ONE Albania achieved the best service experience score in the Albanian mobile network benchmark



Omnitele conducted an independent assessment of network quality and service experience benchmarking campaign in Albania in February 2024. The benchmark measurements compared the voice, data and application services in ONE and Vodafone networks.

Evaluation of end-user perceived service experience revealed that ONE Albania had the best overall service experience in the benchmarking campaign.

ONE scored **95.25 points** (out of 100), whereas Vodafone scored **91 points**. ONE outscored Vodafone in each service experience category.

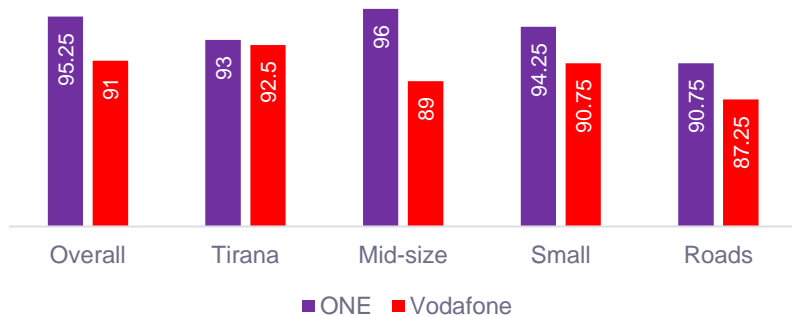


ONE provided the best service experience throughout Albania

ONE achieved the highest total service experience score in every measured area. The measurements were conducted in Tirana, 6 mid-sized cities with over 50 000 inhabitants (Durrës, Elbasan, Fier, Korçë, Shkodër and Vlorë) and 4 smaller cities with less than 50 000 inhabitants (Gjirokastrë, Kukës, Laç and Rrëshen) and the connecting roads between them.

The gap between ONE and Vodafone varied between different areas. ONE outscored Vodafone in the measured mid-sized cities by quite a margin. The difference was rather small in Tirana. In the measured smaller cities and the roads connecting the cities, ONE also achieved a higher service experience score.

Service experience score in the measured areas (pts)



ONE achieved the highest score in each service experience category

Voice call experience

Both operators had excellent voice service throughout the measured area, ONE achieved a higher score in voice call service due to slightly shorter call setup time.

Average call setup time:

- **ONE: 1.4 seconds**
- Vodafone 1.6 seconds

The measured voice quality was equally excellent for both operators.

Average voice quality (Mean Opinion Score):

- ONE: 4.5 / 5
- Vodafone: 4.5 / 5

Both operators provided world-class consistent call success rate.

Call success rate:

- ONE: 99.8 %
- Vodafone: 99.8 %



Voice score

ONE	39.5 / 40
Vodafone	38.5 / 40

Data service experience

ONE network provided the highest average throughput in both download and upload tests. Both operators had a short network latency, ONE providing shorter median round trip time (RTT).

Average download throughput:

- **ONE: 143 Mbit/s**
- Vodafone: 121 Mbit/s

Average upload throughput:

- **ONE: 38 Mbit/s**
- Vodafone: 29 Mbit/s

Median latency (RTT):

- **ONE: 25 ms**
- Vodafone: 43 ms

ONE also provided good service quality (over 10 Mbit/s download) more consistently.

Share of download throughput over 10 Mbit/s:

- **ONE: 98.4 %**
- Vodafone: 97.0 %



Data score

ONE	26.75 / 30
Vodafone	24 / 30

Application experience

Both networks provided excellent application experience for the tested applications. ONE achieved slightly better score than Vodafone.

Web browsing - Average time to load web page:

- **ONE: 1.9 seconds**
- Vodafone: 2.6 seconds

YouTube - Share of Full HD & average time to start video streaming

- **ONE: 98.7 % Full HD**, 0.63 seconds to start streaming
- Vodafone: 96.4 % Full HD, 0.65 seconds to start streaming

Instagram - Average time to load feed

- **ONE: 1.3 seconds**
- Vodafone: 1.4 seconds

Facebook - Average time to post picture

- **ONE: 9.7 seconds**
- Vodafone: 10.7 seconds



Application score

ONE	29 / 30
Vodafone	28.5 / 30



Benchmark campaign scope and benchmarked areas

Scope of the campaign

Drive test benchmarking measurements were carried out by Omnitele in Albania in February 2024. The measurements were conducted in Tirana, 6 mid-sized cities with over 50 000 inhabitants (Durrës, Elbasan, Fier, Korçë, Shkodër and Vlorë) and 4 smaller cities with less than 50 000 inhabitants (Gjirokastrë, Kukës, Laç and Rrëshen) and the connecting roads between them. Measurements included voice, data and application testing for ONE and Vodafone.

1260+ km covered

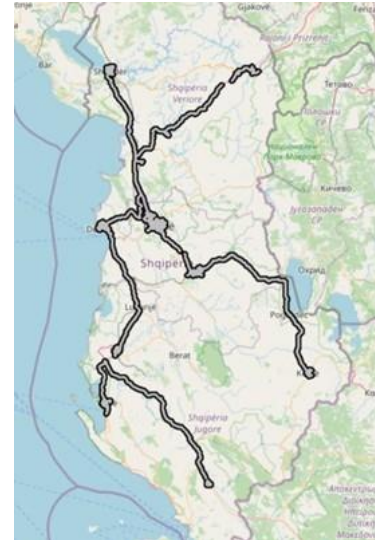
42+ hours of drive testing

1360+ voice calls

4800+ unique data sessions

Figures per operator

Benchmark measurement routes



Maps: OpenStreetMap



Benchmark methodology and measured services

Benchmark methodology

Omnitele conducted the campaign by following our internally standardised *be-the-customer* benchmark methodology. The approach is designed for capturing unbiased and objective view of how end-users actually perceive the services. This means that:

- Measured services, test cases and methodology reflect real end-user traffic profiles.
- Testing times and locations reflect subscriber behaviour and traffic distribution.
- Each network is measured at the same time, in the same location with identical equipment.
- State-of-the-art smartphones (Samsung Galaxy S23 for data and applications and Samsung Galaxy S21+ for voice) are used in the measurements.
 - Measurement terminals freely select the best available network technology (4G/3G/2G) as normal end-user devices do.
 - Measurement terminals are calibrated and swapped between operators to even out any bias from terminal impact.
- The best available subscriptions from each operator are used to mitigate any possible restrictions.
- Enough measurement samples are gathered for reliable statistical significance analysis.

Be-the-customer approach

WHERE	Dense population areas selected independently
WHEN	Test focus on peak hours, no empty network testing
HOW	Test terminals and use cases based on customer behaviour

Service experience measurement test cases

Test Case	Description
Voice Call	90 s VoLTE/CSFB call sequence with MOS (Mean Opinion Score) voice audio quality measurement using POLQA algorithm
Data Session	HTTP download: 30 s continuous data transfer HTTP upload: 30 s continuous data transfer Latency: ping RTT (round trip time) WWW browsing: static web page loading YouTube: 30 s full HD video streaming Instagram: Load self feed Facebook: Post picture (3 MB)



Service experience evaluation methodology

Service experience evaluation model

In mobile network benchmarking, Omnitele deploys a proprietary *End-User Service Experience Evaluation Model* that defines Quality of Service and Experience KPIs and subsequent KPI weightings based on which a network operator's service experience score is determined. The scoring thresholds used in the service experience analysis model are based on Omnitele's experience from many benchmarking campaigns in different markets worldwide. Working with this international experience, the building of the specific service experience analysis model comes down to the adaptation of the various KPI scoring thresholds to accurately represent the specific local market situation, the regulator's requirements and mobile users' network performance expectations.

The service experience results are determined for different service categories and aggregation levels. Final scores are obtained by the individual KPI weighting. Evaluation of end-user service experience is based on three main service components:

- Voice service experience 40 %
- Data service experience 30 %
- Application experience 30 %

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Omnitele is an internationally recognised, independent mobile network consulting company, with an extensive history in the domain of mobile network benchmarking through field measurements.

Further information: contact@omnitele.com

Service experience scoring

Service	Key performance indicator (KPI)	Max score
Voice	Call setup time (average)	10
	Call success rate	20
	Voice audio quality (average)	5
	Low voice audio quality (%)	5
<i>Voice total</i>		<i>40</i>
Data	Download data speed (average)	7,5
	Low download data speed (%)	5
	Upload data speed (average)	7,5
	Low upload data speed (%)	5
<i>Data total</i>		<i>30</i>
Applications	Browsing: load web page	10
	YouTube streaming: initial buffering	5
	YouTube streaming: low resolution	5
	Instagram: load self feed	5
	Facebook: post picture	5
<i>Applications total</i>		<i>30</i>
Total score		100

