Foreword

umlaut has tested the quality of the Mobile Networks in Kazakhstan and took a detailed look into the performance of each operator. The company is headquartered in Aachen, Germany and is a world leader in mobile network testing and benchmarking.

For the inhabitants of Kazakhstan it is particularly interesting to see how the operators perform in metropolitan areas. Therefore, we have performed individual analyses for 16 cities: Aktau, Aktobe, Almaty, Atyrau, Karagandy, Kostanay, Kyzylorda, Nur-Sultan, Oskemen, Pavlodar, Petropavl, Shymkent, Taldykorgan, Taraz, Turkistan and Uralsk.

In our nationwide assessment, more than 74,970 square kilometres of Kazakhstan were tested. For the extensive crowdsourcing analysis more than 78 million samples have been collected.

Test area, methodology, drive routes and times have been independently selected by umlaut.
Report facts

- 78.7 million samples
- 24 weeks, W02 2022 to W25 2022
  Data collection time period

Testing area

- 74.190 km² size of tested area
- 93.2% of the ‘build-up area’ covered
- 91.2% of the ‘Population area’ covered
Nationwide — Overview

Score and breakdown

Tele2 achieved the highest overall score among competitors with 878 dots out of 1000.

---

**Score achieved by the networks under test.**

<table>
<thead>
<tr>
<th>Operator</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tele2</td>
<td>878</td>
</tr>
<tr>
<td>Kcell</td>
<td>737</td>
</tr>
<tr>
<td>Beeline</td>
<td>714</td>
</tr>
</tbody>
</table>

---

**Overall KPI name**

- **Coverage Quality**: 67.5, 59.5, 43.2, 47.3
- **Coverage Reach**: 135.0, 125.0, 120.2, 137.6
- **Time on broadband**: 247.5, 238.1, 223.4, 224.0

**Download Speed**

- **Basic internet class**: 165.0, 152.0, 129.5, 134.3
- **HD video class**: 101.3, 94.4, 76.8, 87.4
- **UHD video class**: 33.8, 30.5, 30.4, 30.5

**Latency**

- **Gaming class**: 90.0, 61.0, 41.2, 7.7
- **OTT voice class**: 110.0, 70.2, 71.5, 14.8

---

<table>
<thead>
<tr>
<th>Overall KPI</th>
<th>Tele2</th>
<th>Kcell</th>
<th>Beeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1000</td>
<td>878</td>
<td>737</td>
</tr>
</tbody>
</table>
Summary

Nationwide

Tele 2
In the nationwide assessment Tele 2 achieves the highest overall score with 878 points out of 1000 points. Tele 2 also achieves the highest umlaut Score in all categories, which are Coverage, DL Speed, Latency and Voice.

KCell
KCell is following with the 2nd highest overall umlaut Score of 737 points. KCell achieves the second highest score in the Latency category, but is behind the competition in the categories DL Speed and Coverage. In the Voice category, KCell has no VoLTE implementation. Therefore their network does not support HD voice and receives no points in this category.

Beeline
In the overall umlaut Score for Kazakhstan Beeline is 23 points behind KCell and achieves 714 points in total. Beeline achieves the second highest umlaut Score in the categories Voice, Download Speed and Coverage.
Score and breakdown

Almaty

Tele2 achieved the highest overall score among competitors with 928 dots out of 1000 in Almaty. In the categories Broadband Coverage, DL Speed and Voice Tele2 is ahead of competition. KCell is leading in the Latency category with the highest score.

Total Score 1000 Dots

<table>
<thead>
<tr>
<th>Operator</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tele2</td>
<td>928</td>
</tr>
<tr>
<td>KCell</td>
<td>855</td>
</tr>
<tr>
<td>Beeline</td>
<td>893</td>
</tr>
</tbody>
</table>

Score achieved by the networks under test.

<table>
<thead>
<tr>
<th>Category</th>
<th>KPI name</th>
<th>max.</th>
<th>Tele2</th>
<th>KCell</th>
<th>Beeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadband Coverage</td>
<td>Coverage Quality</td>
<td>67.5</td>
<td>60.6</td>
<td>50.0</td>
<td>47.6</td>
</tr>
<tr>
<td></td>
<td>Coverage Reach</td>
<td>135.0</td>
<td>135.0</td>
<td>134.0</td>
<td>134.9</td>
</tr>
<tr>
<td></td>
<td>Time on broadband</td>
<td>247.5</td>
<td>243.0</td>
<td>236.0</td>
<td>228.6</td>
</tr>
<tr>
<td>Download Speed</td>
<td>Basic internet class</td>
<td>165.0</td>
<td>154.6</td>
<td>141.9</td>
<td>150.2</td>
</tr>
<tr>
<td></td>
<td>HD video class</td>
<td>101.3</td>
<td>94.9</td>
<td>88.0</td>
<td>94.7</td>
</tr>
<tr>
<td></td>
<td>UHD video class</td>
<td>53.8</td>
<td>50.5</td>
<td>50.6</td>
<td>50.6</td>
</tr>
<tr>
<td>Latency</td>
<td>Gaming class</td>
<td>90.0</td>
<td>77.9</td>
<td>83.9</td>
<td>72.9</td>
</tr>
<tr>
<td></td>
<td>OTT voice class</td>
<td>110.0</td>
<td>83.0</td>
<td>91.0</td>
<td>85.1</td>
</tr>
<tr>
<td>Voice</td>
<td>HD voice</td>
<td>50.0</td>
<td>46.7</td>
<td>0.0</td>
<td>46.4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1000</td>
<td>928</td>
<td>893</td>
<td>895</td>
</tr>
</tbody>
</table>
Score and breakdown

Nur-Sultan

Tele2 achieved the highest overall score among competitors with 898 dots out of 1000 in Nur-Sultan.

Tele2 achieves the highest score in all service categories of Broadband Coverage, DL Speed, Latency and Voice.
Score and breakdown

Shymkent

Tele2 achieved the highest overall score among competitors with 915 dots out of 1000 in Shymkent.

Tele 2 is ahead competition in Broadband Coverage, DL Speed and Voice. KCell achieves the highest score in the Latency category.

---

### Total Score 1000 Dots

<table>
<thead>
<tr>
<th>Operator</th>
<th>Tele2</th>
<th>KCell</th>
<th>Beeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL Speed</td>
<td>153</td>
<td>159</td>
<td>158</td>
</tr>
<tr>
<td>Coverage</td>
<td>159</td>
<td>153</td>
<td>168</td>
</tr>
<tr>
<td>Coverage Quality</td>
<td>915</td>
<td>802</td>
<td>807</td>
</tr>
</tbody>
</table>

Score achieved by the networks under test.

---

### Category KPI name max. Tele2 KCell Beeline

**Broadband Coverage**
- Coverage Quality | 67.5 | 56.6 | 43.9 | 53.1 |
- Coverage Reach | 135.0 | 134.3 | 134.5 | 134.4 |
- Time on broadband | 247.5 | 242.7 | 229.6 | 230.4 |

**Download Speed**
- Basic internet class | 165.0 | 153.6 | 130.0 | 134.0 |
- HD video class | 101.3 | 95.9 | 74.4 | 81.2 |
- UHD video class | 53.8 | 50.5 | 40.4 | 29.2 |

**Latency**
- Gaming class | 90.0 | 75.7 | 77.8 | 49.3 |
- OTT voice class | 150.0 | 76.9 | 81.4 | 58.8 |

**Voice**
- HD voice class | 50.0 | 49.1 | 36.7 | 49.3 |

**Total**
| 1000 | 915 | 802 | 807 |

Shown scores are rounded.
Summary
Almaty, Nur-Sultan, Shymkent

Tele 2
Tele 2 achieves the highest umlaut Score in Almaty, Nur-Sultan and Shymkent. In all three cities Tele2 achieves the highest score in Broadband Coverage, Download Speed and Voice. In Latency Tele2 achieves the highest score in Nur-Sultan.

Beeline
Beeline achieves the second highest umlaut city score in Almaty, Nur-Sultan and Shymkent. In all three cities Beeline achieves the second highest score in the categories Download Speed and Voice.

KCell
KCell shows the highest umlaut city score for the service category Latency in Almaty and Shymkent. In Broadband Coverage KCell has the second highest Score in Almaty. Overall KCell is behind competition in the achieved umlaut Score for these cities.
# 16 cities — Overview

## Score and breakdown

Score achieved by the networks under test. Max. achievable Total score = 1000, max. achievable Coverage score = 450, max. achievable Speed score = 300, max. achievable Latency score = 200, max. achievable Voice score = 50.

### Almaty
- **Tele2**: DL Speed 49, Coverage 161, Latency 280, Voice 439
- **Beeline**: DL Speed 48, Coverage 158, Latency 275, Voice 411
- **Kcell**: DL Speed 175, Coverage 260, Latency 420, Voice 855

### Nur-Sultan
- **Tele2**: DL Speed 46, Coverage 140, Latency 275, Voice 437
- **Beeline**: DL Speed 38, Coverage 8, Latency 252, Voice 420
- **Kcell**: DL Speed 75, Coverage 243, Latency 377, Voice 695

### Atyrau Karagandy Kostanay Kyzylorda Aktau Aktobe
- **Tele2**: DL Speed 49, Coverage 73, Latency 281, Voice 438
- **Beeline**: DL Speed 50, Coverage 9, Latency 270, Voice 422
- **Kcell**: DL Speed 88, Coverage 264, Latency 415, Voice 717

### Oskemen Pavlodar Petropavl Shymkent Taldykorgan Taraz Turkistan Uralsk
- **Tele2**: DL Speed 49, Coverage 54, Latency 275, Voice 437
- **Beeline**: DL Speed 44, Coverage 65, Latency 277, Voice 416
- **Kcell**: DL Speed 83, Coverage 276, Latency 371, Voice 714

### Shymkent
- **Tele2**: DL Speed 48, Coverage 129, Latency 284, Voice 439
- **Beeline**: DL Speed 45, Coverage 38, Latency 269, Voice 406
- **Kcell**: DL Speed 159, Coverage 256, Latency 398, Voice 730

### Tele2

Score achieved by the networks under test. Max. achievable Total score = 1000, max. achievable Coverage score = 450, max. achievable Speed score = 300, max. achievable Latency score = 200, max. achievable Voice score = 50.
Summary

16 cities

Tele 2
Tele 2 achieves the highest umlaut Score in 13 of 16 measured cities. In Taddykorgan, Petropavl and Turkistan it achieves the second highest umlaut Score. In the category Coverage Tele2 is ahead in 15 of 16 cities, in DL Speed in 14 of 16 cities, in Latency in 7 of 16 cities and in Voice in 11 of 16 cities, including Oskemen, where Tele2 is on par with Beeline for Voice.

KCell
KCell achieves the highest umlaut Score in Turkistan and Petropavl. In 7 of 16 cities KCell achieves the second highest umlaut Score. In Turkistan KCell achieves the highest Score in Coverage. In Kostanay KCell is ahead competition in DL Speed. In Latency KCell has the highest achievements in 9 of 16 cities.

Beeline
Beeline achieves the highest umlaut Score in Taddykorgan. In 6 of 16 cities Beeline achieves the second highest umlaut Score. In Taddykorgan Beeline has the highest achievements in DL Speed. In the Voice category Beeline is ahead competition in 6 of 16 cities, which includes Oskemen, where Beeline is on par with Tele2 in Voice.
Methodology

User Experience testing
Based on crowdsourced data

Crowdsourcing
For the collection of crowd data, umlaut has integrated background diagnosis processes into 8000+ diverse Android apps. If one of these applications is installed on the end-user’s phone and the user agrees, anonymous data collection takes place 24/7, 365 days a year on this device. Reports are generated for every 15 minutes and daily sent to umlaut’s cloud servers. Such reports generate just a small number of bytes per message and do not include any personal user data. The unique crowdsourcing technology allows umlaut to collect data about real-world customer experience in a truly passive way – wherever and whenever customers use their smartphones. By analyzing data according to predefined metrics, umlaut can provide information for the optimization of networks and also show if networks live up to the expectations of their customers.

Various adaptations have been realized in the 2022 User Experience testing methodology to further improve end-user focus, differentiation, robustness and fairness.

- **Voice**
  - User-centric
  - Rewarding access to VoLTE and VoWiFi – how often VoLTE capable users can actually make HD capable voice calls

- **Coverage**
  - User-centric
  - Rewarding individual good Broadband offering through users: “Time on broadband (4G+5G)”
  - Geographical coverage
    - Coverage reach (footprintize)
    - Coverage quality (avg. Broadband share)

- **Latency**
  - User-centric
  - Rewarding how often users experience latency supporting popular services:
    - OTT Voice, requiring 100ms or less
    - Gaming, requiring 50ms or less

- **Speed**
  - User-centric
  - Rewarding how often users achieve speeds supporting popular services:
    - basic internet, requiring 2 Mbps and above
    - HD Video, requiring 5 Mbps and above
    - UHD Video, requiring 20 Mbps and above

umlaut score
As the de-facto industry standard, our benchmarking methodology focuses on customer-perceived network quality and covers a wide range of mobile services. Today, more than 200 mobile networks in more than 120 countries are being evaluated by our unique scoring methodology. It allows a technical analysis that is unprecedented in its level of detail – enabling comparisons between the network performance and capability of each mobile network. Our public benchmarks as well as the certificate benchmarks help network operators to demonstrate how well they deliver wireless connections to consumers, business users and enterprises while revealing the areas of improvement.
Key takeaways

Tele2 achieves the highest umlaut score in the nationwide assessment with 878 of 1000 points and is leading as well in 13 of 16 measured cities.

KCell ranks second overall with 737 of 1000 points, but is leading in Petropavl and Turkistan.

Beeline achieves the highest umlaut Score in Taddykorgan.

In Broadband Coverage Tele2 is leading in 15 of 16 cities, in Turkistan KCell achieves the highest Score in Coverage.

In the category DL Speed Tele2 is ahead competition in 14 of 16 cities, while KCell and Beeline are ahead in 1 city each.

In Latency KCell has the highest Score in 9 of 16 cities, while Tele2 is ahead in 7 of 16 cities.

In the voice category Tele2 is ahead competition in 11 of 16 cities, while Beeline is ahead in 6 of 16 cities. In Oskemen Tele2 and Beeline are on par in Voice.
This audit report has been commissioned by a third party.