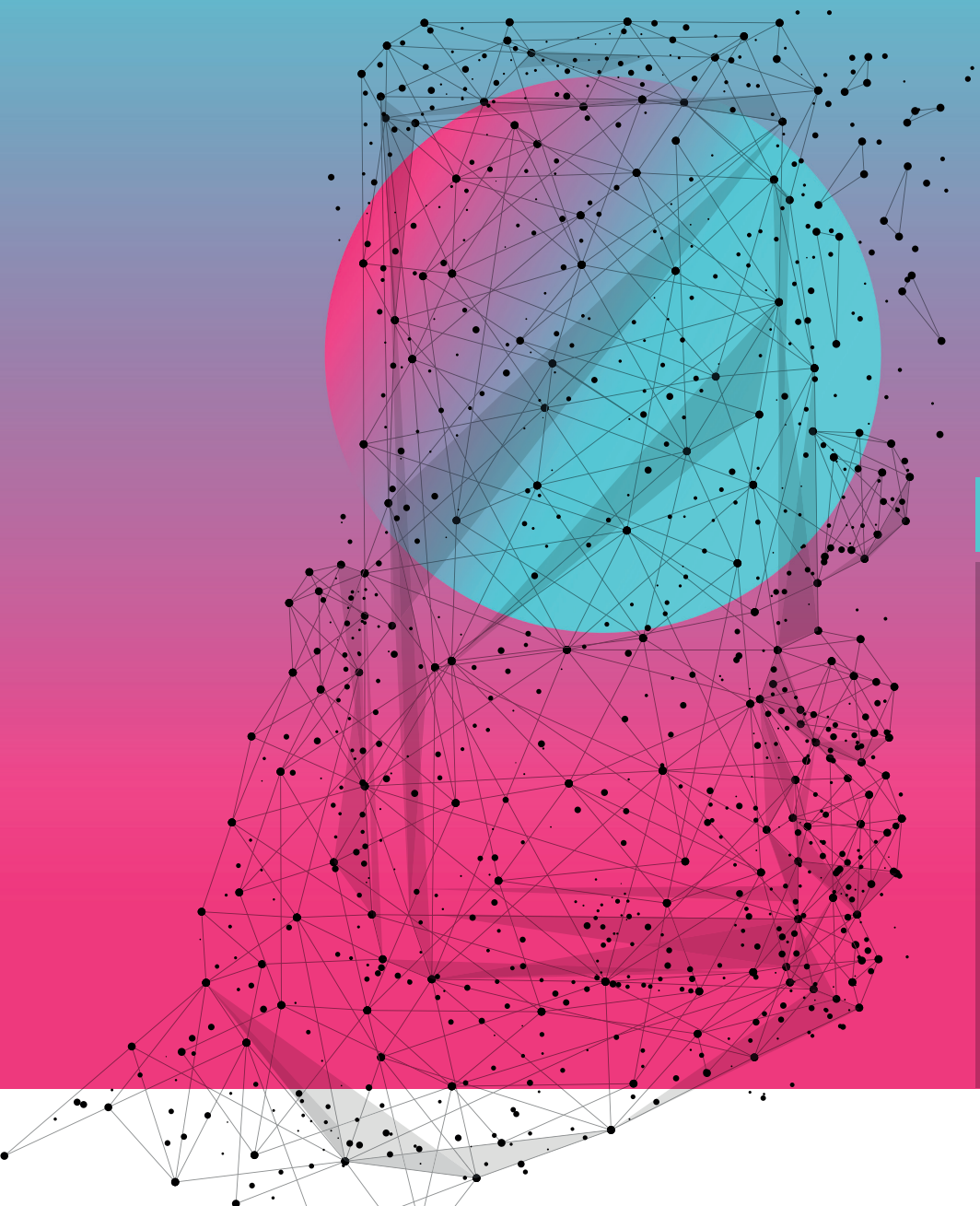
The Great Mobile Network Test 2026

THE BENCHMARK SINCE 1993

umlaut × connect

Our mobile network test has been around for an impressive 32 years. This year, we have further refined its methodology in close cooperation with our test partner umlaut. How do the mobile networks in Germany, Austria and Switzerland perform in 2026?



Contents

The first performance comparison of German mobile network providers appeared in the inaugural issue of connect in 1993. So, we can now look back on 32 years of mobile network testing. Since 2004, and thus for over 20 years, we have been conducting our renowned performance comparison of mobile networks in close cooperation with the Aachen-based benchmarking expert, which has been operating under the name umlaut since 2019.

The most reputable mobile network test

However, we would not have been able to develop what is probably the most reputable network test in the mobile communications industry if we had not continuously refined our methodology and expanded its focus to include more and more countries.

We conduct extensive measurement campaigns not only in Germany, Austria, and Switzerland, but also in the United Kingdom, the Netherlands, Spain, and other countries. This in turn provides valuable experience that allows us to make a particularly well-founded assessment of network quality in different market environments and topographies.

The reward for our efforts: a large number of mobile communications customers base their choice of an operator on the results of our network test. And the CTOs of mobile network operators base their planning on our test results. We are quite proud of this significance and reputation.

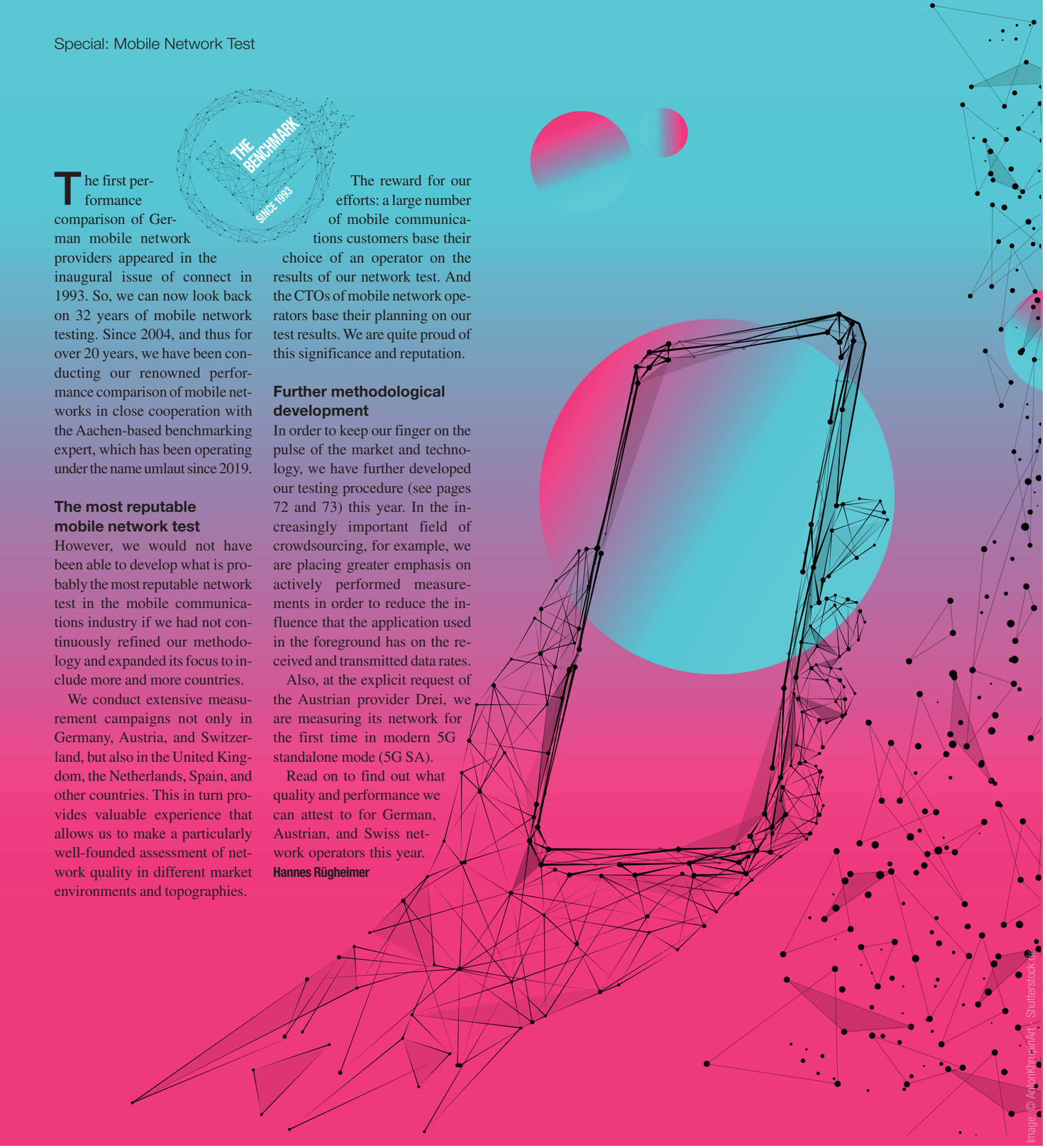
Further methodological development

In order to keep our finger on the pulse of the market and technology, we have further developed our testing procedure (see pages 72 and 73) this year. In the increasingly important field of crowdsourcing, for example, we are placing greater emphasis on actively performed measurements in order to reduce the influence that the application used in the foreground has on the received and transmitted data rates.

Also, at the explicit request of the Austrian provider Drei, we are measuring its network for the first time in modern 5G standalone mode (5G SA).

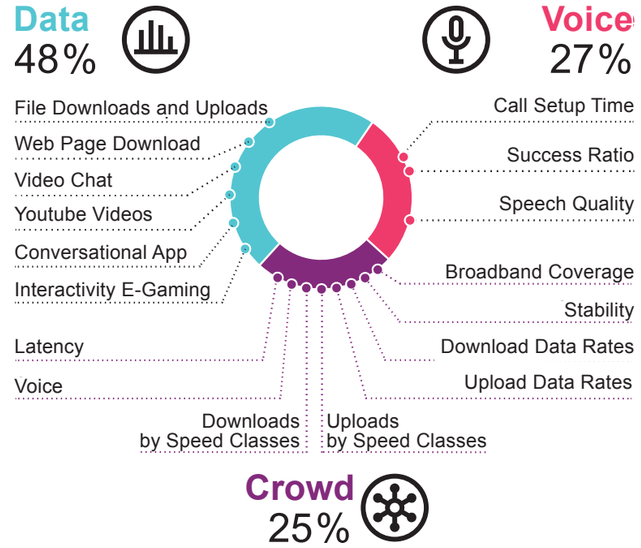
Read on to find out what quality and performance we can attest to for German, Austrian, and Swiss network operators this year.

Hannes Rügheimer



Practice-oriented **assessment**

The most relevant smartphone applications today are texting, voice and video messaging, app usage and mobile web applications. They are all based on data connections, which is why they account for 48% of our overall rating. However, voice telephony is still important and should work reliably when you need it. It therefore accounts for 27% of the overall result. Crowdsourcing (see also below) contributes 25%.



Sophisticated **Methodology**

Crowdsourcing allows us to determine the actual performance values achieved by a large number of users in their daily smartphone use. It also allows us to accurately determine network coverage even in sparsely populated areas. However, since wireless technologies and data rates depend, among other things, on the devices used and the rates booked, we also conduct targeted test drives and tests on foot with mobile measuring equipment – known as drive tests and walk tests – to determine the peak performance of mobile networks. The combination of both approaches provides a 360-degree view of network performance.

DRIVETESTS AND WALKTESTS

22.5	22 900	498 693	56 057
Million Inhabitants	Kilometers Drive Test	Data Samples	Voice Samples

CROWDSOURCING

101.1	2.84	14.2	98.5%
Million Inhabitants Covered	Million Participants in the Crowdsourcing	Billion Samples	Average Coverage of Built-up Area

The values given here are the combined values for Germany, Austria, and Switzerland. For individual values per country, see “How we test” on page 72.

Germany

Data

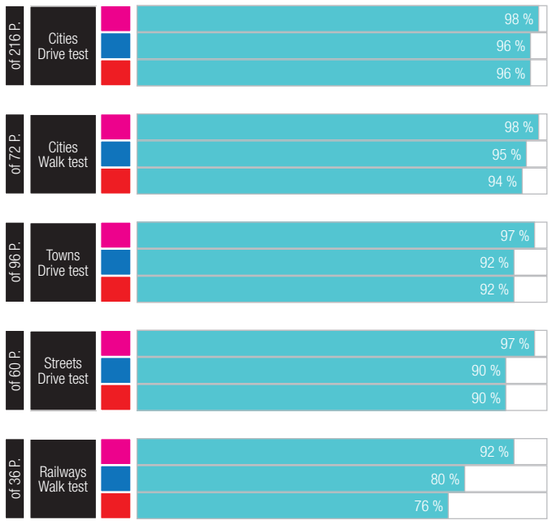
Telekom is ahead overall in the important area of data. However, O2/Telefónica and Vodafone are catching up, especially outside of large cities.

Messaging, apps, websites, e-mails – today's typical communication behavior is heavily based on mobile internet. Deutsche Telekom, which was already strong in this area last year, improved once again in the data category, closing in on the top performers from Austria and Switzerland.

However, it is particularly encouraging to see how the two runners-up from Munich and Düsseldorf have improved in this area. Compared to last year, O2/Telefónica gained an impressive 20 points in the data discipline, while Vodafone gained 10 points. A look at the details shows that these gains were achieved primarily in small towns, on connecting roads, and, last but not least, on the railways.

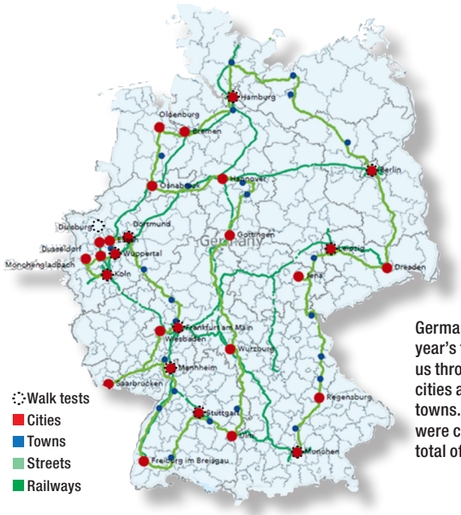
Although Telekom is clearly ahead in all categories, its competitors have been able to close the gap and often score almost equally.

However, it should also be noted that over the last year, around 10 million 1&1 customers have been gradually transferred from the Telefónica network to the Vodafone network.



Competition: Telekom leads in all scenarios. O2/Telefónica and Vodafone are essentially neck and neck, with Vodafone lagging slightly behind only on the railways.

Data			
Operator	**Telekom**	**Telefónica**	**Vodafone**
Data (Cities; Drive test)			
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	100.0/0.9	99.9/1.0	99.9/0.9
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/0.6	100.0/1.1	100.0/1.2
90%/10% faster than (Mbit/s)	118.7/298.5	54.2/284.7	48.3/275.9
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/1.2	100.0/2.1	100.0/2.3
90%/10% faster than (Mbit/s)	21.7/88.5	11.1/74.5	9.6/70.5
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	100.0	100.0	100.0
10% faster than (Mbit/s)	1028.8	626.0	556.6
Speed > 20Mbit/s / 100Mbit/s (%)	99.9/97.1	97.6/85.3	97.0/81.2
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	100.0	99.9	99.9
10% faster than (Mbit/s)	152.3	111.1	112.4
Speed > 2Mbit/s / 5Mbit/s (%)	100.0/99.6	99.3/97.0	99.6/97.4
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	99.8/1.4	99.8/1.5	99.9/1.6
Average Video Resolution (p)	1080	1080	1080
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	99.9/1.9	99.7/2.2	99.6/2.2
Average Video Resolution (p)	1080	1080	1079
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	99.9/4.4	99.9/4.1	100.0/4.0
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	99.6/90.5	97.7/83.2	97.5/82.9
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	99.3/95.5	98.3/90.7	96.8/91.0
Data (Cities; Walk test)			
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	100.0/0.9	99.6/1.0	99.7/1.0
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/0.7	99.7/1.2	99.9/1.9
90%/10% faster than (Mbit/s)	106.4/283.7	56.9/251.5	30.7/260.4
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/1.1	99.7/2.1	99.9/2.7
90%/10% faster than (Mbit/s)	30.0/89.7	15.0/76.0	11.9/70.7
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	99.9	99.7	99.5
10% faster than (Mbit/s)	899.0	575.4	514.3
Speed > 20Mbit/s / 100Mbit/s (%)	99.8/96.3	96.4/82.9	93.7/73.5
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	100.0	99.9	100.0
10% faster than (Mbit/s)	154.9	120.2	107.2
Speed > 2Mbit/s / 5Mbit/s (%)	99.8/99.3	99.0/97.8	98.8/95.7
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	99.8/1.4	99.2/1.6	99.4/1.7
Average Video Resolution (p)	1080	1080	1080
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	99.9/2.0	99.4/2.1	99.2/2.3
Average Video Resolution (p)	1080	1077	1079
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	100.0/4.4	100.0/4.4	99.9/4.2
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	99.5/91.9	97.2/86.0	96.5/84.4
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	99.4/96.4	98.5/92.5	97.8/91.6
Data (Towns; Drive test)			
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	99.9/1.0	99.8/1.2	99.8/1.1
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/0.9	100.0/1.8	100.0/2.2
90%/10% faster than (Mbit/s)	79.8/275.9	25.7/229.9	24.6/240.7
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/1.6	99.9/3.0	100.0/3.0
90%/10% faster than (Mbit/s)	14.4/83.0	7.1/63.4	7.4/57.8
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	99.9	100.0	99.5
10% faster than (Mbit/s)	766.5	411.2	470.3
Speed > 20Mbit/s / 100Mbit/s (%)	99.2/91.2	93.4/63.6	93.7/63.1
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	99.5	100.0	100.0
10% faster than (Mbit/s)	131.2	89.0	91.0
Speed > 2Mbit/s / 5Mbit/s (%)	99.7/99.2	99.3/96.4	99.6/96.3
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	99.9/1.5	99.2/1.8	99.3/1.8
Average Video Resolution (p)	1080	1079	1078
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	99.7/2.1	99.2/2.5	98.6/2.5
Average Video Resolution (p)	1080	1077	1076
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	100.0/4.2	100.0/4.0	99.9/3.8
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	99.6/88.2	96.0/75.2	95.9/77.3
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	98.5/93.7	97.2/87.0	95.0/88.1



Germany trip: This year's test tour took us through 24 large cities and 24 small towns. Walking tests were conducted in a total of 11 cities.

Cities: Telekom leads, Telefónica and Vodafone almost neck and neck

Telekom leads the way in terms of the data measurements taken during drive and walk tests in major cities.

O2/Telefónica and Vodafone are neck and neck in the drive tests, just two percentage points behind. In the walk tests, Telefónica even scores one percentage point better than Vodafone – but both achieve very high scores.

Telecom ahead in rural areas

In smaller towns and on connecting roads, Telekom continues to enjoy a clear lead. Vodafone and Telefónica/O2 follow some way behind, but have improved significantly compared to last year. Whereas last year there was a clear ranking, this time O2/Telefónica and Vodafone are on a par in these sub-disciplines.

Significant improvements on German trains

For a long time, the results for long-distance and local trains were the problem child in our network test in Germany. Here, we can see encouraging improvements—not least thanks to Deutsche Bahn's initiative to equip its trains with RD-transparent windows (see connect 12/25).

Nevertheless, Telekom leads the field here by a particularly large margin. And O2/Telefónica scores more points than Vodafone.

Data (Streets; Drive test)			
Operator	**Telekom**	**Telefónica**	**Vodafone**
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	100.0/1.0	99.5/1.2	99.3/1.2
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/1.1	100.0/3.2	100.0/3.9
90%/10% faster than (Mbit/s)	55.7/227.4	11.8/165.3	9.3/170.1
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/1.9	99.6/3.9	100.0/4.5
90%/10% faster than (Mbit/s)	11.2/76.5	4.6/54.8	4.3/51.8
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	100.0	99.6	99.7
10% faster than (Mbit/s)	396.4	259.0	291.0
Speed > 20Mbit/s / 100Mbit/s (%)	97.9/82.2	81.0/37.5	85.5/41.6
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	99.7	98.9	99.9
10% faster than (Mbit/s)	123.5	76.5	78.1
Speed > 2Mbit/s / 5Mbit/s (%)	99.5/98.4	97.5/93.4	96.7/89.5
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	99.9/1.5	98.3/1.9	97.8/2.0
Average Video Resolution (p)	1080	1078	1079
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	99.2/2.2	98.2/2.7	98.0/2.6
Average Video Resolution (p)	1080	1072	1075
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	100.0/4.1	99.5/3.8	99.8/3.7
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	98.2/86.5	93.1/76.7	91.6/75.0
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	97.2/92.9	93.5/88.6	93.0/85.9

Data (Railways; Walk test)			
Operator	**Telekom**	**Telefónica**	**Vodafone**
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	99.3/1.2	97.5/1.5	96.6/1.5
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/2.4	99.3/5.2	97.7/5.3
90%/10% faster than (Mbit/s)	21.1/244.6	6.1/229.9	5.5/184.0
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	99.5/3.9	98.1/6.0	99.2/7.2
90%/10% faster than (Mbit/s)	5.0/62.7	2.6/46.5	2.0/42.3
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	99.8	97.4	97.7
10% faster than (Mbit/s)	647.1	399.4	307.9
Speed > 20Mbit/s / 100Mbit/s (%)	89.5/63.1	78.2/39.9	75.9/41.1
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	99.5	97.0	98.3
10% faster than (Mbit/s)	98.2	60.5	61.4
Speed > 2Mbit/s / 5Mbit/s (%)	97.2/93.2	94.6/86.5	93.4/82.8
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	96.9/1.9	93.5/2.2	88.4/2.3
Average Video Resolution (p)	1078	1077	1076
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	96.0/2.4	91.4/2.9	90.9/3.0
Average Video Resolution (p)	1074	1066	1064
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	99.8/3.7	98.8/3.8	98.7/3.4
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	90.6/80.4	82.8/72.0	79.6/70.9
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	87.2/88.2	82.6/83.9	78.2/83.5

5G

How does the ongoing expansion of 5G affect the data rates recorded in drive tests and walk tests? We'll look at the results of the 7-second download measurements as an example.

Telekom and Vodafone continue to rely on dynamic spectrum sharing (DSS), while we see only a small proportion of this technology at O2/Telefónica. DSS distributes cell capacities between 4G and 5G depending on current user demand. In the sum of all 5G samples, Telekom is ahead, and the same applies to data rates. Vodafone and O2/Telefónica are close together in most scenarios.

Data Rates 7s Download	Telekom			Telefónica			Vodafone		
Samples with 5G	Share	Ø (Mbps)	10% faster than (Mbps)	Share	Ø (Mbps)	10% faster than (Mbps)	Share	Ø (Mbps)	10% faster than (Mbps)
Cities Drive test	51.4%	657.4	1083.5	96.5%	337.3	632.4	44.0%	321.1	563.3
Cities Walk test	56.0%	598.4	1014.1	92.4%	312.4	586.8	38.6%	298.2	621.2
Towns Drive test	50.5%	470.2	879.3	84.1%	203.7	445.6	25.1%	337.5	656.8
Streets Drive test	45.5%	262.7	459.9	74.7%	129.1	282.6	20.9%	230.5	430.4
Railways Walk test	44.4%	349.9	757.9	64.9%	195.0	447.2	23.2%	241.8	420.3
Samples with 5G-DSS	Share	Ø (Mbps)	10% faster than (Mbps)	Share	Ø (Mbps)	10% faster than (Mbps)	Share	Ø (Mbps)	10% faster than (Mbps)
Cities Drive test	48.4%	514.9	971.3	0.1%	103.6	150.9	52.6%	263.1	558.5
Cities Walk test	43.0%	353.8	690.2	–	–	–	43.4%	224.3	509.8
Towns Drive test	48.6%	312.7	583.7	2.4%	103.0	211.8	67.7%	179.7	417.0
Streets Drive test	52.1%	204.5	329.9	1.8%	79.5	105.7	65.6%	101.9	242.5
Railways Walk test	53.2%	205.7	498.9	1.9%	37.2	82.4	65.8%	92.7	244.9

Voice

In telephony, there is a neck-and-neck race between Telekom and Vodafone, with Telefónica/O2 following close behind. Overall, the differences are becoming smaller.

Although traditional telephony nowadays often plays only a minor role in smartphone use, this still applies: users expect reliable connections, short call set-up times and high voice quality for outgoing and incoming calls. The good news is that the scores achieved in the telephony discipline are high overall, meaning that these expectations are usually met.

Close race in the cities

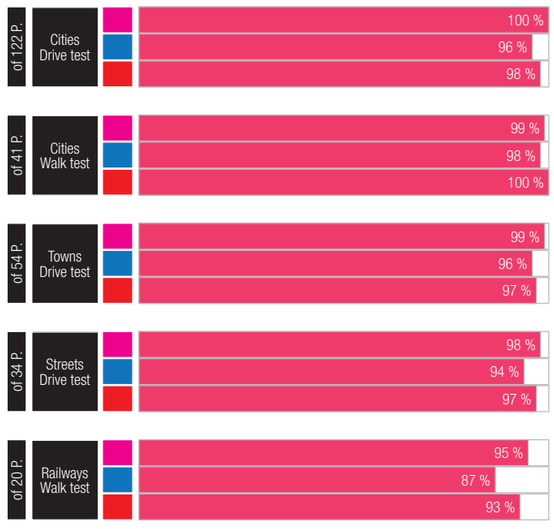
In large cities, there are differences in performance in terms of voice quality, but these are minor overall. While Telekom is slightly ahead in the drive tests, Vodafone comes out on top in the walk tests. O2/Telefónica keeps up at a high level, but is just behind the leading duo in each case.

High-quality telephone services even in rural areas

It is encouraging to see that the high level of performance in the voice discipline continues in the smaller towns. Nevertheless, we see a clear ranking here: Telekom – Vodafone – O2/Telefónica. The overall high success rates and quality parameters mean that motorists can rely on mobile telephony even outside the major centres. And those who do without a landline connection in small towns and rely solely on their smartphones can still be reached by telephone almost all the time.

Advances on the railways

The encouraging observations we were able to make in the data evaluation also apply to making calls on trains: compared to the previous year, the results in this sub-discipline have clearly improved. Telekom and Vodafone are also the strongest operators here, with O2/Telefónica following some way behind.



Voice: Telekom is ahead in almost all areas, with Vodafone performing slightly better only in walk tests in large cities. Overall, in the voice category the Düsseldorf-based company is slightly stronger than its Munich-based competitor.

Voice (Telephony)			
Operator	**Telekom**	**Telefónica**	**Vodafone**
VOICE CITIES (DRIVE TEST)			
Success Ratio (%)	100.0	99.6	99.8
Call Setup Time 10% faster than (P90, s)	1.0	1.1	1.1
Speech Quality 90% better than (P10, MOS-LQO)	4.7	4.5	4.6
VOICE CITIES (WALK TEST)			
Success Ratio (%)	99.9	99.8	100.0
Call Setup Time 10% faster than (P90, s)	1.0	1.1	1.1
Speech Quality 90% better than (P10, MOS-LQO)	4.7	4.7	4.7
VOICE TOWNS (DRIVE TEST)			
Success Ratio (%)	99.9	99.6	99.6
Call Setup Time 10% faster than (P90, s)	1.1	1.1	1.2
Speech Quality 90% better than (P10, MOS-LQO)	4.6	4.5	4.6
VOICE STREETS (DRIVE TEST)			
Success Ratio (%)	99.7	98.7	99.3
Call Setup Time 10% faster than (P90, s)	1.1	1.2	1.2
Speech Quality 90% better than (P10, MOS-LQO)	4.6	4.4	4.5
VOICE RAILWAYS (WALK TEST)			
Success Ratio (%)	98.4	96.1	97.9
Call Setup Time 10% faster than (P90, s)	1.1	1.3	1.3
Speech Quality 90% better than (P10, MOS-LQO)	4.4	4.3	4.3

Single reviews

T For the 15th time in a row, Deutsche Telekom has come out on top in Germany. Compared to last year, the Bonn-based company gained another five points, narrowing the gap to its sister company in Austria down to just one point. These results, achieved through continuous network expansion, once again deserve the grade “outstanding“.

O2 O2/Telefónica is consistently pursuing its long-standing course of continuous improvement and shows the greatest increase in the German-speaking test environment. This brings O2/Telefónica significantly closer to the Bonn-based competition, and the Munich-based provider is now on a par with its competitors from Düsseldorf for the first time. In the data and crowd disciplines, it even ranks ahead of Vodafone.

vodafone Intensive work on the network was also carried out in Düsseldorf: Vodafone improved by 13 points compared to the previous year. This is all the more remarkable given that the operator now has to serve 10 million new 1&1 customers. This year, Vodafone shares second place with O2/Telefónica. In some telephony sub-disciplines, the provider is coming very close to Telekom.

Crowd

In the crowdsourcing, based on the user experience of many customers, Telekom is in the lead, but O2/Telefónica scores two valuable points ahead of Vodafone.

While drive tests and walk tests focus on the maximum performance of mobile networks, crowdsourcing takes a broader view: the analysis of more than 12.4 billion samples contributed by almost 2.6 million users allows conclusions to be drawn about the user experience – how well is the performance of the networks received by their users as a whole?

The evaluation of broadband coverage shows that 5G or at least 4G is available to almost all customers who are registered on the mobile network. Telekom leads in all sub-results for broadband coverage, with Vodafone slightly ahead of O2/Telefónica – the same applies to download data rates. The results for uploads are mixed. However, the Munich-based company is able to achieve more points for latency, HD telephony and stability, giving it a two-point lead over Vodafone in the crowd category overall.

Crowdsourcing			
Operator	**Telekom**	**Telefónica**	**Vodafone**
BROADBAND COVERAGE			
Coverage Reach (%)	98.6	97.9	98.1
Time on Broadband (%)	99.3	98.6	98.7
DOWNLOADS BY SPEED CLASSES (ACTIVE)			
Basic Internet Class (%)	98.6	98.2	98.7
HD Video Class / UHD Video Class (%)	94.5/80.9	93.4/72.6	94.4/78.0
UPLOADS BY SPEED CLASSES (ACTIVE)			
Basic Internet Class (%)	95.4	92.6	92.1
HD Video Class (%)	84.8	78.9	76.4
DOWNLOADS BY DATA RATES (ACTIVE)			
Avg. Throughput (Mbps)	161.1	87.5	112.0
90%/10% faster than (Mbps)	10.8/410.3	8.1/224.4	9.3/287.8
UPLOADS BY DATA RATES (ACTIVE)			
Avg. Throughput (Mbps)	33.4	22.4	24.1
90%/10% faster than (Mbps)	3.6/80.6	2.6/52.8	2.4/58.2
LATENCY			
Gaming Class / OTT Voice Class (%)	95.0/98.3	90.8/96.8	88.6/96.2
Highend Gaming Class (%)	40.7	29.2	12.3
VOICE			
HD Voice (%)	99.1	98.0	96.6
STABILITY			
Transaction Success (%)	97.9	97.0	96.2

Telekom continues to close in on the top candidates in Austria and Switzerland, while O2/Telefónica and Vodafone are tied in the overall ranking. Both have improved compared to last year, with O2/Telefónica making the biggest leap.

Image: © AntonKhrupinArt - Shutterstock.de

Reliability

Telekom also leads the way when we look at the basic requirements separately. In this analysis, Vodafone scores slightly ahead of O2/Telefónica overall.

The “Reliability“ section is not a separate test discipline, but rather a different perspective on the results of the preceding categories. The analysis here focuses on basic requirements and excludes KPIs that focus more on peak performance. The result shows how well the providers supply their customers with services relevant to everyday use.

Telekom also leads in this assessment, which focuses on basic requirements. However, Vodafone is slightly ahead of O2/Telefónica in this evaluation, thanks to the Düsseldorf-based company‘s slightly more reliable voice telephony.

In the data and crowd ratings, the two competitors are close together, with Telefónica leading in these categories by a razor-thin margin of one score point. Overall, however, the gaps between O2/Telefónica and Vodafone are relatively small here as well.

Reliability				
Operator		**Telekom**	**Telefónica**	**Vodafone**
VOICE	max. 162 Points	160	153	157
Drive test	126	99%	95%	97%
Walk test	36	97%	92%	96%
DATA	max. 288 Points	284	275	274
Drive test	223	99%	97%	97%
Walk test	65	97%	91%	90%
CROWD	max. 150 Points	143	139	138
Crowd	150	95%	92%	92%
Sum	**600**	**587**	**567**	**569**

All values rounded to whole numbers. Points and percentages were calculated internally to three decimal places.
The maximum achievable score of 600 points is an extract from the overall result of 1000 points (see pages. 72/73).

Austria

Data

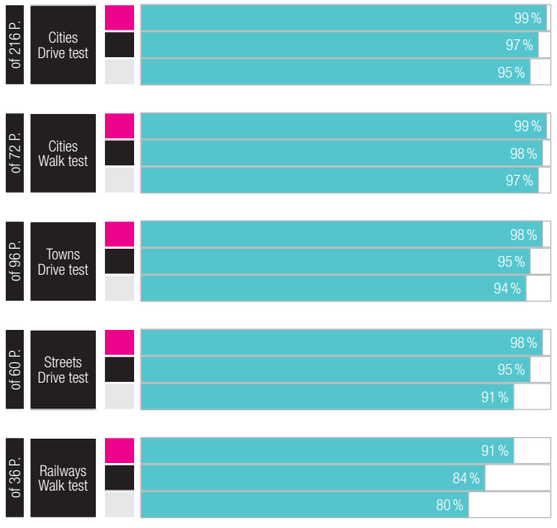
Magenta leads A1 by a clear margin in the data rankings. Drei follows some way behind in third place.

Magenta has improved slightly compared to its previous year's results. A1 and Drei have each lost a few points.

However, there is a specific reason for the differences compared to the previous year in the case of the latter operator: Among the Austrian networks, Drei is by far most ahead with the expansion of 5G Standalone (5GSA), as detailed analyses by umlaut confirm. Drei was therefore the first provider in the DACH region to request that the measurements should be carried out in 5GSA mode wherever possible. As this was not yet the case last year, the differences are easily explained. Where Drei has improved, this is also proof of the technical advantages of 5GSA. Magenta and A1, on the other hand, were still measured with 5G non-standalone (NSA) at their own request.

Cities: Magenta leads, A1 and Drei follow closely behind

However, the ranking remains clear – as in our previous mobile network test in Austria: Magenta leads in all tested scenarios, followed closely by A1, with only a few percentage points separating them in Austria's larger cities and smaller towns. In these more densely populated regions, however, Drei is closing the gap on A1 with 5GSA. This is particularly evident in the metropolitan walk tests and in small towns.



Clear ranking: Magenta leads ahead of A1 by clear margins in the data rankings. Drei follows some way behind in third place.

Data			
Operator	**Magenta**	**A1**	**Drei**
Data (Cities; Drive test)			
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	100.0/0.8	99.9/0.9	99.8/0.9
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/0.5	100.0/0.7	99.9/0.7
90%/10% faster than (Mbit/s)	150.4/373.8	106.6/258.1	85.6/284.7
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/0.9	99.9/1.5	99.9/2.0
90%/10% faster than (Mbit/s)	33.4/93.3	18.4/82.6	10.4/65.4
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	100.0	99.8	99.7
10% faster than (Mbit/s)	1036.8	1065.8	650.1
Speed > 20Mbit/s / 100Mbit/s (%)	100.0/99.3	99.9/96.8	100.0/96.8
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	100.0	99.9	99.9
10% faster than (Mbit/s)	166.6	127.8	91.1
Speed > 2Mbit/s / 5Mbit/s (%)	100.0/99.8	100.0/99.6	99.5/97.8
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	100.0/1.3	99.9/1.9	99.8/1.6
Average Video Resolution (p)	1080	1080	1080
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	99.9/1.9	100.0/2.5	99.8/2.1
Average Video Resolution (p)	1080	1080	1080
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	99.9/4.3	100.0/4.1	99.4/3.9
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	99.6/90.2	99.3/81.3	98.4/78.1
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	99.6/95.4	99.4/91.1	98.2/90.7
Data (Cities; Walk test)			
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	100.0/0.8	100.0/0.9	99.9/0.9
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/0.5	100.0/0.7	100.0/0.7
90%/10% faster than (Mbit/s)	157.9/382.8	101.7/263.0	92.1/298.5
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/1.1	100.0/1.5	100.0/1.7
90%/10% faster than (Mbit/s)	29.8/91.4	25.2/82.1	14.4/73.3
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	100.0	100.0	100.0
10% faster than (Mbit/s)	1293.5	1105.7	765.5
Speed > 20Mbit/s / 100Mbit/s (%)	99.8/98.4	99.2/95.0	100.0/97.5
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	100.0	100.0	99.8
10% faster than (Mbit/s)	166.1	135.5	98.3
Speed > 2Mbit/s / 5Mbit/s (%)	100.0/100.0	99.8/99.6	100.0/98.5
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	100.0/1.3	100.0/1.9	100.0/1.5
Average Video Resolution (p)	1080	1080	1080
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	100.0/1.9	100.0/2.5	100.0/2.1
Average Video Resolution (p)	1080	1080	1080
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	100.0/4.4	99.9/4.3	100.0/4.3
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	99.8/91.1	99.8/82.7	99.4/80.1
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	100.0/95.8	99.6/92.8	98.7/91.8
Data (Towns; Drive test)			
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	99.9/0.9	99.8/1.0	99.7/1.0
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/0.6	100.0/0.7	100.0/0.9
90%/10% faster than (Mbit/s)	120.9/332.0	94.3/256.8	84.9/265.8
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/1.2	100.0/2.0	99.8/3.2
90%/10% faster than (Mbit/s)	26.1/87.0	13.0/81.2	5.7/57.1
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	100.0	99.4	100.0
10% faster than (Mbit/s)	850.1	1145.5	662.1
Speed > 20Mbit/s / 100Mbit/s (%)	99.8/97.2	100.0/93.8	99.4/95.3
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	100.0	100.0	100.0
10% faster than (Mbit/s)	155.9	128.5	80.3
Speed > 2Mbit/s / 5Mbit/s (%)	99.8/99.8	99.6/98.7	99.1/95.0
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	100.0/1.4	99.6/2.0	99.8/1.7
Average Video Resolution (p)	1080	1080	1080
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	100.0/2.1	99.2/2.6	99.2/2.3
Average Video Resolution (p)	1080	1080	1079
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	100.0/4.3	99.7/4.0	100.0/3.7
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	99.3/87.4	99.1/78.2	97.0/75.5
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	98.3/94.7	99.2/90.7	94.8/87.7

Streets: clear ranking Magenta – A1 – Drei

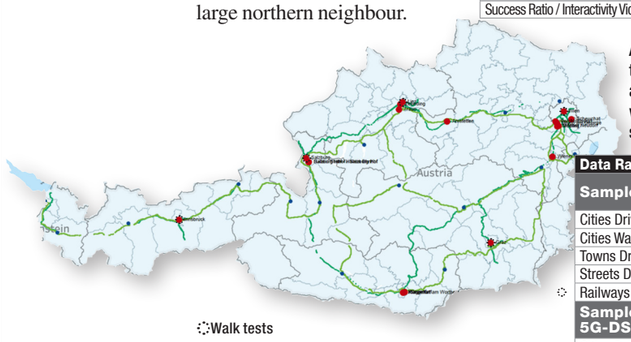
Magenta also leads on connecting roads, with A1 following close behind. However, Drei loses a few percentage points here too, which can probably be explained by the inclusion of 5GSA in the measurements. Overall, however, customers of A1 and Drei can also expect largely stable, fast mobile internet when travelling by car.

Slight setbacks for all providers on the railways

This also applies to Austrian trains, albeit to a somewhat lesser extent. The ranking of the three operators is once again familiar – performance levels are broadly in line with last year. However, Austrian operators have lost the significant lead they had over Germany in this area last year, although this is more due to improvements made by their large northern neighbour.

Data (Streets; Drive test)			
Operator	**Magenta**	**A1**	**Drei**
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	100.0/1.0	99.9/1.1	99.6/1.2
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/1.3	100.0/1.1	99.8/1.2
90%/10% faster than (Mbit/s)	34.2/266.4	44.8/213.4	44.6/229.5
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	100.0/1.8	99.8/3.5	99.8/3.5
90%/10% faster than (Mbit/s)	12.9/73.2	4.8/54.3	5.9/48.1
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	99.8	99.6	99.5
10% faster than (Mbit/s)	652.3	731.8	473.7
Speed > 20Mbit/s / 100Mbit/s (%)	96.3/69.5	97.8/76.7	96.6/71.5
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	100.0	99.3	99.1
10% faster than (Mbit/s)	131.4	82.3	82.2
Speed > 2Mbit/s / 5Mbit/s (%)	100.0/99.6	99.1/97.8	98.3/96.2
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	100.0/1.7	99.6/2.1	99.5/1.9
Average Video Resolution (p)	1080	1080	1080
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	100.0/2.4	99.6/2.7	98.6/2.6
Average Video Resolution (p)	1079	1080	1076
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	100.0/4.3	99.7/4.0	97.7/3.4
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	98.0/77.4	97.6/73.2	93.9/67.8
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	97.6/90.0	98.9/88.5	88.0/81.7

Data (Railways; Walk test)			
Operator	**Magenta**	**A1**	**Drei**
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	98.7/1.1	97.0/1.3	96.5/1.3
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	98.9/1.8	97.8/2.4	98.1/2.5
90%/10% faster than (Mbit/s)	25.7/343.3	22.7/229.9	18.3/229.9
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	98.9/3.8	96.0/6.6	96.6/6.6
90%/10% faster than (Mbit/s)	4.4/70.2	2.3/57.7	2.6/38.5
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	97.5	97.4	96.6
10% faster than (Mbit/s)	743.8	836.2	504.6
Speed > 20Mbit/s / 100Mbit/s (%)	94.6/77.0	91.2/68.8	88.4/66.0
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	98.5	95.5	96.6
10% faster than (Mbit/s)	115.3	90.1	51.8
Speed > 2Mbit/s / 5Mbit/s (%)	96.3/90.4	98.8/91.8	95.0/86.4
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	98.2/1.7	95.9/2.4	94.8/2.2
Average Video Resolution (p)	1080	1080	1076
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	96.1/2.2	94.4/3.0	94.7/2.8
Average Video Resolution (p)	1078	1078	1067
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	99.5/4.2	99.2/3.8	99.4/3.4
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	89.5/81.8	90.3/68.7	84.0/65.9
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	90.7/91.1	87.1/81.7	73.2/80.0



Alpine tour: The drive tests took place in 14 large cities and 16 smaller towns, with walk tests conducted in six cities.

Data Rates 7s Download	Magenta			A1			Drei		
Samples with 5G	Share	Ø (Mbps)	10% faster than (Mbps)	Share	Ø (Mbps)	10% faster than (Mbps)	Share	Ø (Mbps)	10% faster than (Mbps)
Cities Drive test	99,0%	637,4	1038,2	100,0%	636,4	1066,8	100,0%	402,5	650,2
Cities Walk test	99,0%	731,6	1297,0	99,0%	643,2	1106,2	100,0%	440,8	766,4
Towns Drive test	99,0%	510,5	850,4	100,0%	671,2	1145,7	98,0%	409,0	663,5
Streets Drive test	79,0%	320,0	721,5	89,0%	327,1	776,3	54,0%	319,3	568,1
Railways Walk test	86,0%	390,2	774,4	93,0%	379,8	858,4	68,0%	309,5	543,2
Samples with 5G-DSS	Share	Ø (Mbps)	10% faster than (Mbps)	Share	Ø (Mbps)	10% faster than (Mbps)	Share	Ø (Mbps)	10% faster than (Mbps)
Cities Drive test	0,1%	241,4	241,4	–	–	–	–	–	–
Cities Walk test	–	–	–	–	–	–	–	–	–
Towns Drive test	1,0%	188,0	215,5	–	–	–	–	–	–
Streets Drive test	1,0%	183,3	227,9	–	–	–	–	–	–
Railways Walk test	1,0%	211,7	305,9	–	–	–	–	–	–

5G

The detailed analysis of the drive test and walk test data allows conclusions to be drawn about the expansion of 5G in Austria.

A look at the measurements for the test point "Data rates of 7 seconds download" shows that in Austria, only Magenta still relies on the load-dependent frequency allocation between 4G and 5G (Dynamic Spectrum Sharing, DSS) – and even that only to a very limited extent.

In terms of 5G coverage, all three providers are almost neck and neck in large cities. In smaller towns, Magenta achieves the same full coverage with DSS as A1 without DSS, with Drei following two percentage points behind. The differences become more apparent on the roads and on trains: here, A1 is in the lead, followed by Magenta and, at a greater distance, Drei. In terms of data rates, we see a small lead for Magenta in the urban walk tests and on trains, and for A1 in small towns and minimally on the roads. Drei is slightly slower everywhere.

Voice

When it comes to telephony, Magenta and A1 rank close together. Drei has largely maintained its previous year's results, which is not a given with 5GSA technology.

Comparing the scores achieved in the voice discipline with last year's results, A1 managed to improve slightly, Magenta fell by one point, and Drei lost five points.

The latter is likely to be an effect of the measurements with a high 5GSA share. Although fallback to 4G (VoLTE – Voice over LTE) is necessary for both 5GNSA and 5GSA, it poses additional technical challenges when operating a completely independent 5G network (5G stand alone). This slightly brought down Drei's success rates. However, call set-up times have actually tended to decrease for Austria's smallest provider.

Voice in cities: Magenta and A1 neck and neck, Drei follows a little behind

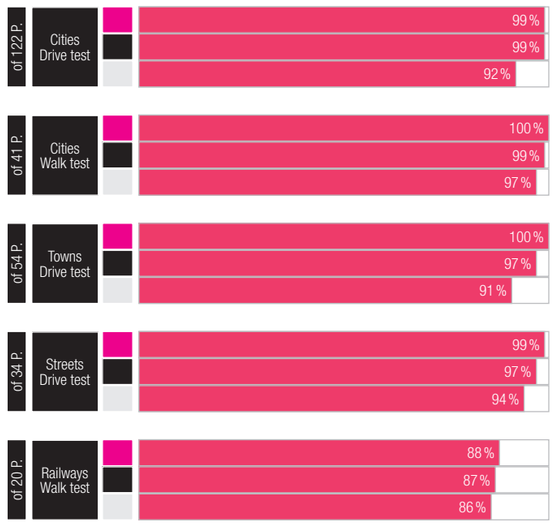
In large cities, Magenta and A1 achieved identical voice scores in the drive tests, while Magenta led by one percentage point in the walk tests. Drei lagged slightly behind, more noticeably in the drive tests, which can be attributed to a slightly lower success rate in this scenario.

In the smaller towns, the gaps between the three operators are a little more pronounced overall.

Magenta is the clear leader, with A1 close behind. Compared to the previous year, Drei has fallen slightly behind in this scenario.

Roads and railways: Magenta in the lead, but only minor differences

Overall, the results for connecting roads are encouraging: Magenta's performance in first place and A1's in second place remain high, as in the previous year, but Drei has managed to close the gap on second-placed A1. The same applies to telephone calls on Austrian trains. However, here the scores of A1 and Drei are closing in on the leader, Magenta.



Voice: In large cities, Magenta and A1 are almost on a par. Performance levels are also high in small towns and on connecting roads, but A1 and Drei lag behind somewhat more significantly. The differences are only minor on the railways.

Voice (Telephony)			
Anbieter	**Magenta**	**A1**	**Drei**
VOICE CITIES (DRIVE TEST)			
Success Ratio (%)	99.9	100.0	99.2
Call Setup Time 10% faster than (P90, s)	1.0	1.2	1.6
Speech Quality 90% better than (P10, MOS-LQO)	4.7	4.6	4.5
VOICE CITIES (WALK TEST)			
Success Ratio (%)	100.0	100.0	99.8
Call Setup Time 10% faster than (P90, s)	1.0	1.3	1.6
Speech Quality 90% better than (P10, MOS-LQO)	4.7	4.6	4.7
VOICE TOWNS (DRIVE TEST)			
Success Ratio (%)	100.0	99.7	99.0
Call Setup Time 10% faster than (P90, s)	1.0	1.3	1.7
Speech Quality 90% better than (P10, MOS-LQO)	4.7	4.6	4.5
VOICE STREETS (DRIVE TEST)			
Success Ratio (%)	99.9	99.3	98.9
Call Setup Time 10% faster than (P90, s)	1.0	1.3	1.9
Speech Quality 90% better than (P10, MOS-LQO)	4.7	4.6	4.4
VOICE RAILWAYS (WALK TEST)			
Success Ratio (%)	96.1	95.9	95.8
Call Setup Time 10% faster than (P90, s)	1.1	1.6	1.7
Speech Quality 90% better than (P10, MOS-LQO)	4.6	4.4	4.3

Single reviews

Magenta

For the eighth time in a row, Magenta has come out on top among Austrian providers – once again with the top rating of "outstanding". The provider leads in all categories and has improved its overall score by one point compared to last year. With this point, Magenta also leads in the internal group competition ahead of Deutsche Telekom, which also performed outstandingly.

A1

A1 maintains its very high performance level from the previous year and thus rightly receives the top rating of "outstanding". In large cities, A1 is almost on a par with Magenta, and only slightly behind in rural areas. In terms of 5G expansion, we see 5G coverage in large and small cities significantly above 99% together with Magenta, and A1 even takes the lead in small towns.

Drei

Drei was the first provider in the DACH region to opt for measurements that take into account the 5G stand alone technology which is already widely deployed in its network. This has enabled Austria's smallest operator to achieve a very good result. The fact that it has fallen slightly behind compared to last year is likely to be partly attributable to minor adjustments to the new network technology.

Crowd

Magenta leads the crowdsourcing analyses, which reflect the actual customer experience. A1 comes in second, but Drei is close behind.

The crowdsourcing analyses also confirm Magenta's leadership. This is evident, for example, in the actively determined data rates and also in the download and upload measurements by speed classes.

However, A1 takes the lead in terms of broadband coverage. And in terms of the amount of time customers were able to use broadband, i.e. 5G or 4G, A1 and Drei are very close behind Magenta.

In the latency category, Drei follows Magenta at a fairly small distance, while A1 falls behind more significantly as latency requirements increase. Especially in the demanding high-end gaming class (round-trip times up to 20 ms), A1 only achieves a fulfilment rate of around 8%, while Drei achieves around 48% and Magenta around 60%. In HD telephony, Drei also follows closely behind Magenta and ahead of A1. Magenta leads in terms of stability, with A1 and Drei performing on a par.

Crowdsourcing			
Operator	**Magenta**	**A1**	**Drei**
BROADBAND COVERAGE			
Coverage Reach (%)	93.6	94.2	90.4
Time on Broadband (%)	99.2	98.5	98.3
DOWNLOADS BY SPEED CLASSES (ACTIVE)			
Basic Internet Class (%)	99.5	99.1	98.7
HD Video Class / UHD Video Class (%)	97.3/86.3	95.8/80.6	95.2/84.6
UPLOADS BY SPEED CLASSES (ACTIVE)			
Basic Internet Class (%)	96.6	94.4	94.0
HD Video Class (%)	88.1	83.2	82.3
DOWNLOADS BY DATA RATES (ACTIVE)			
Avg. Throughput (Mbps)	143.5	95.0	91.2
90%/10% faster than (Mbps)	15.7/338.2	11.4/210.8	12.7/202.2
UPLOADS BY DATA RATES (ACTIVE)			
Avg. Throughput (Mbps)	34.7	23.1	22.3
90%/10% faster than (Mbps)	4.5/78.1	3.3/51.2	3.1/49.5
LATENCY			
Gaming Class / OTT Voice Class (%)	97.1/98.9	83.8/98.1	96.4/98.3
Highend Gaming Class (%)	59.7	7.9	47.9
VOICE			
HD Voice (%)	98.7	97.5	98.5
STABILITY			
Transaction Success (%)	98.4	97.4	97.4

The "5G Stand-alone" mobile communications technology, which is being used for the first time in the Drei network, is still experiencing minor adjustment difficulties at this operator. However, top results, especially in densely populated areas, demonstrate its potential.

Image: © AntonKhrupinArt - Shutterstock.de

Reliability

The reliability rating, which focuses on basic performance, also shows the familiar ranking of Magenta – A1 – Drei.

Our special evaluation focusing on "Reliability" only takes into account the test points that are relevant for good basic services, while we ignore the scoring for top performance. That is why this discipline is not a separate evaluation category, but rather an alternative look at the overall result.

In Austria, however, this reliability evaluation reveals the same ranking as the overall result. Magenta and A1 are close together in the voice discipline, while the gap between the candidates is slightly more pronounced in the data evaluation. Drei follows behind Magenta and A1 at some distance. However, the fact that A1 and Drei share second place in the crowd evaluation of the reliability assessment proves that Drei is quite successful in providing its customers with basic performance.

Reliability				
Operator		**Magenta**	**A1**	**Drei**
VOICE	max. 162 Points	159	157	146
Drive test	126	99%	98%	90%
Walk test	36	93%	93%	91%
DATA	max. 288 Points	285	280	275
Drive test	223	100%	98%	96%
Walk test	65	97%	94%	93%
CROWD	max. 150 Points	145	142	142
Crowd	150	97%	94%	94%
Sum	**600**	**589**	**579**	**563**

All values rounded to whole numbers. Points and percentages were calculated internally to three decimal places.
The maximum achievable score of 600 points is an extract from the overall result of 1000 points (see pages. 72/73).

Switzerland

Data

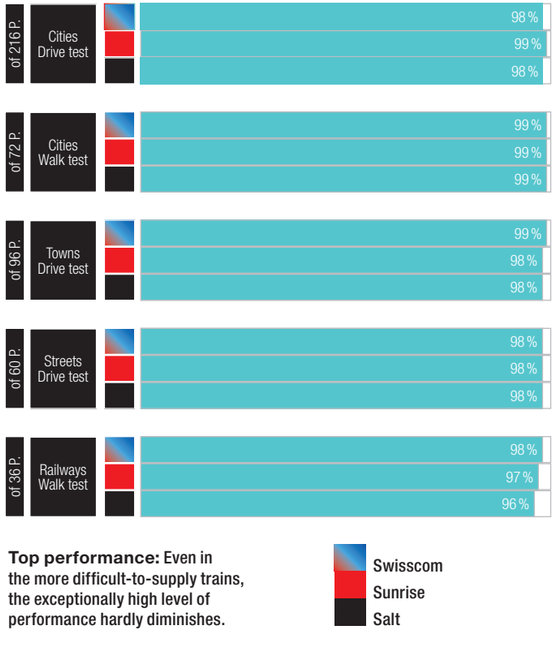
Swisscom ranks at the highest level overall, slightly ahead of Sunrise and Salt.

It has been a longstanding tradition for Swiss providers to show where the top level can be found in terms of performance and scores in a DACH comparison. This is also the case this year – but the gaps in the three-country comparison are shrinking. This can be explained by the fact that Germany‘s leading provider Telekom and its Austrian sister company Magenta have continuously improved in recent years, closing the gap on the Swiss operators, who have long achieved outstanding results.

A glance at the fulfilment rates in the individual test categories shows just how high the level of performance in Switzerland has become. Differences here are only in the order of a few percentage points.

Sunrise slightly ahead in large cities, Swisscom narrowly leads in small towns, Salt consistently close behind

Sunrise has a slight edge over Swisscom and Salt in the metropolitan data drive tests. The walk tests conducted in eight Swiss cities show the same extremely high level of performance for all three networks in the data discipline.



Top performance: Even in the more difficult-to-supply trains, the exceptionally high level of performance hardly diminishes.

Data			
Operator	**Swisscom**	**Sunrise**	**Salt**
Data (Cities; Drive test)			
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	100,0/0,7	100,0/0,8	99,9/0,9
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100,0/0,5	100,0/0,7	100,0/0,8
90%/10% faster than (Mbit/s)	120,0/434,8	76,2/352,7	69,8/333,3
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	100,0/1,1	100,0/1,0	99,9/1,0
90%/10% faster than (Mbit/s)	19,5/109,0	26,4/98,0	27,4/90,6
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	99,9	100,0	99,9
10% faster than (Mbit/s)	1008,7	963,2	738,0
Speed > 20Mbit/s / 100Mbit/s (%)	99,4/94,7	98,5/91,0	98,6/87,8
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	100,0	99,9	99,9
10% faster than (Mbit/s)	179,3	166,5	142,9
Speed > 2Mbit/s / 5Mbit/s (%)	100,0/99,7	100,0/99,5	100,0/99,7
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	100,0/1,3	99,9/1,3	99,9/1,4
Average Video Resolution (p)	1080	1080	1080
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	99,9/1,9	99,9/2,0	99,8/2,0
Average Video Resolution (p)	1080	1079	1080
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	99,9/4,3	99,9/4,3	100,0/4,3
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	99,2/87,9	99,5/92,9	99,2/91,9
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	98,5/92,4	99,4/96,1	99,1/95,1
Data (Cities; Walk test)			
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	100,0/0,7	100,0/0,7	100,0/0,8
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100,0/0,4	100,0/0,6	100,0/0,8
90%/10% faster than (Mbit/s)	164,5/437,2	109,7/372,1	56,6/343,3
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	100,0/0,9	100,0/0,8	100,0/1,1
90%/10% faster than (Mbit/s)	28,1/108,7	38,5/99,7	33,4/90,5
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	100,0	100,0	100,0
10% faster than (Mbit/s)	1009,2	1025,9	790,9
Speed > 20Mbit/s / 100Mbit/s (%)	100,0/98,3	100,0/95,5	99,7/83,0
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	100,0	100,0	100,0
10% faster than (Mbit/s)	178,8	172,6	148,4
Speed > 2Mbit/s / 5Mbit/s (%)	100,0/99,8	100,0/99,8	100,0/99,7
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	100,0/1,2	100,0/1,2	100,0/1,4
Average Video Resolution (p)	1080	1080	1080
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	99,8/1,9	99,8/1,8	100,0/2,0
Average Video Resolution (p)	1080	1080	1080
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	100,0/4,3	100,0/4,5	100,0/4,5
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	99,5/91,0	99,8/95,1	99,8/93,7
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	99,4/95,0	99,4/97,0	99,5/96,5
Data (Towns; Drive test)			
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	100,0/0,7	99,9/0,8	100,0/0,9
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100,0/0,5	100,0/0,7	100,0/0,7
90%/10% faster than (Mbit/s)	141,8/442,0	86,0/343,4	82,8/334,7
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	100,0/1,2	100,0/1,3	100,0/1,3
90%/10% faster than (Mbit/s)	17,6/104,6	19,8/90,7	18,8/87,8
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	100,0	100,0	100,0
10% faster than (Mbit/s)	1016,6	861,3	778,9
Speed > 20Mbit/s / 100Mbit/s (%)	99,6/94,8	98,5/89,2	98,8/87,6
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	100,0	100,0	100,0
10% faster than (Mbit/s)	171,8	154,1	139,8
Speed > 2Mbit/s / 5Mbit/s (%)	100,0/99,9	99,8/99,5	99,8/99,1
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	100,0/1,3	99,9/1,3	99,7/1,4
Average Video Resolution (p)	1080	1080	1080
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	100,0/1,9	100,0/2,0	99,9/2,0
Average Video Resolution (p)	1080	1080	1080
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	100,0/4,2	100,0/4,3	99,9/4,3
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	99,9/87,6	99,0/92,4	99,6/91,5
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	98,6/92,7	98,5/95,7	98,3/94,4

In the 17 smaller Swiss towns visited by the drive test teams, Swisscom is once again just ahead. Salt, Switzerland‘s smallest provider, keeps up with the highest performance in each of these scenarios.

Impressive performance levels across all three Swiss networks, both on roads and railways

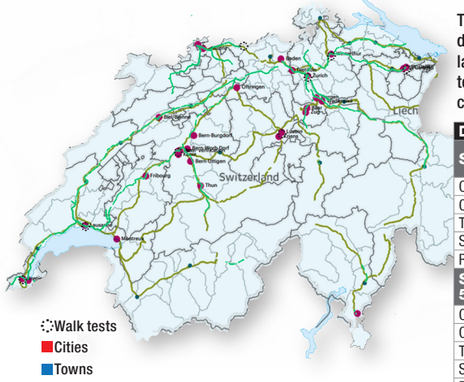
Not less impressive is the fact that the levels of performance achieved by the three Swiss network operators remain at the same high level on connecting roads and on the railways.

On the roads, the three operators perform neck and neck in terms of data coverage, meaning that customers travelling by car receive the same high level of service from each network operator.

On Swiss trains, market leader Swisscom is ahead, followed by Sunrise and then Salt, each one percentage point behind. However, with 96% of the total possible points in this discipline, Salt also achieved an excellent result in the railway rating – as did of course Swisscom and Sunrise.

Data (Streets; Drive test)			
Operator	**Swisscom**	**Sunrise**	**Salt**
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	99,9/0,8	99,9/0,9	99,8/0,9
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100,0/0,7	100,0/1,0	100,0/0,9
90%/10% faster than (Mbit/s)	91,2/401,2	43,8/334,7	67,1/296,3
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	100,0/1,8	99,4/1,8	99,7/1,7
90%/10% faster than (Mbit/s)	12,1/94,3	12,0/79,2	14,5/81,3
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	100,0	100,0	99,7
10% faster than (Mbit/s)	907,6	767,4	751,8
Speed > 20Mbit/s / 100Mbit/s (%)	99,1/92,1	96,4/82,2	97,6/83,0
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	99,7	100,0	100,0
10% faster than (Mbit/s)	145,7	123,8	121,8
Speed > 2Mbit/s / 5Mbit/s (%)	99,7/98,8	99,4/96,6	99,1/96,0
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	100,0/1,3	99,4/1,5	100,0/1,6
Average Video Resolution (p)	1080	1079	1080
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	99,7/1,9	100,0/2,0	100,0/2,2
Average Video Resolution (p)	1080	1080	1080
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	99,8/4,2	99,8/4,2	99,8/4,2
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	97,3/86,9	99,1/90,3	99,1/88,8
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	94,4/91,2	98,0/94,3	96,5/93,6

Data (Railways; Walk test)			
Operator	**Swisscom**	**Sunrise**	**Salt**
WEB PAGE DOWNLOAD			
Success Ratio / Avg. Session Time (%/s)	99,9/0,9	99,7/0,9	99,7/1,0
FILE DOWNLOAD (10MB)			
Success Ratio/Avg. Session Time (%/s)	100,0/0,8	100,0/1,2	100,0/1,5
90%/10% faster than (Mbit/s)	62,9/397,8	42,3/312,3	34,4/298,4
FILE UPLOAD (5MB)			
Success Ratio/Avg. Session Time (%/s)	100,0/1,9	100,0/2,2	99,7/2,4
90%/10% faster than (Mbit/s)	10,0/87,4	9,0/81,6	10,2/75,7
FILE DOWNLOAD (7 SECONDS)			
Success Ratio (%)	99,7	100,0	100,0
10% faster than (Mbit/s)	807,9	764,1	629,5
Speed > 20Mbit/s / 100Mbit/s (%)	98,5/89,5	96,2/74,1	96,2/77,4
FILE UPLOAD (7 SECONDS)			
Success Ratio (%)	100,0	100,0	99,1
10% faster than (Mbit/s)	126,1	134,9	107,8
Speed > 2Mbit/s / 5Mbit/s (%)	99,4/98,6	99,4/97,9	99,4/95,6
YOUTUBE VIDEO			
Success Ratio/Start Time (%/s)	100,0/1,4	99,4/1,5	99,1/1,6
Average Video Resolution (p)	1080	1080	1078
YOUTUBE LIVE			
Success Ratio/Start Time (%/s)	99,7/2,0	99,7/2,2	98,5/2,2
Average Video Resolution (p)	1079	1074	1079
CONVERSATIONAL APP			
Success Ratio / Speech Quality P10 (%/MOS-LQO)	100,0/4,2	100,0/4,1	99,8/4,2
INTERACTIVITY E-GAMING			
Success Ratio / Interactivity E-Gaming (%)	98,5/83,7	95,7/88,4	96,8/88,0
INTERACTIVITY VIDEO CHAT			
Success Ratio / Interactivity Videochat (%)	93,9/90,3	96,2/93,3	94,7/91,2



Through Switzerland: The drive tests took place in 24 large cities and 17 smaller towns, while walk tests were conducted in eight cities.

Data Rates 7s Download	Swisscom			Sunrise			Salt		
Samples with 5G	Share	Ø (Mbps)	10% faster than (Mbps)	Share	Ø (Mbps)	10% faster than (Mbps)	Share	Ø (Mbps)	10% faster than (Mbps)
Cities Drive test	91,5%	618,3	1033,3	96,2%	519,0	970,9	91,6%	412,4	750,7
Cities Walk test	95,5%	657,7	1024,1	96,0%	629,3	1031,8	80,2%	453,0	842,0
Towns Drive test	91,9%	605,4	1029,3	97,6%	475,5	863,0	91,8%	439,2	796,1
Streets Drive test	65,0%	604,5	983,4	84,6%	398,1	799,4	71,5%	377,4	808,2
Railways Walk test	72,6%	502,6	843,4	88,7%	360,0	812,7	78,8%	329,6	665,4
Samples with 5G-DSS	Share	Ø (Mbps)	10% faster than (Mbps)	Share	Ø (Mbps)	10% faster than (Mbps)	Share	Ø (Mbps)	10% faster than (Mbps)
Cities Drive test	7,6%	158,7	289,5	–	–	–	–	–	–
Cities Walk test	1,6%	254,0	465,8	–	–	–	–	–	–
Towns Drive test	7,0%	184,0	279,1	–	–	–	–	–	–
Streets Drive test	28,0%	189,9	286,8	–	–	–	–	–	–
Railways Walk test	24,2%	153,5	276,8	–	–	–	–	–	–

5G

With overall very good 5G coverage in Switzerland, the individual analysis shows that Swisscom is also leading the way in this area.

In Switzerland, too, we are taking a close look at 5G coverage by analysing the measurements taken at the “7second download“ test point as an example.

Swisscom remains the only operator to use situation-dependent frequency allocation between 4G and 5G, known as „Dynamic Spectrum Sharing“ (DSS). However, in large and small towns, the proportion of samples in which this technology was observed is quite low – it occurs to a significant extent mainly on connecting roads and railways.

Overall, Swisscom achieves the highest 5G shares in all test disciplines with this network architecture and also the highest average and peak data rates (P90) with 5G without DSS. Sunrise follows closely behind, however, and always offers its customers full 5G performance by not using DSS. This also applies to Salt, which follows in third place some way behind.

Voice

In the category ranking for mobile telephony, there is an absolute tie at the highest level between the three network operators in Switzerland this year.

As is the case almost everywhere else in the world, the trend also applies in Switzerland: mobile telephony may have declined compared to other forms of communication such as messaging or e-mail. But anyone who actually makes a call still expects the highest quality and reliability.

The three Swiss network operators meet this demand – and do so at the highest level. Swisscom, Sunrise and Salt are neck and neck in the category rating for voice telephony. There are minimal differences in the individual disciplines, but even here they range in the order of one or at most two percentage points.

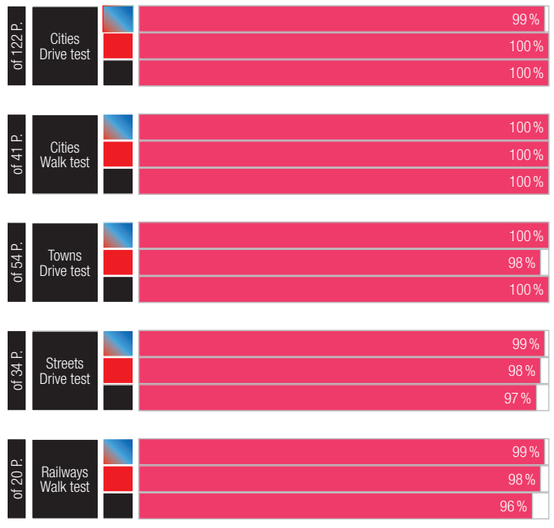
In large cities, all three networks are practically equally strong, while in small towns Swisscom and Salt have a slight advantage.

In the voice measurements carried out by umlaut as part of the drive and walk tests in major Swiss cities, Swisscom, Sunrise and Salt all achieved top results. Only Swisscom fell short of the virtually inevitable 100% fulfillment rate by one percentage point in the drive tests conducted in larger cities. In ther smaller towns, Swisscom and Salt again achieved the full possible score, while Sunrise lagged two percentage points behind.

Clear ranking on streets and railways, but also at the highest level

In the voice rating for Swiss connecting roads and Swiss railway lines, we see a slightly more pronounced difference among the three candidates for the first time, but once again at the top end of the rating scale.

Nevertheless, Swisscom narrowly beats Sunrise in both scenarios, which in turn is slightly ahead of Salt.



Close Race: Minor differences can be observed in the voice discipline. However, these only lead to more significant gaps between the candidates in small towns, on connecting roads and on the railways.

Voice (Telephony)			
Operator	**Swisscom**	**Sunrise**	**Salt**
VOICE CITIES (DRIVE TEST)			
Success Ratio (%)	99.9	100.0	100.0
Call Setup Time 10% faster than (P90, s)	1.1	0.8	0.9
Speech Quality 90% better than (P10, MOS-LQO)	4.6	4.7	4.7
VOICE CITIES (WALK TEST)			
Success Ratio (%)	100.0	100.0	100.0
Call Setup Time 10% faster than (P90, s)	1.1	0.8	0.9
Speech Quality 90% better than (P10, MOS-LQO)	4.7	4.7	4.7
VOICE TOWNS (DRIVE TEST)			
Success Ratio (%)	100.0	99.8	100.0
Call Setup Time 10% faster than (P90, s)	1.1	0.8	0.9
Speech Quality 90% better than (P10, MOS-LQO)	4.6	4.7	4.7
VOICE STREETS (DRIVE TEST)			
Success Ratio (%)	99.8	99.6	99.3
Call Setup Time 10% faster than (P90, s)	1.1	0.8	0.9
Speech Quality 90% better than (P10, MOS-LQO)	4.6	4.7	4.6
VOICE RAILWAYS (WALK TEST)			
Success Ratio (%)	99.8	99.2	98.6
Call Setup Time 10% faster than (P90, s)	1.1	0.9	0.9
Speech Quality 90% better than (P10, MOS-LQO)	4.6	4.6	4.6

Single reviews

swisscom

Swisscom wins in Switzerland for the nineth time in a row. The market leader has improved by six points compared to last year, which is remarkable in these peak performance regions. Swisscom leads in the data and crowd ratings, while there is a tie with its competitors in the voice category. Swisscom also has the highest share in 5G expansion.

Sunrise

Sunrise once again performs outstandingly, improving by two points on last year. In the voice category, Sunrise is on a par with Swisscom and Salt, while in the data category, Sunrise ranks only one point behind Swisscom. In crowdsourcing, Sunrise scores slightly ahead of Salt, but is clearly behind Swisscom. The differences in 5G expansion are minor.

Salt.

Salt already achieved an outstanding result last year. The opeator has received the same rating again this year, but has significantly reduced the gap to its competitors. With a clear increase of 20 points compared to last year, Salt is now only three points behind Sunrise. Its performance in all disciplines is excellent, and Salt has made particular progress in expanding its 5G network in rural areas.

Crowd

The survey of the user experience of many customers highlights the close contest: Swisscom is in the lead, with Sunrise and Salt separated by just one point.

Swisscom also leads in the crowdsourcing analyses conducted by umlaut, followed by Sunrise seven points behind and Salt another one point behind.

Swisscom‘s lead is based on the range of its broadband coverage and data rates, particularly in the download category. Swisscom ranks also narrowly ahead of its competitors in the stability evaluation.

The three competitors are almost on a par in HD telephony, with Sunrise having a slightly lower share than Swisscom and Salt.

In terms of latency, Swisscom impresses with the best results in the basic classes of OTT Voice (round-trip times up to 100 ms) and Gaming (up to 50 ms), while Salt leads the way in the most demanding class of highend gaming (up to 20 ms), with Sunrise ranking second here. Overall, however, the level of performance is very high in this category too.

Crowdsourcing			
Operator	**Swisscom**	**Sunrise**	**Salt**
BROADBAND COVERAGE			
Coverage Reach (%)	98,4	95,7	94,0
Time on Broadband (%)	98,9	98,9	97,7
DOWNLOADS BY SPEED CLASSES (ACTIVE)			
Basic Internet Class (%)	99,3	98,5	98,8
HD Video Class / UHD Video Class (%)	96,4/85,5	94,5/78,0	94,5/80,6
UPLOADS BY SPEED CLASSES (ACTIVE)			
Basic Internet Class (%)	96,3	94,9	96,5
HD Video Class (%)	88,0	82,6	86,2
DOWNLOADS BY DATA RATES (ACTIVE)			
Avg. Throughput (Mbps)	180,6	135,7	145,0
90%/10% faster than (Mbps)	13,8/474,8	9,0/383,8	9,7/377,6
UPLOADS BY DATA RATES (ACTIVE)			
Avg. Throughput (Mbps)	38,9	27,7	31,2
90%/10% faster than (Mbps)	4,7/91,4	3,2/63,0	4,0/70,7
LATENCY			
Gaming Class / OTT Voice Class (%)	96,9/99,0	95,1/98,0	95,0/98,2
Highend Gaming Class (%)	46,9	58,5	67,2
VOICE			
HD Voice (%)	98,3	98,2	98,3
STABILITY			
Transaction Success (%)	97,9	97,4	97,1

Despite the already very high performance level, all three Swiss network operators improved once again. Salt achieved the most significant jump ahead, with a whopping 20-point increase over its previous year‘s result.

Image: © AntonKhrupinArt - Shutterstock.de

Reliability

In terms of basic services, Swisscom is still ahead – but its rivals Sunrise and Salt are closing in.

The separately presented reliability rating excludes test points that reward absolute peak performance. This leaves the test results which allow conclusions to be drawn about the quality of basic services relevant to everyday use.

But even with this approach, Swisscom is still in the lead overall. However, Swisscom and Salt achieve the same high score in the voice category, while Swisscom and Sunrise score equally in the data category. In both categories, the third-placed provider follows with a gap of only one point.

The overall reliability ranking is decided by the crowdsourcing, where Swisscom manages to pull ahead more clearly. The distance between Sunrise and Salt narrows down to one point, which is a smaller gap than in the overall Swiss result.

Reliability				
Operator		**Swisscom**	**Sunrise**	**Salt**
VOICE	max. 162 Points	161	160	161
Drive test	126	99%	99%	99%
Walk test	36	100%	99%	98%
DATA	max. 288 Points	286	286	285
Drive test	223	99%	99%	99%
Walk test	65	99%	99%	99%
CROWD	max. 150 Points	145	142	141
Crowd	150	97%	95%	94%
Sum	**600**	**592**	**588**	**587**

All values rounded to whole numbers. Points and percentages were calculated internally to three decimal places.
The maximum achievable score of 600 points is an extract from the overall result of 1000 points (see pages. 72/73).

Methodology

umlaut × connect

The sophisticated methodology of our network test takes into account both the top performance of the networks as well as the everyday requirements of users.

Each drive test car carried nine smartphones for voice and data testing. The walk test teams had trolleys equipped with powerful batteries to power the test smartphones.

The measurements in Germany took place from 14 to 27 October 2025, in Austria from 9 to 27 October 2025 and in Switzerland from 13 October to 1 November 2025. For each country, connect network test partner umlaut sent four measurement vehicles onto the road, each equipped with nine smartphones.

For each network operator, a Samsung Galaxy S24 Ultra performed the voice measurements, another S24 Ultra was used for data tests, and a third one established the connections for the "conversational app" test case (see "Data connections"). In all measurements, "5G preferred" was set – where supported by the network, the tests took place via 5G. For the Drei network in Austria, the use of 5G Stand alone (5G SA) was also possible, as Drei had opted for this setting this year in view of the steadily growing number of its 5G SA users.

The firmware of the devices corresponded to the original network operator versions in each case.

In addition to the drive tests, two walk test teams in each country carried out measurements on foot – in areas with public traffic such as railway station concourses, airport terminals, cafés, public transport and museums. The walk test programme also included trips on long-distance and local railway routes.

The same smartphone models were used for the walk tests as for the drive tests for each network operator. The walk test teams transported the test smartphones in backpacks or trolleys equipped with powerful batteries.

The drive and walk tests took place between 8 a.m. and 10 p.m. For the drive tests, two vehicles were in the same city but not in the same location so that one car would not distort the measurements of the other.

On the connecting roads, two vehicles each drove the same routes, but at different times and distances apart.

In Germany, drive tests were conducted in 24 large cities and 24 small towns, and walk tests in eleven cities. This covers around 16.8 million inhabitants, approximately 20.2% of the German population. The drive tests covered around 11,010 km. The rating for Germany is based on a total of 25,446 voice samples and 224,523 data samples collected in the drive and walk tests.

In Austria, the testers drove around 5,660 km through 14 large cities and 16 small towns. In addition, walk tests were conducted in six cities. This covered around 3.4 million inhabitants (approximately 37.4% of the population). 13,853 voice samples and 123,805 data samples were collected and taken into account.

The drive tests in Switzerland took place in 24 large cities and 17 small towns, while the walk tests were conducted in eight cities. The Swiss test route was around 6,400 km long, and the measurement campaign covered around 2.3 million inhabitants (approximately 25.8% of the population). 16,758 voice and 150,365 data samples were evaluated in Switzerland.

To select the test routes, umlaut made four different suggestions for each country, from which connect blindly selected one route.

Voice connections

Voice connections account for 27% of the overall result. To this end, mobile-to-mobile telephone connections were established and their *success rates*, *call set-up times* and *voice quality* were measured. The smartphones of the walk test teams made calls to a stationary (smartphone) remote station for the voice tests.

To ensure realistic conditions, data traffic took place in the background at the same time. The transmission quality was evaluated using the POLQA (Perceptual Objective Listening Quality Analysis) wideband method, which is suitable for HD voice. With the exception of Drei in Austria, voice telephony was handled exclusively via VoLTE.

Data connections

The data measurements account for 48% of the result. To evaluate *website downloads*, several popular live sites (dynamic) and the ETSI reference site known as the Kepler site (static) were accessed. In addition, there is a preliminary version of its designated successor (working title: „Newton") developed by umlaut, which ETSI is currently assessing.

In addition, *10 and 5 MB files* were *downloaded and uploaded*, respectively, to determine the performance of smaller data transfers. We also determined the data rate over a *7-second period* when *uploading and downloading* large files. Since Youtube dynamically adjusts the playback resolution to the available bandwidth, our Youtube evaluation takes into account the *average image resolution* of the videos as well as the *success rate* and the *time until playback starts*.

An over-the-top voice connection (OTT) is represented by the *conversational app* test case. To do this, we set up a voice channel using the SIP and STUN protocols with the OPUS codec and determined the *success rate* and *voice quality*.

In addition, our measurements simulated a highly interactive UDP multiplayer session to determine the latency of the connection and any packet loss using the *e-gaming interactivity* test point. A *video chat* was also included in the test scope. It measures latency, packet delay and data rates in both directions. The e-gaming and video chat tests follow the ITU-T G.1051 recommendation.

Crowdsourcing

The results of crowdsourcing accounted for 25% of the overall rating. They show the network performance experienced by users – although the end devices and tariffs used also have an impact. To this end, samples collected in all three countries from the beginning of May to mid-October 2025 (calendar weeks 19 to 42) were evaluated. Around 12.4 billion individual measurements were analysed from Germany, covering 100% of the population statistically. For Austria, umlaut evaluated around 533 million samples (99.9% of the population). In Switzerland, around 1.2 billion samples statistically correspond to 100% of the population.

In order to obtain the data basis for the analyses, a large number of popular apps collect the parameters described below in the background – provided that users have agreed to the completely anonymous data collection.

At specific intervals (from one second to 15 minutes), samples are collected and sent daily to umlaut's cloud servers, where the data is then processed. These reports contain only a few bytes, so they have little impact on the user's data volume.

Broadband Coverage

To determine the quality of broadband coverage, umlaut laid out a grid of approximately 2 x 2 km tiles ("evaluation areas", EAs) over the test area. For the determination of *coverage reach*, umlaut awarded three points per EA if the network under consideration offered 4G or 5G coverage. The score achieved in this way was divided by the maximum number of points achievable (three points per EA in the "union footprint" – the area of the respective country measured by all participants with their smartphones). We also looked at the *time on broadband* – the proportion of time with broadband coverage. This indicates how often a user had 4G or 5G reception during the observation period – regardless of the EAs in which the samples were collected. To do this, umlaut compares the samples that have 4G/5G coverage to the total number of samples.

Important: The percentages determined for these parameters reflect the respective degree of fulfilment of these KPIs – not the percentage of 4G/5G coverage of area or population.

Data rates and Latency

The measurements of *download and upload data rates* and *latency* were carried out independently of the EAs and focused on the individual experience of each user. Samples that were collected via Wi-Fi or with flight mode activated, for example, were filtered out by umlaut prior to the analysis.

To check the maximum possible throughput, umlaut carried out active measurements of upload and download data rates several times a month. These measurements determine the *amount of data transferred within 3.5 seconds*. For these values, we consider the average data rate, the P10 value (90% of the measured values faster than – a good approximation of the typical minimum speed) and the P90 (a look at the peak values).

To take into account the fact that many mobile phone tariffs throttle the data rate, umlaut also defined three different application-related speed classes: for *basic internet*, at least 2 Mbps must be achieved, *HD video* requires 5 Mbps and *UHD video* requires 20 Mbps.

Similarly, the latency of data packets is also assigned to an application-related class: round-trip times of up to 100 ms are sufficient for the *OTT voice* class, less than 50 ms qualifies a sample for *gaming* and less than 20 ms for *high-end gaming*.

Telephony

The *HD voice* parameter shows the proportion of the user's voice connections that were established using Voice over LTE (VoLTE) or Voice over WiFi (VoWiFi) and thus support HD quality.

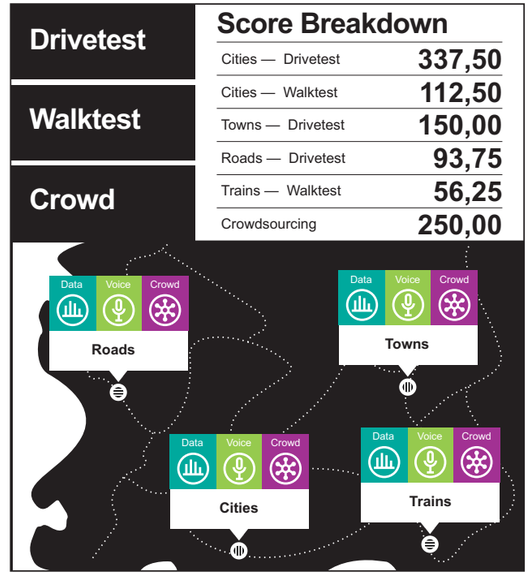
Stability

Based on the success rates of the download, upload and browsing tests, as well as additional connection tests, umlaut also calculates the percentage of *successful transactions*.

Reliability

The reliability assessment is not a separate category, but rather an additional consideration of the previous results. To this end, umlaut divides all measured values into basic or everyday requirements ("qualifier KPIs") and values related to peak performance ("differentiator KPIs").

The reliability rating only takes into account the qualifier KPIs from the voice and data category and the basic crowdsourcing results. This makes it possible to determine how well the network meets everyday requirements.



INTERVIEW

Maziar Kianzad,
Global Network Benchmarking Lead
umlaut

How do you assess the developments among operators revealed by this year's network test?
I am pleased to see that many providers in the DACH region have been able to make significant improvements. Despite rising expansion and energy costs and high regulatory requirements, we continue to see clear improvements. Operators are investing consistently and prioritising quality – even under difficult economic conditions. However, in order for this progress to continue, they need support in the form of faster approvals and fewer regulatory hurdles.

There also seem to be rays of hope in the railway sector.
We are seeing clear progress in Germany. Network operators are investing jointly with Deutsche Bahn in new locations close to the tracks, additional LTE and 5G frequencies, and the latest technology in the trains themselves. Our measurements show significantly fewer dead spots and higher data rates.

5G Standalone is considered the next major technological step forward. What role will it play in future network tests?
5G SA will naturally be given increasing consideration in future tests, as it enables true 5G with lower latency, more stable performance and new services. However, operators are still deliberately cautious in the consumer segment, as the noticeable added value for many everyday applications is currently still somewhat limited and 5G SA is technologically very demanding.

Fairness and Transparency

umlaut and connect have ensured that our mobile network test is fair and transparent.

Certain procedures have proven effective in ensuring that our network test is conducted and evaluated in a fair and transparent manner.

These include connect and umlaut informing network operators of the test conditions at an early stage. The "framework" communicated for this purpose defines, among other aspects, the smartphones used for our measurements, the parameters taken into account in the measurements and evaluations, the basic evaluation scheme and the schedule in all three countries. connect and umlaut already defined this framework data for 2025/2026 in spring 2025 and informed all network operators accordingly.

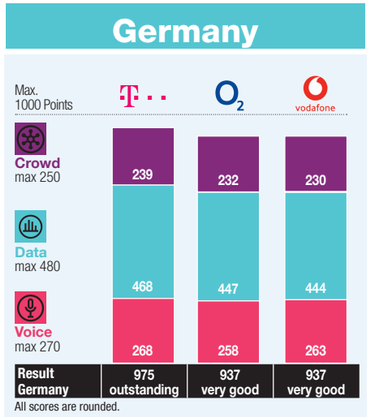
We are open to feedback and suggestions, examine them critically, but may then have to reject proposals. During the preparation and implementation phase of the drive and walk tests, we are also in contact with the network operators, for example regarding the firmware versions of the smartphones to be used for the measurements.

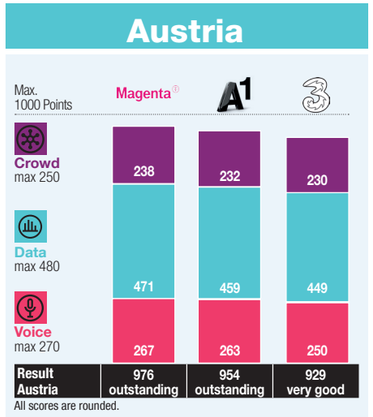
However, communication with network operators also includes an urgent reminder of the rules of fair play. When conducting and evaluating the tests, umlaut analyses the measured values to determine whether there are any signs of manipulation attempts. These can lead to disqualification.

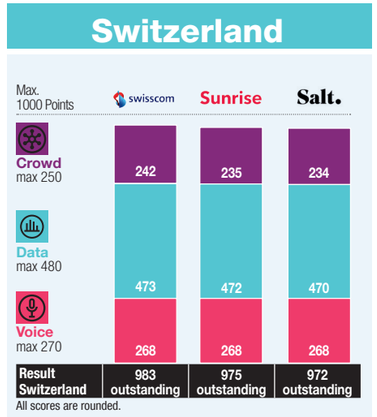
This year, during regular quality checks in crowdsourcing, two of the nine network operators participating in the test showed a relatively small number of measurement samples that indicated a usage pattern that was inexplicable for normal smartphone users. This data from a few participants could have influenced the test results of the assessed network operators in the range of a very low single-digit score, but not the national rankings or the ranks achieved in the three-country comparison.

Since we do not know the origin and intention of the conspicuous data due to the anonymity of crowdsourcing, we developed an algorithm that filtered out these outliers before evaluation. This algorithm was, of course, applied to the data of all network operators.

Otherwise, as in previous years, the extensive data connections that need to be established during drive tests and walk tests make it necessary to use SIM cards provided specifically for this purpose by the network operators. Otherwise, the SIM cards would have to be constantly replaced during the tests due to quickly reached tariff or fair use limits. The SIM cards provided on loan by the providers are provisioned exactly like normal cards, but have no data limit. In order to prevent possible manipulation attempts in this area as well, umlaut compares the measurement results obtained using these loan SIM cards with random samples recorded using regularly purchased SIM cards. Deviations also lead to in-depth analyses and countermeasures.

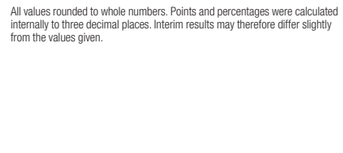






Overall results		Germany			Austria			Switzerland		
Voice, Data and Crowd		Telekom	Telefónica	Vodafone	Magenta	A1	Drei	Swisscom	Sunrise	Salt
VOICE	max. 270 Points	268	258	263	267	263	250	268	268	268
Cities Drive test	121,50 P.	100%	96%	98%	99%	99%	92%	99%	100%	100%
Cities Walk test	40,50 P.	99%	98%	100%	100%	99%	97%	100%	100%	100%
Towns Drive test	54,00 P.	99%	96%	97%	100%	97%	91%	100%	98%	100%
Streets Drive test	33,75 P.	98%	94%	97%	99%	97%	94%	99%	98%	97%
Railways Walk test	20,25 P.	95%	87%	93%	88%	87%	86%	99%	98%	96%
DATEN	max. 480 Points	468	447	444	471	459	449	473	472	470
Cities Drive test	216,00 P.	98%	96%	96%	99%	97%	95%	98%	99%	98%
Cities Walk test	72,00 P.	98%	95%	94%	99%	98%	97%	99%	99%	99%
Towns Drive test	96,00 P.	97%	92%	92%	98%	95%	94%	99%	98%	98%
Streets Drive test	60,00 P.	97%	90%	90%	98%	95%	91%	98%	98%	98%
Railways Walk test	36,00 P.	92%	80%	76%	91%	84%	80%	98%	97%	96%
CROWD	max 250 Points	239	232	230	238	232	230	242	235	234
Crowd	250,00 P.	96%	93%	92%	95%	93%	92%	97%	94%	94%
connect	Sum max. 1000 Points	975 outstanding	937 very good	937 very good	976 outstanding	954 outstanding	929 very good	983 outstanding	975 outstanding	972 outstanding

All values rounded to whole numbers. Points and percentages were calculated internally to three decimal places. Interim results may therefore differ slightly from the values given.



CONCLUSION

Hannes Rügheimer,
connect author

Our congratulations go not only to the test winners, but to all the providers tested. Most of them were able to improve or maintain their previous year's results – no easy accomplishment given the challenging conditions and already high scores. In Germany, Telekom defended its test victory for the 15th time in a row, once again achieving an 'outstanding' rating and improving by five points over the previous year. Noteworthy are the improvements made by O2/Telefónica and Vodafone – and, of course, the fact that these two providers now share second place.

In Austria, Magenta, part of Telekom Group, is once again at the top – for the eighth time in a row in the Alpine republic – also with a rating of 'outstanding' and an improvement of one point over the previous year. A1 maintains its high performance from the previous year and also achieves an 'outstanding' rating. The smallest Austrian provider, Drei, loses ten points compared to last year. The reason for this is probably the need for fine-tuning of 5G SA, which was measured here for the first time.

In Switzerland, where the competition is traditionally fierce at the highest level, all three providers achieved the top rating of 'outstanding'. Swisscom won the test for the nineth time in a row and improved by six points. Sunrise improved by two points and Salt by an impressive 20 points.