connect

The 2025 Mobile Network Test in Spain

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For the tenth time, we – umlaut and connect – have conducted our comprehensive assessment of the Spanish mobile networks. The results show four very good operators, with distinct distances between each other – and a winner that fought its way from third place last year to the top. While some of the contenders have lost points compared to the previous year, others have clearly improved.
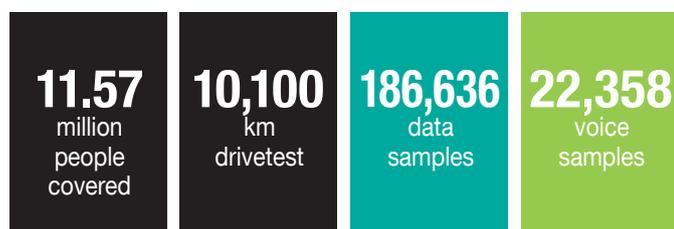
The carefully designed methodology of our 2025 Mobile Network Test in Spain represents a holistic approach to network benchmarking. It includes drivetests and walktests for executing detailed voice and data measurements under controlled circumstances combined with a sophisticated crowdsourcing methodology. The drivetests and walktests allow that the maximum capabilities of the networks can be evaluated. The crowdsourcing methodology provides profound insights into the overall coverage and performance of Voice, Data and 5G services as well as the actual User Download and Upload Speeds and Latencies. We have thoroughly weighted these components in order to give a realistic and conclusive assessment of the rated networks' true potential and performance.

A Coruna · Gijon · Santander · Donostia · Bilbao · Pamplona · Vigo · Zaragoza · Barcelona · Madrid · Valencia · Elche · Cordoba · Murcia · Sevilla · Granada

● Drivetest
◌ Walktest
— Roads

Scope

The 2025 umlaut connect Mobile Network Test in Spain consists of drivetests and walktests conducted from January 22nd to February 5th, 2025. Four drivetest cars together covered a total of 10,100 kilometers, visiting 16 cities and 19 towns. Additionally, one walktest team visited six cities. The test areas account for 11.57 million people, or approx. 24 percent of the total Spanish population. In addition, the results of extensive crowdsourcing analyses, considering 24 weeks from mid-August 2024 (calendar week 34) to end of January 2025 (CW 5) are included in the score.
Our detailed methodology is described on pages 13/14.

DRIVETEST AND WALKTEST FACTS

11.57 million people covered	**10,100** km drivetest	**186,636** data samples	**22,358** voice samples

CROWDSOURCING FACTS

6.8 billion samples	**24** weeks (mid August 2024 to end of January 2025)	**99.1%** of built-up area covered	**99.8%** of population covered

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The Spanish Mobile Operators

Movistar is the brand name the Spanish telecommunications company Telefónica uses for the mobile network in its home market. Telefónica S.A. is one of the largest telco companies in the world.
The company operates networks in 11 countries and is present in 40. It counted more than 104,100 employees and achieved worldwide revenues of almost €41.3 billion in its fiscal year 2024.
While the company introduced the Movistar brand in Latin American countries in 2005, it has been active in Spain since the launch of GSM services back in 1995. For its fiscal year 2024, Movistar SPAIN published a subscriber number of approx. 22.3 million customers.
It offers GSM, UMTS/3G, LTE and 5G. Movistar is supporting 4G+ carrier aggregation with maximum speeds reaching up to 1 Gbps.
The operator claims to provide 4G coverage of more than 98 percent of the Spanish population. After having launched 5G in 2020, Movistar claims that its 5G covers more than 90 percent of the population of Spain. Since July 2023, the operator has additionally launched 5G SA (stand-alone) services in 11 Spanish cities.

Orange España was the brand name of France Telecom's mobile network in Spain. It has been operating under this name since 2006. In March 2024, Orange announced a 50:50 joint venture with Másmóvil/Yoigo which now operates under the name Masorange. However, at the time of testing, both networks continued to operate independently, which is why we still publish separate results for each of them.
Before the announced merger, Orange Spain reported approx. 17.7 million mobile customers. The joint operation Masorange published a count of 25.8 million mobile subscribers. For the nine months of operation from April to December 2024, Masorange reported a total of billed revenues of €4.3 billion.
The still separately operated Orange network in Spain has deployed 2G/GSM, 3G/UMTS, 4G/LTE and 5G. Before the merger, Orange Spain claimed that its 4G network reached more than 99 percent of the Spanish population. Orange Spain also reported to reach more than 80 percent of the Spanish population with its 5G service.

Vodafone España has been present on the Spanish mobile communications market since the year 2000. Then, the British Vodafone Group had acquired Airtel Móviles which had operated in Spain since 1994. In May 2024, the Vodafone Group sold Vodafone Spain to Zegona Communications plc.
At the time of this acquisition, Zegona published a total subscriber number of approx. 4.8 million customers. Financial results of the new entity were not available at the time of writing this report.
Vodafone Spain's mobile network offers GSM, UMTS/ 3G, LTE and 5G. The Vodafone 4G network in Spain supports LTE 4 carrier aggregation (4CA or "4G+") with maximum speeds of 1 Gbps.
The operator claims to reach approx. 99 percent of the Spanish population with 4G. Also, Vodafone Spain was the first Spanish operator to launch 5G in the country and currently reports to reach about 60 percent of the Spanish population with 5G outdoor coverage.

Yoigo was the latest mobile operator to enter the Spanish market. Founded in 2000 under the name Xfera, the company started its operation in 2006, offering only a 3G network. At this time, the Swedish telecommunications company TeliaSonera acquired the majority of shares and rebranded the network as "Yoigo". In June 2016, the former MVNO Másmóvil bought the company. In March 2024, Másmóvi/Yoigo entered a 50:50 joint venture with Orange under the new name Masorange. Please see the "Orange" section on the left-hand side for fiscal details.
The latest subscriber numbers given for Yoigo alone, stated 12.4 million mobile customers. However, at the time of testing, Yoigo continued to operate as a separate network, which is why we treat it as an individual candidate in this benchmark. Remark: umlaut's methodology has algorithms in place which recognize situations in which the measurement phones use the same radio resources for Orange and Yoigo and handles such cases accordingly. Yoigo operates own 3G, 4G and 5G networks. Based on its roaming and infrastructure sharing agreements, the operator claims a 4G/LTE coverage of approx. 99 percent of the Spanish population and a reach of 77 percent of the population with 5G.

Note: All claims about network coverage reported here are based on the operators' own statements, and are in no way benchmark results determined by umlaut.

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Results at a Glance

In this year's umlaut connect Mobile Network Test in Spain, Movistar takes the lead, working its way to the top from the third rank in the previous year. The Telefónica brand achieves this by a score increase of 8 points. Movistar secures its win by particularly strong results in the data category. This may also be related to the fact that Movistar has made the most progress in reducing its share of DSS in its 5G rollout.

The still separately operating Orange network achieves a very good second place. Orange scores best in the Crowdsourcing category and also shows strong results in the Voice assessment – leading in the voice walktests examined in the larger Spanish cities. Together with future partner Yoigo, Orange also shows the best data reliability in the walktests conducted in cities. Furthermore, Orange shows the highest share of 5G samples in all aggregations.

Vodafone also achieves a very good result and shows the highest score in the voice category. The operator achieves very good results, especially on the road, and is also in second place in the Reliability assessment. In terms of 5G deployment, Vodafone has made some progress on rural roads, but basically remains at the level we already saw in our previous year's benchmark.

Spain's smallest provider has gained the biggest score improvement (+17 points) in comparison to the previous year. This way, Yoigo deservedly now also achieves the overall grade "very good" and has narrowed the gap to its larger competitors. Yoigo ranks second in the data category and has successfully increased its share of 5G samples in all aggregations – in this respect, it ranks second behind its future partner Orange.

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BEST IN TEST
MOVISTAR
2/2025
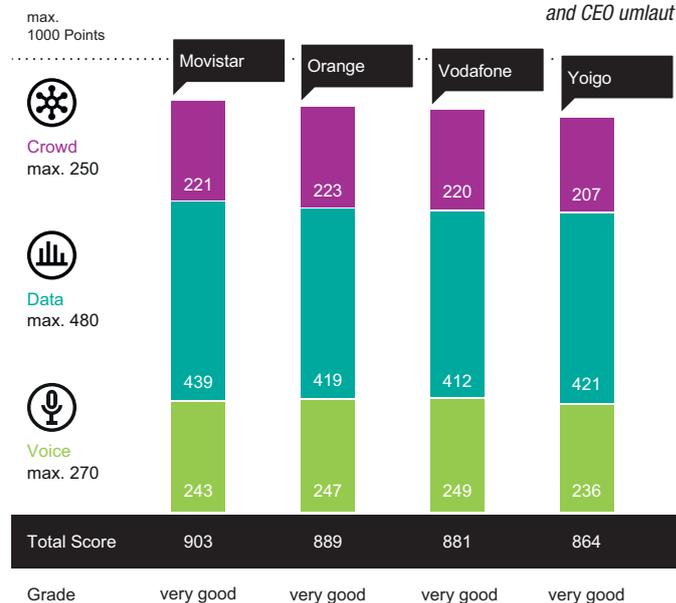**MOBILE NETWORK TEST IN SPAIN**
www.connect-testlab.com

"With the imminent merger of the Orange and Yoigo mobile networks, we see exciting changes in the Spanish mobile marketplace. Congratulations to Movistar for working its way up to the top rank. Furthermore, Orange and Yoigo seem well prepared for their freshly started joint venture. In this increasingly competitive environment, Vodafone holds up well in terms of performance and particularly reliability."

Hakan Ekmen, Global Networks Lead, Comms Industry and CEO umlaut

Overall Results		Movistar	Orange	Vodafone	Yoigo
Voice	max. 270 P.	243	247	249	236
Cities (Drivetest)	122	90%	91%	92%	88%
Cities (Walktest)	40	97%	99%	95%	95%
Towns (Drivetest)	54	91%	90%	91%	84%
Roads (Drivetest)	54	83%	88%	92%	84%
Data	max. 480 P.	439	419	412	421
Cities (Drivetest)	216	93%	91%	85%	91%
Cities (Walktest)	72	94%	95%	90%	96%
Towns (Drivetest)	96	89%	79%	85%	80%
Roads (Drivetest)	96	87%	82%	85%	82%
Crowd	max. 250 P.	221	223	220	207
Crowd	250	88%	89%	88%	83%
Connect Rating	max. 1000 P.	903	889	881	864

Percentages and points rounded to integer numbers.
For the calculation of points and totals, the accurate, unrounded values were used.

max. 1000 Points

	Movistar	Orange	Vodafone	Yoigo
Crowd max. 250	221	223	220	207
Data max. 480	439	419	412	421
Voice max. 270	243	247	249	236
Total Score	903	889	881	864
Grade	very good	very good	very good	very good

All scores shown in this document are rounded.

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Voice

Voice 🎙
270 of 1000 Points

- 🟦 Movistar
- 🟧 Orange
- 🟥 Vodafone
- 🟪 Yoigo

VODAFONE AHEAD IN BIG CITIES VOICE DRIVETESTS, ORANGE FOLLOWS AT NARROW DISTANCE

In the voice tests conducted by umlaut's test cars while driving in Spain's big cities, Vodafone achieves the highest score, followed by Orange and Movistar at a narrow gap of just one percentage point each. Yoigo falls a little behind in this aggregation. While Movistar shows the longest call setup times, Yoigo has some room for improvement in terms of Speech Quality, as it is using VoLTE, but not EVS yet..

CITIES DRIVETEST

VODAFONE

Cities Drivetest	of 122 P.
90%	
91%	
92%	
88%	

Cities Walktest	of 40 P.
97%	
99%	
95%	
95%	

ORANGE AHEAD IN VOICE IN BIG CITIES WALKTESTS, MOVISTAR FOLLOWS AT CLOSE DISTANCE. VODAFONE AND YOIGO ON A PAR ON THIRD RANK

In the walktests, conducted in Barcelona, Madrid, Murcia, Sevilla, Valencia and Zaragoza, Orange is ahead with excellent results. Movistar follows at close distance. Vodafone and Yoigo score on a par and share the third rank. Vodafone shows excellent call setup times, but falls a little behind in the success ratios. As in the voice drivetests, Yoigo shows some potential for improvements in terms of Speech Quality.

CITIES WALKTEST

ORANGE

Towns Drivetest	of 54 P.
91%	
90%	
91%	
84%	

Roads Drivetest	of 54 P.
83%	
88%	
92%	
84%	

MOVISTAR AND VODAFONE ON A PAR ON FIRST PLACE IN SMALLER TOWN VOICE DRIVETESTS, ORANGE FOLLOWS CLOSELY BEHIND, YOIGO AT A MORE DISTINCT GAP

In the voice tests conducted by umlaut's test cars while visiting 19 smaller towns in Spain (see route map on page 1), Movistar and Vodafone share the first place. Orange follows at a small gap of one percentage point. Here, Yoigo falls behind at a wider gap — mainly due to the lower Speech Quality already seen in the other scenarios.

TOWNS DRIVETEST

MOVISTAR & VODAFONE

VODAFONE SCORES BEST IN VOICE TESTS ON ROADS, ORANGE FOLLOWS AT SOME DISTANCE. YOIGO SCORES SLIGHTY AHEAD OF MOVISTAR IN THIS SCENARIO

The drivetests performed on Spanish roads are an important indication for drivers who want to conduct phone calls while driving in Spain. Here, Vodafone takes the lead, with Orange following at a distance of four percentage points. Yoigo achieves the third rank in this scenario, one percentage point ahead of Movistar. With the highest success ratios and best Speech Quality, Vodafone is the best choice for car drivers in the more rural areas of Spain.

ROADS DRIVETEST

VODAFONE

Operator	Movistar	Orange	Vodafone	Yoigo
Cities (Drivetest)				
Sucess Ratio (%)	99.0	99.0	99.0	99.0
Call Setup Time P90 (s)	2.7	1.7	1.6	2.1
Speech Quality P10 (MOS-LQO)	4.4	4.4	4.5	3.7
Cities (Walktest)				
Sucess Ratio (%)	99.9	99.9	99.4	99.9
Call Setup Time P90 (s)	2.3	1.6	1.5	2.0
Speech Quality P10 (MOS-LQO)	4.6	4.6	4.7	3.9
Towns (Drivetest)				
Sucess Ratio (%)	99.2	98.9	98.9	98.6
Call Setup Time P90 (s)	2.7	1.8	1.7	2.4
Speech Quality P10 (MOS-LQO)	4.4	4.4	4.5	3.7
Roads (Drivetest)				
Sucess Ratio (%)	97.0	97.6	98.4	97.6
Call Setup Time P90 (s)	3.0	1.9	1.8	2.4
Speech Quality P10 (MOS-LQO)	4.2	4.3	4.4	3.6

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Data

Data
480 of 1000 Points

■ Movistar
■ Orange
■ Vodafone
■ Yoigo

MOVISTAR LEADS IN BIG CITIES DATA DRIVETESTS, ORANGE AND YOIGO SHARE SECOND RANK HERE. VODAFONE FOLLOWS AT SOME DISTANCE
In the data drivetests conducted in big Spanish cities, Movistar takes a narrow lead. The future joint networks of Orange and Yoigo follow at a gap of two percentage points and share the second rank in this scenario. Vodafone falls a a little behind, which may be explained by a different use of 5G and 4G carrier aggregation than implemented by the other providers.

YOIGO OVERTAKES ORANGE IN BIG CITIES DATA WALKTESTS, MOVISTAR FOLLOWS CLOSELY, VODAFONE RANKS THIRD IN THIS SCENARIO
In the data walktests conducted in Spain's bigger cities, Yoigo manages to overtake its future joint venture partner Orange a a small gap of one percentage point. Movistar follows closely, again at a gap of one percentage point. As in the big city drivetests, Vodafone falls a little more distinctly behind, but in the walktests still shows results on a high level.
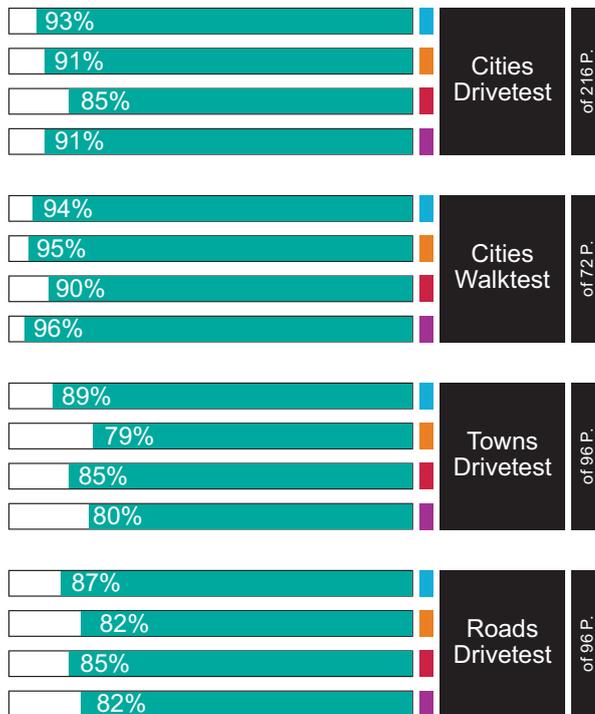
CITIES DRIVETEST

MOVISTAR

CITIES WALKTEST

YOIGO

Cities Drivetest (of 216 P.)
- 93%
- 91%
- 85%
- 91%

Cities Walktest (of 72 P.)
- 94%
- 95%
- 90%
- 96%

Towns Drivetest (of 96 P.)
- 89%
- 79%
- 85%
- 80%

Roads Drivetest (of 96 P.)
- 87%
- 82%
- 85%
- 82%

Data Cities (Drivetest)	Movistar	Orange	Vodafone	Yoigo
Web-Page Download				
Success Ratio/Avg. Session Time (%/s)	99.7/1.2	99.4/1.2	99.3/1.4	99.5/1.3
File Download (10 MB)				
Success Ratio/Avg. Session Time (%/s)	99.8/1.4	99.8/1.4	99.8/2.7	99.8/1.4
90%/10% faster than (Mbps)	35.1/277.8	45.5/289.9	15.5/250.9	40.5/283.4
File Upload (5 MB)				
Success Ratio/Avg. Session Time (%/s)	99.9/1.8	99.5/2.3	99.9/2.5	99.9/2.1
90%/10% faster than (Mbps)	13.4/82.5	10.4/70.7	9.3/67.6	11.3/69.5
File Download (7 Seconds)				
Sucess Ratio (%)	99.8	99.5	99.3	99.5
10% faster than (Mbps)	733.6	624.0	569.9	610.6
Speed > 20Mbps / 100Mbps (%)	95.1/80.0	96.4/82.7	90.1/62.9	96.6/83.0
File Upload (7 Seconds)				
Sucess Ratio (%)	99.9	99.4	99.6	99.6
10% faster than (Mbps)	128.4	106.9	103.2	104.9
Speed > 2Mbps / 5Mbps (%)	99.2/98.0	99.3/97.5	99.2/96.6	99.3/96.7
Youtube				
Success Ratio/Start Time (%/s)	99.4/1.7	99.0/1.8	97.7/2.1	98.6/2.0
Average Video Resolution (p)	1080	1080	1078	1080
Youtube live				
Success Ratio/Start Time (%/s)	99.3/2.5	98.7/2.6	96.4/2.8	98.2/2.7
Average Video Resolution (p)	1078	1078	1074	1078
Conversational-App				
Sucess Ratio (%)	99.8	99.6	99.7	99.6
Speech Quality P10 (MOS-LQO)	3.7	3.5	3.3	3.5
Interactivity e-Gaming				
Success Ratio/Interactivity e-Gaming (%)	96.1/68.0	92.8/69.2	90.4/67.0	93.5/67.3
Interactivity Videochat				
Success Ratio/Interactivity Videochat (%)	92.1/88.3	90.5/85.0	87.5/84.4	92.4/85.4

Data Cities (Walktest)	Movistar	Orange	Vodafone	Yoigo
Web-Page Download				
Success Ratio/Avg. Session Time (%/s)	99.7/1.2	100.0/1.1	99.6/1.3	99.8/1.2
File Download (10 MB)				
Success Ratio/Avg. Session Time (%/s)	100.0/1.7	100.0/1.1	99.8/1.7	100.0/1.3
90%/10% faster than (Mbps)	43.3/267.6	50.8/261.1	28.4/268.5	35.9/261.3
File Upload (5 MB)				
Success Ratio/Avg. Session Time (%/s)	100.0/1.8	100.0/1.7	99.8/2.2	100.0/1.6
90%/10% faster than (Mbps)	16.9/79.8	17.3/66.9	11.0/69.7	18.1/70.8
File Download (7 Seconds)				
Sucess Ratio (%)	99.8	100.0	99.6	100.0
10% faster than (Mbps)	728.5	623.8	587.3	559.9
Speed > 20Mbps / 100Mbps (%)	95.9/85.3	97.4/87.1	95.0/73.0	96.9/84.4
File Upload (7 Seconds)				
Sucess Ratio (%)	100.0	99.8	99.8	100.0
10% faster than (Mbps)	127.4	99.7	103.4	103.9
Speed > 2Mbps / 5Mbps (%)	99.8/98.1	99.6/97.8	99.4/97.2	99.8/99.6
Youtube				
Success Ratio/Start Time (%/s)	99.4/1.7	99.2/1.8	97.9/2.0	99.6/1.9
Average Video Resolution (p)	1079	1080	1079	1080
Youtube live				
Success Ratio/Start Time (%/s)	98.9/2.4	99.2/2.5	98.3/2.7	100.0/2.6
Average Video Resolution (p)	1076	1079	1078	1079
Conversational-App				
Sucess Ratio (%)	99.8	100.0	100.0	99.9
Speech Quality P10 (MOS-LQO)	4.1	4.0	3.6	4.0
Interactivity e-Gaming				
Success Ratio/Interactivity e-Gaming (%)	96.4/68.7	96.4/71.8	89.2/70.4	96.8/71.8
Interactivity Videochat				
Success Ratio/Interactivity Videochat (%)	96.6/89.3	96.0/86.7	89.4/86.1	95.2/87.4

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Data

MOVISTAR LEADS IN DATA DRIVETESTS IN TOWNS, VODAFONE COMES IN SECOND, AND YOIGO THIRD
In the data drivetests performed in the visited smaller towns, Movistar is ahead. The rest of the field follows at some distance, with Vodafone ranking second and Yoigo third. Orange comes in fourth, but at a comparably narrow gap to its future partner Yoigo. Movistar's lead in this category is manifested by the highest data rates and success ratios, while Vodafone achieves the highest scores in the file upload tests.

MOVISTAR AHEAD IN DATA DRIVETESTS ON SPANISH ROADS, FOLLOWED BY VODAFONE. ORANGE AND YOIGO SCORE ON A PAR AND SHARE THE THIRD RANK
In the data measurements performed by our test cars on Spanish roads, Movistar also leads. Vodafone follows at a small gap of two percentage points. Orange and Yoigo share the third rank, scoring on a par and falling behind second-placed Vodafone at a gap of three percentage points. Looking at the single KPIs, Vodafone provides the best web browsing performance, while Movistar is ahead in the file download and YouTube results.

TOWNS DRIVETEST

MOVISTAR

ROADS DRIVETEST

MOVISTAR

Photo: Elzloy, shutterstock

Data Towns (Drivetest)	Movistar	Orange	Vodafone	Yoigo
Web-Page Download				
Success Ratio/Avg. Session Time (%/s)	99.7/1.4	99.5/1.5	99.2/1.5	99.1/1.5
File Download (10 MB)				
Success Ratio/Avg. Session Time (%/s)	99.3/1.9	99.6/2.2	99.8/3.4	99.6/2.8
90%/10% faster than (Mbps)	25.6/261.4	17.8/224.7	10.9/200.8	13.9/223.4
File Upload (5 MB)				
Success Ratio/Avg. Session Time (%/s)	99.8/2.6	97.7/3.5	99.8/2.4	99.1/3.3
90%/10% faster than (Mbps)	7.5/73.9	6.1/53.3	9.7/61.1	6.4/52.1
File Download (7 Seconds)				
Sucess Ratio (%)	99.0	98.6	99.6	99.6
10% faster than (Mbps)	745.1	501.9	426.4	473.7
Speed > 20Mbps / 100Mbps (%)	94.1/70.2	87.8/58.7	80.7/36.3	83.8/53.5
File Upload (7 Seconds)				
Sucess Ratio (%)	99.8	99.4	99.6	99.0
10% faster than (Mbps)	119.3	82.5	92.0	80.3
Speed > 2Mbps / 5Mbps (%)	97.9/94.8	99.0/94.8	99.4/97.2	98.1/93.1
Youtube				
Success Ratio/Start Time (%/s)	98.6/2.0	96.1/2.2	99.1/2.2	97.8/2.4
Average Video Resolution (p)	1079	1079	1079	1079
Youtube live				
Success Ratio/Start Time (%/s)	99.1/2.7	95.7/2.9	97.9/2.9	95.8/3.1
Average Video Resolution (p)	1077	1073	1072	1072
Conversational-App				
Sucess Ratio (%)	99.5	99.2	99.4	99.5
Speech Quality P10 (MOS-LQO)	3.4	3.3	3.6	3.3
Interactivity e-Gaming				
Success Ratio/Interactivity e-Gaming (%)	93.2/60.9	87.1/58.5	91.7/57.2	87.4/55.9
Interactivity Videochat				
Success Ratio/Interactivity Videochat (%)	88.8/88.0	85.7/82.5	86.0/81.5	88.1/81.3

Data Roads (Drivetest)	Movistar	Orange	Vodafone	Yoigo
Web-Page Download				
Success Ratio/Avg. Session Time (%/s)	99.1/1.5	98.6/1.6	99.2/1.5	98.9/1.7
File Download (10 MB)				
Success Ratio/Avg. Session Time (%/s)	99.7/2.8	99.7/3.9	99.8/4.2	99.3/3.9
90%/10% faster than (Mbps)	16.3/190.8	10.9/125.9	9.1/86.9	10.0/116.7
File Upload (5 MB)				
Success Ratio/Avg. Session Time (%/s)	99.1/4.1	98.2/3.8	99.6/3.4	99.6/4.0
90%/10% faster than (Mbps)	5.2/55.4	5.7/48.6	5.4/49.0	4.9/44.2
File Download (7 Seconds)				
Sucess Ratio (%)	99.4	98.8	98.8	98.1
10% faster than (Mbps)	450.9	160.8	109.9	205.0
Speed > 20Mbps / 100Mbps (%)	87.3/39.9	76.9/23.6	73.6/12.4	78.7/25.8
File Upload (7 Seconds)				
Sucess Ratio (%)	98.4	98.0	99.8	98.8
10% faster than (Mbps)	80.7	63.6	64.2	60.7
Speed > 2Mbps / 5Mbps (%)	98.1/91.0	96.7/89.6	99.1/93.2	97.9/91.4
Youtube				
Success Ratio/Start Time (%/s)	98.3/2.1	97.0/2.3	97.7/2.2	96.9/2.5
Average Video Resolution (p)	1078	1079	1079	1078
Youtube live				
Success Ratio/Start Time (%/s)	98.1/2.9	95.9/3.2	97.5/3.1	95.4/3.2
Average Video Resolution (p)	1075	1071	1072	1070
Conversational-App				
Sucess Ratio (%)	98.6	99.1	98.7	98.6
Speech Quality P10 (MOS-LQO)	3.3	3.2	3.4	3.2
Interactivity e-Gaming				
Success Ratio/Interactivity e-Gaming (%)	91.4/54.3	90.3/54.8	90.5/55.0	88.5/52.3
Interactivity Videochat				
Success Ratio/Interactivity Videochat (%)	83.6/85.6	82.6/83.0	83.8/84.0	82.8/81.5

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Data: 5G

ORANGE SHOWS HIGHEST SHARE OF SAMPLES IN ALL AGGREGATIONS, WITH YOIGO FOLLOWING ON SECOND PLACE. MOVISTAR HAS MADE BIGGEST PROGRESS IN SHIFTING FROM 5G DSS TO PURE 5G. VODAFONE AHEAD OF THIRD-PLACED MOVISTAR IN 5G SHARES ON ROADS. Our measurements assume that 5G is the standard. But to shed light on the progress of the 5G rollout, we look at the results of the KPI "Data rates of the 7 second Download tests". This gives a good indication of the data rates which are supported thanks to the 5G technology. But as this assessment does not limit the overall results to the 5G-related aspects or factors such as 5G coverage or the measured latencies of 5G-only connections, we do not identify a separate 5G category winner.

In our exemplary assessment, however, we see that Orange has the highest share of samples with 5G (pure 5G as well as 5G and 5G-DSS combined) in all aggregations, and Yoigo following on second place regarding this KPI. Movistar ranks third in terms of 5G sample share in the cities and towns, and Vodafone fourth. On the rural roads, the 5G share of Vodafone is slightly higher than that of Movistar – but both fall behind Orange and Yoigo.

5G

Photo: Zigres, shutterstock

All four Spanish mobile operators still rely on the bridging technology DSS (Dynamic Spectrum Sharing), with particularly high shares in the towns and on the rural roads. However, Movistar has made the biggest advancements in reducing this share and shifting its network to a larger extent of pure 5G operation. This is rewarded by higher average and P90 download rates, which have increased significantly at Movistar compared to the previous year, while these KPIs on the whole remain on the same level at Orange, Vodafone and Yoigo. Also, when focusing on pure 5G shares, Movistar is ahead in all aggregations.

A closer investigation shows that in the cities all operators use 5G New Radio with carrier aggregation (CA) of up to four LTE carriers. Vodafone is the only operator who utilizes 5GNR 2CA in combination with LTE 3CA or 2CA.
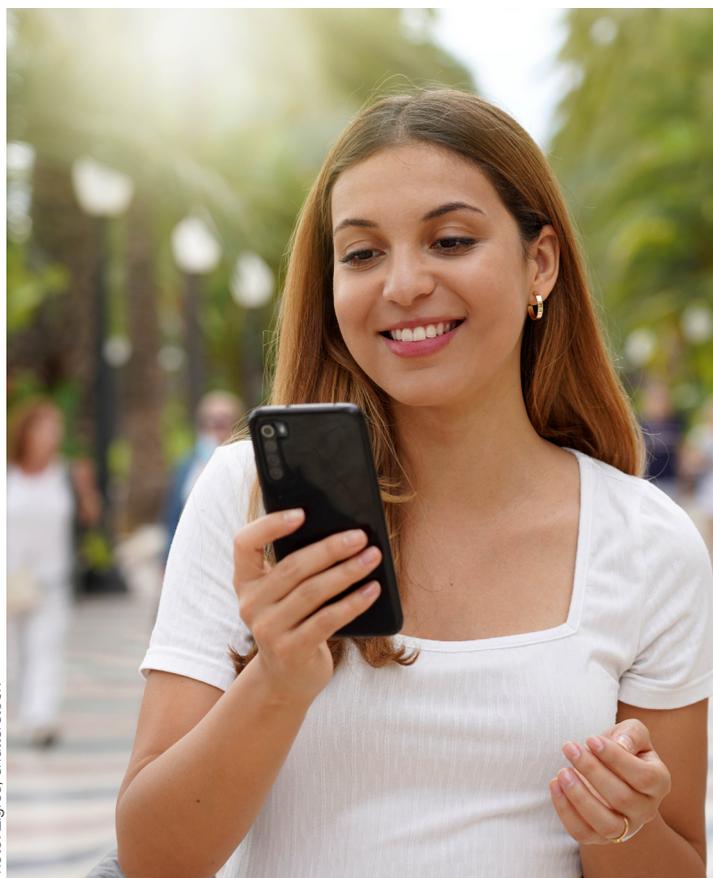
Data rates 7s Download	Movistar			Orange			Vodafone			Yoigo		
Samples with 5G	Share	Average (Mbps)	10% faster than (Mbps)	Share	Average (Mbps)	10% faster than (Mbps)	Share	Average (Mbps)	10% faster than (Mbps)	Share	Average (Mbps)	10% faster than (Mbps)
Cities – Drivetest	89.0%	425.2	748.8	87.0%	369.4	654.3	72.1%	327.8	636.2	87.2%	362.5	631.9
Cities – Walktest	89.1%	452.3	752.5	88.0%	368.9	641.0	86.0%	307.6	611.4	88.2%	337.6	575.6
Towns – Drivetest	82.9%	390.0	787.0	55.3%	326.2	636.5	27.1%	380.5	687.2	57.0%	283.5	500.7
Roads – Drivetest	54.5%	225.3	634.4	7.9%	304.6	499.8	5.4%	127.3	337.9	10.2%	244.8	471.3
Samples with 5G-DSS	Share	Average (Mbps)	10% faster than (Mbps)	Share	Average (Mbps)	10% faster than (Mbps)	Share	Average (Mbps)	10% faster than (Mbps)	Share	Average (Mbps)	10% faster than (Mbps)
Cities – Drivetest	2.0%	110.0	184.7	11.3%	69.2	133.1	14.0%	55.3	112.7	10.3%	72.9	145.2
Cities – Walktest	0.6%	83.6	121.5	8.0%	75.0	121.4	2.8%	82.8	143.9	8.5%	57.8	110.5
Towns – Drivetest	8.4%	97.7	218.9	40.0%	60.7	140.0	47.0%	56.9	119.5	36.2%	63.5	161.4
Roads – Drivetest	11.0%	75.8	129.2	74.4%	66.6	131.0	64.0%	55.5	108.4	71.6%	70.4	160.8

A Closer Look at Radio Standards

Looking at the expansion from 5G NSA to 5G SA, what developments can be observed in the networks? This question can best be answered by a crowdsourcing analysis.

The progress of the expansion of mobile networks is no longer only reflected in the answer to the question 'Is 5G available?'. The next step in 5G roll-outs is the development from 5G nonstandalone (NSA, shared core network with 4G) to 5G standalone (SA, own 5G core network).

As we have deliberately not yet included 5G SA in our drivetests and walktests for compatibility and performance reasons, the development can best be read from the crowdsourcing data collected by umlaut. The table below shows what proportion of the samples were received via which radio standard. We show the percentage values at the beginning and the end of this year's observation period – but for the entire data pool, without the filtering carried out in the crowd discipline.

The fact that the 5G shares in this analysis are considerably lower than the numbers observed in our drivetests and walktests can be easily explained: The "take rates" of 5G (i.e. the number customers who both have a suitable smartphone and tariff) are much smaller than the actual coverage or presence of respective 5G cells in the mobile networks.

As could be expected, the share of 2G/3G is decreasing in favour of the other network technologies. We see a considerable increase of 5G standalone samples in the Movistar network, and also a noticeable success in the 5G SA roll-out in the Orange network. At Yoigo, there was a measurable increase in the share of 5G (NSA) during the observation period. The small declines in the 5G (NSA) shares in the Vodafone network can be explained with statistical tolerance ranges and small fluctuations in the data basis (supported apps etc.) of this analysis.

Photo: Robyn McNeill, shutterstock

Crowdsourcing samples	Movistar		Orange		Vodafone		Yoigo	
Month	August 24	January 25	August 24	January 25	August 24	January 25	August 24	January 25
2G/3G	5.0%	4.2%	4.5%	3.5%	2.3%	1.3%	6.4%	4.7%
4G	65.9%	65.2%	65.5%	66.7%	71.6%	74.1%	74.9%	75.6%
5G Non-Standalone	24.9%	15.8%	28.2%	26.7%	26.0%	24.5%	18.7%	19.6%
5G Standalone	4.2%	14.8%	1.8%	3.1%	0.0%	0.0%	0.0%	0.0%

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Crowd

VODAFONE AHEAD IN OVERALL BROADBAND CO-VERAGE, CLOSELY FOLLOWED BY ORANGE

In terms of Coverage Quality (see definitions on p. 11), Vodafone is ahead of Orange and Yoigo. In Coverage Reach, Movistar takes the lead, ahead of Orange and then Vodafone, which fall behind the Telefónica brand, but with a very small gap between them. In this KPI, Yoigo falls behind at a more distinct gap. In Time on Broadband, Vodafone takes the lead, ahead of Orange. Here, Movistar and Yoigo score on a par. Yoigo's customer experience in terms of coverage is similar to its competitors, as customers can benefit from the roaming with mainly Orange. The stated Coverage Reach, however, reflects the actual level of this network's own deployment.

BROADBAND COVERAGE

VODAFONE

VODAFONE AND ORANGE SLIGHTLY AHEAD OF MOVI-STAR IN PASSIVE DOWNLOAD ANALYSIS

In the passively observed download data rates, Vodafone is ahead of Orange in the Basic Internet class (minimum of 2 Mbps) and in the HD Video class (at least 5 Mbps). In the demanding UHD Video class (min. 20 Mbps), Movistar performs ahead of Orange and Vodafone. Yoigo scores ahead of Movistar in the Basic Internet Class, but falls a little behind when the requirements increase.

DOWNLOADS PASSIVE

VODAFONE & ORANGE

MOVISTAR AND ORANGE BOTH STRONG IN ACTIVE DOWNLOAD ANALYSIS, HERE VODAFONE RANKS THIRD

The actively performed download tests are conducted to better approximate the maximum performance of a mobile internet connection. In this metric, Movistar takes the lead, with Orange ranking second and Vodafone third. In the P10 (90 percent faster than) results, Orange is ahead of Movistar, while Vodafone and Yoigo score closely together.

DOWNLOADS ACTIVE

VODAFONE & ORANGE

MOVISTAR AND VODAFONE BOTH STRONG IN ACTIVE UPLOAD TESTS, ORANGE CLOSE BEHIND

In the examination of active Upload tests, Movistar shows the highest average throughput value, followed by Vodafone and then Orange. In the P10 value, Vodafone takes the lead ahead of Movistar and then Orange. Regarding the P90 value, Movistar is ahead, followed by almost equally strong Orange and Vodafone. Here, Yoigo ranks fourth in all KPIs.

UPLOADS ACTIVE

MOVISTAR & VODAFONE

ORANGE PROVIDES THE SHORTEST LATENCIES, MOVISTAR RANKS SECOND AND VODAFONE THIRD

Orange is ahead in the latency category, due to the best result in the demanding High End (roundtrip times up to 20 ms) and standard Gaming class (up to 50 ms). In the OTT Voice class (up to 100 ms), Movistar achieves a slightly higher share than Vodafone, Yoigo and Orange.

LATENCY

ORANGE

VODAFONE LEADS IN HD VOICE AVAILABILITY, AHEAD OF ORANGE AND MOVISTAR

In the analysis of the availability of HD voice connections (i.e Voice over LTE with the current state of mobile network implementations in Spain), Vodafone takes the first place. In this assessment, Orange follows on second place. Movistar on third and Yoigo on fourth, each at distinct gaps.

VOICE

VODAFONE

VODAFONE LEADING IN TRANSACTION STABILITY, WITH MOVISTAR RANKING SECOND AND YOIGO THIRD

In the Stability category, which looks at the success rates of regular transaction tests, Vodafone takes the lead. Movistar comes in second, Yoigo third and Orange fourth in this assessment. But overall, all Spanish operators show viable results in this category.

STABILITY

VODAFONE

Operators	Movistar	Orange	Vodafone	Yoigo
Broadband Coverage				
Coverage Quality (%)	95.8	97.3	98.9	96.1
Coverage Reach (%)	94.9	91.7	91.6	87.8
Time on Broadband (%)	96.4	97.4	98.8	96.4
Download Speed (Passive)				
Basic Internet Class(%)	95.9	96.5	97.0	96.2
HD Video Class / UHD Video Class (%)	86.0/28.1	86.2/27.5	87.3/25.7	83.8/22.5
Download Speed (Active)				
Avg. Throughput (Mbit/s)	111.6	81.8	50.1	46.7
90% / 10% faster than (Mbit/s)	5.8/349.0	7.7/222.8	4.4/106.7	4.3/86.8
Upload Speed (Active)				
Avg. Throughput (Mbit/s)	22.0	19.1	19.7	14.5
90% / 10% faster than (Mbit/s)	2.4/49.7	2.2/43.6	2.7/43.5	1.9/31.9
Latency				
Gaming Class / OTT Voice Class (%)	73.4/96.5	78.3/95.2	67.7/96.1	68.7/95.6
High End Gaming (%)	1.7	5.5	1.8	1.4
Voice				
HD Voice (%)	92.9	94.3	96.9	90.7
Stability				
Transaction Success (%)	93.6	92.1	95.5	92.6

The 2025 Mobile Network Test in Spain

Reliability

Reliability is not an additional category of our tests, but rather a different angle of looking at the results: For each KPI, our scoring distinguishes between "Qualifiers" (the expected basic performance) and "Differentiators" (the additional performance that exceeds the expected basics). The view at Reliability limits itself to most of the Qualifiers and the basic KPIs of the crowdsourcing – thus conveying an impression of the standards, a user can reasonably expect from a mobile network. The reference values in this representation are therefore only the subset of score points which we assigned to the Qualifiers. The resulting scores state the reliability with which an operator offers its network services. This approach concentrates on the compulsory basics instead of the highest peaks of a network's performance.

Operator		Movistar	Orange	Vodafone	Yoigo
Voice	max. 162 points	144	144	144	143
Drivetest	138	87%	87%	88%	87%
Walktest	24	98%	99%	94%	99%
Data	max. 288 points	270	255	255	259
Drivetest	245	93%	87%	88%	88%
Walktest	43	96%	97%	90%	98%
Crowd	max. 150 points	133	134	135	128
Crowd	150	89%	89%	90%	86%
Total	max. 600 points	547	533	534	530

All shown scores and percentages are rounded.

MOVISTAR, ORANGE AND VODAFONE ON A PAR IN VOICE RELIABILITY, YOIGO FOLLOWS CLOSELY BEHIND
In the assessment of the Reliability of Voice connections, Movistar, Orange and Vodafone all achieve a score of 144 out of 162 points and thus share the first rank. Yoigo follows at a close distance of just one score point. So, basically all four operators perform on a comparable level here. Vodafone is a little stronger in the drivetests, while Orange, Yoigo and Movistar show slightly better results in the walktests.

MOVISTAR LEADS IN DATA RELIABILITY, FOLLOWED AT SOME DISTANCE BY YOIGO. ORANGE AND VODAFONE SCORE ON A PAR ON THIRD RANK HERE
In the Reliability assessment in the Data tests, Movistar takes the lead. At some distance, Yoigo comes in second. Orange und Vodafone achieve the same number of score points and share the third rank here. Movistar achieves the highest score in the data drivetests, while Yoigo is leading in the data walktests, closely followed by Orange and Movistar.

VODAFONE LEADS IN CROWDSOURCED RELIABILITY, WITH ORANGE AND MOVISTAR FOLLOWING CLOSELY
Vodafone achieves the highest score in the crowdsourced assessment of Reliabilty. Orange and Movistar follow at close distance, each with a gap of one score point between them. Yoigo falls a little more distinctly behind, but achieves still a viable result of 86 percent of the possible points in this discipline.

VOICE
ALL OPERATORS

DATA
MOVISTAR

CROWD
VODAFONE

Photo: Alejandro M. Ferrer, shutterstock

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The 2025 Mobile Network Test in Spain

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Case Study: Energy Effiency

The energy efficiency of mobile networks is becoming increasingly important. How can operator successes be measured?

Mobile network operators must reduce the operating costs of their networks and become climate-neutral in the long term. The Radio Access Network (RAN) is the most energy-hungry component of a mobile network. Saving just a few percent of its energy consumption can amount to millions of kilowatt hours and euros per year. umlaut has analysed how the data collected in drive and walktests can be used to determine how the networks use a not insignificant proportion of the energy consumed in the RAN: the energy used for active transmission to users. The results also allow conclusions to be drawn about the operator's overarching efficiency strategy. This case study is however not a part of our official assessment.

The approach presented here relates the speed at which the networks transmit data to the smartphone to the transmission power required for this. The result is a value with the unit Mbps per Watt. To test this, umlaut carried out this analysis for the 7-second file download – one of the test items that pushes the performance of a network to the limit.

The value determined in this way is influenced by a variety of factors – for example, the spatial arrangement of the base stations, the operator's network coverage strategy via macro, micro and pico cells as well as the number, technlology and configuration of frequency bands used and the mobile radio technologies deployed on them. The table below shows the range of this KPI for a number of European key markets and the various operators who are active there, separated for the areas or scenarios of cities, towns and roads. We have delibe-rately decided not to reveal the results by operator in order to not sug-gest any kind of evaluation. However, the ranges shown illustrate that the presented approach can reveal significant differences between individual operators and considered scenarios.

Photo: Roman Belogorodov, shutterstock

Efficiency Chart Connect Tests 2024/25
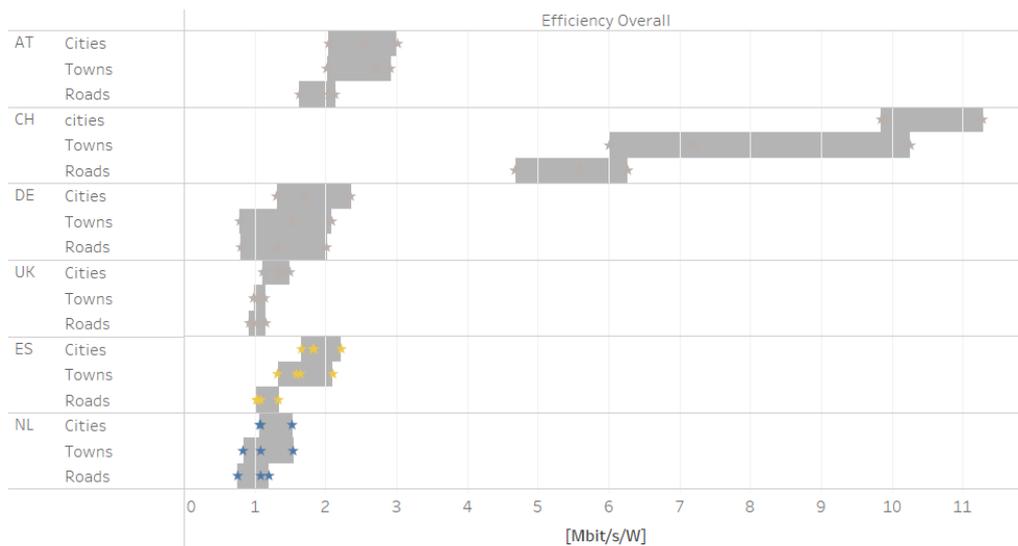
The chart shows the average efficiency of downlink transmission power (in Mbps per Watt) in various countries and various scenarios. The bars visualise the range between the network operator with the lowest and the one with the highest average efficiency. (Higher values = higher efficiency)
The overall higher level in Switzerland can be explained with the particularly restrictive regulations for electro-magnetic emmissions in this country.

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Fairness and Transparency

Testing a mobile network involves more than just measuring, analysing and writing about the result. Transparency for all parties and ensuring that everyone plays by the same rules is paramount. To achieve this, connect and umlaut have developed a set of best practices over the past 30 years of testing mobile networks.

Informing the operators at an early stage about the basic parameters of our tests is among the things, we found helpful during the years. A framework lists the smartphones and the firmware installed on them, the KPIs to be measured and the basic scheme for scoring them. A timeline for the test, with some contingency, is also made transparent in the framework, and operators are encouraged to comment on the information.

We are open to feedback but reserve the right to reject inappropriate claims. Close to the start of the benchmark, we ask all operators to abide by our fair play rules, which are designed to ensure that each network operates under test conditions in the same way as it does for real customers. If we or another operator see a potential violation of our rules, we investigate.

If we see a problematic behaviour, we immediately ask the operator to stop it, and if the benchmark has already started, we remove the affected samples from our measurements.

In this context we always keep our eyes on evolving technologies. This is of course somewhat of a challenge for umlaut and connect, but a challenge we are happy to accept for the benefit of our customers.

Photo: Frans Blok, shutterstock

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The 2025 Mobile Network Test in Spain

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Methodology

The umlaut connect Mobile Network Test is the result of extensive drivetests and walktests, combined with a sophisticated crowdsourcing analysis.

Logistics

connect's network test partner umlaut sent four measurement vehicles through the country, each equipped with nine smart-phones. For each network operator, a Samsung Galaxy S23 took the voice measurements, and another S23 established the connec-tions for the test case "conversational app" (see section "Data con-nections" below). For the actual data test, we used a third Samsung Galaxy S23 per operator. For all measurements, the smartphones were set to "5G preferred" – so wherever supported by the network, the data tests took place via 5G. The firmware of the test smart-phones corresponded to the original network operator versions.

In addition to the drivetests, a walktest team carried out measu-rements on foot in each country, in zones with heavy public traffic such as railway station concourses, airport terminals, cafés, public transport and museums. For the walktests, the same smartphone types were used per network operator for the same measurements as in the drivetests. The walktest team transported the smart-phones in backpacks or trolleys equipped with powerful batteries.

The drive and walktests took place between 8 am and 10 pm. For the drivetests, two vehicles were in the same city, but not in the same place, so that one car would not falsify the measurements of the other. On the connecting roads, two vehicles each drove the same routes, but one after the other with some time and distance between them. For the selection of the test routes, umlaut created four different suggestions for each country, from which connect blindly selected a route.
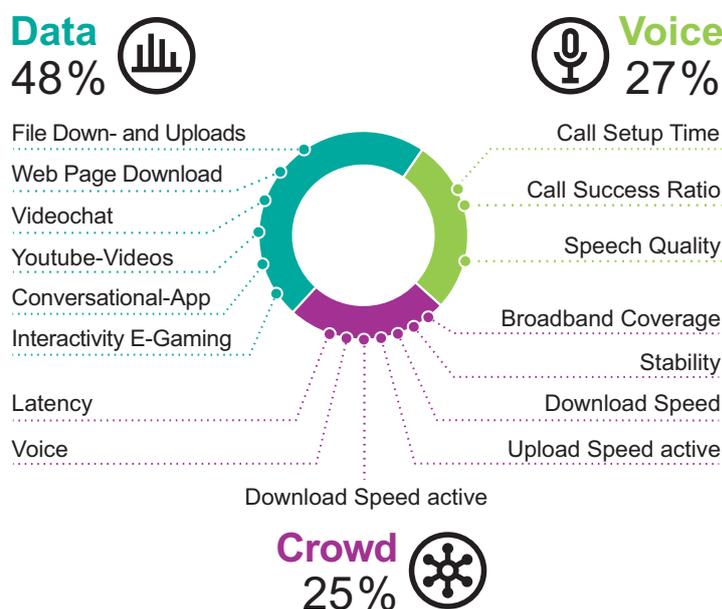
Voice connections

Voice connections account for 27 percent of the overall result. For this purpose, mobile telephone calls were established from vehicle to vehicle ("mobile-to-mobile") and their success rates, call set-up time and voice quality were measured. The smartphones of the walktest teams made calls to a stationary (smartphone) remote station for the voice tests.

To ensure realistic conditions, data traffic took place simultaneously in the background. The transmission quality was assessed using the POLQA wideband method suitable for HD voice. '5G non-standalone preferred' was configured on all phones, with voice telephony being handled via VoLTE.

Data connections

The data measurements account for 48 percent of the total result. Several popular live pages (dynamic) and the ETSI reference page

Data 48 %

- File Down- and Uploads
- Web Page Download
- Videochat
- Youtube-Videos
- Conversational-App
- Interactivity E-Gaming
- Latency
- Voice

Voice 27 %

- Call Setup Time
- Call Success Ratio
- Speech Quality
- Broadband Coverage
- Stability
- Download Speed
- Upload Speed active

Download Speed active

Crowd 25 %

known as the Kepler page (static) were retrieved to assess internet page calls. In addition, umlaut developed a preliminary stage of a designated successor to the Kepler page (working title: 'Newton'), which ETSI is currently considering.

Furthermore, 10 MB and 5 MB files were downloaded and uploa-ded, respectively, in order to determine the performance for smaller data transfers. We also determined the data rate within a 7-second period when uploading and downloading large files. As Youtube dynamically adapts the resolution to the available bandwidth, the evaluation takes into account the average image resolution of the videos as well as the success rate and the time until playback starts.

A typical over-the-top voice connection (OTT) is represented by the "conversational app" test case. To do this, we set up a voice chan-nel via the SIP and STUN protocols using the OPUS codec and determined the success rate and voice quality. In addition, for our test point "Interactivity of eGaming" our measurements simulated a highly interactive UDP multiplayer session to determine the latency times of the connection and any possible packet losses.
A video chat is also part of the test scope, which follows the ITU-T G.1051 recommendation. It measures latencies, packet delays and data rates in both directions.

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The 2025 Mobile Network Test in Spain

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Methodology

Crowdsourcing
Crowdsourcing results accounted for 25 percent of the overall rating. They show which network performance actually reaches the user – however, the end devices and tariffs used also have an impact on these results.

To obtain the data basis for these analyses, thousands of popular apps recorded the parameters described below in the background – provided the user agreed to the completely anonymous data collection. In slightly simplified terms, measured values are recorded in 15-minute intervals and transmitted to the umlaut servers once a day. The reports only contain a few bytes, so they hardly burden the user's data volume.

Broadband Coverage
In order to determine the broadband *coverage reach*, umlaut laid a grid of 2 x 2 km tiles ("Evaluation Areas", in short EAs) over the test area. A minimum number of users and measured values had to be available for each EA. For the evaluation, umlaut awarded one point per EA if the network under consideration offered 3G coverage. Three points were awarded if 4G or 5G was available in the EA. The score achieved was divided by the achievable number of points (three points per EA in the "union footprint" – the area of the respective country measured by all test participants with their smartphones).

We also looked at the *coverage quality*. For each operator, it indicates the average percentage of 4G or 5G coverage on an EA, averaged over all EAs in the 'common footprint'- this describes the area in which samples are available from all operators.

In addition, the *time on broadband* indicated how often a user had 4G or 5G reception in the period under consideration – regardless of the EAs in which the samples were recorded. For this purpose, umlaut sets the samples that show 4G/5G coverage in relation to the total number of all samples. Important: The percentage values determined for all three parameters reflect the respective degree of fulfilment – and not a percentage of 4G/5G mobile coverage in relation to area or population.

Data rates and Latencies
The *passive* determination of *download data rates* and *latencies* was carried out independently of the EAs and focused on the experience of each user. Samples that were captured via Wi-fi or when flight mode was activated, for example, were filtered out by umlaut before the analysis.

To take into account that many mobile phone tariffs throttle the data rate, umlaut defined three application-related speed classes: *Basic internet* requires a minimum of 2 Mbit/s, *HD video* requires 5 Mbit/s and *UHD video* requires 20 Mbit/s. For a sample to be valid, a minimum amount of data must have flowed in a 15-minute period. Similarly, the *latency* of the data packets is assigned to an application-related class: Roundtrip times up to 100 ms are sufficient for

OTT voice services, less than 50 ms qualify a sample for *gaming* and less than 20 ms for *high-end gaming*. This way, the evaluation also does justice to the fact that the passively observed data rates depend on the applications used in each case.

In order to better assess the maximum possible throughput, umlaut also conducted *active* measurements of *upload* and *download* data rates once a month. They determine the amount of data transferred in 3.5 seconds. For the determined values, we consider the average data rate, the P10 value (90% of the values higher than the specified threshold, a good approximation of the typical minimum speed) and the P90 (10% above this threshold), a view at the peak values.

HD Voice
The parameter *HD voice* shows the proportion of the user's voice connections that were established in HD quality – and thus via VoLTE (Voice over LTE). A prerequisite was that the smartphone supports this standard.

Stability
Based on the success rates of the download, upload and browsing tests as well as additional connection tests, umlaut also examined when a broadband connection could be used at all. The averaged and weighted results define the percentage of *transaction success*.

Reliability
umlaut divides all measured values into basic requirements ("Qualifier KPIs") and values related to peak performance ("Differentiator KPIs"). The presentation of *reliability* takes into account only the "Qualifier KPIs" from the voice and data category as well as the basic KPIs from crowdsourcing. This makes it possible to determine how well a mobile network fulfils everyday requirements.

Drivetest	Score Breakdown	
	Cities — Drivetest	**337.5**
Walktest	Cities — Walktest	**112.5**
	Towns — Drivetest	**150**
Crowd	Roads — Drivetest	**150**
	Crowdsourcing	**250**

Roads — Data | Voice | Crowd
Towns — Data | Voice | Crowd
Cities — Data | Voice | Crowd