

# best in test.

For adding something on top in Portugal and reaching an overall score of 958 dots in mobile network benchmarking survey we proudly award this certificate to

## Vodafone Portugal

Score 958 out of 1000 in Total  
Score 258 out of 270 in Voice Services  
Score 465 out of 480 in Data Services  
Score 235 out of 250 in Crowdsourced Quality



Hakan Ekmen  
Global Networks Lead, Comms Industry





# Measurement Overview

umlaut tested and measured the performance of its voice and data services on smartphones in comparison to other 5G/LTE mobile radio networks in metropolitan and rural areas of Portugal.

The audit was done as a performance benchmark performed by umlaut between 26.04.2025 and 22.05.2025 in cities and towns as well as on connection roads.

Dedicated measurements have been executed as drive tests and walk test susing a Samsung Galaxy S23+.

All data measurements have been performed in 5G preferred mode. Voice measurements have been done in 5G/5G preferred mode on both sides, while call origin has been alternated.

In addition crowdsourced performance data has been collected and evaluated between CW49 2024 and CW20 2025.

The following pages provide a comparative overview about the performance results observed for the different tested service types.



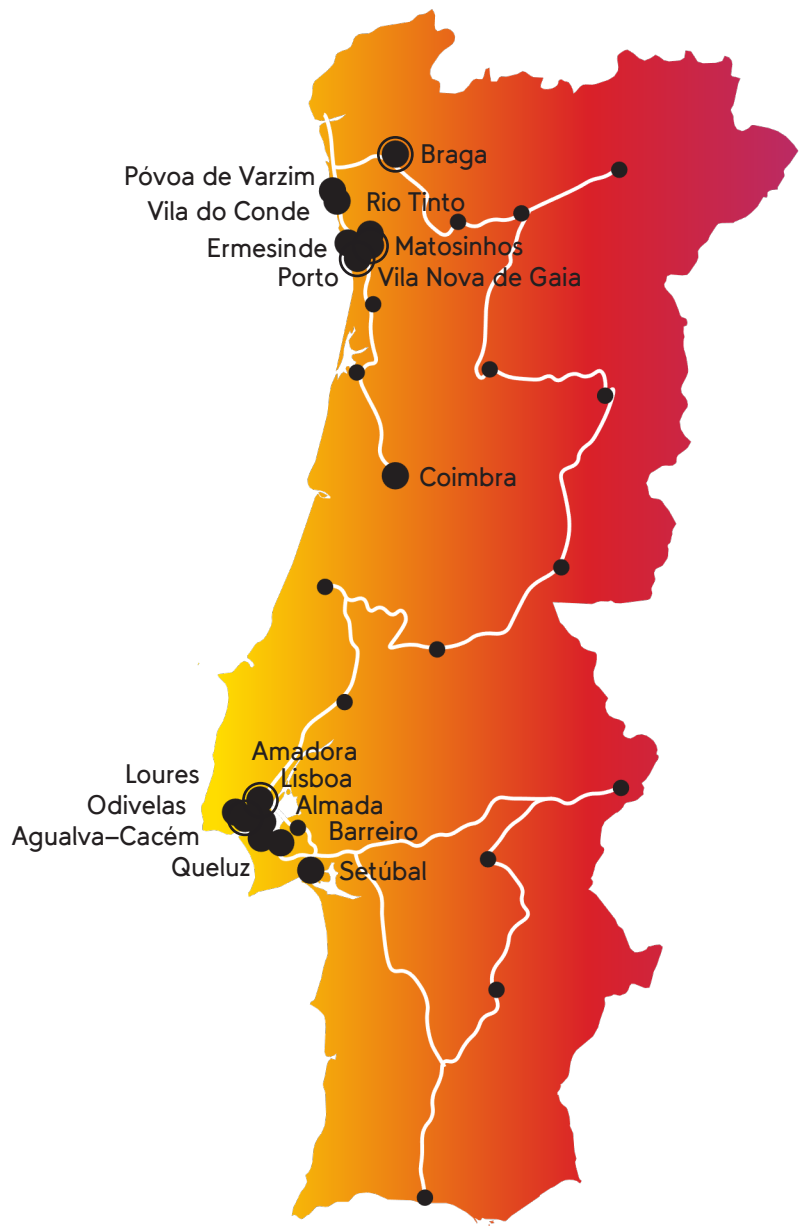
# Measurement setup

Drivetest	Voice	Data
Device	Samsung Galaxy S23+ (S916B)	
Test Cases	Mobile-to-Mobile Side1 (VoLTE, 5G pref.) to Side2 (VoLTE, 5G pref.) 105 sec call window 70 sec call duration 15 sec call setup timeout Multi-RAB traffic injection on both sides	Data 5G preferred HTTP 7s DL & HTTP 7s UL HTTPS 10MB DL & HTTPS 5MB UL Web Browsing (4 international pages, 4 local pages, 1 ETSI reference, 1 umlaut reference page) 2 YouTube videos ( VOD and Live video) Interactivity eGaming & Video Chat Conversational App
Mobility and Route Types	Drivetest: 59% in Cities, 19% in Towns and 22% on Roads	
Samples	14 477 in total	129 681 in total
Dates	26.04.2025 – 22.05.2025	
Crowd Data Assessment	24 weeks CW49 2024 – CW20 2025	



# Testing areas

## Drive route



**26 %**  
of population measured



**5700 km**  
measuring distance



## Crowdsourcing based test area



**99.4 %**  
of the 'built-up area' covered



**99.9 %**  
of the 'Population area' covered



**87,609 km²**  
size of tested area



# Claims



**Best in test**  
Vodafone Portugal

**Best in data**  
Vodafone Portugal

**Best in reliability**  
Vodafone Portugal



# Methodology

The leader in mobile benchmarking, umlaut, has analyzed the mobile networks of Portugal with regards to mobile network performance. We measure smartphone voice and data performance based on extensive drivetests – from major metropolitan areas to smaller cities and connection roads.

We objectively define the routes and test methodology and publish the results through certificates or public benchmark reports. In addition crowdsourced performance data has been collected and evaluated.

As the de-facto industry standard, our benchmarking methodology focuses on customer-experienced network quality and covers a wide range of mobile services. Today, more than 200 mobile networks in more than 120 countries are being evaluated by our unique scoring

methodology. It allows a technical analysis that is unprecedented in its level of detail and enables comparisons between the network performance and capability of each mobile network. Our public benchmarks as well as the certificate benchmarks help network operators to demonstrate how well they are delivering wireless connections to consumers, business users and enterprises and reveals the areas of improvement.



# Score and breakdown

Vodafone Portugal achieved the highest overall score among competitors with 958 dots out of 1000.



Overall score considering Voice, Data and Crowdsourcing.



## Total score

		Vodafone	MEO	NOS
Voice	max. 270	258	259	238
Cities drivetest	122	93%	95%	89%
Cities walk test	41	99%	98%	96%
Towns drivetest	54	98%	98%	83%
Roads drivetest	54	96%	94%	84%
Data	max. 480	465	454	459
Cities drivetest	216	97%	96%	97%
Cities walk test	72	98%	97%	97%
Towns drivetest	96	97%	94%	96%
Roads drivetest	96	95%	89%	92%
Crowdsourced quality	max. 250	235	232	235
Broadband coverage	100	96%	95%	96%
Download speed	55	94%	92%	93%
Upload speed	20	93%	93%	92%
Latency	50	90%	90%	90%
Voice	10	95%	89%	96%
Stability	15	96%	95%	96%
Total	1000	958	945	932

Shown scores are rounded.



Achieved percentage of the maximum score in each of the different data services.

Data	Service Group	max	Vodafone	MEO	NOS
Cities drivetest	Web Browsing	37.8	100%	99%	99%
	File Download	48.6	99%	99%	99%
	File Upload	48.6	98%	97%	98%
	YouTube	48.6	97%	97%	97%
	OTT	32.4	92%	88%	90%
Cities walktest	Web Browsing	12.6	100%	99%	99%
	File Download	16.2	99%	99%	100%
	File Upload	16.2	99%	95%	96%
	YouTube	16.2	98%	96%	98%
	OTT	10.8	94%	92%	91%
Towns	Web Browsing	16.8	100%	99%	99%
	File Download	21.6	99%	97%	96%
	File Upload	21.6	98%	95%	97%
	YouTube	21.6	97%	93%	98%
	OTT	14.4	90%	85%	86%
Roads	Web Browsing	16.8	99%	94%	95%
	File Download	21.6	97%	93%	93%
	File Upload	21.6	92%	90%	91%
	YouTube	21.6	95%	88%	93%
	OTT	14.4	88%	82%	84%

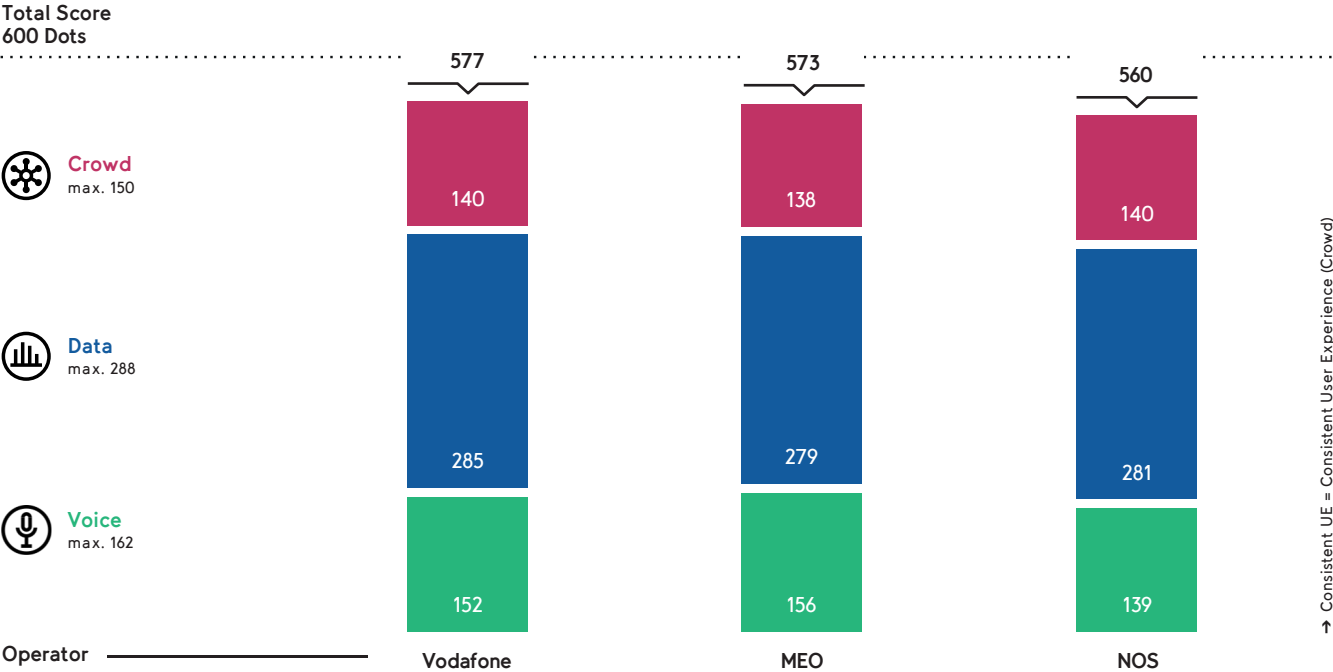


Achieved percentage of the maximum score in each of the different crowdsourcing services.

Crowd	Service Group	max	Vodafone	MEO	NOS
Crowdsourced Quality	Broadband Coverage	100	96%	95%	96%
	DL Speed	55	94%	92%	93%
	UL Speed	20	93%	93%	92%
	Latency	50	90%	90%	90%
	Voice	10	95%	89%	96%
	Stability	15	96%	95%	96%



# Reliability



Reliability score considering Voice, Data and Crowd.



## Total score

	Service Group	max	Vodafone	MEO	NOS
Reliability	Voice	162	94%	96%	86%
	Data	288	99%	97%	98%
	Crowd	150	94%	92%	94%

Score achievement in school grades:  
outstanding ( ≥95%), very good ( ≥85% and <95%), good ( ≥75% and ≤85%), satisfactory ( ≤65% and <75%), sufficient ( ≤55% and <65%).



Voice KPI overview

Achieved values of all networks under test in each of the relevant Voice Key Performance Indicators (KPIs) for the geographical categories "Cities".

Voice	Service Group	Unit	Vodafone	MEO	NOS
Voice M2M Drivetest	Qualifier	[%]	99.1	99.6	98.9
	Call Setup Time (P90)	[s]	1.1	2.1	3.1
	Speech Quality (P10)	[MOS-LQO]	4.5	4.5	4.5
Voice M2M Walktest	Qualifier	[%]	100.0%	100.0%	99.9%
	Call Setup Time (P90)	[s]	1.1	2.4	3.0
	Speech Quality (P10)	[MOS-LQO]	4.6	4.6	4.6
Voice M2M Towns	Qualifier	[%]	99.8%	100.0%	98.0%
	Call Setup Time (P90)	[s]	1.0	2.0	2.7
	Speech Quality (P10)	[MOS-LQO]	4.5	4.5	4.4
Voice M2M Roads	Qualifier	[%]	99.1%	99.0%	97.2%
	Call Setup Time (P90)	[s]	1.1	2.1	3.1
	Speech Quality (P10)	[MOS-LQO]	4.4	4.4	4.3



Data Services KPI overview

Achieved values of all networks under test in each of the relevant Data Key Performance Indicators (KPIs) for the geographical category "Cities drivetest".

Data Cities drivetest	KPI Name	Unit	Vodafone	MEO	NOS
HTTP Web Page DL Smartphone	Qualifier	[%]	99.9%	99.9%	99.8%
	Overall Session Time	[s]	1.0	1.0	1.0
HTTP 10MB DL Smartphone	Qualifier	[%]	99.8%	100.0%	100.0%
	Average Session Time	[s]	0.6	0.8	0.7
	90% faster than	[Mbit/s]	126.6	83.1	115.5
	10% faster than	[Mbit/s]	354.0	312.5	332.0
HTTP 5MB UL Smartphone	Qualifier	[%]	100.0%	100.0%	99.9%
	Average Session Time	[s]	1.2	1.6	1.4
	90% faster than	[Mbit/s]	21.8	14.3	19.2
	10% faster than	[Mbit/s]	96.2	80.1	83.9
HTTP DL FDTT	Qualifier	[%]	99.9%	99.9%	99.9%
	10% faster than	[Mbit/s]	924.9	738.8	813.3
	faster than 20 Mbit/s	[%]	99.7%	99.6%	100.0%
	faster than 100 Mbit/s	[%]	97.3%	93.1%	98.5%
HTTP UL FDTT	Qualifier	[%]	99.9%	99.9%	100.0%
	10% faster than	[Mbit/s]	138.3	115.6	127.7
	faster than 2 Mbit/s	[%]	99.8%	99.8%	99.9%
	faster than 5 Mbit/s	[%]	99.3%	99.4%	99.2%
YouTube	Qualifier	[%]	99.9%	99.8%	100.0%
	Start Time	[s]	1.6	1.6	1.6
	AVG Resolution	[p]	1080.0	1080.0	1080.0
YouTube Live Smartphone	Qualifier	[%]	99.9%	99.9%	99.8%
	Start Time	[s]	2.3	2.4	2.3
	AVG Resolution	[p]	1079.8	1079.8	1079.8
Interactivity eGaming	Qualifier	[%]	99.1%	97.6%	97.7%
	Interactivity score	[%]	69.6%	61.1%	66.7%
Interactivity Videochat	Qualifier	[%]	97.4%	95.5%	96.5%
	Interactivity score	[%]	88.8%	88.3%	88.6%
Conversational App	Qualifier	[%]	99.9%	99.9%	99.9%
	Speech Quality (P10)	[MOS-LQO]	4.1	3.8	3.9





Data Services KPI overview

Achieved values of all networks under test in each of the relevant Data Key Performance Indicators (KPIs) for the geographical category "Cities walktest".

Data Cities walktest	KPI Name	Unit	Vodafone	MEO	NOS
HTTP Web Page DL Smartphone	Qualifier	[%]	100.0%	99.9%	99.9%
	Overall Session Time	[s]	0.9	1.0	1.0
HTTP 10MB DL Smartphone	Qualifier	[%]	100.0%	100.0%	100.0%
	Average Session Time	[s]	0.7	0.7	0.7
	90% faster than	[Mbit/s]	115.9	102.3	110.7
	10% faster than	[Mbit/s]	353.8	329.2	284.9
HTTP 5MB UL Smartphone	Qualifier	[%]	100.0%	99.7%	100.0%
	Average Session Time	[s]	1.2	1.5	1.6
	90% faster than	[Mbit/s]	24.0	19.0	14.4
	10% faster than	[Mbit/s]	98.5	66.9	73.2
HTTP DL FDTT	Qualifier	[%]	100.0%	100.0%	100.0%
	10% faster than	[Mbit/s]	988.9	652.3	752.2
	faster than 20 Mbit/s	[%]	99.0%	99.7%	100.0%
	faster than 100 Mbit/s	[%]	95.1%	96.7%	99.0%
HTTP UL FDTT	Qualifier	[%]	100.0%	99.7%	99.7%
	10% faster than	[Mbit/s]	137.9	101.7	114.2
	faster than 2 Mbit/s	[%]	100.0%	99.7%	100.0%
	faster than 5 Mbit/s	[%]	100.0%	99.3%	99.7%
YouTube	Qualifier	[%]	100.0%	100.0%	100.0%
	Start Time	[s]	1.5	1.6	1.7
	AVG Resolution	[p]	1080.0	1080.0	1080.0
YouTube Live Smartphone	Qualifier	[%]	100.0%	99.7%	100.0%
	Start Time	[s]	2.3	2.3	2.3
	AVG Resolution	[p]	1078.7	1077.3	1080.0
Interactivity eGaming	Qualifier	[%]	98.4%	99.0%	97.0%
	Interactivity score	[%]	72.7%	67.8%	64.3%
Interactivity Videochat	Qualifier	[%]	99.0%	99.3%	99.3%
	Interactivity score	[%]	91.4%	89.4%	89.5%
Conversational App	Qualifier	[%]	100.0%	99.9%	100.0%
	Speech Quality (P10)	[MOS–LQO]	4.3	4.2	4.3



Data Services KPI overview

Achieved values of all networks under test in each of the relevant Data Key Performance Indicators (KPIs) for the geographical category "Towns".

Data Towns	KPI Name	Unit	Vodafone	MEO	NOS
HTTP Web Page DL Smartphone	Qualifier	[%]	100.0%	99.9%	99.9%
	Overall Session Time	[s]	1.0	1.1	1.1
HTTP 10MB DL Smartphone	Qualifier	[%]	100.0%	100.0%	100.0%
	Average Session Time	[s]	0.7	1.0	0.9
	90% faster than	[Mbit/s]	96.5	54.2	74.3
	10% faster than	[Mbit/s]	305.6	318.3	290.9
HTTP 5MB UL Smartphone	Qualifier	[%]	99.7%	100.0%	100.0%
	Average Session Time	[s]	1.3	1.8	1.7
	90% faster than	[Mbit/s]	19.6	11.8	15.1
	10% faster than	[Mbit/s]	82.4	68.0	76.1
HTTP DL FDTT	Qualifier	[%]	100.0%	99.7%	99.2%
	10% faster than	[Mbit/s]	783.2	678.0	737.0
	faster than 20 Mbit/s	[%]	99.7%	98.9%	98.2%
	faster than 100 Mbit/s	[%]	93.1%	88.2%	91.1%
HTTP UL FDTT	Qualifier	[%]	100.0%	99.7%	100.0%
	10% faster than	[Mbit/s]	118.8	95.2	106.3
	faster than 2 Mbit/s	[%]	100.0%	100.0%	100.0%
	faster than 5 Mbit/s	[%]	99.5%	97.8%	98.3%
YouTube	Qualifier	[%]	100.0%	100.0%	100.0%
	Start Time	[s]	1.6	1.7	1.6
	AVG Resolution	[p]	1080.0	1080.0	1079.9
YouTube Live Smartphone	Qualifier	[%]	100.0%	98.6%	100.0%
	Start Time	[s]	2.5	2.4	2.3
	AVG Resolution	[p]	1080.0	1079.8	1079.2
Interactivity eGaming	Qualifier	[%]	98.7%	97.1%	94.8%
	Interactivity score	[%]	64.4%	57.2%	60.8%
Interactivity Videochat	Qualifier	[%]	97.1%	94.1%	95.6%
	Interactivity score	[%]	88.7%	88.9%	88.1%
Conversational App	Qualifier	[%]	100.0%	99.6%	100.0%
	Speech Quality (P10)	[MOS–LQO]	4.0	3.8	3.9



Data Services KPI overview

Achieved values of all networks under test in each of the relevant Data Key Performance Indicators (KPIs) for the geographical category "Roads".

Data Roads	KPI Name	Unit	Vodafone	MEO	NOS
HTTP Web Page DL Smartphone	Qualifier	[%]	100.0%	98.9%	99.2%
	Overall Session Time	[s]	1.2	1.3	1.3
HTTP 10MB DL Smartphone	Qualifier	[%]	100.0%	99.5%	99.7%
	Average Session Time	[s]	1.7	2.2	2.3
	90% faster than	[Mbit/s]	30.4	24.5	18.5
	10% faster than	[Mbit/s]	236.0	228.5	207.8
HTTP 5MB UL Smartphone	Qualifier	[%]	99.7%	99.2%	99.7%
	Average Session Time	[s]	2.6	3.5	2.8
	90% faster than	[Mbit/s]	7.2	5.0	7.0
	10% faster than	[Mbit/s]	60.3	55.7	61.1
HTTP DL FDTT	Qualifier	[%]	99.7%	99.2%	99.2%
	10% faster than	[Mbit/s]	470.7	479.8	485.9
	faster than 20 Mbit/s	[%]	97.9%	89.6%	95.5%
	faster than 100 Mbit/s	[%]	49.5%	51.0%	46.5%
HTTP UL FDTT	Qualifier	[%]	99.5%	99.7%	99.2%
	10% faster than	[Mbit/s]	79.5	74.8	77.4
	faster than 2 Mbit/s	[%]	98.4%	98.2%	97.7%
	faster than 5 Mbit/s	[%]	96.1%	93.7%	94.9%
YouTube	Qualifier	[%]	99.5%	98.2%	99.5%
	Start Time	[s]	1.8	2.0	1.9
	AVG Resolution	[p]	1080.0	1078.8	1080.0
YouTube Live Smartphone	Qualifier	[%]	99.5%	97.9%	98.5%
	Start Time	[s]	2.7	2.8	2.6
	AVG Resolution	[p]	1078.4	1073.6	1078.8
Interactivity eGaming	Qualifier	[%]	95.6%	93.7%	93.2%
	Interactivity score	[%]	59.8%	47.4%	59.6%
Interactivity Videochat	Qualifier	[%]	92.1%	88.7%	88.3%
	Interactivity score	[%]	85.4%	84.3%	84.9%
Conversational App	Qualifier	[%]	99.9%	99.6%	99.7%
	Speech Quality (P10)	[MOS–LQO]	3.8	3.5	3.4



Crowd KPI overview

Achieved values of all networks under test in each of the relevant Crowd Key Performance Indicators (KPIs) for the categories "Broadband Coverage", "Download Speed", "Upload Speed", "Latency". "Voice Crowd" and "Stability".

Category	KPI name	Unit	Vodafone	MEO	NOS
Broadband Coverage	Coverage Quality	[%]	98.7 %	98.1 %	99.0 %
	Coverage Reach	[%]	92.4 %	95.5 %	92.0 %
	Time on broadband	[%]	98.6 %	97.7 %	99.0 %
Download Speed	Basic internet class	[%]	96.1 %	96.0 %	96.3 %
	HD video class	[%]	90.6 %	88.3 %	89.3 %
	UHD video class	[%]	29.6 %	27.2 %	28.2 %
Latency	OTT voice class	[%]	97.5 %	97.3 %	97.4 %
	Gaming class	[%]	92.2 %	93.3 %	91.4 %
	Egoshoooter class	[%]	34.7 %	19.7 %	26.6 %
Voice	HD voice	[%]	96.6 %	92.6 %	97.5 %
Download Speed Active	90% faster than	[Mbit/s]	10.8	6.6	7.5
	10% faster than	[Mbit/s]	301.0	251.9	291.7
	AVG data rate	[Mbit/s]	109.1	98.6	102.8
Upload Speed Active	90% faster than	[Mbit/s]	3.0	3.0	2.6
	10% faster than	[Mbit/s]	51.6	50.4	47.5
	AVG data rate	[Mbit/s]	24.0	22.5	21.7
Stability	Transaction success	[%]	95.7 %	94.9 %	95.9 %



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