

# best in test.

For adding something on top in Georgia and reaching an overall score of 815 dots in mobile network benchmarking survey we proudly award this certificate to

## MagtiCom Georgia

Score 815 out of 1000 in Total  
Score 201 out of 320 in Voice Services  
Score 432 out of 480 in Data Services  
Score 182 out of 200 in Crowdsourced Quality



Hakan Ekmen  
Chief Executive Officer Telecommunication





# Measurement Overview

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

The audit was done as a performance benchmark performed by umlaut between 09.12.2020 and 19.12.2020 in cities and towns as well as on connection roads.

Dedicated measurements have been executed as drive tests outdoors using a Samsung Galaxy S10 Smartphone 1000 Mbit/s Download / 105 Mbit/s Upload.

All data measurements have been performed in 4G preferred mode. Voice measurements have been done in 4G/4G preferred mode on both sides, while call origin has been alternated.

In addition crowdsourced performance data has been collected and evaluated between CW27 and CW50 2020. 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 S10	Samsung Galaxy S10
Test Cases	Mobile-to-Mobile (M2M) Side1 (VoLTE) to Side2 (VoLTE) 115 sec call window 70 sec call duration 15 sec call setup timeout Multi-RAB traffic injection on both sides	Data 4G preferred CA HTTP DL datastream 7s HTTP UL datastream 7s HTTP 5MB DL fixed file transfer HTTP 2.5MB UL fixed file transfer Web Browsing – Kepler ETSI Ref. Page 10 Live web pages 3 YouTube HD video ~ 45s
Mobility and Route Types	100% Drivetest 56% in Cities, 15 % in Towns and 29% on Roads	
Samples	~ 6,980 in total	~ 65,829 in total
Dates	10 measurement days 09.12.2020 – 19.12.2020	
Crowd Data Assessment	24 weeks CW27 2020 – CW50 2020	



# Testing areas

Drive route



**4.002 km**  
measuring distance

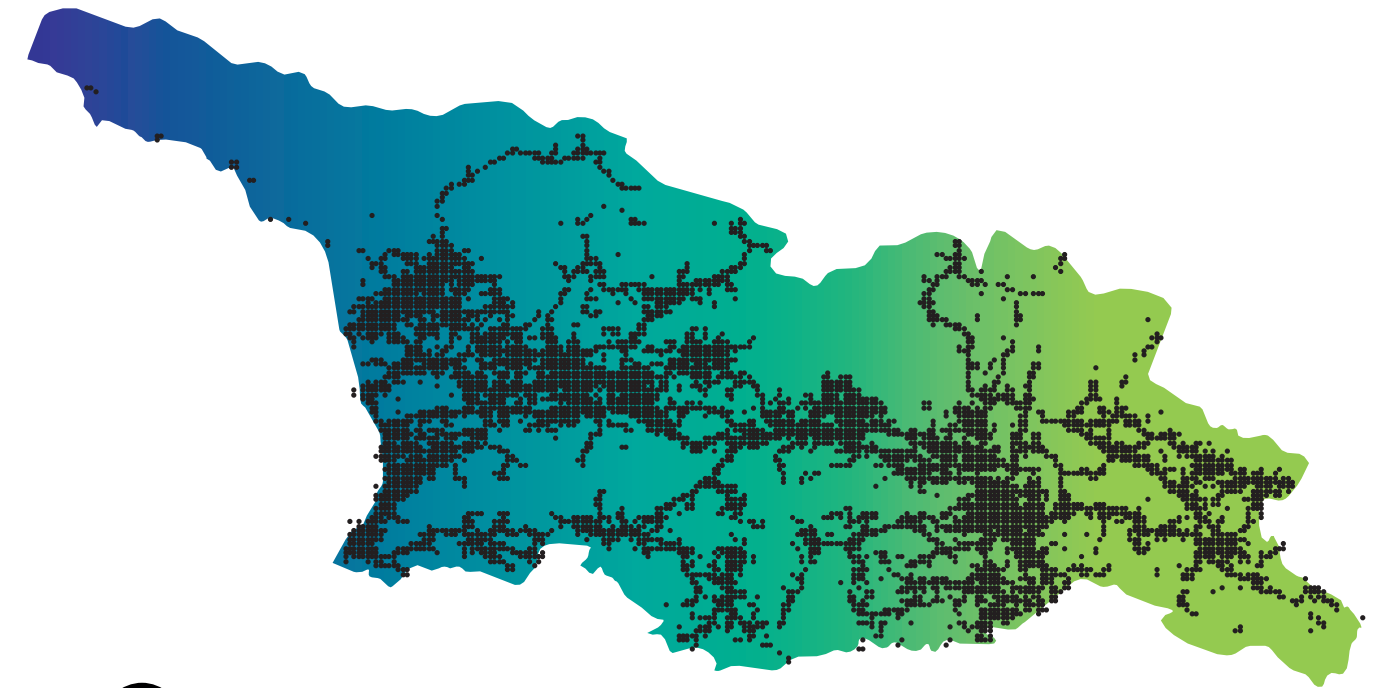


**45 %**  
of population measured



# Testing areas

Crowdsourcing based test area



**87.8 %**  
of the 'build-up area' covered




**92.9 %**  
of the 'Population area' covered



**18.695 km<sup>2</sup>**  
size of tested area



# Claims


**Best in test**  
MagtiCom



**Best in data**  
MagtiCom



**Best in voice**  
MagtiCom



**Best in crowd-sourced quality**  
MagtiCom



# Methodology

The leader in mobile benchmarking, umlaut, has analyzed the mobile networks of Georgia 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.

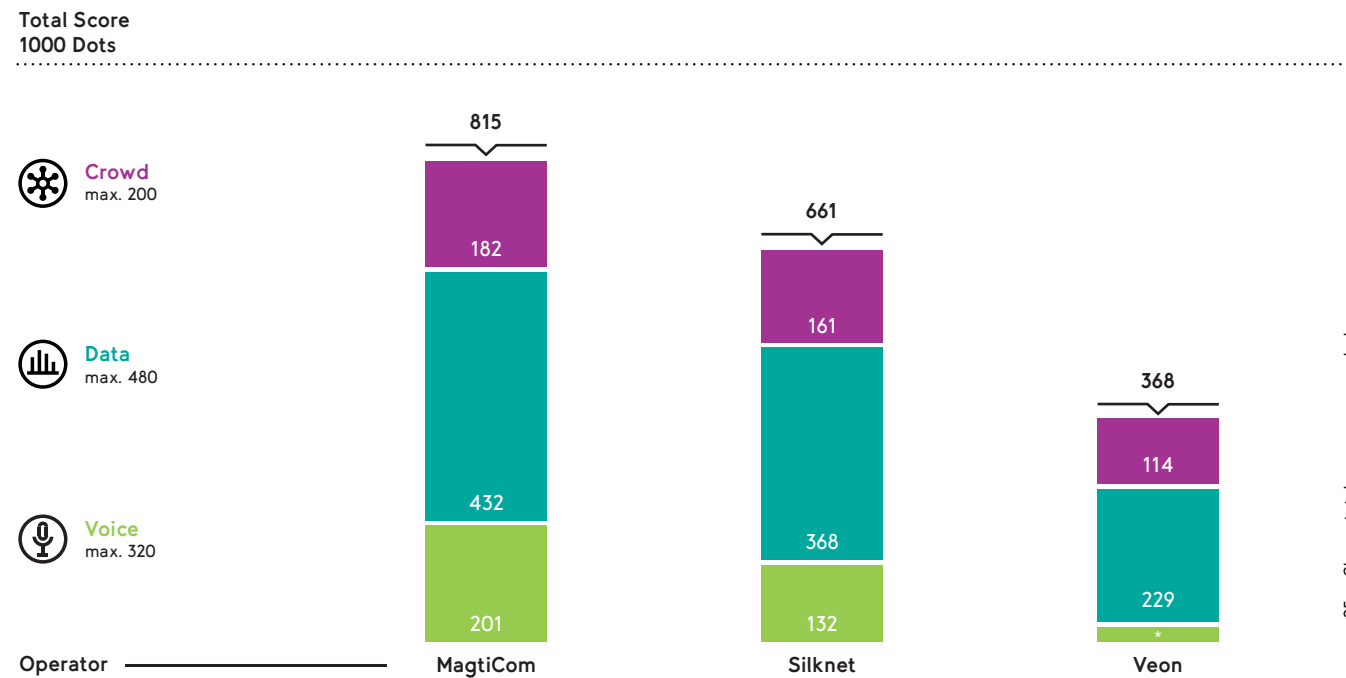
As the de-facto industry standard, our benchmarking methodology focuses on customer-perceived network quality and covers a wide range of mobile services. Today, more than 200 mobile networks in more than 120 countries are being evaluated by our unique scoring methodology. It allows a technical analysis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

cedented 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

MagtiCom achieved the highest overall score among competitors with 815 dots out of 1000.



Overall score considering Voice, Data and Crowdsourcing.

## Total score

	MagtiCom	Silknet	Veon
<b>Voice</b> (max. 320)	201	132	25
Cities Drivetest	192 (67%)	46% (132)	8% (25)
Towns Drivetest	64 (63%)	40% (132)	7% (25)
Roads Drivetest	64 (49%)	27% (132)	7% (25)
<b>Data</b> (max. 480)	432	368	229
Cities Drivetest	288 (90%)	77% (368)	57% (229)
Towns Drivetest	96 (91%)	84% (368)	36% (229)
Roads Drivetest	96 (90%)	67% (368)	30% (229)
<b>Crowdsourced Quality</b> (max. 200)	182	161	114
Broadband Coverage	100 (95%)	87% (368)	85% (229)
Download Speed	60 (85%)	77% (368)	48% (229)
Latency	40 (91%)	69% (368)	1% (229)
<b>Total</b>	1000	661	368

Shown scores are rounded.



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

Data	Service Group	max	MagtiCom	Silknet	Veon
Cities	Web Browsing	72,0	97%	87%	75%
	File Download	72,0	88%	75%	57%
	File Upload	72,0	85%	69%	59%
	YouTube	72,0	89%	79%	39%
Towns	Web Browsing	24,0	97%	93%	27%
	File Download	24,0	89%	82%	22%
	File Upload	24,0	82%	77%	65%
	YouTube	24,0	95%	83%	31%
Roads	Web Browsing	24,0	95%	74%	27%
	File Download	24,0	92%	68%	21%
	File Upload	24,0	85%	59%	42%
	YouTube	24,0	87%	67%	30%



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

Infrastructure	Service Group	max	MagtiCom	Silknet	Veon
Crowd	Broadband Coverage	100	95%	87%	85%
	DL Speed	60	85%	77%	48%
	Latency	40	91%	69%	1%



### 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", "Towns" and "Roads".

Voice	Service Group	Unit	MagtiCom	Silknet	Veon
Cities	Qualifier	[%]	98,5	97,8	90,8
	Call Setup Time	[s]	2,8	8,1	9,0
	Call Setup Time (P90)	[s]	11,2	9,5	13,7
	Speech Quality (AVG)	[MOS-LQO]	3,8	2,8	2,9
	Speech Quality (P10)	[MOS-LQO]	2,9	2,3	2,3
	Multirab connectivity	[%]	99,1	82,0	66,7
Towns	Qualifier	[%]	97,9	96,6	89,6
	Call Setup Time	[s]	3,0	8,2	9,4
	Call Setup Time (P90)	[s]	11,1	9,9	12,9
	Speech Quality (AVG)	[MOS-LQO]	3,8	2,8	2,8
	Speech Quality (P10)	[MOS-LQO]	2,9	2,3	2,2
	Multirab connectivity	[%]	98,1	83,8	58,5
Roads	Qualifier	[%]	92,1	90,2	79,2
	Call Setup Time	[s]	3,0	8,4	9,2
	Call Setup Time (P90)	[s]	11,2	10,1	11,9
	Speech Quality (AVG)	[MOS-LQO]	3,7	2,8	2,7
	Speech Quality (P10)	[MOS-LQO]	2,7	2,3	2,0
	Multirab connectivity	[%]	97,5	78,0	39,5



### 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".

Data Cities	KPI Name	Unit	MagtiCom	Silknet	Veon
HTTP Live Page DL Smartphone	Qualifier	[%]	99,9	98,7	97,6
	Overall Session Time	[s]	1,0	1,4	2,0
HTTP Static Page DL Smartphone	Qualifier	[%]	99,9	98,9	98,1
	Overall Session Time	[s]	0,8	1,9	2,6
HTTP 5MB DL Smartphone	Qualifier	[%]	100,0	99,2	99,6
	Average Session Time	[s]	1,8	3,1	10,0
	90% faster than	[Mbit/s]	9,4	9,7	1,8
	10% faster than	[Mbit/s]	102,6	58,5	29,2
HTTP 2500KB UL Smartphone	Qualifier	[%]	99,8	98,6	99,3
	Average Session Time	[s]	2,3	3,4	4,4
	90% faster than	[Mbit/s]	3,8	3,2	2,7
	10% faster than	[Mbit/s]	29,9	22,3	13,1
HTTP DL FDDT	Qualifier	[%]	100,0	98,0	98,4
	Average Data Rate	[Mbit/s]	80,0	60,3	13,7
	90% faster than	[Mbit/s]	22,6	14,0	1,8
	10% faster than	[Mbit/s]	154,6	116,9	31,4
HTTP UL FDDT	Qualifier	[%]	99,9	97,9	96,9
	Average Data Rate	[Mbit/s]	31,6	22,2	8,9
	90% faster than	[Mbit/s]	11,1	3,6	2,2
	10% faster than	[Mbit/s]	54,9	43,3	16,3
YouTube	Qualifier	[%]	100,0	97,6	86,6
	Start Time	[s]	1,1	1,3	2,1
	AVG Resolution	[p]	920	913	859
YouTube Live Smartphone	Qualifier	[%]	96,4	96,7	89,1
	Start Time	[s]	1,4	1,6	2,3
	AVG Resolution	[p]	1037	1027	954



### 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	MagtiCom	Silknet	Veon
HTTP Live Page DL Smartphone	Qualifier	[%]	99,8	99,6	89,7
	Overall Session Time	[s]	1,0	1,3	2,9
HTTP Static Page DL Smartphone	Qualifier	[%]	100,0	99,8	91,7
	Overall Session Time	[s]	0,7	1,8	3,5
HTTP 5MB DL Smartphone	Qualifier	[%]	100,0	99,3	92,2
	Average Session Time	[s]	1,6	2,7	22,1
	90% faster than	[Mbit/s]	12,6	13,4	0,8
	10% faster than	[Mbit/s]	93,7	55,8	12,5
HTTP 2500KB UL Smartphone	Qualifier	[%]	99,6	100,0	99,2
	Average Session Time	[s]	2,3	2,9	4,2
	90% faster than	[Mbit/s]	3,8	3,6	3,4
	10% faster than	[Mbit/s]	28,1	22,7	12,5
HTTP DL FDTT	Qualifier	[%]	100,0	100,0	94,4
	Average Data Rate	[Mbit/s]	74,3	52,4	5,6
	90% faster than	[Mbit/s]	27,9	16,9	1,0
	10% faster than	[Mbit/s]	136,8	95,6	11,9
HTTP UL FDTT	Qualifier	[%]	99,6	98,9	98,8
	Average Data Rate	[Mbit/s]	28,4	26,8	9,5
	90% faster than	[Mbit/s]	8,9	4,2	3,0
	10% faster than	[Mbit/s]	50,7	42,8	16,1
YouTube	Qualifier	[%]	100,0	97,7	61,4
	Start Time	[s]	1,1	1,3	3,0
	AVG Resolution	[p]	914	917	791
YouTube Live Smartphone	Qualifier	[%]	100,0	98,5	69,6
	Start Time	[s]	1,4	1,6	3,0
	AVG Resolution	[p]	1031	1033	870



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	MagtiCom	Silknet	Veon
HTTP Live Page DL Smartphone	Qualifier	[%]	99,3	94,1	81,8
	Overall Session Time	[s]	1,1	1,6	2,9
HTTP Static Page DL Smartphone	Qualifier	[%]	99,1	93,9	83,8
	Overall Session Time	[s]	0,8	1,9	3,5
HTTP 5MB DL Smartphone	Qualifier	[%]	99,8	94,1	86,1
	Average Session Time	[s]	2,0	3,7	19,9
	90% faster than	[Mbit/s]	11,8	7,1	0,8
	10% faster than	[Mbit/s]	91,5	57,4	19,5
HTTP 2500KB UL Smartphone	Qualifier	[%]	99,4	93,3	88,2
	Average Session Time	[s]	2,8	4,0	4,9
	90% faster than	[Mbit/s]	3,8	2,4	2,0
	10% faster than	[Mbit/s]	27,5	22,6	13,9
HTTP DL FDTT	Qualifier	[%]	99,1	95,2	87,8
	Average Data Rate	[Mbit/s]	61,6	45,5	7,5
	90% faster than	[Mbit/s]	14,5	6,4	0,9
	10% faster than	[Mbit/s]	127,5	91,3	19,1
HTTP UL FDTT	Qualifier	[%]	99,4	91,1	90,2
	Average Data Rate	[Mbit/s]	23,2	19,5	8,7
	90% faster than	[Mbit/s]	3,6	2,6	1,6
	10% faster than	[Mbit/s]	50,5	41,1	17,5
YouTube	Qualifier	[%]	98,2	91,8	59,8
	Start Time	[s]	1,3	1,4	3,2
	AVG Resolution	[p]	914	904	779
YouTube Live Smartphone	Qualifier	[%]	96,1	91,1	71,6
	Start Time	[s]	1,5	1,8	3,3
	AVG Resolution	[p]	1030	1012	812





### 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" and "Latency".

Category	KPI name	Unit	MagtiCom	Silknet	Veon
Broadband Coverage	Coverage Excellence	[%]	74,2	54,5	48,1
	Time on broadband	[%]	97,2	92,6	92,6
Download Speed	Basic internet class	[%]	92,0	90,4	83,0
	HD video class	[%]	74,2	65,9	45,2
	UHD video class	[%]	11,7	10,2	5,9
Latency	Gaming class	[%]	88,2	58,9	0,5
	OTT voice class	[%]	96,7	90,5	8,4



**umlaut SE**

Am Kraftversorgungsturm 3 · 52070 Aachen · Germany

Hakan Ekmen · Chief Executive Officer Telecommunication

cell +49 151 571 33 235 · [hakan.ekmen@umlaut.com](mailto:hakan.ekmen@umlaut.com)

[www.umlaut.com](http://www.umlaut.com)