SPEEDCHECKER

Africa

2021

ABOUT THE DATA

# of speed test samples:	**3,436,863**
# of coverage samples:	**704,560,452**
Data collection period:	**January 2021 – January 2022**

ABOUT THE REPORT

Africa's Mobile Network Champions are the best mobile networks available in Africa. Each country can have only one champion in each category (*).

We select champions in two categories:

Fastest mobile network
Best mobile coverage

(*) Some countries with smaller population have not been included in *Fastest mobile network* category as we did not collect enough samples to get to sufficient accuracy level. List of countries we missed: South Sudan, Swaziland, Seychelles, Equatorial Guinea, Guinea-Bissau, Eritrea, Sao Tome and Principe, Comoros

FASTEST MOBILE CHAMPIONS

Rank	Country	Average Country Download speed (Mb/s)	Mobile Network Champion	# Samples
1	Morocco	23.57	Maroc Telecom	147,819
2	South Africa	19.20	MTN	62,294
3	Tunisia	18.19	Tunisie Telecom	59,133
4	Mali	15.76	Orange	55,509
5	Malawi	13.71	TNM	36,443
6	Botswana	13.56	Orange	19,537
7	Namibia	13.35	MTC	49,990
8	Madagascar	13.24	Telma	18,300
9	Liberia	13.08	Orange	46,891
10	Mauritius	12.80	Mauritius Telecom	66,452
11	Cape Verde	11.89	CV Móvel	27,374
12	Sierra Leone	11.87	Orange	78,339
13	Chad	11.86	Moov	38,730
14	Gabon	11.70	Moov Gabon Telecom	30,420
15	Congo	11.67	MTN	30,426
16	Nigeria	11.55	Airtel	69,393
17	Kenya	10.66	Safaricom	137,495
18	Mozambique	9.67	Vodacom	63,979
19	Senegal	9.56	Orange	57,011
20	Angola	9.52	Unitel	119,175
21	Egypt	9.48	Telecom Egypt	222,590
22	Togo	9.39	Togocom	68,583
23	Burkina Faso	9.35	Onatel	70,384
24	Zambia	9.03	Zamtel	85,403
25	Ethiopia	8.75	Ethio Telecom	25,864
26	Djibouti	8.05	Djibouti Telecom	36,140
27	DR Congo	7.80	Orange	118,992
28	Sudan	7.79	Zain	68,478
29	Rwanda	7.65	KT Rwanda	46,212
30	Uganda	7.55	Airtel	65,345
31	Guinea	7.46	Orange	35,637
32	Ghana	7.42	Vodafone	71,333

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Rank	Country	Average Country Download speed (Mb/s)	Mobile Network Champion	# Samples
33	Lesotho	7.42	Vodacom	42,578
34	Gambia	7.24	Africell	36,503
35	Ivory Coast	7.18	MTN	71,312
36	Zimbabwe	7.12	Econet	138,872
37	Tanzania	6.95	Airtel	203,547
38	Somalia	6.95	Hormuud Telecom	53,275
39	Cameroon	6.78	MTN	68,677
40	Niger	6.70	Zamani Telecom	60,188
41	Benin	6.28	Moov	51,507
42	Algeria	5.40	Ooredoo	430,861
43	Burundi	5.10	Econet	13,822
44	Libya	4.28	Almadar Aljadeed	98,808
45	Mauritania	4.23	Moov Mauritel	32,426
46	Central African Republic	3.97	Orange	4,816

BEST COVERAGE CHAMPIONS

Rank	Country	Country Coverage Score	Mobile Network Champion	# Samples
1	Mauritius	928	Mauritius Telecom	3,895,394
2	Comoros	887	Comores Telecom	539,472
3	Seychelles	848	Airtel	304,166
4	Egypt	844	Vodafone	79,966,887
5	South Africa	816	Vodacom	112,860,127
6	Kenya	811	Safaricom	17,490,152
7	Swaziland	806	Eswatini Mobile	1,752,296
8	Morocco	757	Maroc Telecom	51,329,430
9	Tunisia	746	Ooredoo	31,096,547
10	Algeria	740	Mobilis	57,294,226
11	Malawi	737	Airtel	3,313,944
12	Nigeria	730	MTN	97,415,678
13	Ghana	715	MTN	41,034,962
14	Cape Verde	690	CV Móvel	732,830
15	Uganda	689	Airtel	14,266,814
16	Zambia	682	Airtel	10,745,644
17	Mali	643	Orange	3,672,303
18	Senegal	639	Orange	10,029,094
19	Gabon	623	Airtel	1,363,616
20	Togo	616	Togocom	11,735,444
21	IvoryCoast	606	Orange	9,840,970
22	Benin	593	MTN	6,655,699
23	Cameroon	592	Orange	12,295,614
24	Libya	592	Libyana	4,020,335
25	DR Congo	586	Airtel	9,647,935
26	Lesotho	582	Vodacom	755,039
27	Congo	570	Airtel	2,818,011
28	Tanzania	560	Airtel	10,965,403
29	Botswana	559	Orange	4,647,707
30	Rwanda	551	MTN	2,770,795
31	Gambia	544	Qcell	1,270,993
32	Djibouti	541	Djibouti Telecom	119,992

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Rank	Country	Country Coverage Score	Mobile Network Champion	# Samples
33	Liberia	533	Orange	766,632
34	Mozambique	523	Vodacom	4,958,483
35	Madagascar	519	Telma	4,054,462
36	Guinea-Bissau	518	Orange	330,736
37	Guinea	502	Orange	1,819,938
38	Somalia	500	Telesom	1,367,412
39	Angola	499	Unitel	10,496,351
40	Namibia	485	MTC	2,406,730
41	Equatorial Guinea	457	Getesa	860,761
42	Sao Tome & Principe	454	CST	105,915
43	Zimbabwe	446	Econet	20,075,782
44	South Sudan	441	MTN	411,425
45	Burkina	440	Orange	9,366,221
46	Chad	439	Airtel	426,794
47	Sudan	435	Zain	3,569,650
48	Sierra Leone	434	Orange	2,362,146
49	Burundi	430	Lumitel	685,055
50	Niger	403	Airtel	9,171,766
51	Ethiopia	402	Ethio Telecom	13,185,535
52	Mauritania	361	Moov Mauritel	1,319,245
53	Central African Republic	347	Orange	148,314
54	Eritrea	315	Eritel	23,580

DATA COLLECTION METHODOLOGY

Our data is collected from end user devices running Android and iOS systems. All measurements are executed towards a CDN that has a large geographical footprint and hosts a significant part of the content that is being accessed by the users. This ensures our results are a good approximation of the user's actual quality of experience.

All measurements must contain accurate location information using GPS or wi-fi geolocation methods. Measurements are considered only from the apps that have been approved by SpeedChecker. Submitted measurements are checked to see if they are within expected ranges and additional security precautions are implemented to ensure measurement data is not being manipulated.

The data collection process aims to deliver a single measurement sample from every device in our crowdsourcing system device pool and we strive to remove all duplicates. Due to privacy settings on some users phones we cannot reliably detect unique devices therefore some devices have contributed to more than 1 measurement into this dataset.

MEASUREMENT METHODOLOGY

The methodology is based on the concept of the ITU-T Q.3960 (2016) "Framework of Internet related performance measurements" and "Supplement 71 to ITU-T Q-series Recommendations".

This test methodology aims at delivering an accurate measurement of the maximum bandwidth available over a given internet connection. This is achieved by transferring multiple parallel data streams over separate TCP connections within a predefined amount of time. The transferred data consists of randomly generated data with high entropy.

#	Parameter	Unit	ITU Range	Current Setting
1	Number of parallel threads	#	$1 \le n \le 10$	Dynamic addition from 1 to 10
2	Duration of pre-test	s	$0 \le T_p \le 5$	1s
3	Duration of the downlink test	s	$5 \le T_d \le 15$	5s
4	Duration of the uplink subtest	s	$5 \le T_u \le 15$	5s
5	Number of 'pings' during delay subtest	#	$5 \le p \le 20$	$p = 10$

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COVERAGE SCORE METHODOLOGY

Speedchecker has developed a robust and reliable methodology of assessing cellular coverage worldwide. Our data-driven approach is using billions of cellular measurements conducted by hundreds of millions of mobile devices.

Process

Speedchecker data analysis process for mobile coverage involves four primary steps: collection, filtering, spatial aggregation, and summarization. The results of that process are used to determine coverage score on a country and operator level.

Collection

Millions of cellular measurements are received daily from Android devices around the world.

Filtering

Filtering is applied to ensure that only relevant measurements are used:

- Erroneous out-of-range measurements are excluded from datasets
- Measurements executed by inactive devices are excluded
- Measurements with inaccurate location are excluded

Spatial Aggregation

Filtered multi-RAT signal measurements collected for last 12 months are grouped into tiles of approximately 1 km2. All tiles where at least one operator service was detected are summed up to form a total country coverage footprint. Average signal strength is calculated per tile per RAT for each operator. Each operator is then assigned with a score per tile depending on average signal strength and particular RAT availability (higher RAT and stronger signal will contribute a higher score).

Summarization

Finally, scores from all tiles are summed up per operator. This forms the total operator coverage score. Total operator coverage score is then divided by the total country coverage footprint to produce an overall OPERATOR COVERAGE SCORE.

*RAT – Radio Access Type

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