Largest benchmarking test of mobile operators in Switzerland shows Swisscom as the best network in test

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In a test of Quality of Mobile Services conducted by the Systemics Group in Switzerland, Swisscom achieved the highest score of 86.81 points out of a possible total of 100, followed closely by Sunrise. Swiss operators offer their customers excellent quality of mobile services and the results they achieved are outstanding compared to benchmarking tests throughout the world. The picture below illustrates this international comparison.

Chart 1 – Ranks of Swiss operators compared to other operators in the World
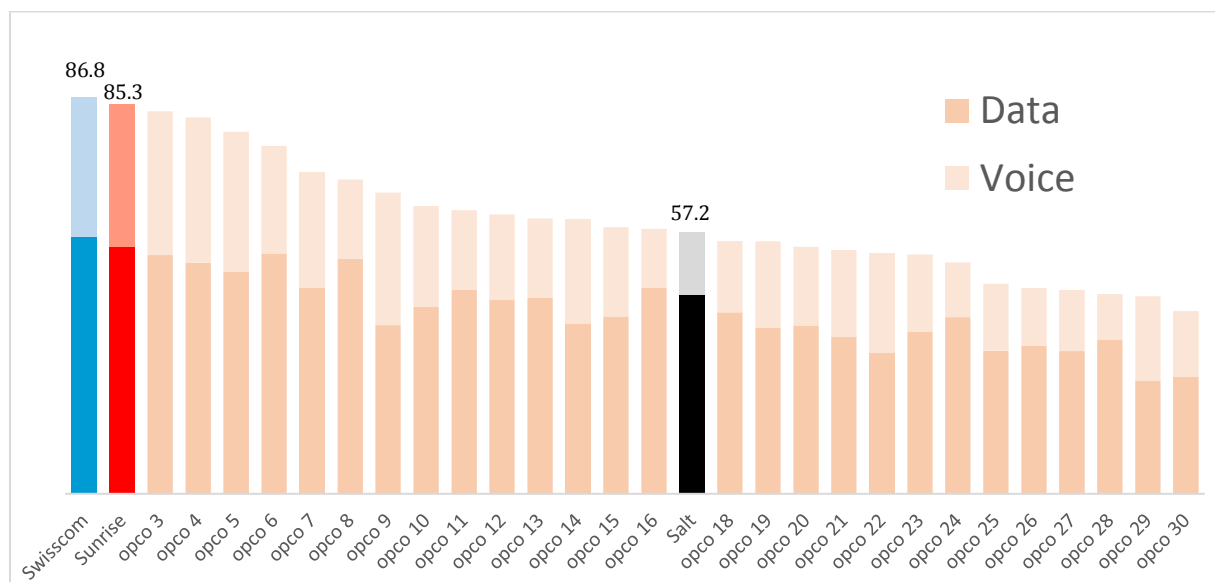
The excellent result of Swisscom and a narrow win over Sunrise in our test was achieved thanks to a more extensive deployment of Advanced LTE (LTE+) coverage in the country. This translated into a better performance of data services and the highest overall score in our survey.

Our test of mobile networks shows Swisscom as the best operator in the test. Swisscom has also achieved the highest score in the data category, while Sunrise has achieved the highest score in the voice category.

Geographical coverage of the test

When conducting nationwide campaigns, we aim to achieve a geographical coverage of the entire country. In Switzerland, the test covered more than 9,000 km of drive route (see the map below), of which more than 6,000 km were roads outside of cities and towns. Our test cars visited all the cantons and we see our survey as the one covering the widest area of the country amongst other previously publicised benchmarks of mobile networks in Switzerland.

Data collected during the test was aggregated into 3 categories: Largest Cities, Smaller Cities and Roads. Largest cities included Zurich, Genève, Basel, Lausanne, Bern and Winterthur. Smaller cities included those cities and towns with the population greater than 30,000 inhabitants. Results from the Largest Cities category contributed 40% to the overall score, while the results from Cities and Towns and Roads categories contributed 30% each to the overall score.

Picture 1 – Drive route and the cities included in the survey
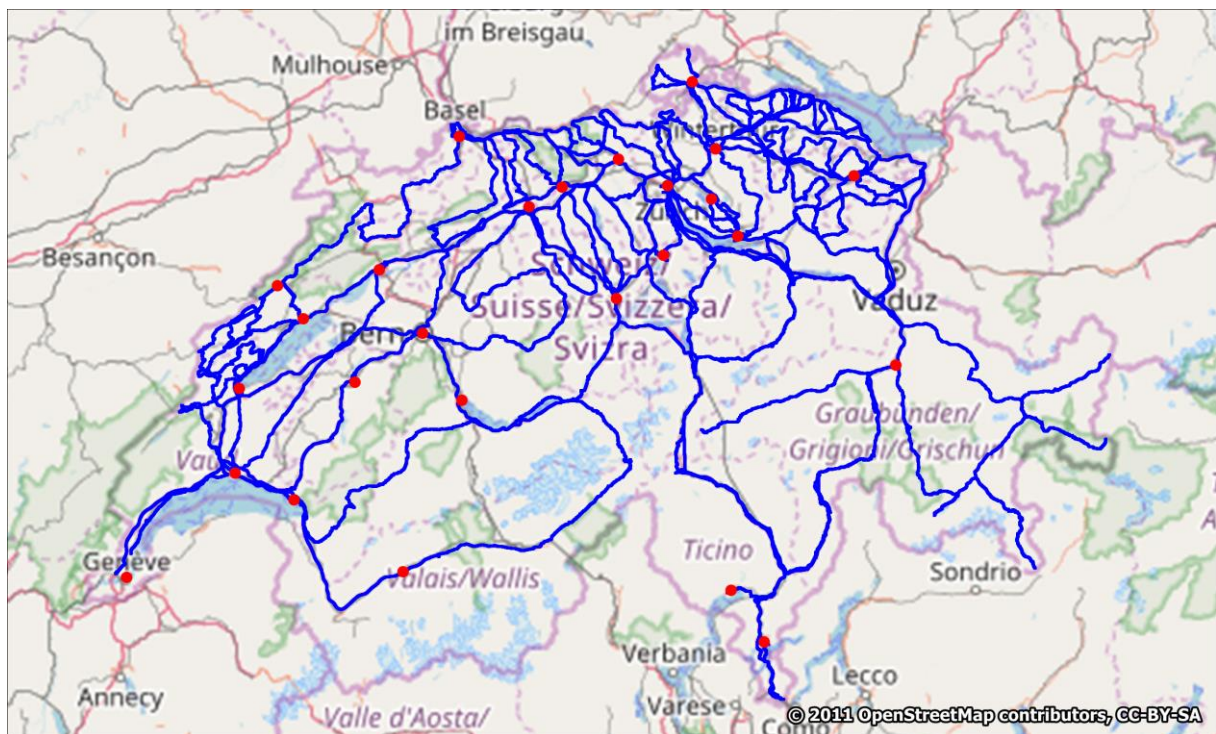
How the survey was conducted

The benchmark test was conducted by two measurement cars equipped with Rohde & Schwarz Benchmarker II systems. Sony XZ terminals were used to test data services and Samsung Galaxy S7 terminals were used to test voice services. We used commercially available SIM cards of all three operators. Data tests were carried out using a server located at an independent Internet Service Provider in Switzerland. Measurement cars were also equipped with radio scanners to measure the radio signal strength of 2G, 3G and 4G.

Measurements were performed in October and November 2017. More than 8,500 test calls were made for each of the tested operators. Assessing data services, we carried out more than 35,000 tests for each operator.

Test results

The results of the test show outstanding performance of mobile networks in Switzerland. Both Swisscom and Sunrise achieved the score that exceeds by far test results that we carried out in other countries. The score of Salt is lower, but compared with other countries it is still a respectable result.

In calculating the overall score, we evaluated 4 main categories of services:

- Voice services affecting 40% of the overall score
- Data services affecting 40% of the overall score
- Web browsing with 10% of impact on the overall score
- YouTube with 10% impact on the overall score.

Overall test results:

Swisscom	Sunrise	Salt
86.81	85.31	57.23

Swisscom, with the total score of 86.81 is the winner of our test, followed closely by Sunrise with the result of 85.31. Salt achieved the score of 57.23 and the significant gap compared to first two operators is caused mainly by the lower evaluation of voice services.

Comparing the results of Swisscom and Sunrise we can see the higher overall score of Swisscom is achieved thanks to the superior performance of data services. Sunrise, although achieving lower overall score, has managed to score a higher result in the voice category compared to Swisscom.

Chart 2 – Overall test results, breakdown of the score
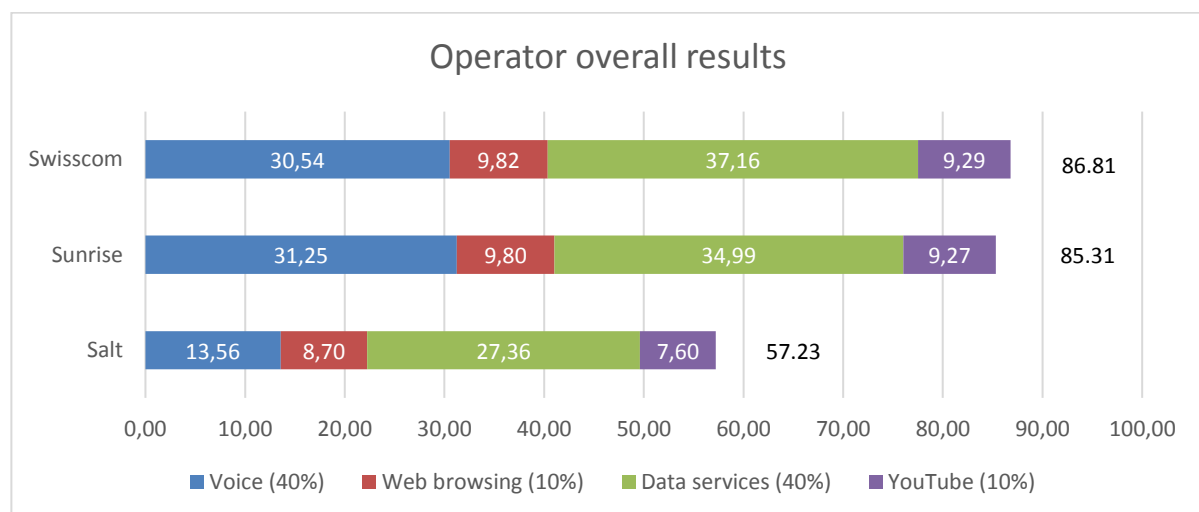
Voice services

The Voice services results show a positive impact on quality of Voice over LTE (VoLTE) technology. In Switzerland both Swisscom and Sunrise have deployed VoLTE in their networks and furthermore have enabled Enhanced Voice Services (EVS). This means both operators now offer superior HD voice quality compared to HD voice in 3G networks. Salt has not yet deployed VoLTE in its network and this is one of the reasons behind the much lower score of Salt in the voice services category.

The table below is a summary of the most important voice services results showing average KPI values for the whole of the country.

Table 1 – main KPIs of voice services

	Swisscom	Sunrise	Salt
Call Setup			
Call Setup Success Rate	99.26%	99.46%	97.97%
Average Call Setup time (sec)	5.37	4.79	8.95

|	Swisscom	Sunrise	Salt
Speech quality			
Average MOS score	4.15	4.19	3.48

MOS represents an evaluation of voice speech quality as perceived by a user. The score can range from 1.0 to 5, with 5 being the best possible result. For both Swisscom and Sunrise, continuous LTE coverage meant that almost all voice tests were completed as VoLTE calls. This led to shorter call setup times and higher MOS scores compared to Salt. Lower call setup success rate for Salt also impacted the overall voice score for this operator. Sunrise achieved the highest score in voice category, outperforming Swisscom in shorter call setup times and achieving slightly higher average MOS scores which correspond to a slightly better overall speech quality.

Data services

The results of the data services tests show close to 100% coverage of LTE in our survey throughout the country. LTE advanced (LTE+) is widely used in Switzerland. It allows the aggregation of more than one LTE radio band and thus achieves higher throughput rates of data transmission.

The Swisscom network has a very extensive coverage of two bands and three bands LTE, which allows it to offer the best performance of LTE+ services to its customers. In our survey 74.5% of data download tests in the Swisscom network utilised LTE+ technology. Most of these were achieved in three bands LTE - 60.6% of total tests (see Chart 3 below). In the Sunrise network, the coverage of three bands LTE is far below that which Swisscom has deployed; however, two bands LTE coverage is on a high level. For Salt, two bands LTE is the highest data technology offered to its customers.

Chart 3 – Breakdown of radio technology usage
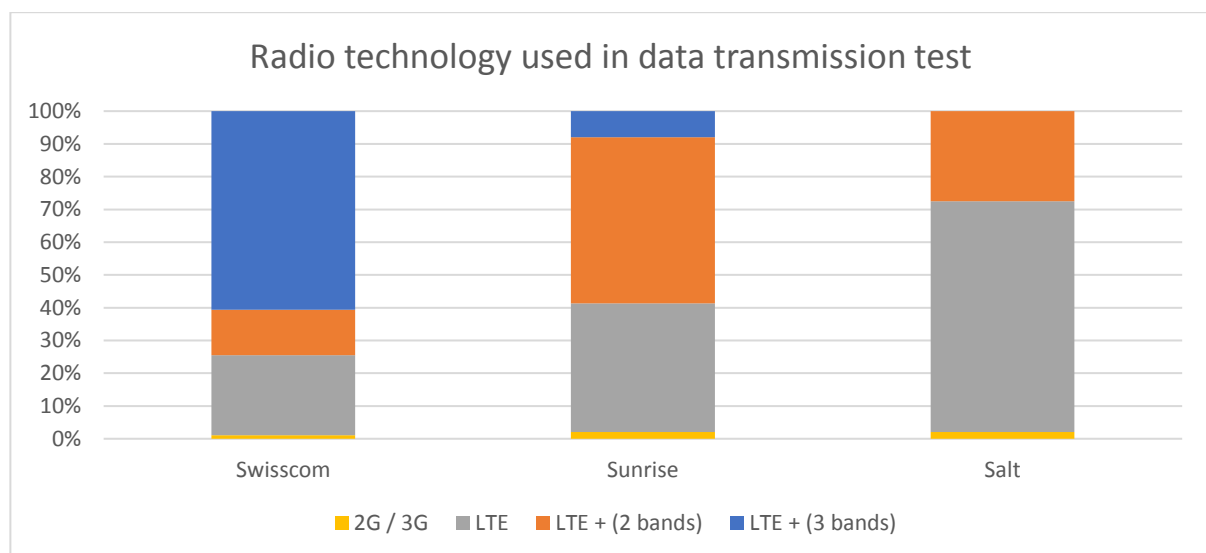
The superior coverage of LTE+ translates into higher throughput rates of data services as shown in the picture below.

Chart 4 – Distribution of average throughput

Distribution of average throughput in data download test
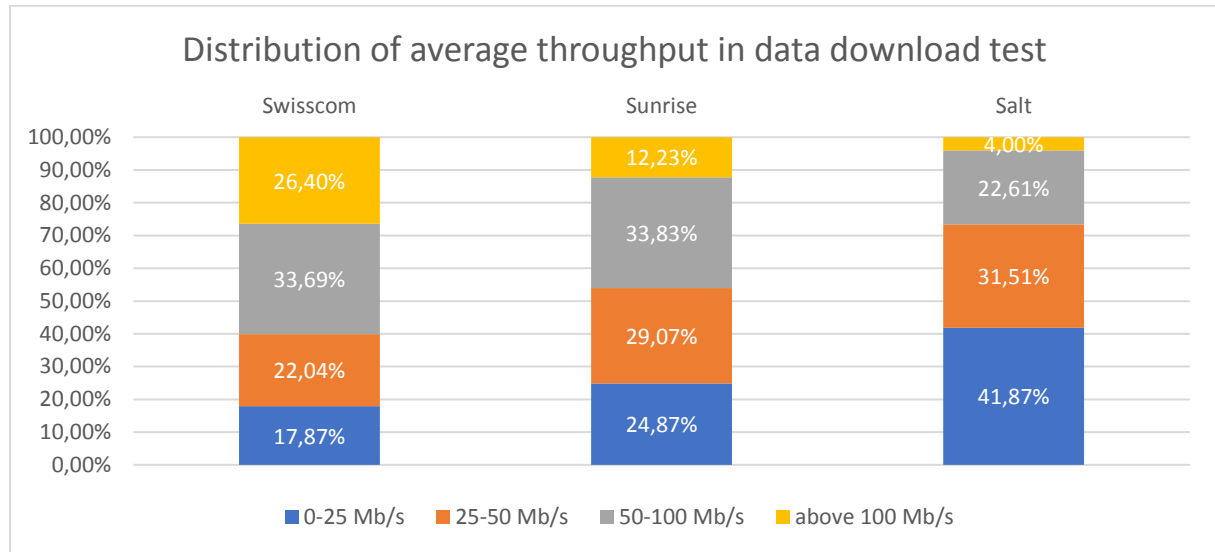
To highlight the data transfer results achieved by mobile operators in Switzerland, we show below the average and maximum data throughput rates achieved in the data download and upload tests throughout the country.

Table 2 – main KPIs of data services

	Swisscom	Sunrise	Salt
Data download test (Mb/s)			
Average throughput	73.9	54.5	36.7
Maximum throughput	337.2	269.1	192.2

	Swisscom	Sunrise	Salt
Data upload test (Mb/s)			
Average throughput	31.9	29.5	26.5
Maximum throughput	48.4	48.0	47.1

It is truly remarkable for Swisscom to achieve an average download throughput in excess of 100 Mb/s in 26.4% of all the tests and to actually achieve a maximum data rate throughput of 337.2 Mb/s.

Web browsing and YouTube

The web browsing test was conducted by accessing both international and local Swiss web pages from test terminals. The main KPIs measured were the success rate of loading a complete web page and the time it took to load the web page. The YouTube test was conducted by requesting and playing a YouTube test clip whilst requesting the highest possible video resolution. The main KPIs that were measured were the success rate of loading and playing out a video clip and the respective VMOS score. VMOS represents an evaluation of video quality as perceived by a user. The score can range from 1.0 to 5, with 5 being the best possible result.

In web browsing and YouTube categories, the results of operators are very close to each another. The score of Swisscom and Sunrise are the same for the YouTube category and are only marginally different in web browsing. The results of Salt in both the categories are much closer to the two leading operators. Both web browsing and YouTube currently do not require high throughput rates for good user experience. This might change in the future as mobile networks are getting more congested with ever increasing video traffic. The most important KPIs for web browsing and YouTube are presented in tables below.

Table 3 – main KPIs of web browsing and YouTube

	Swisscom	Sunrise	Salt
Web browsing			
Web browsing success rate	99.46%	99.65%	98.89%
Time to load the webpage	2.51	2.54	3.28

	Swisscom	Sunrise	Salt
YouTube			
YouTube success rate	99.40%	99.34%	97.95%
Average VMOS score	4.18	4.18	4.14

About Systemics Group

The Systemics Group is a leading provider of independent Quality of Experience benchmarking services for mobile operators and regulators. We have conducted national benchmarking campaigns of mobile networks in more than 20 countries.

The benchmarking tests that we perform are carried out using a fleet of 50+ Diversity Benchmarker II Rohde & Schwarz measurement systems with over 30 vehicles and Systemics has recently become the first certified partner of Rohde & Schwarz in the mobile testing domain.

The Systemics Group comprises of Systemics-PAB, Nexus Telecom, Commsquare and NetQPro allowing us to offer a unique set of monitoring and testing tools for both mobile and fixed networks. We operate globally with offices and subsidiaries in Poland, Germany, Switzerland, Belgium, Greece, Ireland, United Kingdom, Canada, Russia, Jordan and Malaysia.

Our mission is to assist customers understand and address the variety of issues affecting quality in mobile and fixed telecommunication networks. Expert know-how developed over many years, combined with large scale operations and efficient cloud based data post-processing, allows us unparalleled flexibility in conducting high quality large benchmarking projects in multiple countries world-wide.