



**SYSTEMICS PAB**  
Network Quality Experts

# CERTIFICATE

**Systemics-PAB Sp. z o.o.**

Wolodyjowskiego 46B, 02-724 Warsaw, Poland

hereby certifies that

**Orange Romania S.A.**

Europe House, Bulevardul Lascăr Catargiu, nr 47-53, Sector 1, Bucuresti, România

received the title for

## THE BEST ROMANIAN MOBILE NETWORK IN THE TEST

This certificate is based on the results of measurement campaign, which was carried out by Systemics-PAB between October and November 2018. The measurement campaign assessed the quality of experience of mobile services in Romania. We also tested Carrier Aggregation coverage for all operators in Romania: Orange Romania S.A. (Orange), RCS & RDS S.A. (Digi), Telekom Romania Mobile Communications S.A. (Telekom) and Vodafone Romania S.A. (Vodafone). Systemics-PAB performed the benchmarking measurements throughout Romania covering 22 largest cities as measured by population, and national roads across the country. The measurements were carried out using SwissQual Diversity system equipped with Samsung Galaxy S8 terminals for voice test and Sony Xperia XZ2 terminals for data tests. For the coverage assessment Rohde and Schwarz radio scanners were used. Voice tests were done in mobile to mobile mode. The assessment of quality of services was done using international standards and Systemics-PAB expert knowledge.

The results of the measurements showed Orange as operator achieving the highest overall results for the quality of experience of mobile services in Romania.

Orange Romania S.A. can therefore be certified as the operator with the highest overall quality of mobile services in the test.

Certificate Date: 29.11.2018



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Jan Kondej  
Chief Technical Officer

## Test Route



## Measurement Setup

	Voice/ VoLTE	Smartphone
<b>Device</b>	Samsung Galaxy S8 cat. 16 (SM-G950F) LTE / HSPA+ DC / HSUPA 5.76 attenuation - 7dB	Sony Xperia XZ2 cat. 16 (H8216) LTE / HSPA+ DC / HSUPA 5.76 attenuation - 7dB
<b>Test Cases</b>	<b>Mobile-to-Mobile 3G - 4G preferred:</b> 115 sec call window 85 sec call duration 15 sec call setup time out HTTP Transfer 100kB Data traffic injection (1 test per call window)	<b>Data 4G preferred:</b> HTTP UL and DL stress test 10s HTTP 1MB UL and 3MB DL fixed file transfer Web Browsing - ETSI Ref. Page Live Web Browsing 4 pages (http & https) YouTube Streaming  <b>Data 3G preferred:</b> HTTP UL and DL stress test 10s
<b>Mobility and Route Types</b>	100% Drivetest Big cities, small cities and connecting roads	
<b>Samples</b>	~3640 voice calls per Operator	~2890 data sessions per Operator
<b>Dates</b>	29.10.2018 - 21.11.2018	

## Scoring Results

Type	Units	Orange	Operator 2	Operator 3	Operator 4
Voice	[%]	98.47%	80.35%	87.61%	88.25%
Data	[%]	97.36%	71.98%	94.89%	95.07%
Overall	[%]	97.81%	75.33%	91.98%	92.34%