

CERTIFICATE

P3 communications GmbH

Am Kraftversorgungsturm 3, D-52070 Aachen, Germany

hereby certifies that



vodafone

Vodafone Qatar

Office 210, TECH2, Qatar Science and Technology Park, DOHA, QATAR

achieved „**Best in Test**“ with a

Total Score of **836 of 1000**

in the **Mobile Benchmark Qatar 04/2017**.

(Score 347 of 400 in Voice, Score 489 of 600 in Data Services)



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*Head of Network Testing
& Benchmarking*
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Measurement Setup

	Voice	Data
Device	Samsung Galaxy S5 Cat4 P3 attenuator	Samsung Galaxy Note4 Cat6 P3 attenuator
Test Cases	<p>Mobile-to-Mobile</p> <p>Mobile-to-Mobile (M2M) Side1 (4G preferred) to Side2 (3G preferred) Side1 (4G preferred) to Side2 (4G preferred) 115 sec call window 70 sec call duration 15 sec call setup timeout Data traffic injection on both sides (100KB) (1 download per call window)</p>	<p>4G CA preferred</p> <p>HTTP DL datastream 10s HTTP UL datastream 10s HTTP 3MB DL fixed file transfer HTTP 1MB UL fixed file transfer Web Browsing - Kepler ETSI Ref. Page 10 Live web pages (50% http, 50% https) YouTube video streaming - 45s</p>
Mobility and Route Types	<p>100% Drivetest 61% in Cities, 20% in Towns and 19% on Roads</p>	
Samples	~ 3000 per Operator	~ 1000 per Operator
Dates	<p>8 measurement days April 6th – April 15th, 2017</p>	

Testing Route



Score Points and Breakdown

The following table indicates the score points achieved by the networks under test in the modules “Voice” and “Data Services”.

Module	Infrastructure	Max.	Vodafone	Operator 2
Voice	Total	400	347	301
	Overall	260	87%	75%
Data	Total	600	489	488
	Overall	390	81%	81%
TOTAL		1.000	836	789

Shown voice, data and total scores are rounded

The following table indicates the achieved percentage of the maximum score in each of the different Data Service Group.

Data	Service Group	Max.	Vodafone	Operator 2
Overall	Web Browsing	210,0	74%	75%
	File Download	120,0	78%	77%
	File Upload	120,0	89%	86%
	YouTube	150,0	89%	91%

Voice KPI Overview

The following table indicates the achieved values of all networks under test in each of the relevant Voice Key Performance Indicators (KPIs).

Voice M2M	Kpi Name	Unit	Vodafone	Operator 2
Overall	Qualified	[%]	99,0	97,3
	Call Setup Time	[s]	6,2	7,3
	AVG Speech Quality	[MOS-LQO]	3,7	3,8

Data KPI Overview

The following table indicates the achieved values of all networks under test in each of the relevant Data Key Performance Indicators (KPIs).

Data Cities	Kpi Name	Unit	Vodafone	Operator 2
HTTP live page DL	Qualified	[%]	98,6	98,6
	AVG Session Time	[s]	4,8	4,7
HTTP static page DL	Qualified	[%]	99,2	99,3
	AVG Session Time	[s]	3,9	3,8
HTTP file DL 3MB	Qualified	[%]	99,6	99,9
	AVG Session Time	[s]	4,0	3,4
	90% faster than	[kbit/s]	5122	4583
	10% faster than	[kbit/s]	9677	15443
HTTP file UL 1MB	Qualified	[%]	99,6	100,0
	AVG Session Time	[s]	2,5	3,0
	90% faster than	[kbit/s]	5281	2533
	10% faster than	[kbit/s]	14572	4039
HTTP DL FDTT 10s	Qualified	[%]	99,5	99,5
	AVG throughput	[kbit/s]	30250	30977
	90% faster than	[kbit/s]	9802	5787
	10% faster than	[kbit/s]	52617	65453
HTTP UL FDTT 10s	Qualified	[%]	99,7	99,9
	AVG throughput	[kbit/s]	23675	17252
	90% faster than	[kbit/s]	5624	8552
	10% faster than	[kbit/s]	39097	24179
YouTube	Qualified	[%]	99,3	99,7
	Start Time	[s]	2,1	2,3
	Playouts w/o interruptions	[%]	99,9	99,9
	AVG resolution	[p]	601,4	606,9