

CERTIFICATE

P3 communications GmbH

hereby certifies that



Safaricom Limited

P. O. Box 66827, 00800 Nairobi

achieved „**Best in Test**“ with a
Total Score of **395 of 1000**

in the **Mobile Benchmark Kenya 04/2015.**

(Score 246 of 400 in Telephony, Score 149 of 600 in Data Services)

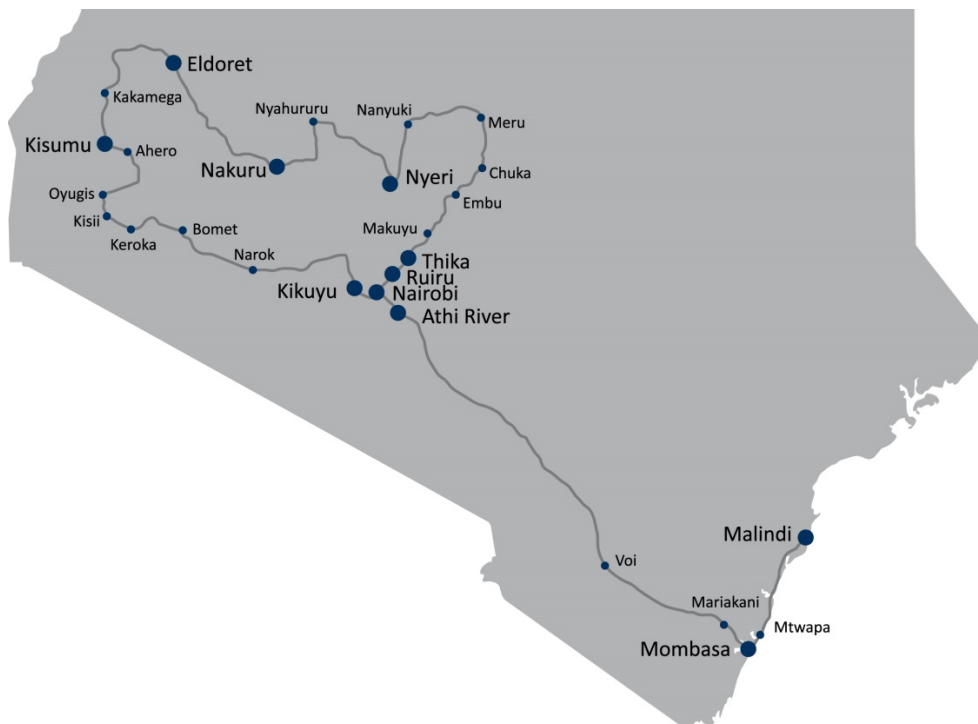


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*Head of Network Testing
& Benchmarking*
April 2015

Measurement Setup

	Voice	Data
Device	Samsung Galaxy S4 LTE+ (GT-I9506) LTE / HSPA+ DC / HSUPA 5.76 12 dB attenuation for drivetest	Samsung Galaxy S4 LTE+ (GT-I9506) LTE / HSPA+ DC / HSUPA 5.76 12 dB attenuation for drivetest
Test Cases	Mobile-to-Mobile 3Gpref (MRAB) to 3G pref 70 sec call duration 115 sec call window multiRAB 1:1 traffic injection all operators set to 3G pref	HTTP DL stress test 10s HTTP DL stress test 3MB HTTP UL stress test 10s HTTP UL stress test 1MB Web Browsing-ETSI Ref. Page, 4 live websites YouTube SD Video-30s clip YouTube HD Video-30s clip
Mobility and Route Types	100% Drivetest 80% in Cities and 20% on Transfer Major and Small cities and connecting roads	
Samples	3Gpref: ~ 5350 per Operator	3Gpref ~ 1800 per Operator
Dates	27 measurement days, March 21th - April 24th, 2015	

Testing Route



Score Points and Breakdown

The following table indicates the score points achieved by the networks under test in the modules “Telephony” and “Data Services” as well as the breakdown of achieved points in the geographical categories “Big Cities” and “Connecting Roads”.

Module	Infrastructure	Max.	Safaricom	Operator 2	Operator 3
Voice	Total	400	246	100	255
	big cities	260	63%	21%	66%
	small cities and connecting roads	140	58%	33%	60%
Data	Total	600	149	69	110
	big cities	390	28%	13%	21%
	small cities	90	23%	6%	13%
	connecting roads	120	16%	12%	13%
TOTAL		1.000	395	169	365

The following table indicates the achieved percentage of the maximum score in each of the different data services.

Data	Service Group	Max.	Safaricom	Operator 2	Operator 3
big cities	Web Browsing	136,5	16,8%	9,3%	13,2%
	File Download	78,0	60,8%	24,7%	42,8%
	File Upload	78,0	18,1%	8,6%	22,4%
	YouTube	97,5	25,0%	10,4%	14,0%
small cities	Web Browsing	31,5	15,9%	5,8%	15,3%
	File Download	18,0	48,5%	6,5%	7,4%
	File Upload	18,0	15,6%	5,2%	6,5%
	YouTube	22,5	18,1%	7,8%	19,6%
connecting roads	Web Browsing	42,0	16,7%	8,1%	16,2%
	File Download	24,0	16,6%	9,4%	8,7%
	File Upload	24,0	12,2%	6,8%	8,5%
	YouTube	30,0	17,4%	23,7%	16,9%

Voice KPI Overview

The following table indicates the achieved values of all networks under test in each of the relevant Telephony Key Performance Indicators (KPIs) for the geographical categories “Big Cities” and “Connecting Roads”.

Voice M2M	Kpi Name	Unit	Safaricom	Operator 2	Operator 3
big cities	Qualified	[%]	94,0%	85,4%	94,9%
	Call Setup Time	[s]	5,9	6,1	6,8
	AVG Speech Quality	[MOS-LQO]	3,0	2,7	3,2
small cities and connecting roads	Qualified	[%]	88,0%	80,2%	89,8%
	Call Setup Time	[s]	6,1	7,1	7,5
	AVG Speech Quality	[MOS-LQO]	2,9	2,5	2,6

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) for the geographical categories “Big Cities” and “Connecting Roads”.

Data big cities	Kpi Name	Unit	Safaricom	Operator 2	Operator 3
http Live Page DL	Qualified	[%]	59,2%	1,3%	60,2%
	AVG Session Time	[s]	5,9	7,6	6,6
http Static Page DL	Qualified	[%]	80,0%	36,3%	83,5%
	AVG Session Time	[s]	4,6	6,1	5,2
http file DL 3MB	Qualified	[%]	97,4%	87,8%	92,4%
	AVG Session Time	[s]	8,4	10,9	11,8
	90% faster than	[kbit/s]	1340	1163	1113
	10% faster than	[kbit/s]	7366	7351	5701
http file UL 1MB	Qualified	[%]	77,5%	71,0%	79,0%
	AVG Session Time	[s]	7,3	9,9	8,2
	90% faster than	[kbit/s]	591	521	627
	10% faster than	[kbit/s]	2342	1640	1443
http DL FDTT 10s	Qualified	[%]	98,7%	91,7%	96,4%
	AVG throughput	[kbit/s]	6023	2584	3537
	90% faster than	[kbit/s]	1316	454	868
	10% faster than	[kbit/s]	11022	5302	6644
http UL FDTT 10s	Qualified	[%]	90,7%	87,7%	93,1%
	AVG throughput	[kbit/s]	1388	944	1016
	90% faster than	[kbit/s]	217	221	257
	10% faster than	[kbit/s]	2618	1950	1550
Youtube SD	Qualified	[%]	94,2%	18,3%	88,5%
	Start Time	[s]	3,7	10,0	5,0
	Playouts w/o interruptions	[%]	97,5%	99,3%	97,5%
Youtube HD	Qualified	[%]	85,6%	37,0%	65,9%
	Start Time	[s]	4,3	7,5	6,8
	Playouts w/o interruptions	[%]	90,0%	80,4%	87,4%

Data small cities	Kpi Name	Unit	Safaricom	Operator 2	Operator 3
http Live Page DL	Qualified	[%]	57,7%	1,6%	16,9%
	AVG Session Time	[s]	6,0	8,5	6,2
http Static Page DL	Qualified	[%]	75,8%	26,7%	22,7%
	AVG Session Time	[s]	4,7	5,6	4,7
http file DL 3MB	Qualified	[%]	93,1%	67,0%	24,3%
	AVG Session Time	[s]	10,1	10,4	8,9
	90% faster than	[kbit/s]	1406	1244	2090
	10% faster than	[kbit/s]	6168	7585	5871
http file UL 1MB	Qualified	[%]	78,4%	53,6%	25,7%
	AVG Session Time	[s]	6,8	8,9	7,4
	90% faster than	[kbit/s]	682	535	843
	10% faster than	[kbit/s]	2039	1906	1421
http DL FDTT 10s	Qualified	[%]	97,5%	68,2%	56,6%
	AVG throughput	[kbit/s]	4625	3074	2195
	90% faster than	[kbit/s]	937	640	143
	10% faster than	[kbit/s]	8989	5894	6224
http UL FDTT 10s	Qualified	[%]	89,1%	66,7%	44,9%
	AVG throughput	[kbit/s]	1392	1066	738
	90% faster than	[kbit/s]	222	245	71
	10% faster than	[kbit/s]	2280	1927	1523
Youtube SD	Qualified	[%]	89,7%	17,3%	22,9%
	Start Time	[s]	3,8	9,0	4,1
	Playouts w/o interruptions	[%]	99,3%	97,0%	96,1%
Youtube HD	Qualified	[%]	68,6%	31,4%	19,5%
	Start Time	[s]	4,3	6,6	5,4
	Playouts w/o interruptions	[%]	81,4%	86,2%	97,6%

Data connecting routes	Kpi Name	Unit	Safaricom	Operator 2	Operator 3
http Live Page DL	Qualified	[%]	40,8%	0,6%	17,3%
	AVG Session Time	[s]	6,0	8,0	6,1
http Static Page DL	Qualified	[%]	57,1%	18,7%	25,2%
	AVG Session Time	[s]	4,9	6,0	5,1
http file DL 3MB	Qualified	[%]	71,3%	44,3%	27,8%
	AVG Session Time	[s]	10,2	10,1	9,5
	90% faster than	[kbit/s]	1303	1483	1506
	10% faster than	[kbit/s]	6588	7542	6112
http file UL 1MB	Qualified	[%]	57,1%	36,4%	26,5%
	AVG Session Time	[s]	7,1	9,5	7,7
	90% faster than	[kbit/s]	612	500	733
	10% faster than	[kbit/s]	2371	1921	1451
http DL FDTT 10s	Qualified	[%]	80,3%	47,2%	64,8%
	AVG throughput	[kbit/s]	4381	3147	1769
	90% faster than	[kbit/s]	538	409	145
	10% faster than	[kbit/s]	9371	6833	6084
http UL FDTT 10s	Qualified	[%]	77,1%	46,5%	48,5%
	AVG throughput	[kbit/s]	1272	903	686
	90% faster than	[kbit/s]	113	135	73
	10% faster than	[kbit/s]	2758	1919	1513
Youtube SD	Qualified	[%]	73,2%	6,1%	25,2%
	Start Time	[s]	4,1	9,6	4,8
	Playouts w/o interruptions	[%]	98,8%	100,0%	93,8%
Youtube HD	Qualified	[%]	60,3%	17,6%	20,6%
	Start Time	[s]	4,5	6,4	6,2
	Playouts w/o interruptions	[%]	87,5%	94,9%	90,9%