

CERTIFICATE

P3 communications GmbH

hereby certifies that



T-Mobile Polska S.A.

Marynarska 12, 02-674 Warszawa

achieved „**Best in Test**“ with a
Total Score of **812 of 1000**

in the **Mobile Benchmark Poland 05/2015.**

(Score 318 of 400 in Telephony, Score 493 of 600 in Data Services)

P3 | communications



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Measurement Setup

	Voice	Data
Device	Samsung Galaxy S5 Cat6 (SM-G901F) LTE / HSPA+ DC / HSUPA 5.76 P3 attenuation solution	Samsung Galaxy S5 Cat6 (SM-G901F) LTE / HSPA+ DC / HSUPA 5.76 P3 attenuation solution
Test Cases	Mobile-to-Mobile 4Gpref (MRAB) to 3G pref (MRAB) 90 sec call duration 140 sec call window multiRAB 1:1 traffic injection	HTTP DL stress test 10s HTTP DL user experience 3MB HTTP UL stress test 10s HTTP UL user experience 1MB Web Browsing-ETSI Ref. Page, 3 live websites YouTube SD Video-30s clip YouTube HD Video-30s clip
Mobility and Route Types	100% Drivetest 59% in Big cities and 41% in small cities and on transfer	
Samples	4Gpref to 3Gpref: ~7100 per Operator	4Gpref ~ 2500 per Operator and Service
Dates	17 days of measurement: April 16th - May 7th	

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.	T-Mobile	Operator 2	Operator 3	Operator 4
Voice	Total	400	318	319	309	302
	big cities	260	79%	81%	83%	73%
	small cities and connecting roads	140	80%	78%	67%	79%
Data	Total	600	493	439	456	481
	big cities	390	86%	75%	84%	84%
	small cities	90	83%	80%	82%	79%
	connecting roads	120	70%	63%	47%	70%
TOTAL		1.000	812	758	765	783

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 services.

Data	Service Group	Max.	T-Mobile	Operator 2	Operator 3	Operator 4
big cities	Web Browsing	136,5	89%	86%	89%	77%
	File Download	78,0	79%	79%	77%	84%
	File Upload	78,0	79%	74%	83%	83%
	YouTube	97,5	91%	57%	82%	93%
small cities	Web Browsing	31,5	85%	84%	89%	79%
	File Download	18,0	78%	80%	77%	78%
	File Upload	18,0	77%	73%	77%	81%
	YouTube	22,5	89%	80%	80%	78%
connecting roads	Web Browsing	42,0	71%	69%	46%	64%
	File Download	24,0	76%	74%	52%	79%
	File Upload	24,0	67%	62%	48%	76%
	YouTube	30,0	67%	45%	43%	67%

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	T-Mobile	Operator 2	Operator 3	Operator 4
big cities	Qualified	[%]	97,3%	97,5%	97,6%	95,9%
	Call Setup Time	[s]	6,6	6,4	5,5	5,6
	AVG Speech Quality	[MOS-LQO]	3,6	3,6	3,4	3,2
small cities and connecting roads	Qualified	[%]	94,9%	94,0%	90,3%	94,6%
	Call Setup Time	[s]	6,3	6,0	5,7	5,5
	AVG Speech Quality	[MOS-LQO]	3,4	3,4	3,2	3,1

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	T-Mobile	Operator 2	Operator 3	Operator 4
http Live Page DL	Qualified	[%]	98,7%	98,2%	98,7%	95,2%
	AVG Session Time	[s]	3,4	3,4	3,2	3,5
http Static Page DL	Qualified	[%]	99,5%	99,5%	98,9%	99,3%
	AVG Session Time	[s]	1,4	2,1	1,5	1,6
http file DL 3MB	Qualified	[%]	99,2%	99,6%	99,4%	99,7%
	AVG Session Time	[s]	2,4	2,7	3,1	2,0
	90% faster than	[kbit/s]	5707	6002	4211	8097
	10% faster than	[kbit/s]	28674	21220	27119	30651
http file UL 1MB	Qualified	[%]	99,2%	98,8%	99,3%	98,8%
	AVG Session Time	[s]	1,8	2,9	1,5	1,9
	90% faster than	[kbit/s]	2575	1239	3699	2374
	10% faster than	[kbit/s]	10165	6369	9963	9852
http DL FDTT 10s	Qualified	[%]	99,5%	99,8%	99,7%	99,9%
	AVG throughput	[kbit/s]	18026	16667	14544	24075
	90% faster than	[kbit/s]	6025	6494	3932	7875
	10% faster than	[kbit/s]	34176	29899	28647	46322
http UL FDTT 10s	Qualified	[%]	98,8%	99,5%	99,6%	99,9%
	AVG throughput	[kbit/s]	14310	10443	12953	20757
	90% faster than	[kbit/s]	3354	1184	5157	2982
	10% faster than	[kbit/s]	20725	18451	19074	36185
Youtube SD	Qualified	[%]	98,9%	98,0%	99,6%	99,2%
	Start Time	[s]	1,1	1,7	1,2	1,4
	Playouts w/o interruptions	[%]	99,9%	99,7%	99,9%	99,9%
Youtube HD	Qualified	[%]	98,7%	89,4%	97,1%	99,3%
	Start Time	[s]	1,7	2,1	1,7	1,6
	Playouts w/o interruptions	[%]	99,5%	94,5%	96,3%	99,7%

Data small cities	Kpi Name	Unit	T-Mobile	Operator 2	Operator 3	Operator 4
http Live Page DL	Qualified	[%]	97,8%	98,0%	98,8%	95,8%
	AVG Session Time	[s]	3,6	3,7	3,3	3,6
http Static Page DL	Qualified	[%]	99,4%	99,4%	98,6%	99,7%
	AVG Session Time	[s]	1,5	2,3	1,5	1,7
http file DL 3MB	Qualified	[%]	99,4%	100,0%	99,4%	98,5%
	AVG Session Time	[s]	2,5	2,9	3,1	3,6
	90% faster than	[kbit/s]	5336	5521	4041	5217
	10% faster than	[kbit/s]	26172	19769	26144	28402
http file UL 1MB	Qualified	[%]	99,4%	98,5%	98,9%	100,0%
	AVG Session Time	[s]	2,3	3,3	1,9	2,3
	90% faster than	[kbit/s]	1756	1177	2382	1812
	10% faster than	[kbit/s]	8954	6178	9709	9122
http DL FDTT 10s	Qualified	[%]	99,4%	100,0%	99,7%	100,0%
	AVG throughput	[kbit/s]	16379	16003	15294	18915
	90% faster than	[kbit/s]	5711	6357	3553	4213
	10% faster than	[kbit/s]	29065	28972	29285	37921
http UL FDTT 10s	Qualified	[%]	99,1%	99,4%	98,9%	99,7%
	AVG throughput	[kbit/s]	10935	8432	10935	15328
	90% faster than	[kbit/s]	1472	1262	2363	1436
	10% faster than	[kbit/s]	19816	17690	18784	30145
Youtube SD	Qualified	[%]	99,4%	99,7%	99,4%	98,8%
	Start Time	[s]	1,3	1,9	1,3	1,4
	Playouts w/o interruptions	[%]	99,7%	100,0%	99,7%	99,4%
Youtube HD	Qualified	[%]	98,3%	96,4%	95,7%	93,8%
	Start Time	[s]	1,7	2,2	1,7	1,7
	Playouts w/o interruptions	[%]	98,8%	96,9%	97,3%	99,7%

Data connecting routes	Kpi Name	Unit	T-Mobile	Operator 2	Operator 3	Operator 4
http Live Page DL	Qualified	[%]	90,7%	90,8%	79,9%	86,8%
	AVG Session Time	[s]	4,1	4,2	3,7	4,1
http Static Page DL	Qualified	[%]	93,8%	93,1%	81,0%	94,4%
	AVG Session Time	[s]	1,9	2,6	1,8	2,0
http file DL 3MB	Qualified	[%]	97,8%	98,1%	87,9%	98,0%
	AVG Session Time	[s]	5,9	7,2	6,3	6,1
	90% faster than	[kbit/s]	1652	1580	1384	1627
	10% faster than	[kbit/s]	24024	16271	26359	28235
http file UL 1MB	Qualified	[%]	92,1%	90,6%	83,3%	95,1%
	AVG Session Time	[s]	3,6	4,8	3,2	3,5
	90% faster than	[kbit/s]	1010	810	1013	896
	10% faster than	[kbit/s]	8772	5618	9302	9174
http DL FDTT 10s	Qualified	[%]	97,4%	98,6%	88,2%	99,1%
	AVG throughput	[kbit/s]	13244	10693	12875	14456
	90% faster than	[kbit/s]	1724	1305	1188	1577
	10% faster than	[kbit/s]	28785	21780	30725	36023
http UL FDTT 10s	Qualified	[%]	94,8%	95,0%	87,0%	97,4%
	AVG throughput	[kbit/s]	7811	5677	8367	11466
	90% faster than	[kbit/s]	628	642	647	644
	10% faster than	[kbit/s]	19598	16141	18615	31785
Youtube SD	Qualified	[%]	95,3%	96,0%	84,7%	95,2%
	Start Time	[s]	1,9	2,5	2,1	1,9
	Playouts w/o interruptions	[%]	98,4%	98,3%	98,1%	98,0%
Youtube HD	Qualified	[%]	86,1%	73,9%	77,0%	86,3%
	Start Time	[s]	2,4	3,0	2,4	2,4
	Playouts w/o interruptions	[%]	96,0%	90,1%	95,9%	95,5%