

NET CHECK

MOBILE BENCHMARK MEASUREMENT REPORT Serbia, May-June 2022

With an overall score of **891 points**,

Telekom Srbija

achieved the highest score among competitors
and won the mobile network benchmark test

Score

891

out of 1000
in Total

Score

329

out of 350
in Voice
Services

Score

562

out of 650
in Data
Services





METHODOLOGY

NET CHECK pairs engineering expertise with statistically rigorous methodologies to design network performance tests, collect data that represents consumer experience.

The main focus of NET CHECK ranking is an assessment of the end-user experience.

We evaluate service accessibility, retain-ability, network quality, and performance.

Performance is assessed with extensive drive tests in big cities, medium cities, small cities, and connecting roads.

The winner is found by weighting all data.

DRIVE TEST ROUTE & MEASUREMENT SETUP

Start: May 12, 2022
End: June 2, 2022



	Voice	Data
DEVICE	Samsung S21+5G	
ROUTE TYPE	Cities and Connecting Roads	
SAMPLE COUNT	~ 4500 per operator	~ 65000 per operator
TEST CASE SCENARIO	Max Call Setup Time: 30 [s] Call duration: 120s [s] Call window: 155 [s] Call mode: VoLTE preferred Speech quality: POLQA WB Reference File: German Scenario: 2 x VoLTE preferred + 3xMultiRAB + 1 x What's app call	HTTP time based: FDTT DL 10 [s] /UL UDP FDTT 10 [s] HTTP file based FDFS DL/UL (10MB/5MB) Facebook YouTube 4K (livestream) Browsing static and dynamic (Kepler as static, and dynamic based on Alexa ranking) Interactivity (every 2 nd cycle)



OVERALL RESULTS

In overall ranking results

Telekom is the first ranked.

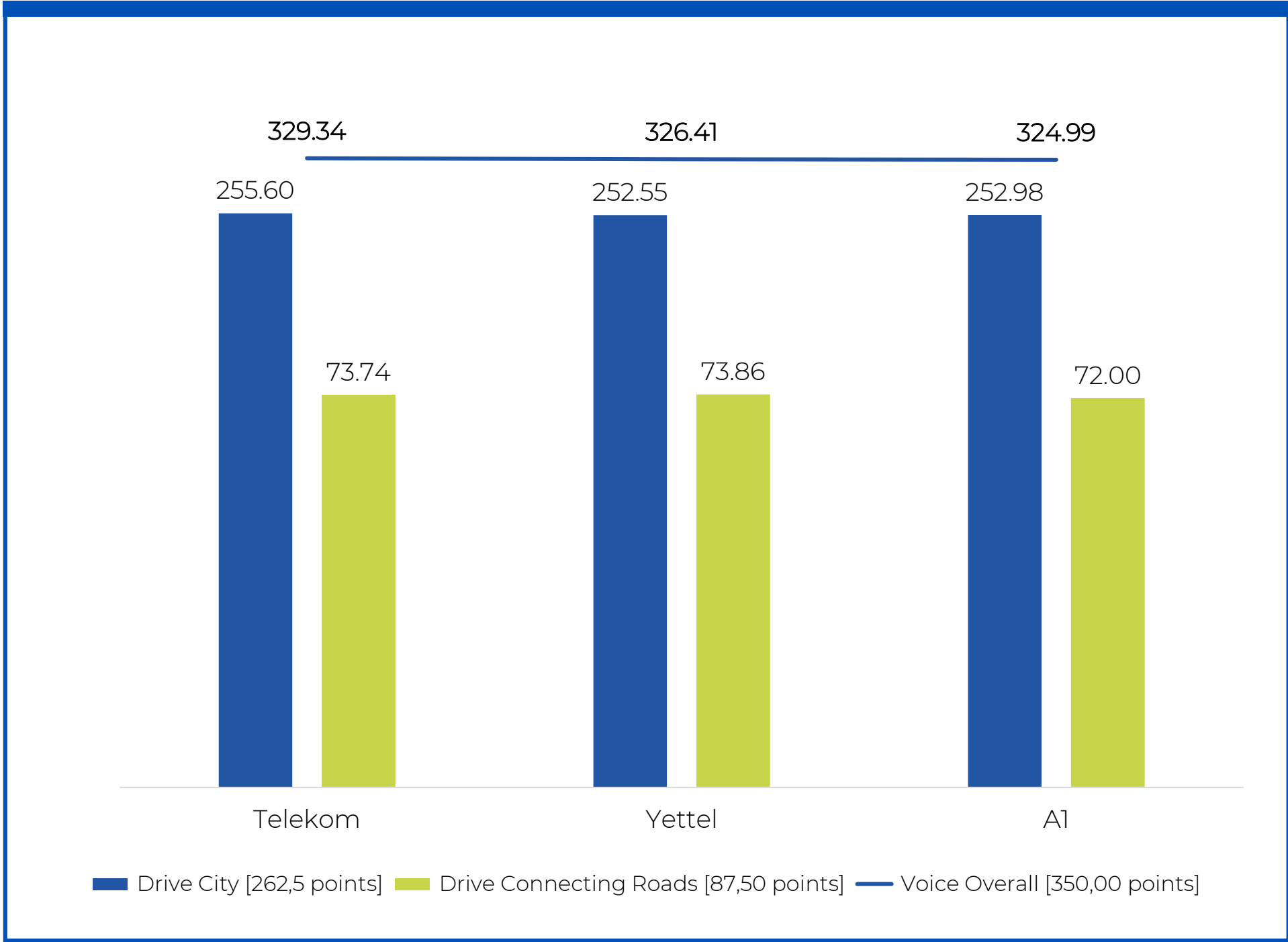
A1 is on the second place, while

Yettel takes the third position



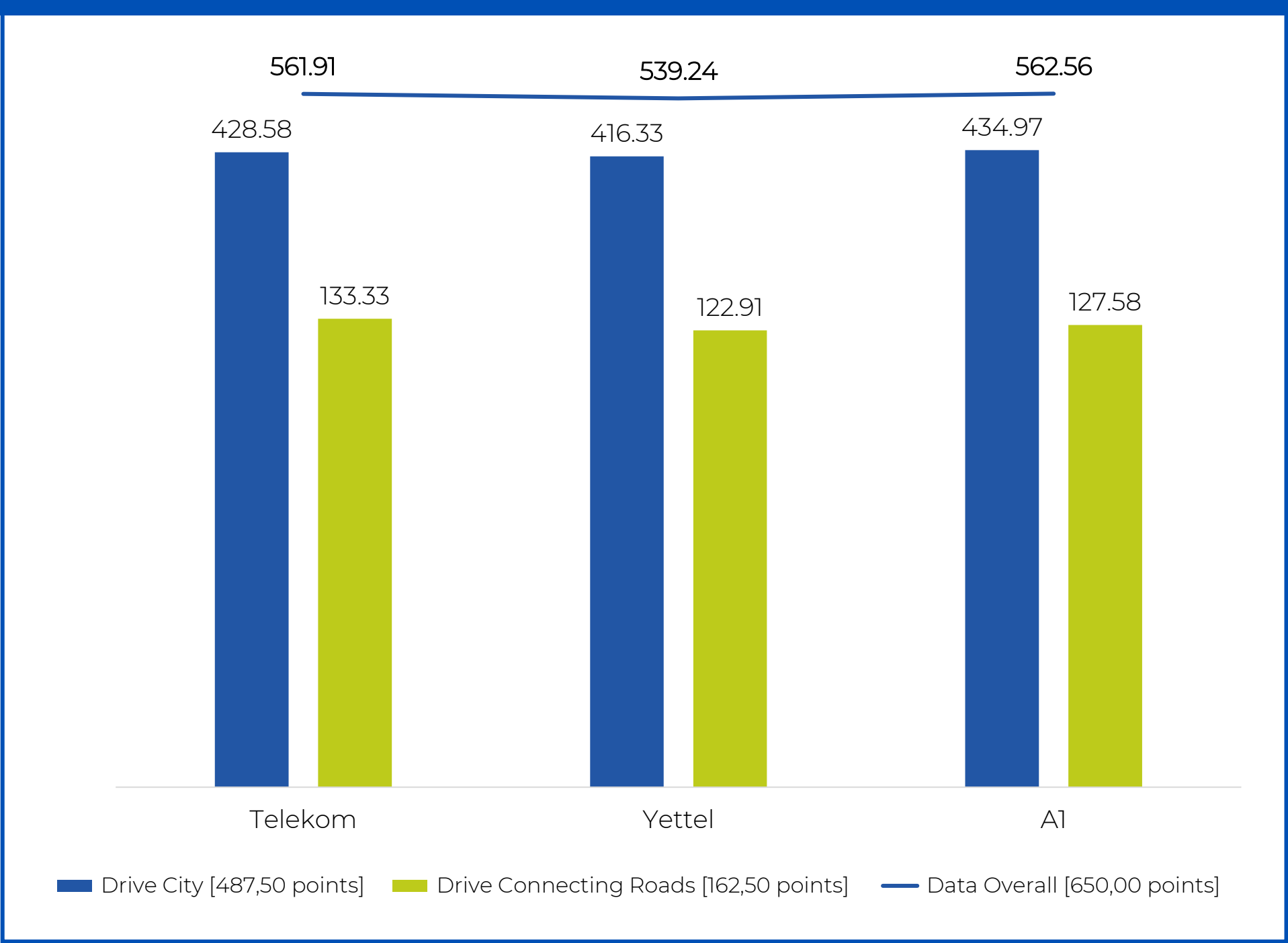
RANKING – VOICE SERVICE

Telekom is the first ranked in overall Voice evaluation



RANKING – DATA SERVICE

Telekom and A1 with close score on data service



DRIVE CITY & CONNECTING ROADS VOICE RESULTS



Ranking identifiers	Telekom	Yettel	A1	Telekom	Yettel	A1
CLASSIC CALLS	DRIVE CITY			DRIVE CONNECTING ROADS		
CALL SETUP SUCCESS RATIO	99.68%	99.64%	99.41%	98.74%	98.73%	97.80%
DROPPED CALL RATIO	0.18%	0.09%	0.14%	1.48%	1.15%	1.16%
AVG CALL SETUP TIME	3.20 [s]	3.47 [s]	3.39 [s]	3.40 [s]	3.61 [s]	3.49 [s]
CALL SETUP TIME > 15 s RATIO	0.18%	0.46%	0.14%	0.27%	0.82%	0.54%
POLQA < 1.6 RATIO	0.12%	0.10%	0.08%	0.81%	0.83%	0.72%
POLQA AVG MOS	4,52 [MOS]	4,53 [MOS]	4,31 [MOS]	4.38 [MOS]	4.42 [MOS]	4.37 [MOS]
DISTURBED_CALL_RATIO	0.00%	0.14%	0.05%	0.40%	0.87%	0.47%
IMPAIRED_CALL_RATIO	0.00%	0.05%	0.05%	0.07%	0.20%	0.20%
WHATSAPP CALLS						
CALL SETUP SUCCESS RATIO	99.79%	99.58%	99.59%	98.27%	99.09%	96.52%
DROPPED CALL RATIO	0.00%	0.43%	0.21%	0.29%	0.62%	0.60%
POLQA < 1.6 CRATION	0.12%	0.10%	0.08%	0.47%	0.72%	0.76%
POLQA AVG MOS	4,52 [MOS]	4,53 [MOS]	4,31 [MOS]	4.52 [MOS]	4.51 [MOS]	4.49 [MOS]
DISTURBED_CALL_RATIO	0.00%	0.21%	0.00%	0.58%	1.22%	2.03%
IMPAIRED_CALL_RATIO	0.00%	0.00%	0.00%	0.29%	0.61%	0.87%
MultiRAB Data						
Multi RAB DATA_SUCCESS_RATIO	99.68%	99.68%	99.60%	95.98%	97.78%	97.53%

DRIVE CITY & CONNECTING ROADS DATA RESULTS



Ranking identifiers	Telekom	Yettel	A1	Telekom	Yettel	A1
	DRIVE CITY			DRIVE CONNECTING ROADS		
HTTP TRANSFER - FDFS DL						
HTTP TRANSFER FDFS DL SUCCESS RATIO	99.57%	99.43%	99.50%	99.17%	98.33%	97.04%
HTTP TRANSFER - FDFS UL						
HTTP TRANSFER FDFS UL SUCCESS RATIO	99.13%	99.51%	99.30%	97.75%	98.08%	95.61%
HTTP TRANSFER - FDTT DL						
HTTP TRANSFER FDTT DL MDR P10	32.86 [Mbit/s]	27.91 [Mbit/s]	40.86 [Mbit/s]	18.98 [Mbit/s]	13.60 [Mbit/s]	25.65 [Mbit/s]
HTTP TRANSFER FDTT DL MDR AVG	81.31 [Mbit/s]	75.06 [Mbit/s]	112.75 [Mbit/s]	73.78 [Mbit/s]	56.08 [Mbit/s]	102.32 [Mbit/s]
HTTP_TRANSFER_FDTT_DL_MDR_P90	144.90 [Mbit/s]	133.96 [Mbit/s]	198.93 [Mbit/s]	140.83 [Mbit/s]	114.51 [Mbit/s]	189.11 [Mbit/s]
UDP - FDTT UL						
HTTP TRANSFER FDTT UL MDR P10	18.95 [Mbit/s]	19.59 [Mbit/s]	18.17 [Mbit/s]	4,07 [Mbit/s]	5,04 [Mbit/s]	5,93 [Mbit/s]
HTTP TRANSFER FDTT UL MDR AVG	41.02 [Mbit/s]	40.57 [Mbit/s]	52.43 [Mbit/s]	31,15 [Mbit/s]	30,61[Mbit/s]	33,89 [Mbit/s]
UDP_FDTT_UL_MDR_P90	58.25 [Mbit/s]	58.13 [Mbit/s]	78.91 [Mbit/s]	58.07 [Mbit/s]	52.57 [Mbit/s]	73.34 [Mbit/s]
HTTP BROWSING						
HTTP BROWSING SUCCESS RATIO	97.30%	97.37%	97.31%	97.19%	97.07%	97.44%
HTTP_BROWSING_TIME_TO_1MB	1213.68 [ms]	1452.53 [ms]	1222.62 [ms]	1258.99 [ms]	1576.31 [ms]	1324.20 [ms]
VIDEO STREAM						
VIDEO STREAM SUCCESS RATIO	99.64%	99.59%	99.34%	98.09%	97.87%	96.41%
VIDEO STREAM TTFP >= 10 s RATIO	0.00%	0.00%	0.04%	0.12%	0.32%	0.19%
VIDEO STREAM IRRITATING EXPIRIENCE RATIO	0.95%	1.32%	0.55%	1.10%	2.56%	0.81%
FACEBOOK - FDFS UL						
FACEBOOK FDFS UL SUCCESS RATIO	99.81%	99.60%	99.35%	99.59%	99.45%	98.64%
FACEBOOK FDFS UL TRANSFER TIME AVG	4.93 [s]	4.68 [s]	4.42 [s]	5.29 [s]	5.03 [s]	5.04 [s]
INTERACTIVITY						
INTERACTIVITY PACKET ERROR RATIO	0.54%	1.49%	1.26%	1.94%	2.94%	2.67%
INTERACTIVITY MEDIAN RTT [MS]	47.39 [ms]	54.38 [ms]	52.94 [ms]	44.71 [ms]	53.82 [ms]	53.80 [ms]

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