

NET CHECK

MOBILE BENCHMARK
MEASUREMENT REPORT
Bosnia and Herzegovina,
February 2023



With an overall score of **823 points**,

m:tel Bosnia and Herzegovina

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

Score
823
out of 1000
in Total

Score
291
out of 350
in Voice
Services

Score
532
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.

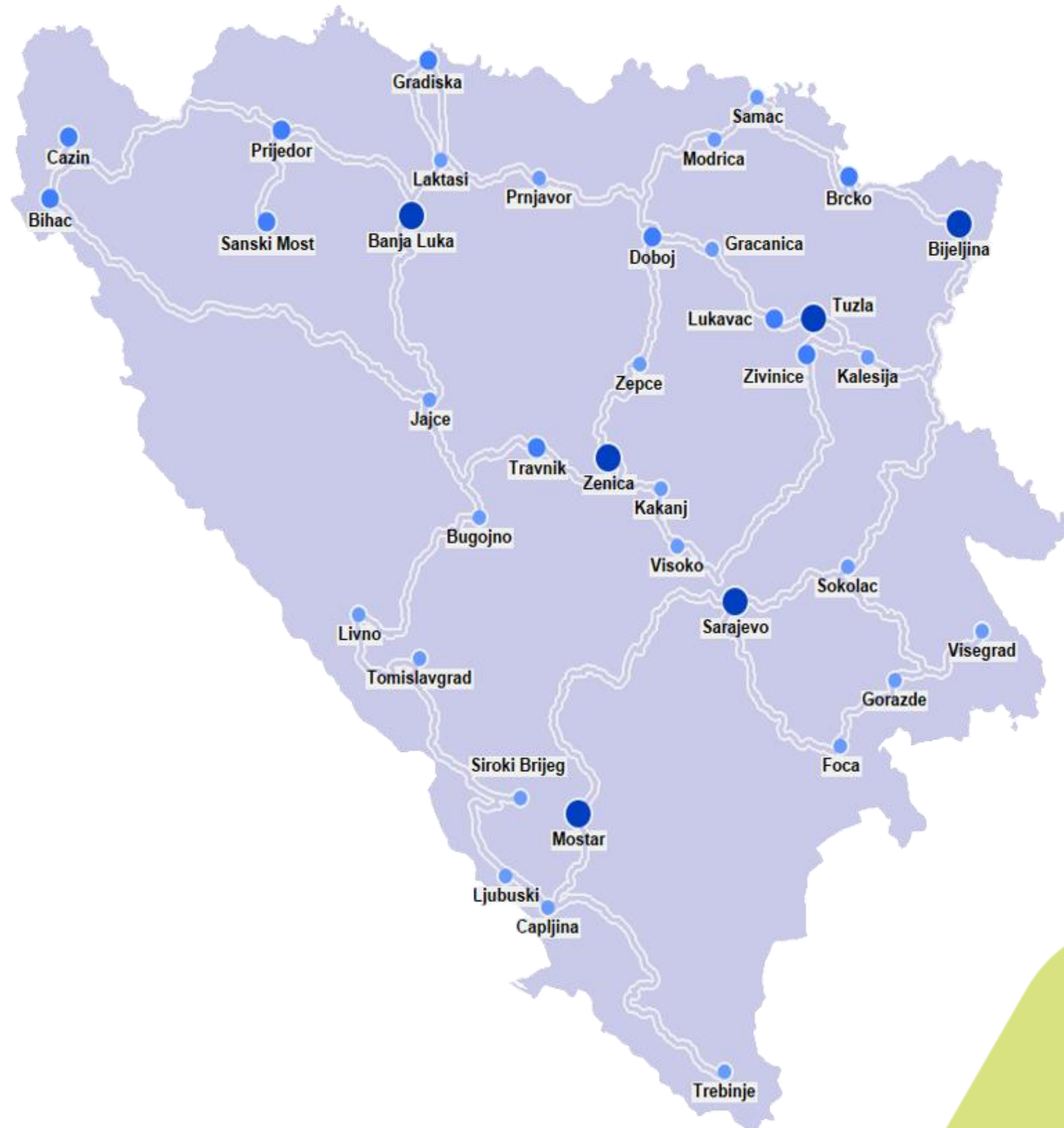
We evaluate service accessibility, retain-ability, network quality, and performance.

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: February 08, 2023
End: February 27, 2023

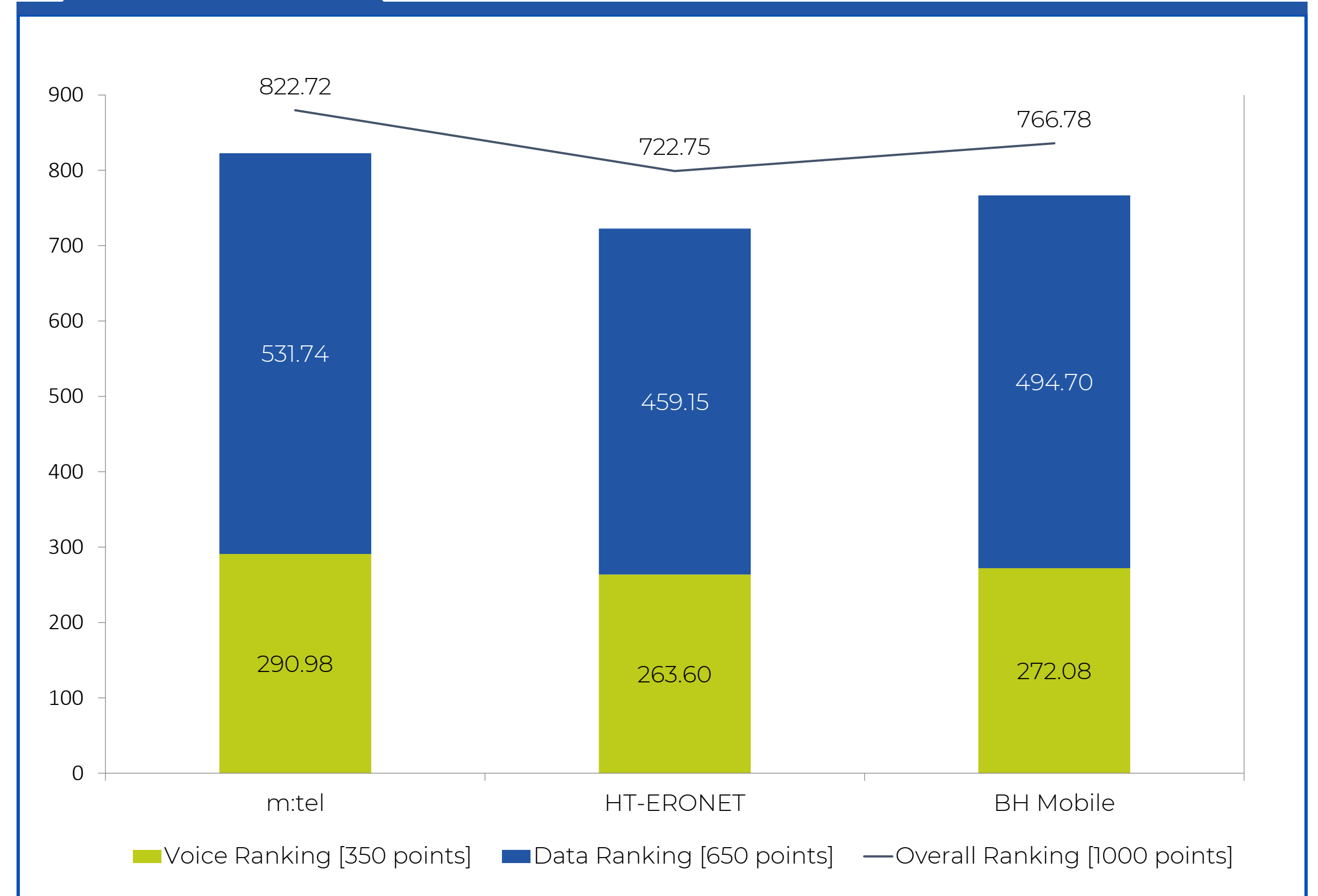


	Voice	Data
DEVICE	Samsung S21+5G	
ROUTE TYPE	Cities and Connecting Roads	
SAMPLE COUNT	~ 3250 per operator	~ 42500 per operator
TEST CASE SCENARIO	<p>Max Call Setup Time: 30 [s] Call duration: 120s [s] Call window: 155 [s] Call mode: CS Voice Speech quality: POLQA WB Reference File: German Scenario: 5 x CS Voice Call (2xClassic Call + 3xMultiRAB) + 1 x What's App call</p>	<p>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 2nd cycle)</p>

OVERALL RESULTS

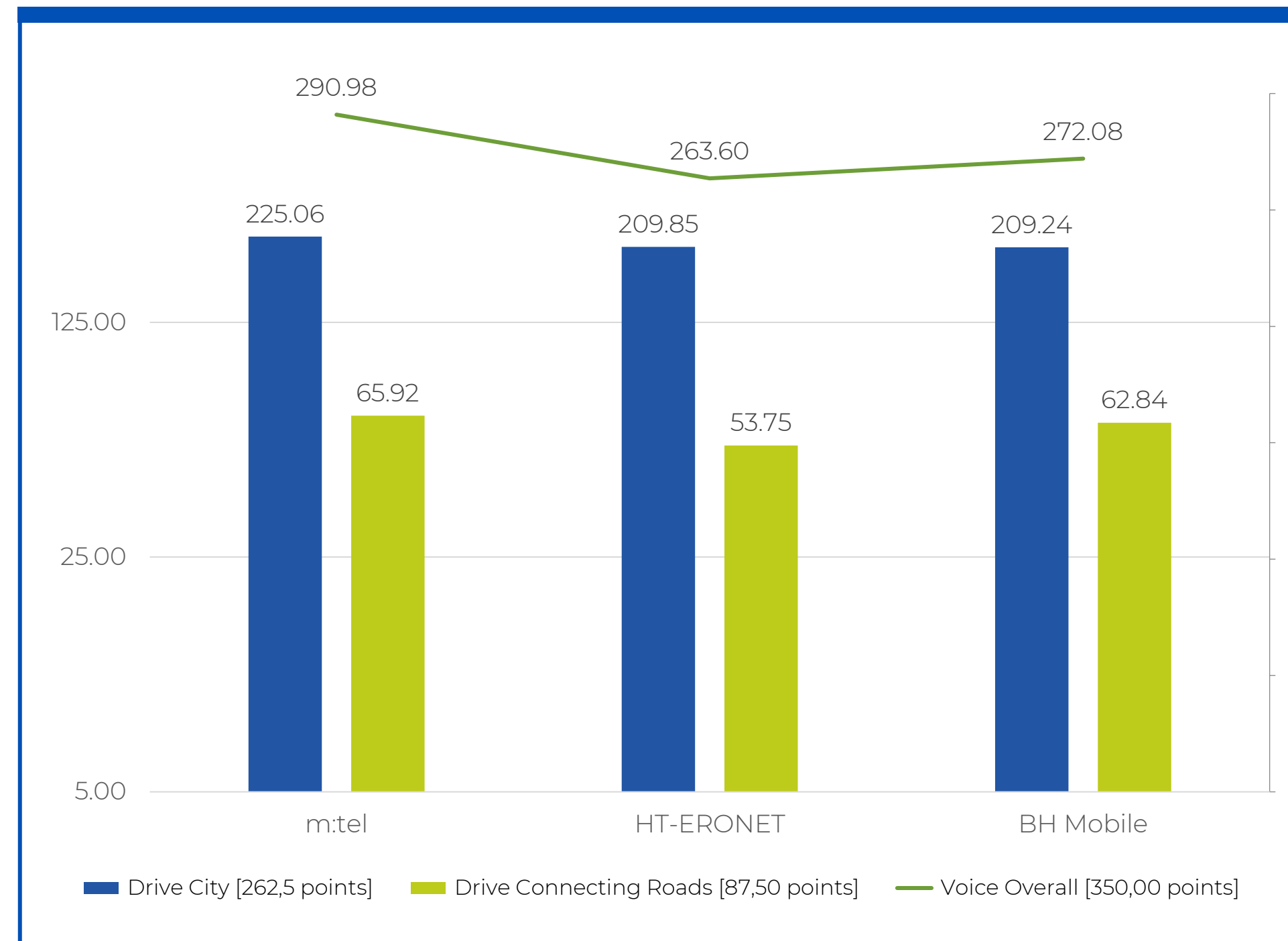
In overall ranking results **m:tel** is the first ranked.

BH Mobile is on the second place, while **HT ERONET** takes the third position



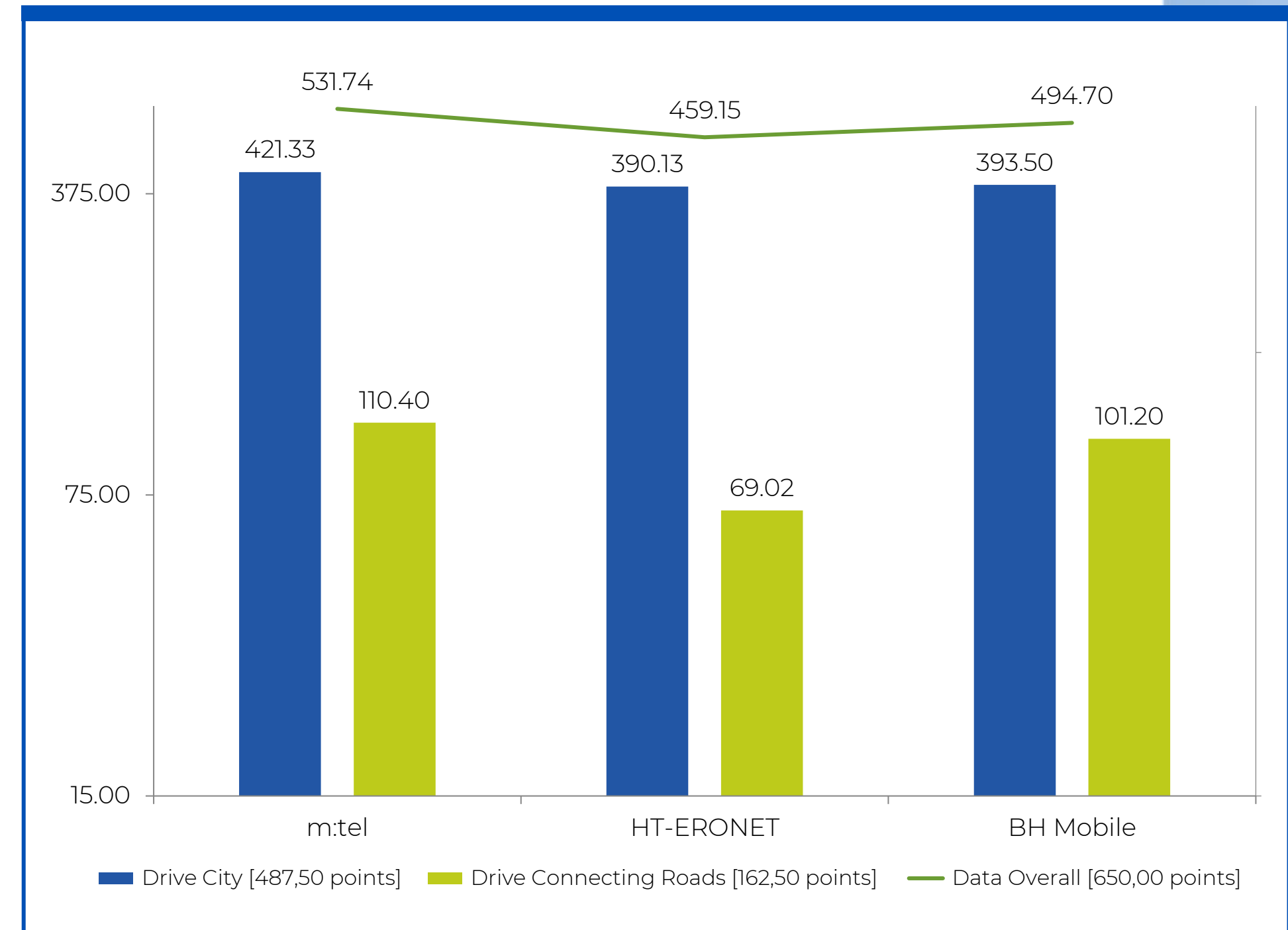
RANKING – VOICE SERVICE

m:tel is the first ranked in overall Voice evaluation



RANKING – DATA SERVICE

m:tel is the first ranked in overall Data evaluation



DRIVE CITY & CONNECTING ROADS VOICE RESULTS



Ranking identifiers	m:tel	HT-ERONET	BH Mobile	m:tel	HT-ERONET	BH Mobile
CLASSIC CALLS		DRIVE CITY			DRIVE CONNECTING ROADS	
CALL SETUP SUCCESS RATIO	99,02%	99,23%	97,77%	95,42%	96,98%	97,73%
DROPPED CALL RATIO	0,36%	0,83%	0,11%	1,50%	3,26%	1,02%
AVG CALL SETUP TIME	6,52 [s]	9,22 [s]	8,37 [s]	6,42 [s]	9,01 [s]	8,95 [s]
CALL SETUP TIME > 15 s RATIO	0,89%	0,42%	2,23%	0,15%	2,37%	3,78%
POLQA < 1.6 RATIO	1,49%	2,44%	1,31%	1,51%	2,36%	1,20%
POLQA AVG MOS	3,54 [MOS]	2,58 [MOS]	3,42 [MOS]	3,56 [MOS]	2,62 [MOS]	3,43 [MOS]
DISTURBED CALL RATIO	0,31%	0,41%	0,31%	0,57%	0,86%	0,57%
IMPAIRED CALL RATIO	0,10%	0,21%	0,10%	0,14%	0,00%	0,14%
WHATSAPP CALLS						
CALL SETUP SUCCESS RATIO	99,78%	100,00%	99,78%	98,78%	95,76%	97,59%
DROPPED CALL RATIO	0,00%	0,00%	0,00%	0,00%	1,90%	0,62%
POLQA < 1.6 RATIO	0,25%	0,60%	0,31%	1,49%	1,51%	1,56%
POLQA AVG MOS	4,54 [MOS]	4,52 [MOS]	4,54 [MOS]	4,49 [MOS]	4,45 [MOS]	4,48 [MOS]
DISTURBED CALL RATIO	0,22%	0,45%	0,00%	1,22%	3,64%	1,20%
IMPAIRED CALL RATIO	0,22%	0,00%	0,00%	0,00%	2,42%	1,20%
MultiRAB Data						
Multi RAB DATA_SUCCESS_RATIO	93,41%	89,48%	82,12%	88,89%	79,53%	71,94%

DRIVE CITY & CONNECTING ROADS DATA RESULTS



Ranking identifiers	DRIVE CITY			DRIVE CONNECTING ROADS		
	m:tel	HT-ERONET	BH Mobile	m:tel	HT-ERONET	BH Mobile
HTTP TRANSFER - FDFS DL						
HTTP TRANSFER FDFS DL SUCCESS RATIO	99,41%	97,75%	99,02%	95,62%	87,54%	94,14%
HTTP TRANSFER - FDFS UL						
HTTP TRANSFER FDFS UL SUCCESS RATIO	99,82%	98,56%	99,58%	94,66%	85,27%	95,19%
HTTP TRANSFER - FDTT DL						
HTTP TRANSFER FDTT DL MDR P10	12,78 [Mbit/s]	12,14 [Mbit/s]	9,40 [Mbit/s]	7,45 [Mbit/s]	2,89 [Mbit/s]	6,62 [Mbit/s]
HTTP TRANSFER FDTT DL MDR AVG	50,07 [Mbit/s]	46,57 [Mbit/s]	39,05 [Mbit/s]	33,79 [Mbit/s]	29,15 [Mbit/s]	30,21 [Mbit/s]
HTTP TRANSFER FDTT DL MDR P90	101,12 [Mbit/s]	81,37 [Mbit/s]	78,18 [Mbit/s]	68,75 [Mbit/s]	69,38 [Mbit/s]	57,92 [Mbit/s]
UDP - FDTT UL						
UDP FDTT UL MDR P10	11,29 [Mbit/s]	9,78 [Mbit/s]	12,26 [Mbit/s]	3,12 [Mbit/s]	1,23 [Mbit/s]	6,24 [Mbit/s]
UDP FDTT UL MDR AVG	35,05 [Mbit/s]	32,21 [Mbit/s]	27,22 [Mbit/s]	24,05 [Mbit/s]	18,02 [Mbit/s]	18,23 [Mbit/s]
UDP FDTT UL MDR P90	61,45 [Mbit/s]	52,69 [Mbit/s]	46,30 [Mbit/s]	49,34 [Mbit/s]	46,67 [Mbit/s]	28,68 [Mbit/s]
HTTP BROWSING						
HTTP BROWSING SUCCESS RATIO	99,54%	99,10%	99,22%	96,84%	92,91%	95,15%
HTTP BROWSING TIME TO 1MB	1553,82 [ms]	1725,09 [ms]	1679,56 [ms]	1743,87 [ms]	2687,73 [ms]	1871,89 [ms]
VIDEO STREAM						
VIDEO STREAM SUCCESS RATIO	99,86%	99,38%	99,49%	96,74%	92,56%	94,52%
VIDEO STREAM TTFP >= 10 s RATIO	0,00%	0,14%	0,05%	0,13%	0,16%	0,14%
VIDEO STREAM IRRITATING EXPERIENCE RATIO	0,09%	0,29%	0,14%	0,40%	0,49%	1,10%
FACEBOOK - FDFS UL						
FACEBOOK FDFS UL SUCCESS RATIO	99,87%	99,81%	100,00%	99,21%	96,06%	98,95%
FACEBOOK FDFS UL TRANSFER TIME AVG	4,90 [s]	5,03 [s]	4,87 [s]	5,52 [s]	6,97 [s]	5,44 [s]
INTERACTIVITY						
INTERACTIVITY PACKET ERROR RATIO	1,66%	4,03%	1,02%	7,61%	24,96%	4,86%
INTERACTIVITY MEDIAN RTT [ms]	51,46 [ms]	57,68 [ms]	57,59 [ms]	51,14 [ms]	59,06 [ms]	57,90 [ms]

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