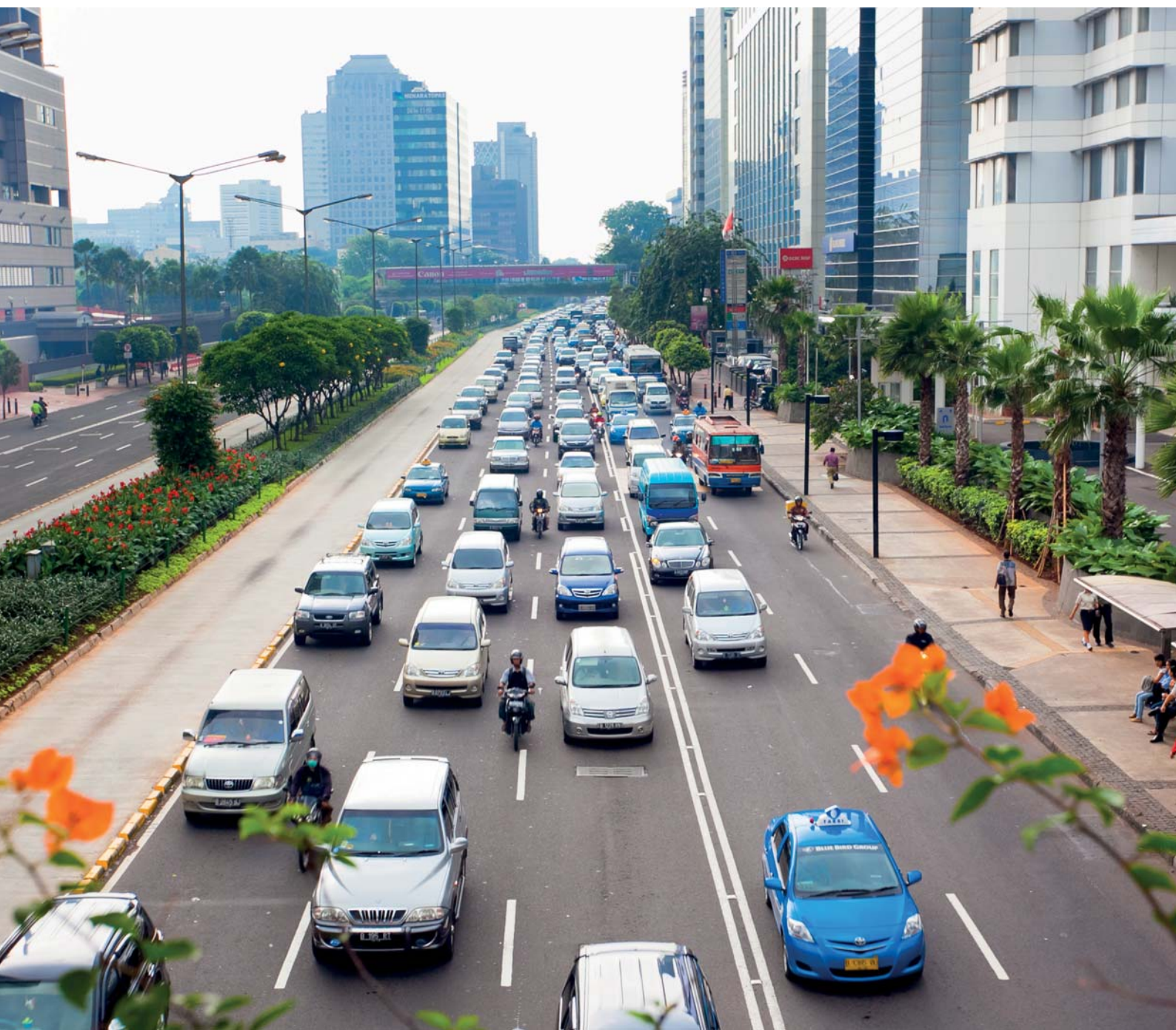


# INDONESIA BENCHMARK AUDIT REPORT





**P3 communications GmbH**  
**Am Kraftversorgungsturm 3, D-52070 Aachen, Germany**

tested and measured the  
**performance of its voice and data services on smartphones**  
in comparison to other LTE/UMTS/GSM mobile radio networks in metropolitan and rural areas of Indonesia.

The audit was done as a performance benchmark performed by P3 communications between November 30<sup>th</sup> 2017 and December 13<sup>th</sup> 2017 in cities and towns as well as on connection roads.

Measurements have been executed as drive tests outdoors using a Samsung Galaxy S7 cat9 Smartphone 300 Mbit/s Download / 50 Mbit/s Upload. All data measurements have been performed in 4G preferred mode. Voice measurements have been done in 4G/4G preferred mode on both sides, and in 4G/3G preferred mode on both sides, while call origin has been alternated

The following pages provide a comparative overview about the performance results observed for the different tested service types.

# MEASUREMENT OVERVIEW

## MEASUREMENT SETUP

Drivetest	Voice	Data
Device	Samsung Galaxy S7 cat9	Samsung Galaxy S7 Cat9/Sony Xperia XZ Cat9
Test Cases	<b>Mobile-to-Mobile (M2M)</b> Side1 (4G preferred) to Side1 (4G preferred) 115 sec call window 70 sec call duration 15 sec call setup timeout Email traffic injection on both sides (100KB) (1 email per call window)	<b>Data 4G preferred CA</b> HTTP DL datastream 7s HTTP UL datastream 7s HTTP 3MB DL fixed file transfer HTTP 1MB UL fixed file transfer Web Browsing - Kepler ETSI Ref. Page 6 Live web pages (50% http, 50% https) YouTube HD/ SD video - 45s
Mobility and Route Types	<b>Drive test</b> 62% in Cities, 19% in Towns and 18% on Roads Cities, towns and roads	
Samples	~ 3110 per Operator	~ 1,250 per Operator
Dates	<b>14 measurement days</b> November 30th – December 13th, 2017	

voice not tested for Smartfren

Walktest	Voice	Data
Device	Samsung Galaxy S7 Cat9	Samsung Galaxy S7 Cat9
Test Cases	<b>Mobile-to-Mobile (M2M)</b> Side1 (4G preferred) to Side1 (4G preferred) 115 sec call window 70 sec call duration 15 sec call setup timeout Email traffic injection on both sides (100KB) (1 email per call window)	<b>Data 4G preferred CA</b> HTTP DL datastream 7s HTTP UL datastream 7s HTTP 3MB DL fixed file transfer HTTP 1MB UL fixed file transfer Web Browsing - Kepler ETSI Ref. Page 6 Live web pages (50% http, 50% https) YouTube HD/ SD video - 45s
Mobility and Route Types	<b>Walk test</b> 100% in Cities Cities	
Samples	~ 3110 per Operator	~ 1,250 per Operator
Dates	<b>14 measurement days</b> November 30th – December 13th, 2017	

voice not tested for Smartfren

# TESTING ROUTE



3700 km  
measuring distance



5%  
of population measured

# CLAIMS



Best in Test  
Telkomsel



Best in Data  
Telkomsel



2nd Best Data  
Smartfren

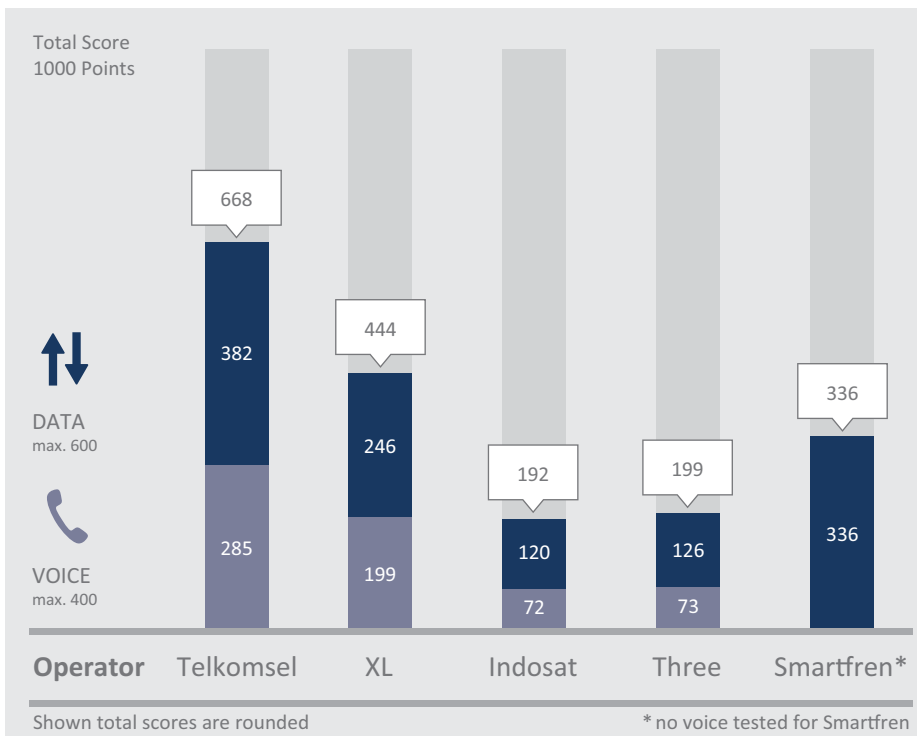


Best in Voice  
Telkomsel

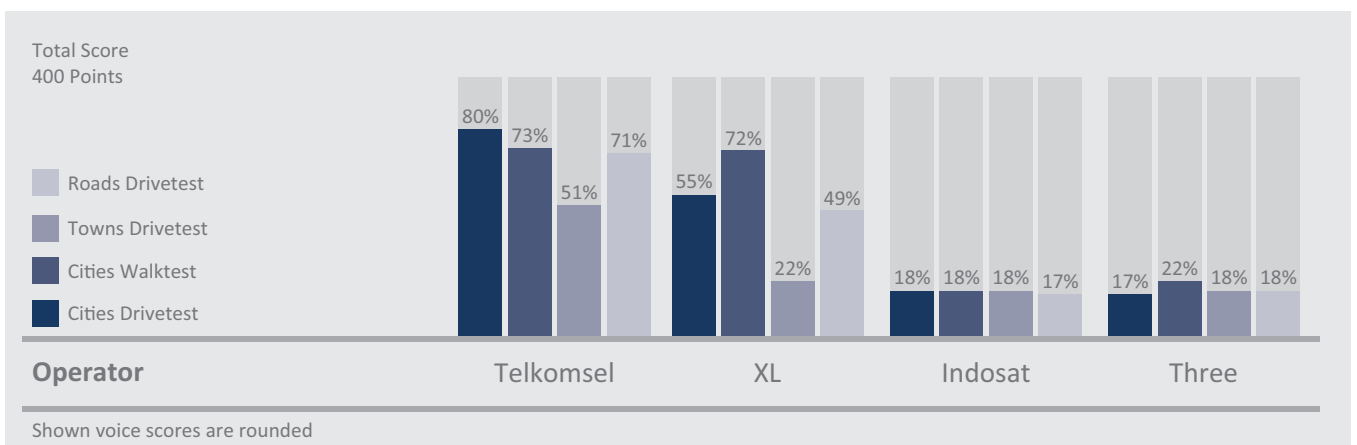
# OVERALL SCORE

TELKOMSEL ACHIEVED THE HIGHEST SCORE AMONG COMPETITORS WITH 668 POINTS OUT OF MAXIMUM 1000. TELKOMSEL IS AHEAD OF COMPETITION FOR VOICE AND DATA SERVICES.

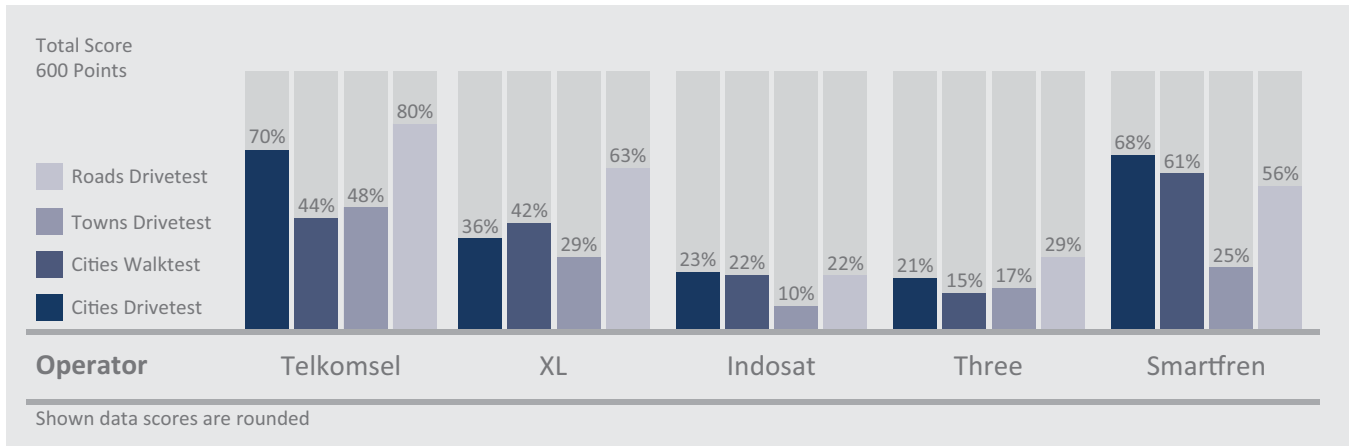
## Total Score



## Voice Score



## Data Score



# VOICE AND DATA OVERALL

		Telkomsel	XL	Indosat	Three	Smartfren
<b>Voice</b>	max. 400	285	199	72	73	not tested
Cities Drivetest	180	80%	55%	18%	17%	
Cities Walktest	60	73%	72%	18%	22%	
Towns Drivetest	80	51%	22%	18%	18%	
Roads Drivetest	80	71%	49%	17%	18%	
<b>Data</b>	max. 600	382	246	120	126	336
Cities Drivetest	270	70%	36%	23%	21%	68%
Cities Walktest	90	44%	42%	22%	15%	61%
Towns Drivetest	120	48%	29%	10%	17%	25%
Roads Drivetest	120	80%	63%	22%	29%	56%
<b>Total</b>	1000	668	444	192	199	336

Shown scores are rounded.

No voice tested for Smartfren.

P3 communications GmbH  
Hakan Ekmen, [hakan.ekmen@p3-group.com](mailto:hakan.ekmen@p3-group.com), +49 151 571 33 235  
Maziar Kianzad, [maziar.kianzad@p3-group.com](mailto:maziar.kianzad@p3-group.com), +49 151 571 33 362

Am Kraftversorgungsturm 3 | 52070 Aachen | Germany | +49 241 9437 400  
[www.p3-group.com](http://www.p3-group.com) | [info.communications@p3-group.com](mailto:info.communications@p3-group.com)