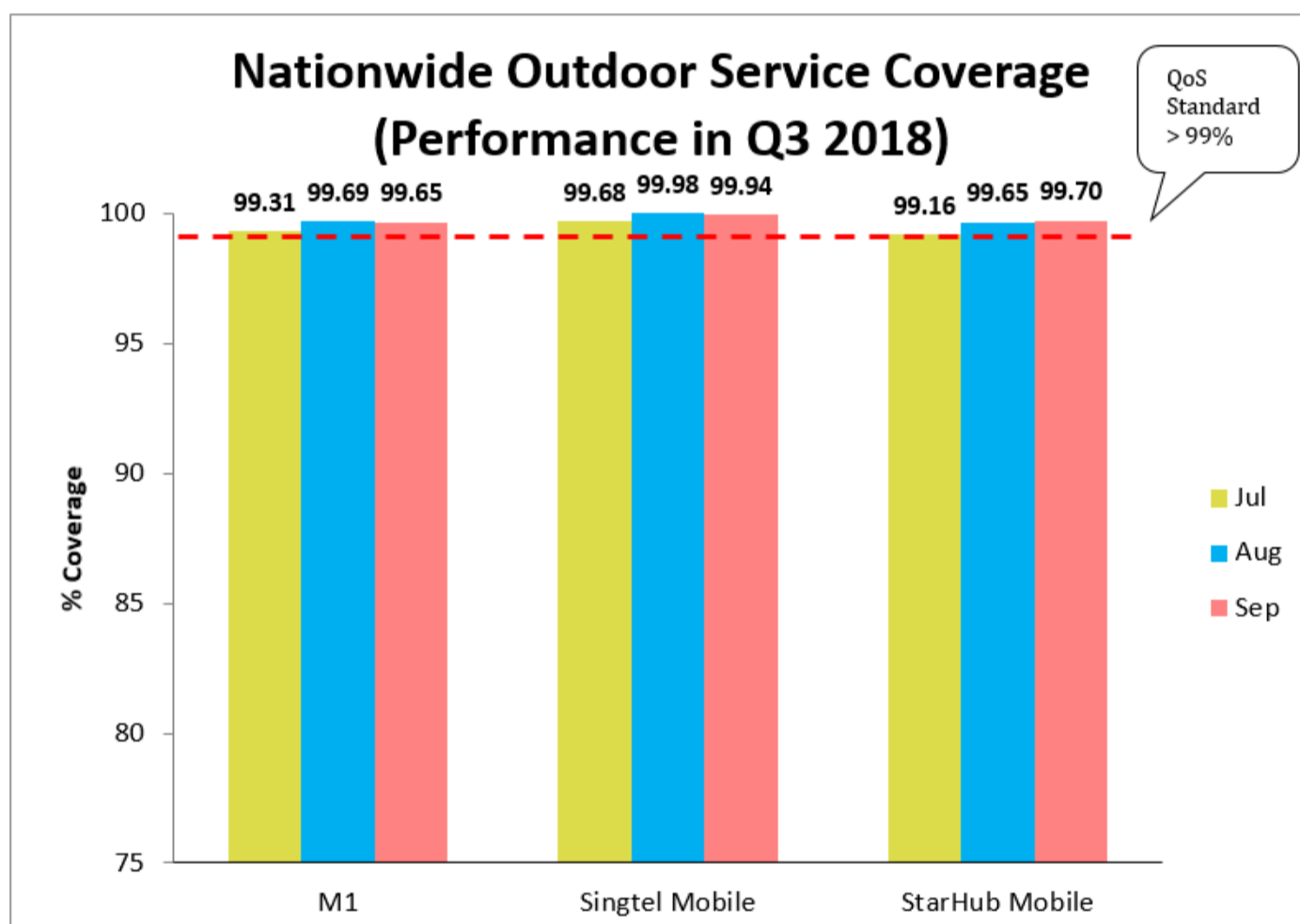


Quality of Service Performance Results for July – September 2018

Nationwide Outdoor Mobile Service Coverage

This indicator measures the Nationwide Outdoor Service Coverage for the 4G cellular mobile networks. Service coverage is determined by signal strength. The availability of service coverage is the ability of a cellular network to achieve the minimum signal strength of at least -109dBm. Under IMDA's 4G Service QoS framework, mobile operators are required to achieve Nationwide Outdoor Service Coverage of > 99%. In order to better measure the end users' experience*, IMDA uses mobile phones to collect the signal strength data points.



*Based on IMDA's coverage performance surveys which included nationwide outdoor drive test and areas such as housing estates/town centres, outdoor recreational areas and above ground MRT tracks.

This indicator measures the service coverage for the 4G cellular mobile network within road and MRT tunnels. Tunnel service coverage measures the percentage of data points collected in a tunnel from a 4G cellular mobile network that achieve a minimum signal strength of at least -109dBm. The tunnel areas surveyed by IMDA include all road and MRT tunnels in Singapore. Under IMDA's 4G Service QoS framework, mobile operators are required to achieve a service coverage of > 99% for all road and MRT tunnels. In order to better reflect end users' experience, IMDA uses mobile phones to collect the signal strength data points.

IMDA's Performance Survey Period: Q3 2018

M1	Singtel Mobile	Starhub Mobile
Compliance standard: > 99% for all road and MRT tunnels		
Central Expressway (Road Tunnel)		
Pass	Pass	Pass
Kallang-Paya Lebar Expressway (Road Tunnel)		
Pass	Pass	Pass
Fort Canning Tunnel (Road Tunnel)		
Pass	Pass	Pass
Woodsville Tunnel (Road Tunnel)		
Pass	Pass	Pass
Marina Coastal Expressway (Road Tunnel)		
Pass	Pass	Pass
North South Line (MRT Tunnel)		
Pass	Pass	Pass
East West Line (MRT Tunnel)		
Pass	Pass	Pass
Changi Airport Line (MRT Tunnel)*		
Fail	Fail	Fail
Circle Line (MRT Tunnel)		
Pass	Pass	Pass
North East Line (MRT Tunnel)		
Pass	Pass	Pass
Downtown Line (MRT Tunnel)		
Pass	Pass	Pass

Note: End users' individual experience may differ due to different models of handset used, handset settings, number of users in the vicinity, etc. The tunnel service coverage results are based on IMDA's coverage performance surveys.

* The mobile operators had failed to meet the 4G QoS standard of > 99% for the Changi Airport Line due to delays in completing the enhancement works. IMDA expects the mobile operators to work closely with the relevant parties to complete the enhancement works as soon as possible.

