

Substantiation of speed, reliability, and 5G coverage claims across multiple UK metros

SUBSTANTIATION OF CLAIMS

Last Reviewed: 10/01/2021

Claims:

Speed, reliability, and 5G coverage comparisons between EE and competitors in the following metros:

Belfast	Leeds
Birmingham	Leicester
Bristol	Liverpool
Cardiff	London
Coventry	Manchester
Edinburgh	Newcastle
Glasgow	Nottingham
Hull	Sheffield

Summary

EE's claim to be the most reliable and/or be fastest and/or have the most 5G coverage across the above metro areas is based on RootMetrics' extensive testing, which assesses reliability across a wide variety of call, text, and data tests using the latest devices and a geographically representative methodology. Metro-level test results are provided below for easy comparison of operator performance.

RootMetrics Awards

RootMetrics, an independent mobile analytics firm, publishes a series of reports, titled the UK RootScore® Report (the "RootScore Report"). The RootScore Report ranks the UK's four major mobile network operators ("MNOs") on a number of performance metrics, including "Network Reliability", "Network Speed", "Data Performance", "Network Accessibility," "Call Performance" and "Text Performance". The report also ranks MNOs on "Overall Performance".

In addition to testing across the nations, RootMetrics extensively tests 16 of the largest metropolitan areas (Eurostat 'Large Urban Zones' [LUZs]) within the UK. To provide objectivity, the boundaries of the areas we test for our RootScore Reports are defined by governments and official agencies—not by RootMetrics.

Why are these results robust?

RootMetrics uses scientific methodologies to design tests, measure activities, and collect data about mobile network performance that are representative of a consumer's mobile experience within a given market. RootMetrics then employs statistical techniques to verify and validate the results. This approach ensures all operators are measured on a level playing field, removes unintentional bias, and allows RootMetrics to provide actual, in-the-field data that confirms or challenges performance numbers that are otherwise only theoretical or based on ideal conditions. Weighting and stratification methods ensure that test data correctly represents the overall national population distribution.

We measure network reliability, accessibility, and speed performance across the activities that consumers use their smartphones for on a daily basis, like browsing webpages, using apps, making calls, and sending texts. Our methodology is designed to ensure that our tests measure performance across a wide range of real-world situations that consumers experience while using their smartphones on a daily basis. For example: we collect samples during periods of high and low

congestion; we measure performance across variations in speed, from standing still to driving on the highway; and we perform tests whether coverage is poor or excellent or somewhere in between. We test each network head-to-head in these situations to make comparisons easy and assure all networks are measured on a level playing field.

Methodological Facts from RootMetrics' UK tests conducted between July and December 2021:

- 650,000 tests performed
- 25,000 miles driven
- 4 nations visited
- 16 of the largest metropolitan areas (Eurostat 'Large Urban Zones' [LUZs]) included

Reliability and downlink testing

The RootMetrics Network Reliability category provides a holistic look at reliability performance across data, call, and text testing. The reliability category addresses the two questions most fundamental to a reliable mobile experience for consumers: can I access the network and can I then stay connected to complete my intended task?

To answer these critical questions, RootMetrics assesses performance across the following key areas:

	Reliability
Call	<ul style="list-style-type: none">• Mobile-to-mobile blocked outgoing call• Mobile-to-mobile dropped outgoing call
Data	<ul style="list-style-type: none">• Lite data (web/app) access success• Lite data (web/app) task success• Lite data (web/app) secure access success• Lite data (web/app) secure task success• Download/upload access success• Download/upload task success
Text	<ul style="list-style-type: none">• Intra/inter-network text send failure rate• Intra/inter-network text receive failure rate

To evaluate downlink throughput performance, the RootMetrics testing application attempts to open and maintain 4 simultaneous HTTP connections to measure the total bytes transferred during the test period. Downlink throughput speed is measured during this testing.

Speed, reliability, and 5G coverage comparisons

The tables below provides key H2 2021 scoring and download throughput comparisons across metros in which EE has made reliability, speed, or 5G coverage claims. Links to associated RootScore Reports are as follows:

- [Belfast RootScore® Report October 2021](#)
- [Birmingham RootScore® Report Nov. 2021](#)
- [Bristol RootScore® Report August 2021](#)
- [Cardiff RootScore® Report September 2021](#)
- [Coventry RootScore® Report July 2021](#)
- [Edinburgh RootScore® Report October 2021](#)
- [Glasgow RootScore® Report October 2021](#)
- [Hull RootScore® Report December 2021](#)
- [Leeds RootScore® Report August 2021](#)
- [Leicester RootScore® Feb-Mar 2021](#)
- [Liverpool RootScore® Report November 2021](#)
- [London RootScore® Report August 2021](#)
- [Manchester RootScore® Report September 2021](#)
- [Newcastle RootScore® Report November 2021](#)
- [Nottingham RootScore® Report August 2021](#)
- [Sheffield RootScore® Report August 2021](#)

Market	EE 5G% coverage	O2 5G% coverage	Three 5G% coverage	Vodafone 5G% coverage
Belfast	31.4%	29.3%	13.8%	26.9%
Birmingham	54.7%	20.2%	45.2%	40.2%
Bristol	25.50%	36.16%	22.89%	49.76%
Cardiff	29.81%	18.95%	26.94%	33.99%
Coventry	21.04%	21.03%	18.15%	8.79%
Edinburgh	27.67%	49.37%	20.16%	15.31%
Glasgow	28.7%	10.1%	26.6%	28.1%
Leeds	35.86%	26.75%	36.22%	17.57%
Leicester	37.5%	28.1%	42.3%	2.4%
Liverpool	38.4%	30.2%	22.5%	47.6%
London	43.41%	18.68%	36.53%	31.81%
Manchester	47.56%	18.86%	46.23%	36.73%
Newcastle	36.8%	40.5%	23.5%	28.6%
Nottingham	56.19%	15.65%	44.37%	0.88%
Sheffield	37.18%	12.13%	22.53%	10.94%

Market	EE Reliability RootScore	O2 Reliability RootScore	Three Reliability RootScore	Vodafone Reliability RootScore
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Substantiation of metro performance claims

Belfast	99.3	97.4	97.3	98.0
Birmingham	99.2	96.2	96.6	98.9
Bristol	99.1	97.8	96.8	98.2
Cardiff	98.1	98.3	97.0	99.2
Coventry	99.5	99.6	97.2	99.5
Edinburgh	99.5	98.9	98.2	99.6
Glasgow	99.6	98.4	98.4	99.7
Hull	98.9	95.9	94.1	99.0
Leeds	99.2	98.3	97.0	98.7
Leicester	99.4	98.5	97.8	99.5
Liverpool	99.7	99.0	98.5	99.5
London	98.7	96.9	96.5	97.3
Manchester	99.6	99.0	98.4	99.3
Newcastle	99.3	99.3	96.7	99.0
Nottingham	99.4	98.3	98.5	99.4
Sheffield	99.3	98.7	96.4	98.9

Market	EE median download speed (Mbps)	O2 median download speed (Mbps)	Three median download speed (Mbps)	Vodafone median download speed (Mbps)
Belfast	84.9	21.7	14.5	44.8
Birmingham	91.9	14.9	45.0	41.7
Bristol	77.0	20.3	21.0	74.1
Cardiff	81.6	11.6	19.8	46.0
Coventry	77.2	24.9	25.4	24.2
Edinburgh	74.0	24.7	25.8	38.9
Glasgow	78.8	13.5	28.8	38.4
Hull	72.2	28.9	38.5	44.9
Leeds	64.5	19.9	30.5	20.9

Substantiation of metro performance claims

Leicester	79.6	37.2	37.0	24.1
Liverpool	96.3	23.6	33.4	70.7
London	81.3	23.8	29.5	30.2
Manchester	95.2	14.1	37.6	60.2
Newcastle	79.3	39.6	26.4	38.3
Nottingham	115.0	22.9	39.4	26.8
Sheffield	67.3	23.0	24.8	27.2