# Virgin Media O2 leverages mmWave spectrum to turbocharge urban 5G and broadband speeds



Virgin Media O2 has announced a significant step forward in its mobile network capabilities with the acquisition of new millimeter-wave (mmWave) spectrum, following Ofcom’s recent auction. This investment, valued at £13 million, secures 800MHz in the 26GHz band and 1,000MHz in the 40GHz band, positioning the operator to enhance its high-capacity 5G coverage in some of the UK’s busiest urban and commercial areas. The company aims to deploy this new spectrum in key locations such as airports, train stations, arenas, and major city centres, where mobile data demand is highest.

The mmWave spectrum acquisition represents roughly a third of the total available spectrum from the auction, underlining Virgin Media O2’s ambition to manage increasing mobile traffic while delivering fast, reliable connectivity. This development complements the company’s broader £700 million Mobile Transformation Plan for 2025, which focuses on expanding and future-proofing its 5G network infrastructure across the UK. These high-frequency airwaves are particularly suited for dense environments, enhancing network capacity and reliability where traditional communications infrastructure can struggle.

Prior to the spectrum acquisition, Virgin Media O2 conducted a successful trial of the mmWave technology under a temporary licence, reaching a record-breaking 4Gbps peak speed to a single device. While the availability of compatible devices with mmWave support remains limited in the UK market, Virgin Media O2 anticipates wider hardware adoption will coincide with its rollout plans, thereby maximising the impact of this ultra-fast connectivity. The company is also leveraging its extensive deployment of over 2,000 small cells—compact base stations typically installed on lampposts and buildings—to facilitate dense, high-capacity 5G coverage in crowded locations.

This strategic approach reflects a practical stance on mmWave technology's challenges: despite its exceptional speed capabilities, mmWave signals operate over shorter ranges and can be more costly to cover widely. Virgin Media O2 appears to be prioritising focused enhancements in high-demand areas, such as transport hubs and major event venues, rather than attempting broad nationwide mmWave coverage. This is supported by their recent activation of a “Giga Site” in Paddington, London, which combines low, mid, and high-band spectrum using Nokia’s dual-band massive MIMO technology. This site, capable of delivering more than 10Gbps throughput and supporting up to 2,000 simultaneous HD video streams, exemplifies the network’s ability to provide both broad coverage and ultra-fast speeds in targeted locations.

Virgin Media O2’s recent network milestones extend beyond mobile spectrum acquisition. The company has completed a nationwide upgrade of its broadband infrastructure, delivering average download speeds of 1,130Mbps—22 times faster than the national average and nearly two-thirds of the Government’s broadband speed ambitions, achieved four years ahead of schedule. This gigabit-speed network significantly strengthens Virgin Media O2’s position in the UK market, with a footprint more than twice the size of its nearest competitor. Such advancements lay the groundwork for future innovations including immersive services like the metaverse and cloud gaming, which demand high-capacity, low-latency networks.

The company has also trialled cutting-edge fibre optic technology capable of producing symmetrical data speeds of up to 400Gbps, highlighting its commitment to supporting increasing digital consumption driven by video streaming, remote working, and other bandwidth-intensive applications.

Taken together, Virgin Media O2’s investments in mmWave spectrum, small cell infrastructure, next-generation fibre optics, and national gigabit upgrades paint a comprehensive picture of a network evolving to meet the future demands of mobile and fixed connectivity. By focusing on high-density, high-demand environments with state-of-the-art technology, the operator is positioning itself to provide customers with trustworthy, reliable, and ultra-fast mobile experiences where they need it most.

### 📌 Reference Map:

* Paragraph 1 – [[1]](https://www.techradar.com/pro/security/virgin-media-o2-will-roll-out-mmwave-tech-that-allows-it-to-transmit-a-record-breaking-4gbps-to-a-single-device-and-it-will-come-to-the-busiest-places-in-the-uk), [[2]](https://news.virginmediao2.co.uk/virgin-media-o2-invests-in-new-5g-high-speed-airwaves-to-boost-mobile-network-for-future/), [[3]](https://www.ispreview.co.uk/index.php/2025/10/virgin-media-o2-uk-trial-mmw-5g-band-for-broadband-speeds-of-4gbps.html)
* Paragraph 2 – [[1]](https://www.techradar.com/pro/security/virgin-media-o2-will-roll-out-mmwave-tech-that-allows-it-to-transmit-a-record-breaking-4gbps-to-a-single-device-and-it-will-come-to-the-busiest-places-in-the-uk), [[2]](https://news.virginmediao2.co.uk/virgin-media-o2-invests-in-new-5g-high-speed-airwaves-to-boost-mobile-network-for-future/), [[3]](https://www.ispreview.co.uk/index.php/2025/10/virgin-media-o2-uk-trial-mmw-5g-band-for-broadband-speeds-of-4gbps.html)
* Paragraph 3 – [[1]](https://www.techradar.com/pro/security/virgin-media-o2-will-roll-out-mmwave-tech-that-allows-it-to-transmit-a-record-breaking-4gbps-to-a-single-device-and-it-will-come-to-the-busiest-places-in-the-uk), [[3]](https://www.ispreview.co.uk/index.php/2025/10/virgin-media-o2-uk-trial-mmw-5g-band-for-broadband-speeds-of-4gbps.html)
* Paragraph 4 – [[1]](https://www.techradar.com/pro/security/virgin-media-o2-will-roll-out-mmwave-tech-that-allows-it-to-transmit-a-record-breaking-4gbps-to-a-single-device-and-it-will-come-to-the-busiest-places-in-the-uk), [[4]](https://www.advanced-television.com/2025/10/02/virgin-media-o2-switches-on-first-giga-site/), [[5]](https://www.rcrwireless.com/20251006/5g/virgin-media-o2)
* Paragraph 5 – [[6]](https://news.virginmediao2.co.uk/virgin-media-o2-completes-gigabit-upgrade-in-boost-for-britains-broadband-target/)
* Paragraph 6 – [[7]](https://news.virginmediao2.co.uk/vm-archive/virgin-media-trials-cutting-edge-multi-gigabit-network-technology/)
* Paragraph 7 – [[1]](https://www.techradar.com/pro/security/virgin-media-o2-will-roll-out-mmwave-tech-that-allows-it-to-transmit-a-record-breaking-4gbps-to-a-single-device-and-it-will-come-to-the-busiest-places-in-the-uk), [[2]](https://news.virginmediao2.co.uk/virgin-media-o2-invests-in-new-5g-high-speed-airwaves-to-boost-mobile-network-for-future/), [[3]](https://www.ispreview.co.uk/index.php/2025/10/virgin-media-o2-uk-trial-mmw-5g-band-for-broadband-speeds-of-4gbps.html), [[4]](https://www.advanced-television.com/2025/10/02/virgin-media-o2-switches-on-first-giga-site/), [[6]](https://news.virginmediao2.co.uk/virgin-media-o2-completes-gigabit-upgrade-in-boost-for-britains-broadband-target/), [[7]](https://news.virginmediao2.co.uk/vm-archive/virgin-media-trials-cutting-edge-multi-gigabit-network-technology/)

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## Bibliography

1. <https://www.techradar.com/pro/security/virgin-media-o2-will-roll-out-mmwave-tech-that-allows-it-to-transmit-a-record-breaking-4gbps-to-a-single-device-and-it-will-come-to-the-busiest-places-in-the-uk> - Please view link - unable to able to access data
2. <https://news.virginmediao2.co.uk/virgin-media-o2-invests-in-new-5g-high-speed-airwaves-to-boost-mobile-network-for-future/> - Virgin Media O2 has invested £13 million to acquire 800MHz of 26GHz spectrum and 1,000MHz of 40GHz spectrum following Ofcom’s mmWave auction. This high-frequency airwave acquisition aims to deliver fast, reliable 5G connectivity in busy locations such as airports, arenas, and stadiums. A trial of the mmWave spectrum in September achieved a record speed of 4Gbps on the O2 network. This investment complements Virgin Media O2’s £700 million Mobile Transformation Plan for 2025, focusing on enhancing and future-proofing its mobile network.
3. <https://www.ispreview.co.uk/index.php/2025/10/virgin-media-o2-uk-trial-mmw-5g-band-for-broadband-speeds-of-4gbps.html> - Virgin Media O2 has secured 800MHz of 26GHz spectrum and 1,000MHz of 40GHz spectrum in Ofcom’s mmWave auction, investing £13 million. A trial of the new spectrum achieved mobile broadband speeds of 4Gbps on a single device. The operator has deployed over 2,000 small cells, ideally suited for mmWave spectrum, to enhance connectivity in high-density urban areas. CEO Lutz Schüler highlighted the investment's role in transforming the mobile network and providing reliable connectivity in crowded places like stadiums and airports.
4. <https://www.advanced-television.com/2025/10/02/virgin-media-o2-switches-on-first-giga-site/> - Virgin Media O2 has activated its first 'Giga Site' in Paddington, London, combining newly acquired spectrum with Nokia’s dual-band massive MIMO technology to enhance network performance and capacity. The site integrates low, mid, and high-band spectrum to deliver broader coverage, higher capacity, and faster speeds. It can provide over 10 Gbps of total throughput and support 2,000 simultaneous HD video streams. This deployment is part of Virgin Media O2's £700 million Mobile Transformation Plan to strengthen 4G and 5G connectivity nationwide.
5. <https://www.rcrwireless.com/20251006/5g/virgin-media-o2> - Virgin Media O2 has activated the UK's first 'Giga Site' in Paddington, London, combining newly acquired spectrum from Vodafone with Nokia’s dual-band massive MIMO technology to enhance network performance and capacity. The site integrates low, mid, and high-band spectrum to deliver broader coverage, higher capacity, and faster speeds. It can provide over 10 Gbps of total throughput and support 2,000 simultaneous HD video streams. This deployment is part of Virgin Media O2's £700 million Mobile Transformation Plan to strengthen 4G and 5G connectivity nationwide.
6. <https://news.virginmediao2.co.uk/virgin-media-o2-completes-gigabit-upgrade-in-boost-for-britains-broadband-target/> - Virgin Media O2 has completed the upgrade of its entire national network to gigabit speeds, delivering nearly two-thirds of the Government’s broadband ambition four years ahead of the target date. The upgrade provides average download speeds of 1,130Mbps, 22 times faster than the national average. This milestone solidifies Virgin Media O2’s leadership position with a gigabit network that is more than twice the size of its nearest competitor, paving the way for future technologies such as the metaverse and cloud gaming.
7. <https://news.virginmediao2.co.uk/vm-archive/virgin-media-trials-cutting-edge-multi-gigabit-network-technology/> - Virgin Media has trialled innovative network technology in Reading, installing prototype Infinera XR Optics technology to send and receive data at speeds up to 400Gbps in a single fibre. This trial demonstrates that the operator’s passive fibre optic access network could deliver 400Gbps symmetrical services, supporting the growing demand for data driven by high-quality video streaming, remote working, and emerging bandwidth-intensive technologies. The technology allows for simple upgrades to consumer services in the future.