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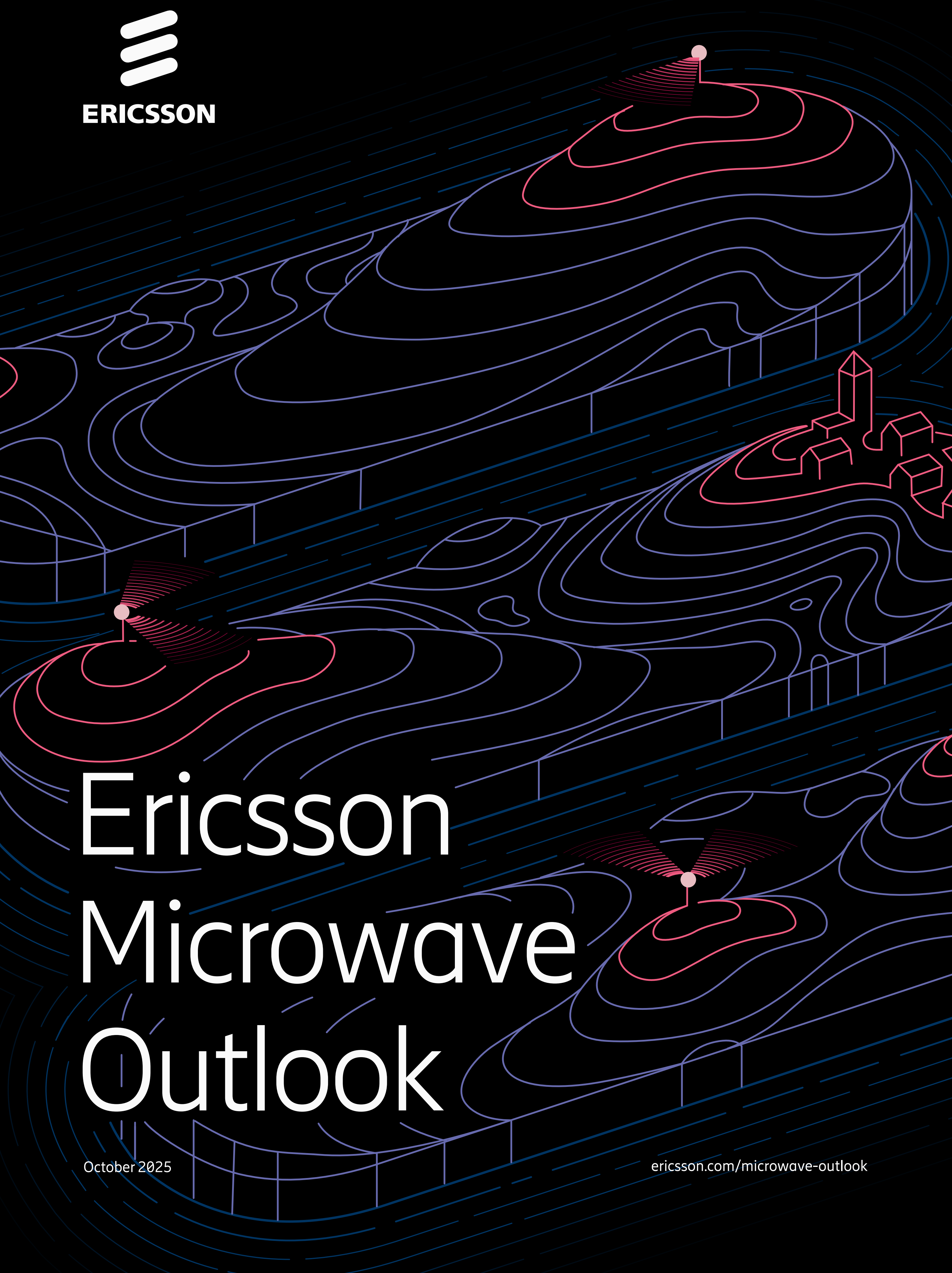
Ericsson Microwave Outlook



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Executive summary

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The global backhaul landscape is projected to achieve a near-equal split – 49 percent microwave and 51 percent fiber – by 2030. Advanced economies, such as the US, show signs of breaking a long-running trend of increased fiberization. In these regions, fiber is already deployed to easily fiberized backhaul sites, leading to renewed interest in modern, high-capacity microwave. This can also be seen when looking at live 5G networks around the globe, where microwave backhaul is used in 75 percent of these networks.

Microwave backhaul is continuing its steady expansion, with the installed base of transceivers rising from 10 million in 2022 to approximately 10.5 million currently. Notably, the E-band's share of deployments has increased from 6 to 8 percent, surpassing the longstanding 38 GHz band, largely due to new rollouts in India. Looking ahead, the W- and D-bands will become increasingly important, offering abundant spectrum and technical characteristics akin to the E-band. Our studies indicate that W-band supports 90 percent of E-band hop lengths, while D-band achieves 60 percent.

In modern 5G networks, reliability hinges on a unified management approach between the Radio Access Network (RAN) and transport layers. O2 Telefónica Germany is pioneering the integration of AI into microwave network management, setting new standards for efficiency and reducing total cost of ownership (TCO) through AI-based preventive maintenance. By converting high-granularity data into actionable insights, AI enhances network performance, predicts potential issues and supports more proactive and effective maintenance strategies.

Innovations in millimeter-wave (mmWave) technology and network simulations reveal the most effective strategies to double backhaul capacity to 20 Gbps. Our analysis reveals that, provided spectrum fees are manageable, leveraging a 2,000 MHz E-band channel with XPIC is the most cost-effective method. This can double the capacity for 96 percent of existing links in the studied network without requiring additional hardware investments. Other upgrade paths, while more resource-intensive, still offer substantial coverage, with even the least advantageous solution enabling a doubling of capacity for 79 percent of sites. Overall, service providers will have a robust range of options for capacity enhancement across their networks.

Backhaul media for 5G and beyond

The global telecommunications backhaul landscape remains dynamic, driven by increasing data consumption. Microwave continues to play an important role in meeting these demands.

Mobile data traffic continues to grow at 15 percent year over year, according to the June 2025 Ericsson Mobility Report,[1] largely powered by 5G rollouts. 5G's share of mobile data traffic is currently 35 percent and it is forecast that by 2029, it will increase to 75 percent.

By 2030, global mobile traffic is expected to rise with the introduction of 6G, although the rate of network expansion will gradually stabilize in mature markets. Service providers are balancing capacity, coverage, and cost considerations as they build resilient future-proof infrastructure.

Backhaul media equalization

While backhaul connections will keep increasing overall, the ratio of microwave to fiber in 2030 is expected to equalize to a 49/51 split along the trends previously identified in 2023, as seen in Figure 1, driven by increased data use. Fiber is a key technology for trunk and aggregation sites, while most 5G backhaul in suburban and rural areas is supported by new microwave technology.

Trend breakers

Although global patterns point to a gradual equalization between fiber and microwave backhaul by 2030, certain markets are defying these broader trends, as can be seen in Figure 2.

Contrary to the long-standing shift toward fiber dominance in North American markets, the US is witnessing renewed investment in microwave infrastructure. This change is driven by three main factors: firstly, the acceleration of rural 5G deployments where fiber economics remain challenging; secondly, the emergence of high-capacity E-band and multi-band solutions capable of delivering fiber-like connections; and thirdly, strategic redundancy planning to improve network resilience against fiber cuts.

By leveraging microwave, US service providers can act faster, reduce investments and extend coverage.

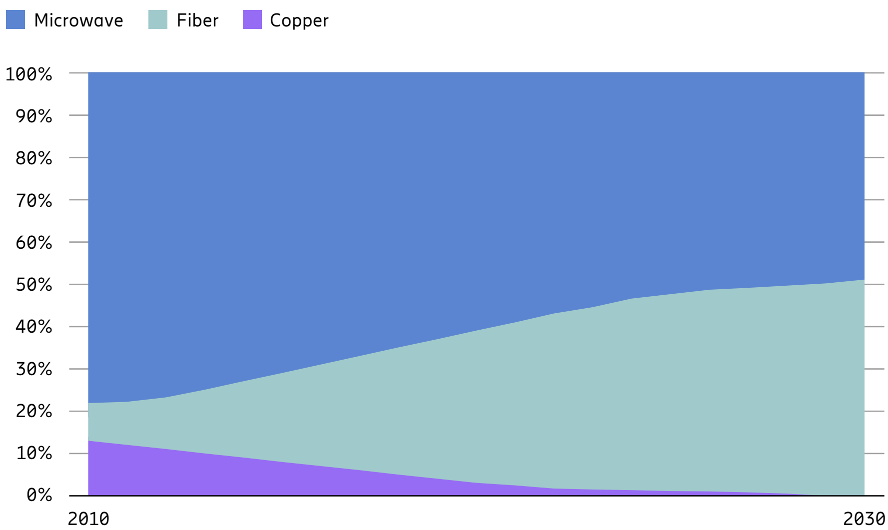
Across Western Europe, fiber rollout momentum is showing early signs of a slowdown. Factors such as complex permit processes, urban construction challenges and inflationary cost pressures are slowing down expansion compared to earlier forecasts. Service providers are increasingly deploying a mix of fiber and advanced microwave solutions in urban and suburban contexts to balance cost, speed and coverage.

Within the broader North East Asia market region, which includes mainland China, the microwave share is expected to remain at approximately 6 percent by 2030. The presence of extensive rural and hard-to-reach areas within mainland China ensures the continued relevance of microwave technology. In the Taiwanese market, recent regulatory changes that lower microwave spectrum fees have incentivized selective microwave deployments, particularly for enhancing coverage, increasing flexibility and providing redundancy for high-reliability links. Collectively, these trends highlight that even in markets with extensive fiber infrastructure, microwave solutions retain strategic importance in various deployment scenarios.

A 49/51 split is predicted between microwave and fiber for mobile backhaul by 2030.[2]

49%

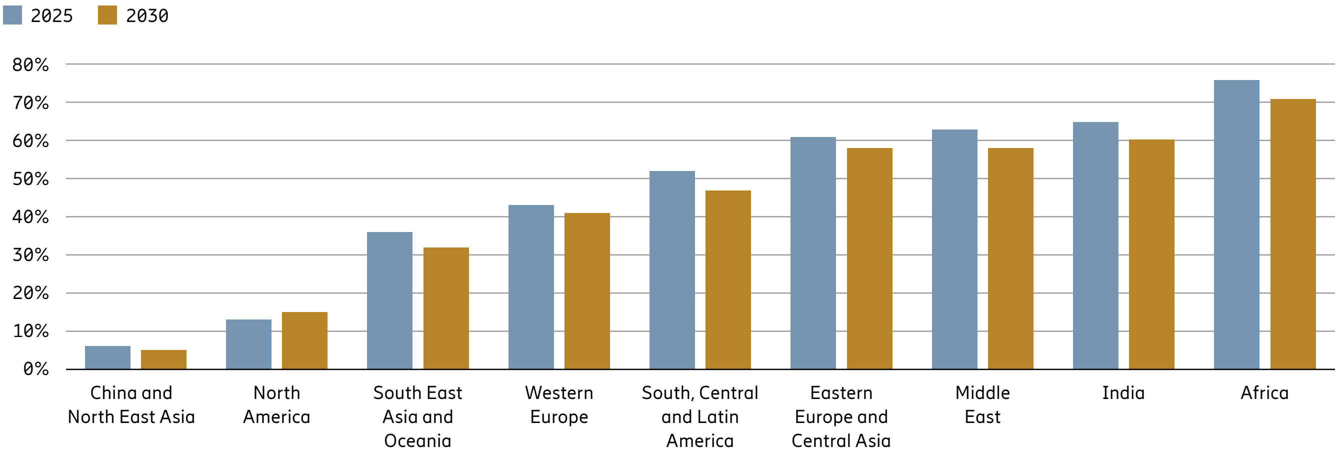
Figure 1: Predicted global backhaul media distribution up to 2030



Source: Ericsson (2025).

[1] Ericsson Mobility Report (June 2025)
[2] Excluding North East Asia.

Figure 2: Predicted regional differences in deployment of microwave backhaul in 2025 and 2030



Source: Ericsson (2025).

In India, fiber rollout is accelerating faster than previously projected, particularly in urban areas. Service providers have been focusing on easy-to-reach, high-capacity sites and replacing trunk links. While fiber is expanding rapidly, microwave continues to play a major role in rural and suburban 5G backhaul. The overall site count is growing, meaning microwave's absolute presence will likely increase in parallel even as its share declines in dense urban areas.

South East Asia is demonstrating some of the fastest fiberization rates globally. Microwave supports rural and island connections, while the region's infrastructure trajectory shows a preference for fiber as the urban backhaul technology.

Network resilience and backhaul strategies

As 5G networks mature and preparation for 6G begins, resilience and redundancy are vital to maintain service quality.

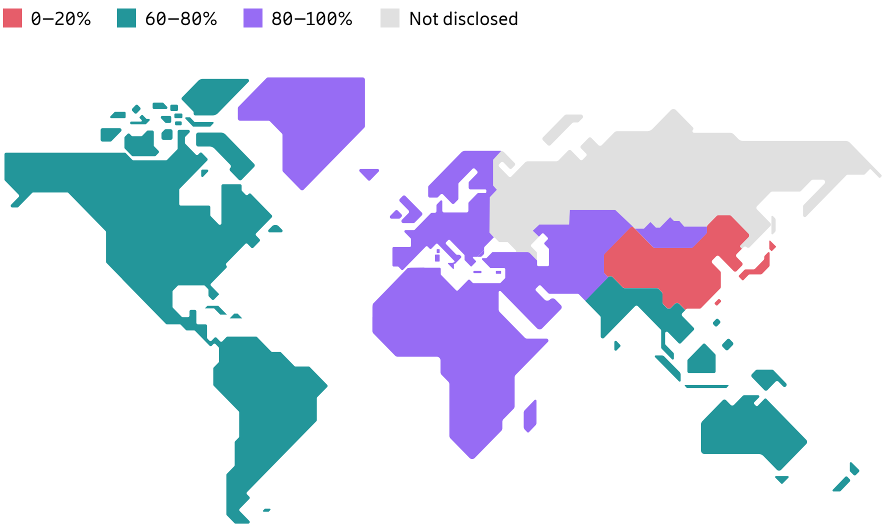
Today, microwave backhaul is used in 75 percent of the live 5G networks worldwide, ensuring fast, dependable connectivity (Figure 3). Often, dual-carrier XPIC links in traditional frequency bands act as the foundation for 5G backhaul, offering long reach and future-proof capacity. In most cases the traditional spectrum is enough but, when required, E-band and multi-band solutions can be used to deliver multi-gigabit throughput for urban and suburban areas.

In the realm of network resilience, microwave remains a vital, future-proof enabler of robust, high-performance networks, giving service providers network protection against disruptions such as fiber cuts.

Conclusions

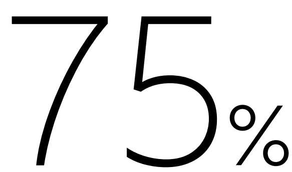
The global backhaul landscape is on track to reach a 49/51 split between microwave and fiber solutions by 2030. However, advanced economies such as the US show signs of breaking the trend of increased fiberization. In these regions, fiber is already deployed to easily fiberized backhaul sites, leading to renewed interest in modern, high-capacity microwave. Overall, the main use of fiber is for aggregation and urban areas, while microwave solutions continue to be indispensable for mobile backhaul into 2030 and beyond. By leveraging the complementary strengths of fiber and microwave, service providers can ensure that their networks can support the data demands of both advanced 5G services and the projected increase of capacity needs in 6G. The future of backhaul is not a contest between fiber and microwave; instead, both play essential roles in building robust and future-proof networks.

Figure 3: Share of live 5G networks using microwave backhaul



Source: Ericsson (2025).

Globally, microwave backhaul is used in 75 percent of live 5G networks today.



The new frontier: AI-based backhaul management

In today's modern 5G networks, true network reliability means treating the Radio Access Network (RAN) and its transport network as one cohesive entity.

Strategic reliability is no longer about reacting to failures, but proactively preventing them. O2 Telefónica Germany has been looking into how to incorporate artificial intelligence (AI) in microwave network management to complement and further enhance its current backhaul management tools suite.

Red Cells versus Red Sites

O2 Telefónica Germany is leading the way in proactive network management by systematically identifying and optimizing "Red Cells", defined as RAN cells with potential for enhanced performance, to help set a new standard for reliable network connectivity.

Red Cells may be impacted by factors such as fluctuating traffic demands, hardware malfunctions, or signal propagation challenges due to local geography. All of this can influence calls, data throughput, service quality and other key performance indicators (KPIs). Although Red Cells are specific to the RAN, their performance is inherently connected to the underlying transport network. To differentiate transport-related concerns from Red Cells, O2 Telefónica Germany uses the term "Red Site", which refers to a location experiencing backhaul capacity constraints or microwave link limitations.

O2 Telefónica Germany's approach to resolving Red Sites

To ensure optimal network performance and deliver a superior customer experience, O2 Telefónica Germany uses efficient and systematic methods to monitor the holistic health of its mobile network. Building on its established strategy, the company has a long history of utilizing microwave technology to complement its fiber backhaul network. By using advanced customized tools to transition from reactive fixes to a predictive maintenance model, O2 Telefónica Germany has reduced the occurrence of Red Sites in its transport network by 98 percent.

Transport network performance is continuously monitored end-to-end using a comprehensive range of KPIs that differentiate between data types and actual data throughput. The system converts the data into an intuitive 1–6 scoring scale that includes color codes and generates tasks automatically, making it easy for engineers to identify areas that may require attention. This multi-faceted analysis helps quickly distinguish between capacity-related bottlenecks and physical defects, which are the primary causes for Red Sites as shown in Figure 4.

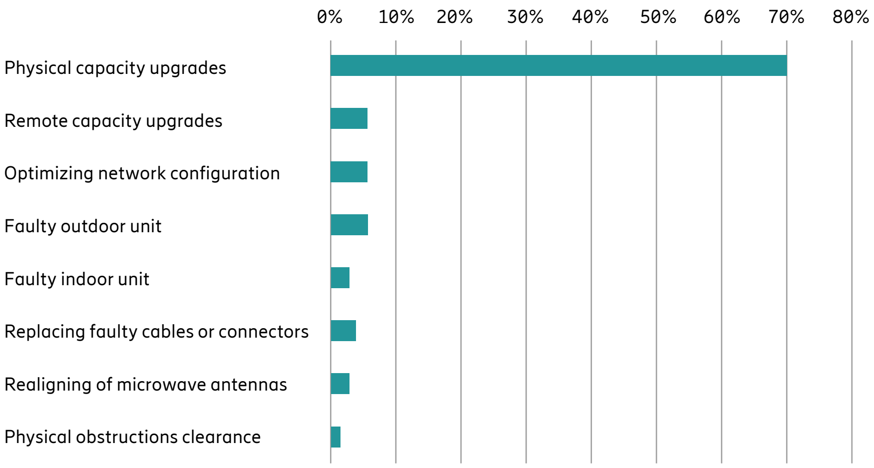
O2 Telefónica Germany is one of the leading integrated telecommunications providers in Germany, with 34.4 million mobile telephone lines and 2.4 million broadband lines. The company offers mobile and fixed network services for private and business customers as well as innovative digital solutions based on its infrastructure and the analysis of mobile data. It is part of Telefónica, one of the largest telecommunications service providers in the world. The company offers fixed and mobile connectivity, as well as a wide range of digital services for residential and business customers.

Red Cells and Red Sites

Red Cell
A RAN cell with lower performance than expected.

Red Site
A site with reduced backhaul availability or throughput.

Figure 4: Main remedial actions for resolving Red Sites



Beyond monitoring: The use of AI for smarter network management

A key objective for today's network operations is to use AI and automation to move from costly, reactive fixes to smarter, preventive maintenance and proactive, cost-efficient network management. Acknowledging this, O2 Telefónica Germany and Ericsson have collaborated to explore the transformative potential of AI in enhancing traditional monitoring systems, making early and automated predictions of Red Sites a crucial capability.

The foundation for efficient AI-based preventive maintenance

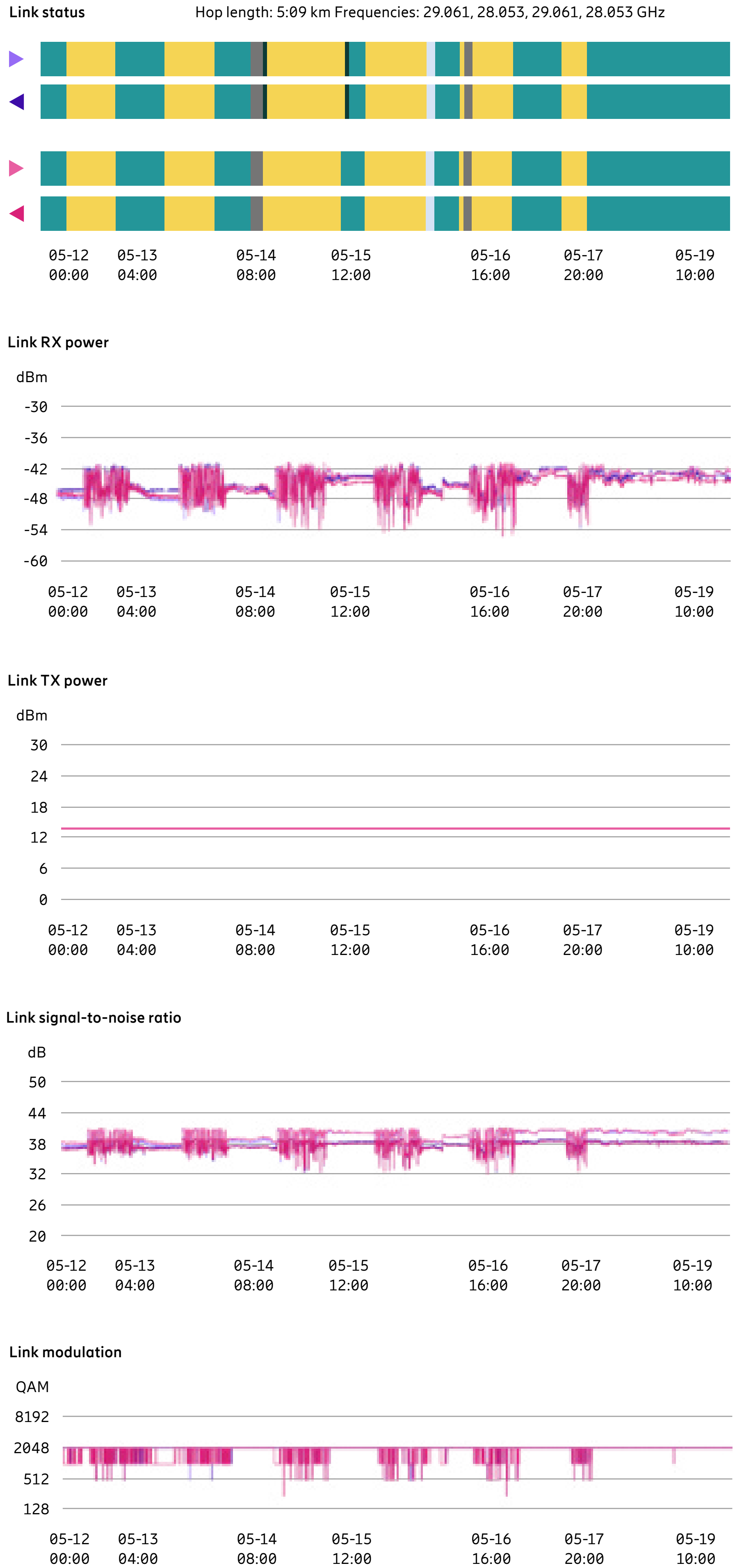
Building effective preventive maintenance with AI and automation starts with several key requirements. First, high-quality, granular network data must be available in real time. This data should also be stored for later analysis to identify and visualize performance trends over time. Traditional methods that use 15-minute performance counters are insufficient as they no longer provide enough detail. Today, modern data-centric architectures are used to deliver both the required data granularity and real-time availability. It's also becoming crucial to combine live performance data with network planning information to make the right correlations and detect outliers early and quickly.

For instance, AI-based management systems can easily identify slight antenna misalignments caused by storms or pinpoint developing cable faults. They can also distinguish between different types of signal degradation, such as the erratic signature of multipath fading versus the predictable pattern of rain fading, and can even predict equipment failures like an optical transceiver approaching its end-of-life.

Using AI to detect noise floor degradations

AI may also identify low-level interference events that degrade the system's noise floor, causing "erroneous seconds" in transmitted data. This invisible phenomenon, often brief and sporadic, reduces the available system margin but is often not severe enough to cause an immediate service outage, making it difficult to discover through manual monitoring. Consequently, the affected link operates with less resilience than planned, amplifying the impact of subsequent events such as rain or multipath fading. An AI system can detect such noise floor degradations and highlight the hidden risks, allowing network operations centers (NOCs) to address vulnerabilities and schedule maintenance activities efficiently before they impact service availability.

Figure 5: Visualization of an obstruction in the line of sight



Harsh environments present significant maintenance challenges.

The AI advantage in action: Uncovering hidden link issues

While a skilled microwave engineer could, in theory, analyze massive volumes of performance data to find hidden issues, the sheer scale of modern networks makes such manual checks unfeasible. A network with thousands of microwave links generates millions of data points each month, creating volumes that are impossible to review effectively by hand. AI-based tools play a crucial role in continuously analyzing large datasets and effectively detecting complex patterns and anomalies at an early stage. This includes subtle issues that traditional monitoring may overlook — issues that AI technology is particularly well-suited to addressing. O2 Telefónica Germany could see these benefits as a result of its hands-on experience, gained through an AI-driven transport network management solution.

Figure 5 shows a real-life example from the O2 Telefónica Germany network, where timely and proactive action was important to prevent a site from becoming a Red Site. By combining fine-granularity data and AI algorithms, the tool detected a recurring line-of-sight obstruction. The top of Figure 5 shows detected issues versus time, where yellow shows detected line-of-sight obstruction and green indicates stable operation. The following four plots show received signal power, transmitted power, signal-to-noise ratio and the modulation used to support the engineer in confirming the root cause detected by the AI algorithms. The root cause in this case was a nearby construction site with cranes that temporarily blocked the signal at similar time intervals during workdays. When the cranes stopped at night, their changing positions led to different signal levels being received each night.

Maintaining network reliability in harsh environments with challenging access, such as the high-altitude location shown in the image above, presents significant operational challenges.

Delivering consistent backhaul for RAN connectivity is vital in such areas, making the shift to intelligent remote management more important than ever. This detailed visibility enables accurate remote issue diagnosis, allowing the planning of site visits only when necessary and ensuring that field teams arrive with appropriate equipment for required tasks when a site visit is unavoidable. Additionally, it enables a proactive approach by allowing preventive maintenance to be scheduled well in advance, which helps to uphold consistent and reliable services even for remote communities.

Finally, having access to historical data on weather-related fading patterns in certain geographical areas helps engineers to plan new links more effectively. With real-world fading data, they can choose parameters with greater confidence, reducing the risk of future Red Sites and drops in RAN network performance.

By converting high-granularity data into actionable insights, AI provides a crucial advantage. It empowers O2 Telefónica Germany's transport optimization teams to distinguish root causes with greater precision, enabling more accurate and proactive maintenance decisions. This capability allows engineers to resolve complex network issues more effectively, improving field force allocation and expediting the resolution of transport bottlenecks, which in turn increases maintenance efficiency and reduces operational costs.

Outlook for a smart future with AI-driven operations

Ultimately, the primary objective of a robust transport network is to support the services running on top of it seamlessly. This directly contributes to improved RAN performance and tangible gains in end-user satisfaction, thereby strengthening the network's reliability and readiness for future requirements. Through targeted analysis leveraging purpose-built tools, O2 Telefónica Germany has achieved a 98 percent reduction in Red Sites within its network. Moving forward, the integration of AI and automation-driven proactive maintenance and operations is anticipated to drive further efficiency and greater operational cost savings for the company.

Latest global developments in microwave spectrum

E-band has now become a truly global solution with deployments in all regions. W-band will be a great complement – when the time is right.

The global microwave backhaul market is continuing on a steady growth trajectory, with the installed base of transceivers increasing from 10 million, as described in the 2022 edition of the Microwave Outlook report, to approximately 10.5 million today. This uptick reflects the ongoing build-out of mobile networks and capacity upgrades to meet rapidly increasing data demands driven by 5G rollout, as well as the proliferation of high-bandwidth services.

The rapid rise of E-band

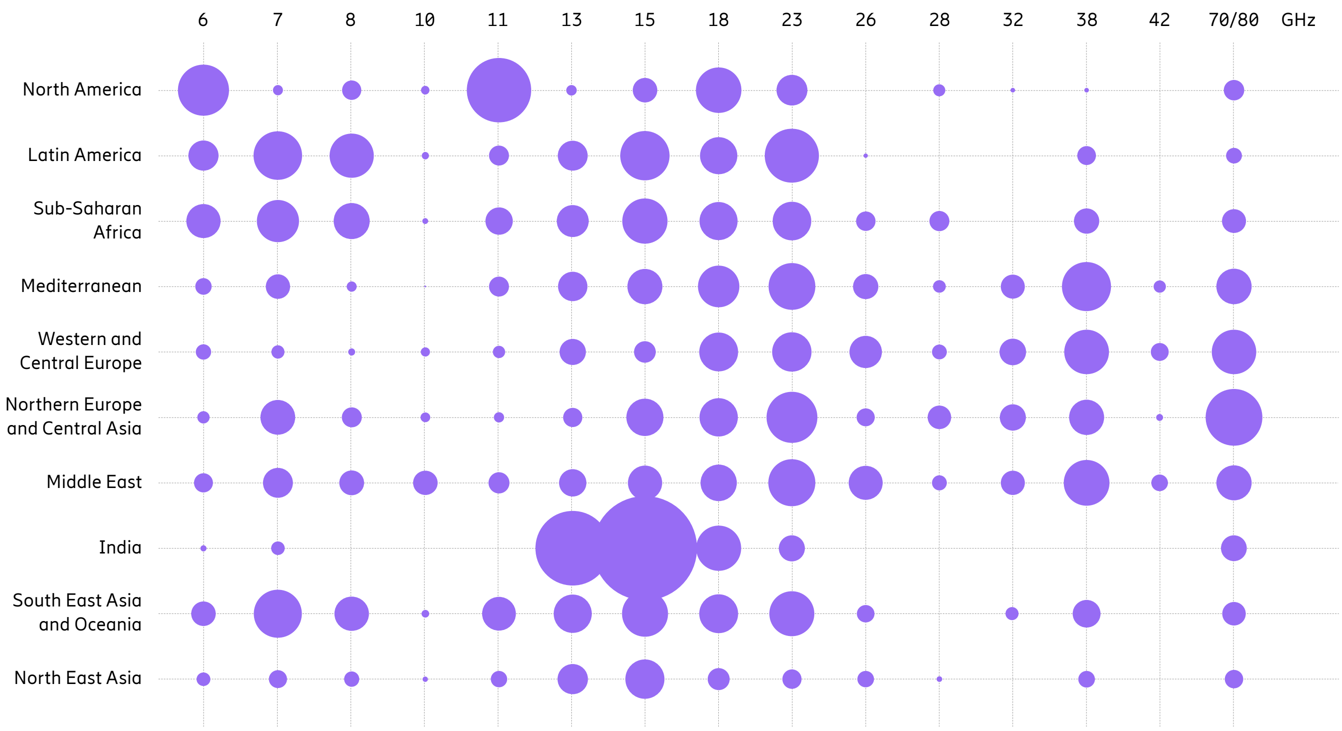
One of the most notable developments has been the rapid rise of E-band (70/80 GHz) technology as seen in Figure 6. In 2022, E-band accounted for about 6 percent of the global installed base; today that share has grown to 8 percent, allowing it to surpass the long-established 38 GHz band. The growth has been especially pronounced thanks to the start of deployments in India, triggered by the introduction of 5G New Radio (NR), as well as sustained demand in multiple other regions. In India, E-band currently holds a 3.5 percent share of the installed base – still relatively small, but indicative of strong growth potential. Regionally, E-band's share ranges from just a couple of percent to around 25 percent, while some selected countries have already exceeded that level.

E-band has now become a truly global solution, with deployments in all regions – a significant step forward from 2022 when some areas had not yet embraced it. Its importance lies in its ability to provide exceptionally wide channels and multi-Gbps backhaul capacity, delivering fiber-like speeds over short distances. This is critical for meeting the ultra-high capacity requirements of 5G, as well as 6G – both for single- and multi-band deployments.

E-band transceivers make up approximately 8 percent of the global installed base.

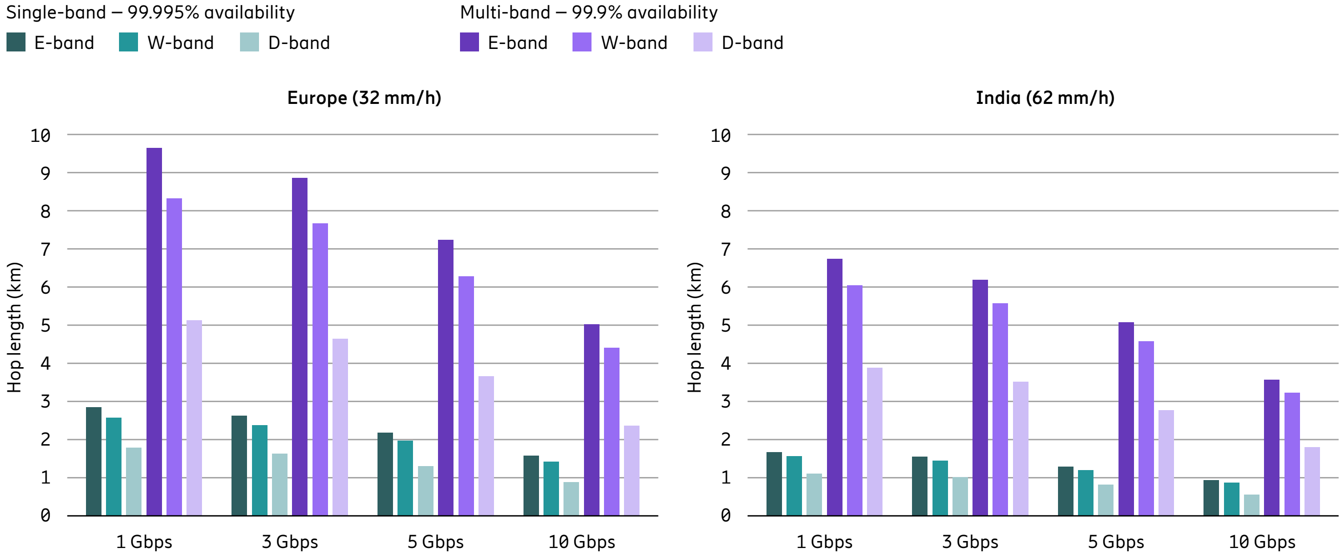
~8%

Figure 6: Global and regional view of microwave spectrum use in backhaul spectrum



Source: Ericsson (2025).

Figure 7: mmWave hop length for single- and multi-band configurations, in medium and high rain zones



Note: Channel spacing 2,000 MHz, fixed 0.3 m antenna
Source: Ericsson (2025).

Regional spectrum use

The 32 GHz band is also expanding and now represents more than 2 percent of the global installed base. Adoption varies greatly, ranging from close to zero in some areas to about 7 percent in others. Meanwhile, lower-frequency bands between 6 and 11 GHz hold a strong position, with around 25 percent global market share and significant regional differences – from a few percent to nearly 65 percent. These bands, especially the 6–8 GHz subset (which stands near 18 percent globally), are valued for their long-range capabilities and high availability. This makes them vital in rural and long-haul links, where service providers need to connect distant cell sites to the core network reliably and cost effectively. Their propagation characteristics allow for fewer relay points over challenging terrains, making them indispensable in national backbone networks and for extending broadband reach to underserved areas.

Looking more into some regional findings, in the Middle East, for example, E-band continues to grow steadily, yet the 38 GHz band still holds a larger share in this region compared to Europe and Central Asia, where we can see E-band surpassing 38 GHz. Another finding is that 6–11 GHz bands are increasing their importance in North America, since more than 60 percent of the links are in these bands.

Another emerging focus is the lower 6 GHz range, where some countries have reassigned the 5,925–6,425 MHz portion for unlicensed uses, such as Wi-Fi and NR Unlicensed. While this opens the door for expanded broadband connectivity and supports innovative use cases for homes and businesses, it introduces complications for fixed-service microwave links that rely on interference-free operation when unlicensed use occurs in a licensed backhaul band. The introduction of unlicensed devices into this spectrum raises the possibility of performance degradation over time due to interference and traffic contention. Because unlicensed spectrum lacks centralized control, resolving interference issues can be challenging. By contrast, coexistence with other licensed services – such as licensed 5G NR – is generally more manageable, as coordination frameworks can be put in place to mitigate potential conflicts.

The upcoming World Radiocommunication Conference (WRC) in 2027 will cover studies on sharing and compatibility and developing technical conditions for the use of International Mobile Telecommunications (IMT), which includes the bands 7.125–8.4 GHz (or parts thereof), and 14.8–15.35 GHz. These bands have a large overlap with the 7, 8 and 15 GHz wireless backhaul bands. The intention of identifying frequency bands for IMT is to provide equipment manufacturers with guidance on which spectrum may be made available for mobile services, while leaving the final decision on implementation up to each nation.

Future spectrum additions

The increasing deployment of E-band that has taken place in recent years has resulted in indications of spectrum congestion in regions with very high E-band use, such as dense urban areas in Eastern Europe. Thanks to its proximity to the E-band, the W-band is a good choice to complement the E-band for Gbps transport over km hop lengths. The W-band begins only 6 GHz above the highest part of the E-band, and it therefore allows for a reuse of technologies already developed and deployed in high volumes for the E-band. The sub-THz D-band still has some unresolved practical challenges, mainly in terms of reaching sufficient output powers enabling km hop lengths.

Figure 7 shows calculated hop lengths up to 10 Gbps for the E-band, W-band and the D-band with 99.995 percent and 99.9 percent availability using 0.3 m antennas for European (more than 32 mm/h at 0.01 percent of the time) and Indian (more than 62 mm/h at 0.01 percent of the time) rain zones. The higher availability is typically needed for single-band deployments, while the lower availability is acceptable for multi-band deployments with a lower frequency band securing an overall high availability. We have assumed realistic transmitted output power levels for the different bands. As shown in Figure 7, we may expect only marginal differences in reach and availability for the W-band compared to the E-band, while the D-band is mainly fit for urban applications.

mmWave hop lengths

- W-band achieves 90% of E-band hop lengths
- D-band achieves 60% of E-band hop lengths

Exploring ways to double mmWave capacity

Innovations in millimeter-wave (mmWave) technology and network simulations reveal the most effective strategies to double backhaul capacity. So which solutions lead the way in capacity evolution?

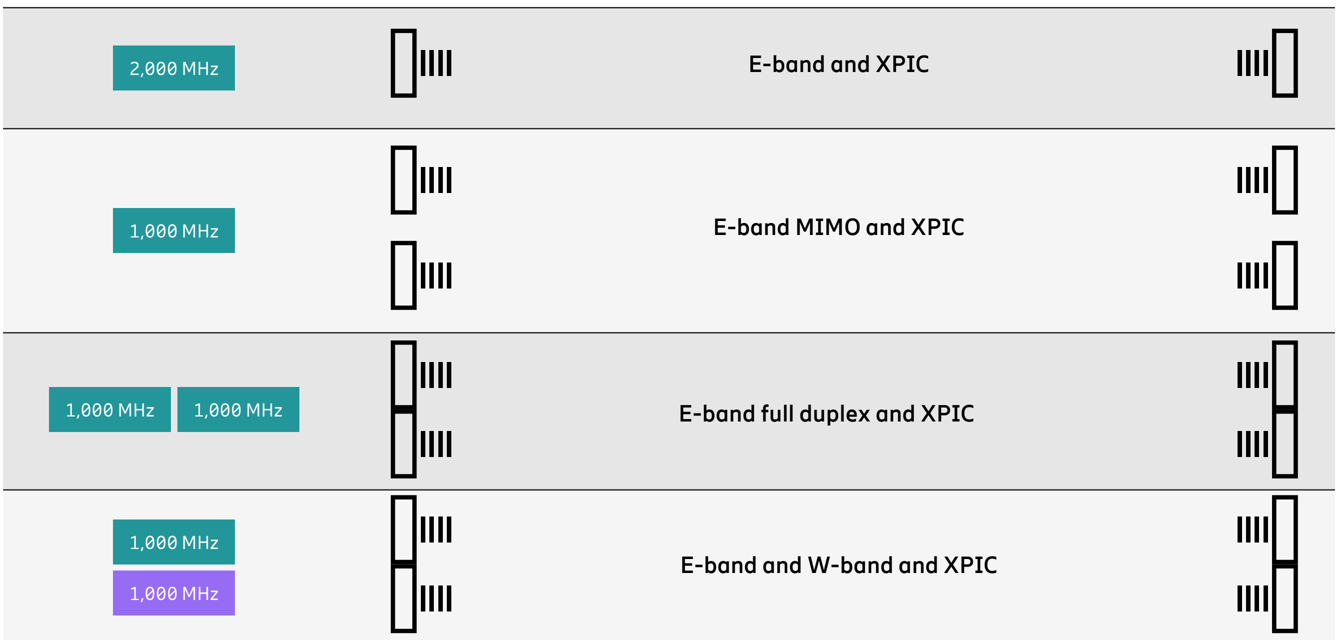
The large amount of spectrum provided by mmWave technology enables it to deliver high capacity. By mmWave, we typically refer to E-band (70/80 GHz), W-band (92–114 GHz) and D-band (130–174.5 GHz). E-band provides 10 GHz of spectrum, while the W-band provides almost twice this amount.

The different mmWave bands have different maturity levels. E-band technology is mature and commercially deployed worldwide, while W-band technology is currently only used in pre-commercial trials. W-band technology shares many commonalities with E-band and can therefore be seen as an extension of E-band. Meanwhile, D-band technology is based on separate radio technology, and it will take many years of research and development (R&D) before we see commercial deployments.

Technologies doubling mmWave capacity
Moving to higher frequencies and more spectrum is not the only way to achieve higher capacities. There are features that can be used to increase capacity in existing bands. For example, the use of CCDP/XPIC with dual-polarized antennas can double the capacity over the same frequency channel. Another related antenna technology called multiple-input, multiple-output (MIMO) uses multiple, spatially separated antennas to increase capacity. These types of antenna technologies are well-proven and commercially used in a variety of wireless communication systems. Another possibility to explore is the use of full-duplex (FD) radios in microwave links where the same frequency channel is used both in transmit and receive mode at the same time. Theoretically, this can achieve twice the capacity of a classical frequency division duplex (FDD) radio, where the available band is divided in half between a transmitter and a receiver. The obvious challenge with FD radios is potential interference between transmitters and receivers, which requires more sophisticated interference mitigation techniques and network planning compared to conventional FDD radios. FD radio technology needs further investments in R&D and standardization before it can be deployed in commercial networks.

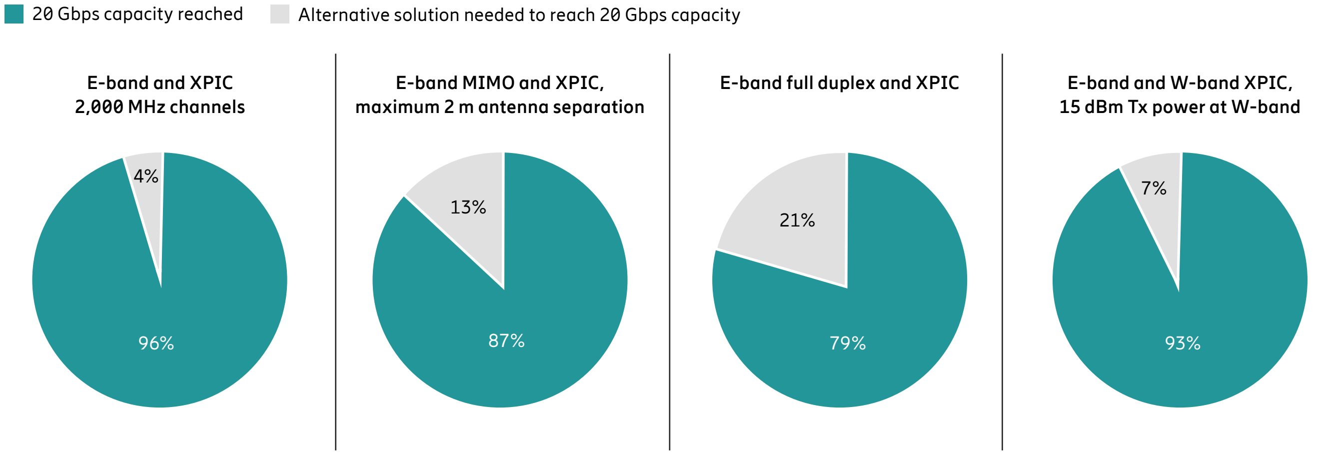
Technology comparison through network simulations
We carried out extensive simulations of very dense network deployments from three different European cities to evaluate how different mmWave technology options can be utilized to support a doubling

Figure 8: Different options to reach 20 Gbps capacity



Source: Ericsson (2025).

Figure 9: Simulation outcome showing the potential to reach 20 Gbps capacity using different options



Source: Ericsson (2025).

of the capacity of every single link in the network. The total number of links over the three cities was 1,619.

The baseline configuration was that each link used a dual-polarized (XPIC) antenna over a 1,000 MHz channel with 128 QAM (99.9 percent availability). This baseline configuration achieved 10 Gbps capacity and the goal was to double that capacity to 20 Gbps. Given the aforementioned technologies, there are several options to achieve this goal, as illustrated in Figure 8.

Doubling E-band channel

The first, and most straightforward cost-effective option, is to double the channel bandwidth from 1,000 MHz to 2,000 MHz in E-band and continue using XPIC and conventional FDD. This is assuming that all E-band spectrum is made available by the national spectrum regulator, such as 5 GHz of paired E-band spectrum. Thus, two 2,000 MHz channels and one 1,000 MHz channel are available in this scenario. A potential problem with doubling the channel size is that not all links can acquire 2,000 MHz, since the number of 2,000 MHz channels is limited to two. When having only two 2,000 MHz channels, network planning might not allow all links to use a 2,000 MHz channel due to possible interference between links, which means that some links could potentially only use a 1,000 MHz channel. However, our network simulations showed that 96 percent of all links could, in fact, use a 2,000 MHz channel and achieve the goal of 20 Gbps (see Figure 9). This really demonstrates the strength of using wider E-band channels, even in very dense network deployments, since only 4 percent, or 66 out of 1,619 links, could only use a 1,000 MHz channel.

MIMO

Instead of doubling the channel size, we also investigated how MIMO and XPIC over a 1,000 MHz channel can be used to achieve the goal of 20 Gbps. We know from a previous Microwave Outlook report[1] that the optimal antenna separation in a MIMO deployment depends on frequency and hop length. The optimal antenna separation can sometimes become impractical if it becomes too large for long hop lengths. Therefore, suboptimal antenna separations, say 80 percent of optimal, may sometimes be used without causing too large a performance penalty. We found that, if the maximum permitted antenna separation is 2 m, 87 percent of the links could achieve 20 Gbps by using MIMO and XPIC. The remaining 13 percent were too long.

Full duplex

We also studied FD E-band radios and found that 79 percent of the links could use FD to achieve 20 Gbps with proper network planning that fulfilled conventional interference criteria. The remaining 21 percent of the links could not use FD due to too much interference between links, which is caused by the fact that FD radios use both the low and high bands for transmitting and receiving in both directions, which reduces the available degrees of freedom in network planning. Meanwhile, conventional FDD radios can utilize the extra degree of freedom provided by having separate channels for each direction and therefore do not suffer from this kind of interference.

Complement with W-band

Finally, we also studied how W-band could be used to complement E-band to achieve the goal of 20 Gbps links. W-band radios have a shorter range compared to E-band equivalents, which can also be seen in Figure 7 in the Spectrum article. This is a result of W-band being an immature technology that cannot achieve the same maximum output power as today's E-band radios. However, if we carried out multi-band operations with E-band and W-band over 1,000 MHz channels, then we found that 93 percent of the links could achieve 20 Gbps. This assumed a maximum output power of 15 dBm at W-band, which limited the maximum hop length. With continued R&D, W-band radios will be able to support similar capacities and hop lengths as E-band radios of today, which means that 100 percent of the links could achieve 20 Gbps or more in the future.

Conclusion

The approach that is clearly most cost-effective (assuming spectrum fees are not overly costly) is to double the capacity for the vast majority (96 percent) of the existing links in this simulation by utilizing a 2,000 MHz channel together with XPIC, as there is no need to invest in new hardware. The other three alternatives require, besides added spectrum cost, various investments including radios, antennas and site installations (including on-site labor).

Overall, the simulation shows that all four technologies would offer a good range of possibilities for a capacity upgrade, as even the least usable one would still make it possible to expand 79 percent of the sites. However, a mix of two, or more, technologies would likely be needed to upgrade all links from 10 to 20 Gbps, and the choice of technology would be guided by regulatory requirements as well as network topology and financial possibilities to invest in new hardware.

Use of 2,000 MHz E-band channels is the most cost-efficient way of doubling capacity for 96 percent of links.

96%

[1] Ericsson Microwave Outlook (October 2019)

About Ericsson

Ericsson's high-performing networks provide connectivity for billions of people every day. For nearly 150 years, we've been pioneers in creating technology for communication. We offer mobile communication and connectivity solutions for service providers and enterprises. Together with our customers and partners, we make the digital world of tomorrow a reality.

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