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INTERVIEW

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COLLABORATION WITH UNITED GROUP'S NOVA FOR 5G MM-WAVE ENTERPRISE CONNECTIVITY

Intracom Telecom has expanded its strategic collaboration with Nova, a member of United Group, to further enhance high-speed enterprise connectivity in Greece. Nova will deploy Intracom Telecom's WiBAS™ G5 Smart and WiBAS™ G5 GigaConnect Fixed Wireless Access platforms over its 5G mmWave spectrum (26.50–27.50 GHz), delivering reliable, high-capacity broadband services to business customers.

The deployment supports Nova's continued investment in advanced access infrastructure, enabling consistent performance and robust connectivity in demanding enterprise environments. Building on a multi-year network modernization program launched in 2021, the collaboration has already expanded coverage and capacity across major metropolitan areas, connecting thousands of businesses nationwide. The expanded partnership reinforces Nova's strategy to provide resilient, ultra-fast wireless connectivity and highlights Intracom Telecom's role as a trusted technology partner for next-generation enterprise networks. The collaboration supports EU Digital Compass goals and reaffirms Intracom Telecom's leadership in advanced broadband solutions.



INTRACOM TELECOM PARTNERS WITH AVIAT NETWORKS

The strategic partnership between Intracom Telecom and Aviat Networks aims to deliver advanced Fixed Wireless Access (FWA) solutions leveraging 28 and 39 GHz mmWave spectrum for 5G deployments in North America. The collaboration combines Intracom Telecom's WiBAS™ G5 platform, the only commercially available point-to-multipoint FWA solution operating in both mmWave bands, with Aviat's strong regional presence and services expertise. Aviat will target select service providers to address growing consumer and enterprise demand for multi-gigabit connectivity as a cost-effective, rapidly deployable alternative to fiber. WiBAS™ G5 delivers over 22 Gbps from a single base station using Multi-User MIMO and Hybrid Massive Beamforming, supporting fiber-like performance over distances of up to 5 miles. Together, the companies aim to accelerate broadband expansion and enable true multi-gigabit wireless experiences across the U.S.

MULTI-GIGABIT FWA MILESTONE IN U.S. TRIAL

Intracom Telecom and GeoLinks successfully demonstrated multi-gigabit fixed wireless performance during a landmark joint field trial unveiled at WISPAPALOOZA 2025 in Las Vegas. Using Intracom Telecom's WiBAS™ G5 Smart base station and GeoLinks' FCC-licensed LMDS spectrum, the live demonstration achieved 1.6 Gbps aggregate throughput over a 5-mile link in the 29/31 GHz band. The trial confirmed the commercial and operational readiness of licensed mmWave FWA, proving its ability to deliver secure, interference-free, fiber-like connectivity over long distances. As the largest LMDS license holder, GeoLinks now enables WISPs across more than 1,300 U.S. counties to deploy high-capacity services using its nationwide licensed spectrum portfolio. This collaboration empowers service providers to accelerate network expansion, unlock new revenue opportunities, and bring reliable, enterprise-grade broadband to underserved markets where fiber is limited or cost-prohibitive.

GEOLINKS

AWARD-WINNING FWA SOLUTION FOR MDUs

Intracom Telecom's latest Fixed Wireless Access solution, WiBAS™ G5 MDUConnect, has been honored with the Infocom Award for "Technology Product of the Year" received by John Tenidis, Product Management Director, Wireless Networks Systems. This new solution has been designed to upgrade broadband connectivity in urban Multi-Dwelling Units (MDUs) without trenching or rewiring. By combining high-capacity mmWave FWA with Gigabit Home Networking (G.hn) distribution over existing in-building coaxial and telephone wiring, the solution delivers fiber-like speeds, up to 5.6 Gbps per sector and 1.7 Gbps per apartment, while minimizing cost and tenant disruption. Centrally managed via the uniMS™ platform, it supports automation, AI-driven optimization, and zero-touch provisioning.



NEW LEADERSHIP APPOINTMENTS TO DRIVE GROWTH IN GREECE

As part of its strategy to accelerate growth and further expand in Greece, Intracom Telecom strengthened its local management team. Specifically, Pericles Kanellos is appointed General Manager, Greece – Commercial, assuming responsibility for business development and commercial operations. In his role, he will focus on driving growth, expanding the customer base, and maximizing the value of Intracom Telecom's comprehensive solutions portfolio in the Greek market.



P. Kanellos



P. Gavathas

At the same time, Panagiotis Gavathas takes on the role of Defense & Security Systems Director, leading activities across defense, surveillance, and security. He will take the lead strategic initiatives, strengthen partnerships with key institutional and industrial stakeholders, and support the delivery of advanced security solutions in Greece. Commenting on the appointments, CEO Kartlos Edilashvili highlighted that strengthening the leadership team in Greece is a core strategic priority, reinforcing the company's position in digital transformation and critical infrastructure security.

INTRAROM RECOGNIZED FOR TECHNOLOGICAL EXCELLENCE

Intrarom has earned significant national recognition, reaffirming its leadership in high-tech manufacturing and innovation. At the prestigious Top Companies Gala in Bucharest, organized by the Chamber of Commerce and Industry of Bucharest, the company secured first place in the Research, Development, and High Technology category for large manufacturers of communication equipment. The distinction reflects strong performance across key financial indicators and highlights the advanced telecommunications equipment for wireless access, transmission, and transport produced at Intrarom's Bucharest facility. Further underscoring this accomplishment, Intrarom was also recognized by the Romanian Chamber of Commerce and Industry with third place at the national level in the Large Enterprises category for its field of activity. Intrarom also received the Excellence in Cloud-Based CX Transformation Special Award with Genesys, recognizing the successful migration of PPC Romania to Genesys Cloud and the delivery of advanced Contact Center Cloud solutions through strong partnership and customer collaboration.



SKYTELECOM UTILIZES WIBAS™ G5 FOR GIGABIT FWA IN GREECE

Intracom Telecom extended its collaboration with SkyTelecom through the supply of WIBAS™ G5 GigaConnect FWA technology, enhancing SkyTelecom's SkyLink service with reliable gigabit connectivity. Powered by Intracom Telecom's WIBAS™ G5 28 GHz platform, the deployment enables wireless access speeds of up to 1 Gbps with extended range for homes and businesses across Greece. By transitioning from unlicensed 5 GHz spectrum to licensed 28 GHz mmWave, SkyTelecom significantly increases network capacity, reliability, and performance consistency, delivering fiber-like broadband experiences to thousands of users. This partnership represents a key milestone in Greece's broadband evolution, highlighting how advanced wireless technologies and strong local collaboration can accelerate digital transformation and help bridge connectivity gaps nationwide.



WEBINAR SERIES: "TECH TALKS BY INTRACOM TELECOM"

Episode 2 of "Tech Talks by Intracom Telecom", the webinar series, delivered in partnership with our U.S. distributor Winncom Technologies., was titled "Wireless Fiber: How mmWave powers Multigigabit Fixed Access at scale – Speed. Scale. Simplicity." The webinar brought together industry professionals to explore how millimeter-wave technologies are enabling multigigabit fixed wireless access with exceptional performance and ease of deployment. During the session, our experts walked participants through the fundamentals of mmWave technology, key differentiators of wireless fiber solutions, and real-world use cases supporting broadband expansion. Special emphasis was placed on connecting unserved and underserved areas, as well as leveraging opportunities such as BEAD funding to accelerate next-generation networks. To watch the webinar replay, scan the QR code.



GIGABIT FWA DELIVER TO U.S. ENTERPRISES

Intracom Telecom has entered a strategic partnership with BroadbandOne to expand gigabit broadband access for enterprises across Georgia, Louisiana, Texas, Oklahoma, and Florida. The initiative combines Intracom Telecom's high-performance multi-gigabit mmWave Fixed Wireless Access (FWA) technology with BroadbandOne's differentiated, fully managed service model. Using Intracom Telecom's WIBAS™ G5 platform operating at 28 GHz, the rollout delivers fiber-like performance with download speeds up to 2.4 Gbps and extended reach beyond 5 miles, ideal for areas where fiber is limited or cost-prohibitive. The solution supports BroadbandOne's Telco as a Service (TaaS) offering, enabling enterprises to scale connectivity without owning or maintaining network infrastructure. The partnership accelerates time to service, ensures predictable costs, and delivers carrier-grade reliability. Expansion into additional U.S. regions is planned for 2025, further supporting enterprise digital transformation nationwide.



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MM-WAVE FWA FOR GLOBAL GIGABIT ACCESS

DR. CHARALAMBOS PAPANASTASIOU
Head, Access Radio Solutions

GIGABIT BROADBAND AS A UNIVERSAL REQUIREMENT

Access to high-quality broadband connectivity has become a fundamental requirement for modern societies. Economic growth, digital inclusion, public services, and innovation increasingly depend on reliable, high-capacity networks. Applications such as cloud computing, remote work, online education, telemedicine, ultra-high-definition video, and emerging immersive services demand not just basic connectivity, but consistent broadband speeds approaching or exceeding 1 Gbps.

While fiber-to-the-home (FTTH) is widely recognized as the gold standard for gigabit access, deploying fiber everywhere is neither fast nor economical. Civil works, rights-of-way, and long deployment timelines make universal fiber coverage difficult, particularly in suburban, rural, and rapidly expanding urban areas.

To bridge this gap, millimeter-wave Fixed Wireless Access (mmWave FWA) has emerged as a powerful and practical solution, capable of delivering fiber-like performance over a wireless medium.

MM-WAVE FWA AND THE ROLE OF AREA-LICENSED SPECTRUM

mmWave FWA uses spectrum typically above 24 GHz to provide broadband connectivity to fixed locations such as homes, enterprises, and multi-dwelling units (MDUs). The defining strength of mmWave bands lies in the availability of very wide contiguous channels, often hundreds of megahertz or more, enabling multi-gigabit throughput.

However, achieving fiber-like performance over wireless is not only a matter of spectrum width; spectrum licensing is critical. Area-licensed spectrum provides operators with exclusive or coordinated access to frequencies within a defined geographic region. This contrasts sharply with unlicensed spectrum, where interference is unpredictable and quality of service cannot be guaranteed.

Licensed spectrum enables:

- » Interference-free and predictable operation, essential for carrier-grade broadband.
- » High availability and reliability, comparable to wired networks.
- » Confidence for long-term investment, since operators are protected from uncontrolled spectrum congestion.

As a result, area-licensed mmWave bands are the foundation for truly fiber-like FWA services, supporting guaranteed throughput, low latency, and stable performance.

AREA-LICENSED MM-WAVE BANDS: A GLOBAL RESOURCE

One of the major strengths of mmWave FWA is that area-licensed bands are available worldwide, providing a harmonized foundation for large-scale deployments.

Europe: 26 GHz and 28 GHz

In Europe, the primary mmWave band for terrestrial broadband is the 26 GHz band (24.25–27.50 GHz). This band has been designated for 5G networks under a technology-neutral regulatory framework, allowing license holders to deploy 5G NR, FWA, or other broadband technologies. This flexibility enables operators to optimize their networks for fixed wireless gigabit access while preserving the option to support mobile services where needed.

The 28 GHz band in Europe is allocated on a co-primary basis with Earth-to-satellite communications. While satellite services retain protected status, terrestrial deployments such as FWA can coexist without any concern through coordination mechanisms. This shared approach maximizes spectrum efficiency while still enabling high-capacity wireless access.

North America: UMFUS and LMDS

In North America, the regulatory environment has strongly encouraged mmWave innovation. The FCC has introduced the Upper Microwave Flexible Use Service (UMFUS) framework, covering the 24, 28, 37, and 39 GHz bands. These bands are licensed on an area

basis and allow flexible use for mobile, fixed, or hybrid deployments, making them ideal for large-scale mmWave FWA.

In addition, the LMDS bands at 29/31 GHz provide further licensed mmWave capacity. Originally intended for point-to-multipoint systems, LMDS spectrum is increasingly being repurposed to support modern gigabit FWA solutions.

Global Trend: Migration to Flexible TDD

Worldwide, regulators are progressively migrating legacy 26 GHz and 28 GHz allocations toward flexible Time Division Duplex (TDD) usage. In Middle East for example, several Gulf countries have modernized legacy 26 GHz and 28 GHz licenses to support TDD-based broadband and 5G FWA, enabling high-capacity residential and enterprise access without major fiber expansion. In Africa, countries such as Nigeria are refarming parts of the 26 GHz band to support flexible TDD broadband.

This global regulatory evolution reinforces mmWave FWA as a long-term, scalable solution for gigabit access.

Area-licensed mmWave spectrum is available worldwide, providing a harmonized foundation for large-scale reliable, fiber-like Fixed Wireless Access deployments

TECHNOLOGICAL ADVANCES POWERING MM-WAVE FWA

The rapid maturation of radio technologies has transformed mmWave FWA from a niche solution into a carrier-grade alternative to fiber. Several key innovations underpin this transformation.

Modern mmWave FWA systems support Multi-User (MU) operation, enabling multiple terminals to communicate concurrently using the same system resources. Instead of serving users sequentially, the network can schedule and spatially separate transmissions, dramatically improving sector capacity and spectral efficiency. This is essential for dense residential areas and MDUs, where many users demand high throughput simultaneously.

Multiple-Input Multiple-Output (MIMO) technology multiplies system capacity by reusing spectrum resources across multiple spatial streams. By transmitting independent data streams over the same frequency channel, MIMO significantly increases throughput without requiring additional spectrum. In mmWave FWA, MIMO is a cornerstone for delivering gigabit and multi-gigabit services.

One of the most critical innovations in mmWave systems is massive hybrid beamforming. By concentrating transmitted power into narrow, steerable beams, beamforming compensates for higher path loss at mmWave frequencies. This enables Longer transmission distances, Higher link reliability, Improved resistance to interference and blockage. Steerable high-gain beams allow mmWave FWA links to reach several kilometers while maintaining stable gigabit performance—far beyond early perceptions of mmWave limitations.

ARTICLE

Carrier aggregation enables operators to combine multiple spectrum blocks, even across different bands, into a single logical channel. This allows flexible and efficient use of fragmented spectrum holdings, maximizing peak throughput and overall capacity. For FWA, carrier aggregation ensures that available spectrum can be fully exploited to meet growing bandwidth demands.

FIBER-CLASS FWA WITHOUT FIBER-LIKE CONSTRAINTS

Thanks to these technological advances, mmWave FWA can now deliver high-capacity, reliable, fiber-like broadband—but without the long deployment timelines and high costs associated with fiber rollout. Networks can be deployed in weeks rather than years, using existing towers, rooftops, and street infrastructure.

mmWave FWA is suitable for:

- » Residential broadband, delivering gigabit services to single-family homes.
- » Enterprise connectivity, supporting business-grade SLAs and high-availability links.
- » Multi-Dwelling Units (MDUs), where a single wireless link can provide multi-gigabit backhaul to the building, with internal distribution via existing in-building cabling.

Importantly, mmWave FWA can accelerate copper switch-off strategies. Legacy copper networks are fundamentally incapable of delivering gigabit speeds and represent a growing operational burden. Replacing copper with mmWave FWA allows operators to modernize access networks rapidly while meeting future bandwidth requirements.

COMPLEMENTING FIBER AND OUTPERFORMING ALTERNATIVES

mmWave FWA is not a replacement for fiber but a powerful complement. Fiber remains ideal for core and aggregation networks, while mmWave FWA extends gigabit access to locations where fiber is delayed, costly, or impractical.

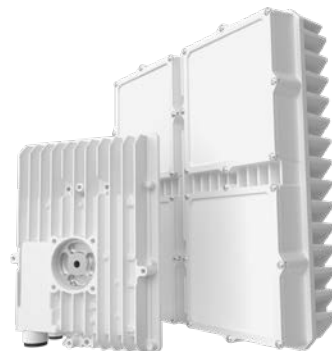
Compared with alternative access solutions:

- » LEO satellite broadband offers wide coverage but lacks the consistent multi-gigabit capacity and low contention required for dense access networks.
- » Sub-6 GHz 3GPP FWA provides broader coverage but cannot match the throughput and capacity density achievable with mmWave.

For the networks of tomorrow—defined by gigabit speeds, reliability, and scalability—mmWave FWA stands out as the most effective wireless access technology.

WIBAS™ G5 AND THE FUTURE OF GIGABIT FWA

A concrete example of these advances is the WiBAS™ G5 solution, which delivers reliable multi-gigabit connectivity over distances exceeding 8 km. Designed for operation across all area-licensed mmWave bands, WiBAS™ G5 combines MU capabilities, advanced MIMO, massive hybrid beamforming, and carrier aggregation to provide true fiber-like performance over wireless.



As regulators, operators, and technology providers align around licensed mmWave spectrum, mmW FWA is poised to play a central role in delivering global gigabit access—everywhere and to everyone. ■

Home & Business Ultra Broadband FWA

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AUTOMATIC BEAM STABILIZATION ANTENNAS ENABLE LONGER RANGE E-BAND LINKS

DR. KONSTANTINOS DIMOPOULOS

Principal Product Manager, Wireless Network Systems

E-Band radios, operating in the 71-76/81-86 GHz frequency range, have become the dominant wireless technology for demanding multi-gigabit per second transport applications in mobile and fixed networks. Due to their superior TCO structure, when compared to optical fiber deployments and other lower frequency microwave (MW) radio link alternatives, E-Band radios are the preferred wireless option to provide Backhaul services to 5G/ 5G Advanced systems, while the next generation of E-Band systems is planned be the foundation of wireless 6G network transport.

Hundreds of thousands of E-Band radios have already been deployed around the world, predominantly for transport links of short and medium range up to about 5 km with link availabilities of 4 9s or better. Nevertheless, long range E-Band radio links have also been deployed in many cases for longer links, up to 10 km and beyond, albeit with smaller link availabilities. Communication Service Providers (CSPs) are keen on extending the ranges for which E-Band links are applicable so that they can exploit the capacity and cost advantages of E-Band technology for longer, high availability wireless backhaul links.

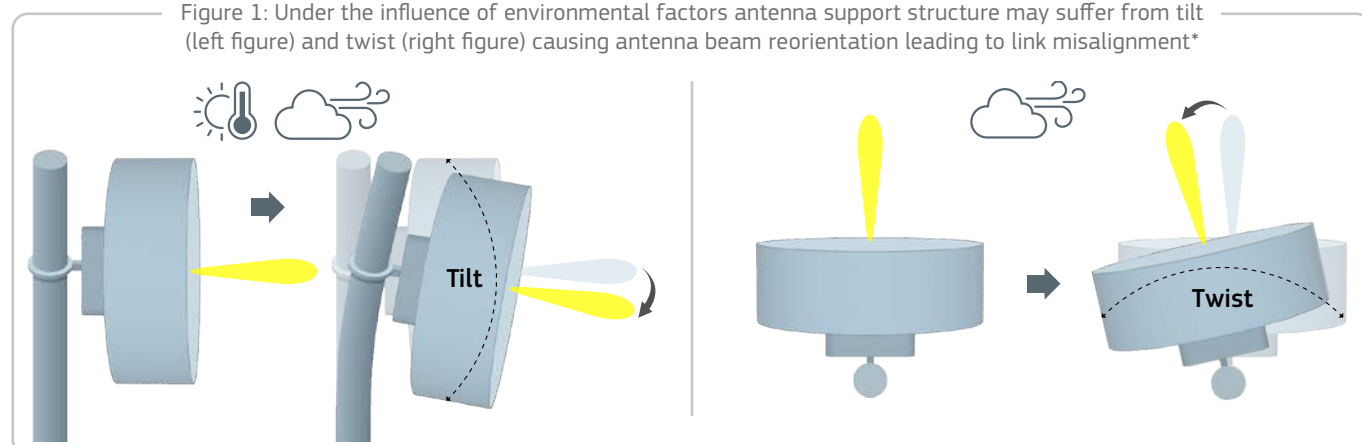
One of the ways to achieve this objective is to increase the nominal diameter of the used E-Band antennas from a maximum of 60 cm (2 feet), which has been the norm so far, to 90 cm (3 feet) or even more.

CHALLENGES OF LARGE DIAMETER E-BAND ANTENNA DEPLOYMENT

A particular characteristic of E-Band antennas is that, even for a relatively small nominal diameter of 60 cm, they feature a very high gain of around 50 dB, and the beamwidth of their main radiation lobe at half of their maximum gain, sometimes referred to as Full Width Half Maximum (FWHM), is quite narrow. The metric of FWHM is used as a rule of thumb to characterize the width of antennas' beam pattern, and for 60 cm nominal diameter E-Band antennas the FWHM is around 0.5 degrees. A nominal 90 cm diameter E-Band antenna features a beamwidth FWHM of around 0.3 degrees. For comparison, a 15 GHz antenna with a nominal diameter of 60 cm has a FWHM of around 2.5 degrees.

The small value of antenna beam FWHM imposes special attention during the phase of link alignment but also has some important implications in the alignment stability of E-Band links during operation, if the support infrastructure of the antenna does not maintain stability/geometrical invariance that is smaller than the FWHM of the antenna. There are several types of antenna support structures, such as self-supporting towers (lattice/monopole), guyed masts, pole/mast mounts on rooftops, some of which, such as monopoles and Guyed towers, have been shown to be more susceptible to deformation/instability effects than others. Deformations of properly constructed and deployed support structures are small in absolute terms, measured in terms of the angle between the deformed/

Figure 1: Under the influence of environmental factors antenna support structure may suffer from tilt (left figure) and twist (right figure) causing antenna beam reorientation leading to link misalignment*



* Structural deformations shown are exaggerated in magnitude for illustration purposes. Structural deformations may move the beam away from the aligned state in either direction. For clarity of the schematic only one direction is shown

non-deformed state, in general less than one degree ($\pm 1^\circ$). Nevertheless, they may still cause a measurable effect on an E-Band link's alignment and performance by deflecting the very narrow E-Band antenna main radiation lobe even by few tenths of a degree (see Fig.1).

It has been observed that, in some cases, the radio/antenna mounting structure can exhibit a small tilting/bending deformation, which may vary throughout the day under the influence of direct solar radiation. This tilting/bending effect is caused by differential thermal expansion of different parts of the pole/tower structure. As the sun moves across the sky throughout the day and the thermal balance in the atmosphere changes, a slow and continually changing mounting structure deformation process occurs. The resulting link misalignment causes variation in the Received Signal Level (RSL) and Signal to Noise Ratio (SNR) of the link's radios. Note that the larger impact on the link alignment due to this effect, is caused by an "up/down" movement of the main antenna radiation lobe in the elevation (vertical) plane, rather than a "left/right" movement in the Azimuth (horizontal) plane.

In other cases, under the influence of strong wind, it is possible for weaker antenna mounting structures to start swaying in both the elevation and the azimuth planes. Such movements cause a twist of the antenna beam, misalignment of the link and detrimental effect in the link SNR and performance at a much faster rate than the sun-related warping effect.

During these misalignment incidents, the radio is adapting to the negative link SNR changes using link's Automatic Transmit Power Control (ATPC) and/or Hitless Adaptive Modulation and Coding (HACM), which enacts automatic modulation format transitions to more robust, albeit lower capacity formats. In extreme cases large radio RSL fades can take place and the link may cease passing traffic altogether.

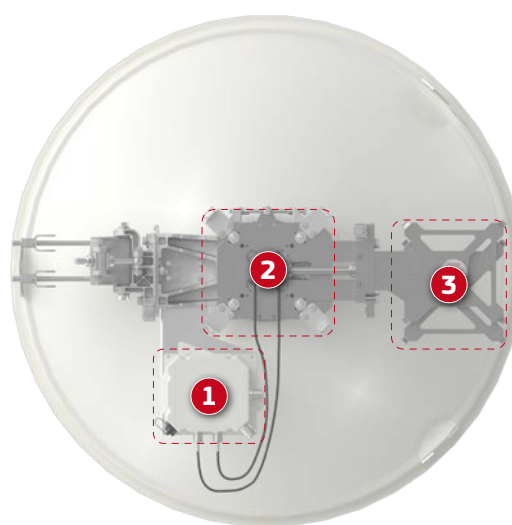
Such effects have, so far, restricted the size of deployed E-Band antennas to a maximum of 60 cm, thus influencing, among other factors, the useful range of E-Band links. Additionally to the discussed dynamic effects, there is also an initial alignment precision issue for 90cm nominal diameter E-Band antennas, which may cause the link gain achievable in the field to be lower than the value one would expect from the antenna specifications, thus lowering the practical benefit of using such antennas. While the stability problem caused by wind gusts can be greatly mitigated by employing suitably rigid and stable support structures, the issue caused by thermal expansion/contraction may

affect even robust support structures and is more difficult to solve with passive means. A solution is to introduce an antenna design that can actively respond to the discussed link alignment deviations to restore the link alignment to as close an optimized state as possible.

THE INTRACOM TELECOM/FAINI 2-D E-BAND BEAM STABILIZATION ANTENNA

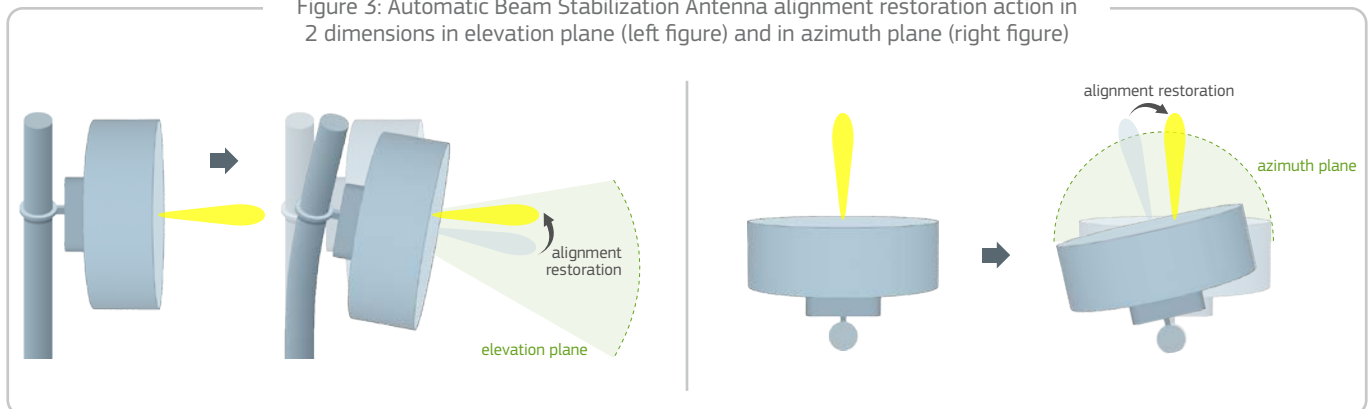
Since 2016 Intracom Telecom has been designing, developing, and manufacturing high RF performance E-Band radios, featuring market leading spectral efficiency and range. Furthermore, Intracom Telecom's antenna manufacturer subsidiary Faini Telecommunication Systems, designs and manufactures high performance Microwave (MW), E-Band and Dual Band antennas. Responding to CSP's requirements for longer and more stable E-Band-based multi-gigabit per second links, Intracom Telecom and Faini proceeded to the co-development of an E-Band Automatic Beam Stabilizing Antenna (ABSA). This type of antenna is appropriate for use cases where the support structure of the antenna/radio system undergoes thermal expansion/contraction related deformations, affecting the orientation of the antenna radiation beam, causing link misalignment, performance degradation or even outages. The E-Band ABSA system has been designed to provide antenna beam stabilization in two-dimensions (2-D), i.e. in both the Elevation and Azimuth planes, and is applicable

Figure 2: Intracom Telecom 90cm 2-D Automatic Beam Stabilization Antenna in Dual Band Configuration (back view)



- 1 Beam Stabilization Control Module
- 2 E-Band Radio Bracket
- 3 2xMW Radio Bracket (detachable)

Figure 3: Automatic Beam Stabilization Antenna alignment restoration action in 2 dimensions in elevation plane (left figure) and in azimuth plane (right figure)



to both 60 cm and 90 cm nominal diameter antennas. A unique feature of the Intracom Telecom/Faini 2-D ABSA is that it has been designed from the start to be a Dual Band antenna that is capable of combining E-Band and MW radios through a single dish (see Fig.2).

The E-Band ABSA system is composed of a control module, placed in an outdoor enclosure that is externally attached to the antenna mount, and a specially designed configurable subreflector / dipole mechanism integrated inside the antenna reflector drum. The control module provides the controlling signal for the movement of the antenna subreflector, while at the same time it serves as a management interface for the antenna stabilization mechanism. The control module interfaces on the one side with the active antenna subreflector / dipole mechanism and on the other side with the E-Band radio, other external networking devices and the antenna power supply feed. It can establish secure IP-based communication with network management systems and provide full management visibility via detailed monitoring information regarding the status of the antenna functions, such as current and "historical" antenna adjustment angle.

The development of such a system poses engineering challenges, as it requires a reliable, high sensitivity and accuracy mechanism that is able to provide effective stabilization to very small alignment deviations below ± 1 degrees, while the accuracy of compensation needs to be much better than the FWHM of the E-Band antenna beamwidth. To achieve this difficult task, the beam compensation mechanism of the antenna processes sensor data from embedded high accuracy accelerometers and gyroscopes. These detect movements and deviations of the radio/antenna system from an initial reference orientation and provide input to an algorithm that controls the adjustment of the antenna active sub-reflector positioning. The Intracom Telecom ABSA system also receives

feedback from the RSL indication of the attached radio to calibrate and optimize the stabilization efficiency, accuracy, and reliability. The result is that the radiation beams of the antennas on both sides of the link can effectively maintain their original orientation, set at the time of initial link alignment (see Fig.3). The 2-D ABSA mechanism is integrated with a standard antenna reflector and mounting bracket structure and can compensate maximum alignment deviations between ± 1.5 degrees (assuming the initial aligned position is a zero-degree deviation), while maintaining an ETSI EN 302 217 Class 3 antenna radiation pattern performance.

CONCLUSION

In conclusion, the use of the Intracom Telecom ABSA system improves the average link capacity and link availability when the antenna installation structure suffers from thermal expansion/contraction related tilting. The Intracom Telecom ABSA enables the more widespread deployment of 90 cm diameter antennas, enhancing the link gain by about 5 dB compared to 60 cm diameter antennas, contributing to the possible extension of the range of high availability E-Band multi-Gbit/s radio links by up to 20%. The misalignment correction mechanism ensures that the link alignment is optimal from the installation phase, which it helps to conclude faster and with higher precision, and onwards throughout the lifetime of the link.

The, currently unique, Dual Band capability of the Intracom Telecom ABSA system can enhance the range extension benefit derived from the use of 90 cm diameter antennas by multiplying it with the range extension benefit of the Dual Band technique. Combining this innovative antenna with Intracom Telecom's long range UltraLink™ E-Band radios enables CSPs to deploy E-Band technology in their networks for significantly larger than before link ranges. ■

ARTICLE

GENERATIVE AI ASSISTANT FOR INTRACOM TELECOM NETWORKS

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DR. NIKOS ANASTOPOULOS
Principal Solutions Architect

ANDREAS SYRENGELAS
Senior Product Manager

DR. PANAGIOTIS FOTIADIS
Head of Data Science

Artificial intelligence is largely becoming a key component of **network automation solutions**. These solutions allow operators to maintain performance, reduce service disruptions, and operate more efficiently, by enabling proactive monitoring, predictive analytics, automated anomaly detection, intelligent traffic or service optimization, and accelerated root-cause analysis. At Intracom Telecom, a long-term focus has been on enhancing our wireless networks through AI-driven innovations that significantly improve network performance and reliability.

FWA AND ITS KEY CHALLENGES NETWORK MANAGEMENT

Fixed Wireless Access (FWA) broadband introduces a fundamentally different operational reality compared to fiber or cable because service quality depends on a shared and highly variable radio medium rather than a stable physical line.

Challenges in deploying mm-Wave FWA include LoS requirements, extensive site surveys and planning to ensure optimal placement of base stations and Terminal Stations (TSs), as well as a strong requirement for continuous monitoring and management to optimize signal quality, adjust bandwidth allocation and ensure uninterrupted high-speed. Additionally, FWA networks are prone to external situations where the service might remain technically connected but the user experience might be poor.

Such degradations are often driven by factors like partial obstructions in the LoS, antenna misalignment, rain-induced attenuation, and persistent signal deterioration caused by vegetation growth on the radio path.

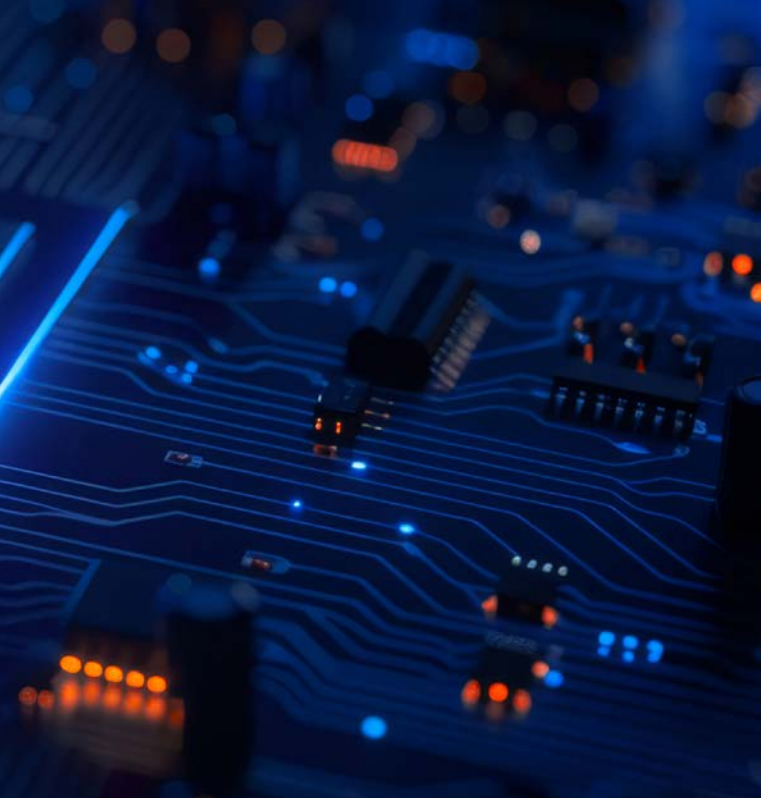
HOW AI/GENAI CAN RESOLVE THOSE FWA-RELATED ISSUES

AI/ML can help reduce operational complexity, enhance reliability, improve performance, and ensure cost-efficient scaling, addressing the most pressing pain points of existing and next-generation wireless deployments.

Towards relieving multi-domain ambiguity, AI/ML can significantly assist by introducing correlation-driven monitoring that combines TS telemetry, radio KPIs, Base Station performance indicators into anomaly detection and root cause classification models. Rather than relying on static thresholds, ML can learn baselines per cell and time-of-day, detect deviations that signal emerging congestion or interference, and classify incidents into buckets such as radio coverage impairment, congestion/capacity limitation. AI/ML can help by forecasting cell load and congestion trends, using historical traffic and radio utilization patterns, allowing operators to anticipate when and where performance will degrade and act proactively.

Generative AI can complement these AI/ML capabilities, by summarizing and explaining incidents and providing contextual information with supporting evidence thus reducing the need for human intervention and escalation. GenAI can also generate tailored next-step guidance for different audiences (NOC engineers, field technicians, or customer support).

Intracom Telecom is developing a uniMS™ AI conversational assistant, that receives user queries through natural-language interaction, pulls evidence across multiple network elements (Base Stations, TSs) and data layers (planning, performance, capacity), provides explainable insights on FWA network status, proposes the most like-



ly root cause category with confidence and evidence, and recommends the next best actions.

The AI assistant is positioned as a natural-language interface to uniMS™ data and workflows, aimed at reducing time spent on repetitive diagnostics and turning raw telemetry/alarms into actionable operational insight.

Functionally, the AI assistant will:

1. provide natural-language access to uniMS™ data,
2. automate common NOC workflows such as worst TS analysis, alarm correlation, disconnection burst detection, and performance trend summaries,
3. hide internal system complexity by returning clean, aggregated outputs that match how operators think (e.g., “top 5 worst sectors”).

The new AI assistant is designed to be tightly integrated with uniMS™ Platform and not as a parallel system. In addition, it could support troubleshooting by utilizing internal technical documentation to provide context aware responses via Retrieval-Augmented-Generation (RAG) functionality.

SAMPLE USER QUERIES

We report two **representative user queries** that illustrate the expected experience: an operator asks for sector ranking by disconnection rate over the last 24 hours and get an aggregated, prioritized list, or requests **KPI trend analysis** (RSSI/SNR) for a given TS across 24 hours and 7 days with deviations highlighted versus a baseline. In other words, the Copilot is designed to translate operator intent into the right data retrieval and analysis steps, and present results in an operationally useful form.

MOVING TOWARDS INTENT-BASED AUTONOMOUS NETWORKS

Autonomous networks shift operations and maintenance away from static rule-based automation – managed by humans, towards more **dynamic intent-based automation** that can enhance customer experience and guarantee SLA commitments at scale.

Generative AI makes FWA troubleshooting conversational and consistent: it summarizes incidents, highlights supporting evidence, and suggests evidence-backed actions

Rather than requiring engineers to define detailed workflows for every possible scenario, intent-driven networks enable operators to express what outcome they want (for example, quality thresholds or performance targets) and rely on AI, real-time data, and closed-loop feedback mechanisms to continually adjust the network to meet those goals. Here, AI and machine learning provide the predictive and analytical layer that anticipates emerging issues, while Generative AI translates network behavior into human-readable explanations and recommendations. In more advanced settings, lightweight agentic capabilities can help the system decide when to act within predefined guardrails, rather than simply reporting problems to humans.

Intent-driven autonomy enhances traditional automation by aligning network behavior with operational goals rather than isolated tasks. For repetitive incidents and predictable performance degradations, an **intent framework** can enable the system to recognize patterns, evaluate utility against specified objectives (such as a minimum throughput or latency target), and enact corrective adjustments proactively. ■

ARTICLE

BREAKING THE FIBER-ONLY MYTH

How Intracom Telecom's FWA Is Powering America's Broadband Future

Fiber won't reach everyone — but gigabit connectivity will. The question is how fast, and how affordable it will be.

For decades, the broadband industry has treated fiber as the gold standard — and for good reason: when properly deployed, fiber delivers virtually limitless bandwidth. But there's a catch; rolling it out may take years of planning, digging, permitting, AND staggering amounts of capital — and in rural areas, fiber's economics often collapse. Fiber networks are also vulnerable to service interruptions, whether underground or aerial, from accidental cuts or severe weather. In fact, in several recent industry surveys aerial fiber comes second to carrier-class FWA in reliability.

As the BEAD program enters its active award and deployment phase in 2026, America's broadband priorities are being reshaped in real time. States, providers, and communities face a pressing question: what's the smartest, fastest, and most cost-effective way to connect the millions still waiting for reliable broadband?

The answer is increasingly clear: licensed millimeter-wave Fixed Wireless Access (FWA) has emerged as a critical complement — and in many cases an alternative — to fiber for connecting the unserved, the underserved, and Priority Broadband Projects. Intracom Telecom's global experience delivering ultra-fast access networks helps operators overcome both current and anticipated bottlenecks in fiber deployment.

FIBER'S LIMITATIONS, FWA'S ADVANTAGE

Laying fiber can cost upwards of \$40,000 per mile. Even with federal subsidies, the time required to trench miles of cable means communities might wait years for service — particularly in low-density or difficult terrain.

By contrast, Intracom Telecom's WiBAS™ mmWave radios bypass the digging altogether. A single base station with 360° coverage can cover up to almost 100 square miles, delivering download speeds up to 2.5 Gbps per subscriber. Customer premise installation takes under 30 minutes, enabling networks to go live in days, not years.

The economics are equally compelling. With lower CAPEX and OPEX, Intracom Telecom's FWA solutions consistently deliver faster ROI than the multi-year payback periods common with fiber deployments.

THE LICENSED SPECTRUM CHALLENGE

Up until recently, mmWave spectrum used for such deployments was only available to the privileged few. That landscape has changed. Intracom Telecom, in collaboration with nationwide license holders, is now able to facilitate cost-effective sub-leasing of licensed spectrum — even for smaller and regional WISPs.

This eliminates one of the final barriers for providers seeking fiber-like performance with FWA economics and operational simplicity, while maintaining the predictability and reliability of licensed spectrum.

REAL-WORLD PROOF

In North America: Intracom Telecom's claims are backed by real deployments on the ground. In the U.S. in 2025, the company delivered over 600 sector radios, supporting a cumulative capacity of 72,000 terminals. Deployments are accelerating in 2026, with many thousands of additional sectors expected across North America alone. These



networks are already providing subscribers with speeds of up to 1 Gbps and beyond. Customers include some of the largest WISPs in the nation, such as BroadbandOne, GeoLinks, and Neptuno.

In Europe: The mmWave PtMP revolution matured earlier. To date, tens of thousands of Intracom Telecom mmWave sectors have been installed, with the number of subscribers served soon expected to reach into the millions. For example, in Italy, Intracom Telecom has deployed the very largest mmW FWA network in the world.

These examples underscore a critical point: FWA is not a stopgap. It is a proven technology for long term investment trusted by Tier-1 operators, WISPs, vertical markets, and public authorities worldwide. Intracom Telecom's FWA is as reliable as buried fiber — and more reliable than aerial fiber — by avoiding accidental cuts and weather-related outages.

BEYOND STOPGAP: A LONG-TERM SOLUTION

For years, wireless was viewed as a temporary measure until fiber eventually arrived. That assumption no longer reflects today's technical reality or investment environment. Advances in mmWave performance, spectrum access, and hybrid massive beamforming have made FWA a viable long-term solution that rivals fiber in both performance and reliability.

Intracom Telecom's WiBAS™ platform, operating in the U.S. in FCC-approved LMDS and UMFUS licensed spectrum, delivers:

- » Up to **2.5 Gbps** download speeds per user;
- » Uplink speeds are in the **hundreds of Gbps** and therefore do not lose out to fiber;
- » Support for up to **120 terminals** per hub, each capable of true multigigabit speeds;
- » **Zero-touch provisioning** for rapid scaling, with no complex 3GPP core required;
- » Clean, compact **installs with integrated antennas**, trusted by operators across the U.S., Europe, LATAM, and Asia-Pacific.

This combination of performance, simplicity, and affordability makes Intracom an ideal partner for Broadband projects.

TIMING IS EVERYTHING

The broadband conversation has shifted. In 2026, the focus is increasingly on execution — connecting the unserved and underserved quickly, reliably, and cost-effectively.

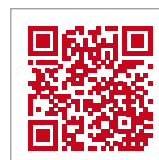
The data supports this shift. With proven ROI, deployments delivering gigabit speeds over distances of up to 5 miles, and successful rollouts across the U.S. and Europe, Intracom Telecom demonstrates that achieving universal broadband does not always require trenching or aerial fiber construction.

THE FUTURE IS WIRELESS

The digital divide is not just a question of bandwidth — it is also a matter of time and cost. Fiber remains essential for greenfield builds and dense metro environments. But for millions of Americans still waiting for service, mmWave FWA offers a pragmatic, scalable, and future-proof path to gigabit connectivity. The bottom line is this: broadband investments no longer need to be fiber-only to be future-ready. ■

Empower Your Bead Priority Broadband Projects with reliable multi-gigabit mmWave FWA

Scan to find out more



UNLOCKING GIGABIT ACCESS

IN EVERY APARTMENT



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STAND **7B44** (HALL 7)

WiBAS^{G5}
MDUconnect

RELIABLE GIGABIT FWA FOR HOMES & MDUs

The **WiBAS™ G5 MDUConnect** solution features a rooftop-installed mmWave Terminal Station connected to a Base Station, with connections speeds exceeding the gigabit benchmark. The Terminal Station is connected to a G.hn Aggregator, located on the MDU rooftop or indoors, which redistributes the offered bandwidth through legacy coaxial or twisted-pair wiring to individual apartments. Compact G.hn CPEs at each apartment complete the chain, delivering Ethernet connectivity while enabling unified QoS management and reverse power feeding where applicable.



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