



# **BRINGING DIRECT TO DEVICE CONNECTIVITY TO EUROPE AND THE WORLD**

**2023 April 13**



# EchoStar Mobile Limited

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- EchoStar Mobile Limited (EML), a European MSS/CGC licensee, is utilising its EchoStar XXI satellite to provide narrowband data and voice mobile satellite services (MSS) throughout Europe in the S band.
  - EML continues to bring to Europe new services, most recently the first satellite-enabled LoRa service (hybrid terrestrial-satellite).
  - EML has been at the forefront of supporting humanitarian efforts associated with the war in Ukraine.
  - EML will release its 3GPP-NTN compliant direct-to-cell service for two-way messaging later this summer.
  - EML is supplementing its services with LEO satellites systems over the next 3-4 years to bring direct-to-cell wideband connectivity throughout Europe and the world.

# EML and Its Affiliates are Well-Positioned for Success

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EchoStar and its affiliates because of its existing satellite networks, its ITU and market access spectrum rights and its MSS experience, is well-positioned for success for its direct to device services. It holds:

- Highest priority global International Telecommunications Union (ITU) rights for the EchoStar XXI satellite network in the 2 GHz band over large portions of Region 1 and using TerreStar 1 and DBSD for the North American market.
- Highest priority global ITU rights its under-construction LYRA system in the 2 GHz band in with deployment beginning in 2024; and
- A European ITU filing to support our 5G 3GPP-NTN 2 GHz band direct to device wideband services, with deployment planned to start in the 2026/2027-time frame.

In addition, EML:

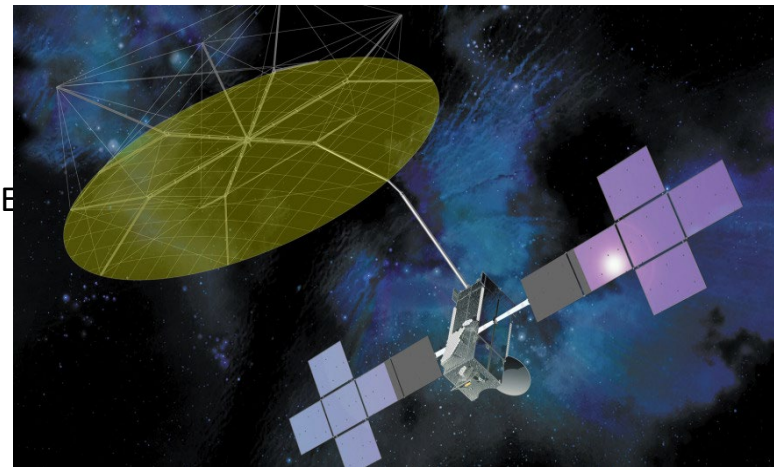
- Has a growing EU-based and globally operating technical, operational, and marketing presence including obtaining 2 GHz band licenses globally, with a focus on Eastern Europe and Africa, among other locations; and
- Is a leader, with its affiliates, at 3GPP and other standard bodies to develop Release 17 and beyond.

# EchoStar XXI: LoRa and Direct to Device MSS

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EchoStar XXI, because of its high capacity and its 18-meter antenna, was designed specifically to enable direct to device communication.

- EML has already commercially launched its satellite-enabled LoRa service in Fall 2022 (the first of its kind). The service is being extended with the launch of another world's first: hybrid satellite-terrestrial LoRa.
- Later this year, EML will commercially launch service to 3GPP-NTN compliant direct-to-cell devices for two-way messaging.

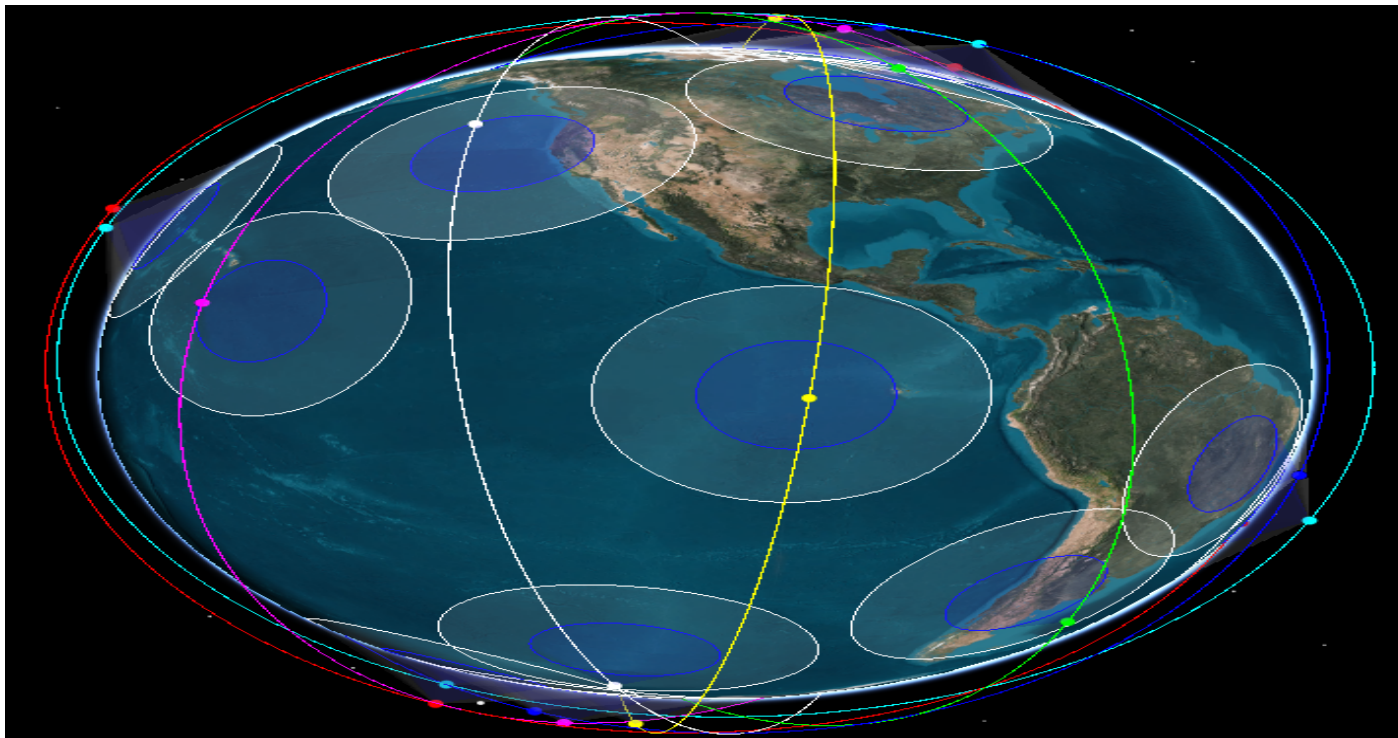




# Next Steps: Global IoT Connectivity

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- EML has under construction its LYRA satellite network which will supplement its current LoRa services in Europe, bringing global IoT connectivity to its users, wherever they are.



# Next Steps: 3GPP-NTN Direct-to-Device Wideband Services

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- Wideband multimedia network with complete global coverage for direct connectivity to 5G cellphones
- Full global coverage (including polar)
- Inter-satellite links for flexible routing to ground locations
- 3GPP-NR-NTN based architecture enables:
  - › Integration with 5G terrestrial mobile networks
  - › Partnership with traditional RAN and Core vendors
  - › Wide range of integrated satellite/terrestrial devices
- Forward-looking satellite design
  - › Software upgradable to support future enhancements
  - › Direct radiating array capable of covering entire MSS bands below 3 GHz
  - › 7-year life span provides opportunity to refresh hardware

# Conclusion

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- EML, working with its affiliates, is best-positioned to bring direct to device and other MSS satellite services to Europe and ensure global coverage for European users, wherever they go based on its global spectrum rights and its development efforts.
- Today, EML offers LoRa and IoT across Europe. In 2023, EML will supplement these offerings to include direct to device 3GPP standards-based satellite services across Europe using EchoStar XXI.
- In 2024-25, EML's LoRa and IoT services will go global and low latency, leveraging the Sirion-1 LEO system.
- In 2026-27, EML will deploy a global LEO system to provide across Europe and the globe, low latency 3GPP standards-based direct to device secure satellite services.

**In order to support this effort and to enable the deployment of these critical networks and services, EML needs spectrum certainty in the 2 GHz band from European regulators.**