EchoStar Mobile LoRa®-enabled Network

EchoStar Mobile™ | LoRa Alliance® Member

Seamless Pan-European coverage for massive IoT

EchoStar Mobile has designed a single pan-European S-band LoRa®-enabled IoT network, providing bi-directional, real-time connectivity to LoRa® sensors across the coverage with no additional infrastructure required.

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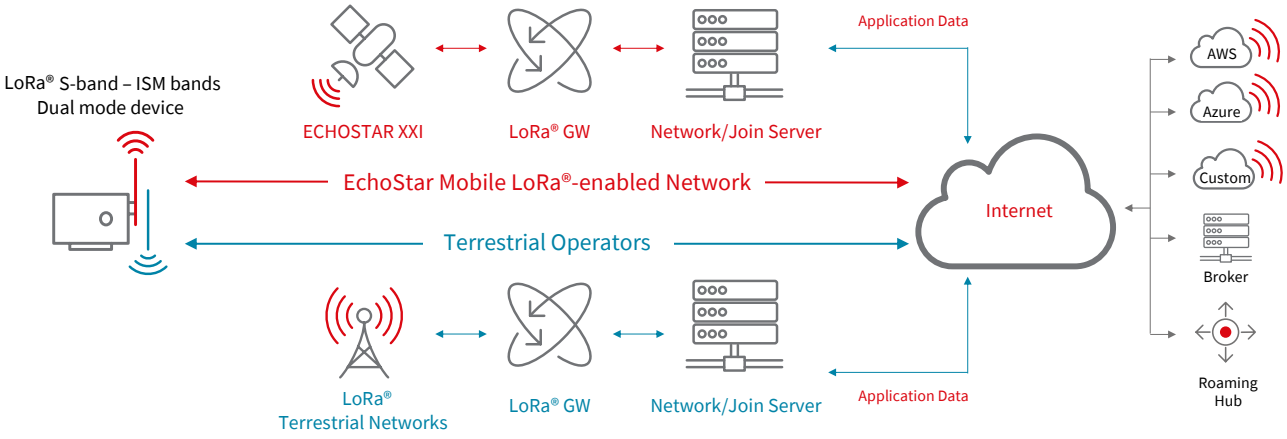
Our seamless coverage and LoRa®-enabled network design, ensure that users across Europe and the UK, do not need cumbersome roaming agreements to achieve ubiquitous service continuity across geographic regions, making it ideal for mobile customers or those customers with widely distributed sites.

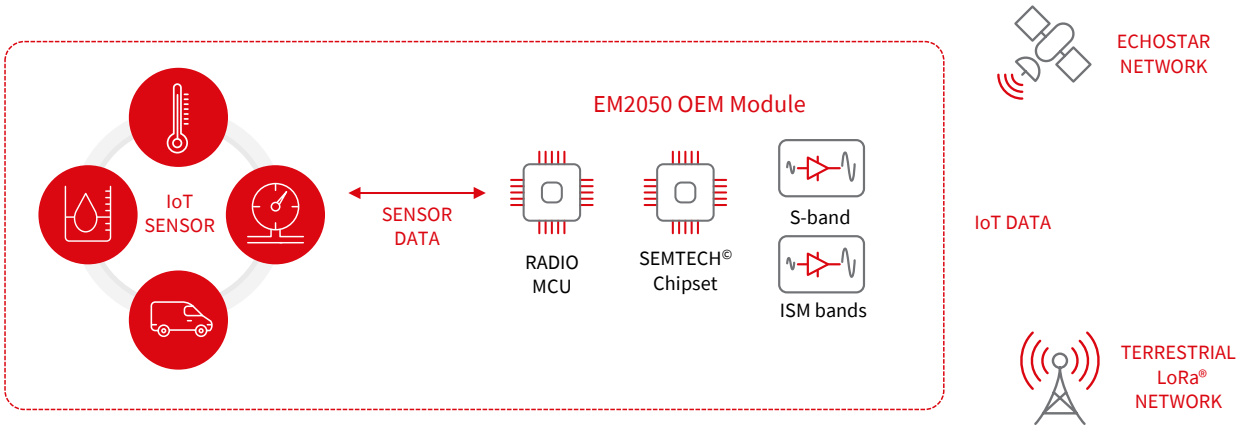
Network overview



Dual-mode terrestrial and satellite module

Our dual-mode terrestrial and satellite module design means devices integrating with our EM2050 OEM module can connect to local terrestrial networks if required.

As a member of the LoRa Alliance®, we are focused on ensuring our LoRa® module works seamlessly with the existing ecosystem, making it easy to integrate our network into existing projects and making the ideal technology choice for deployments where coverage and infrastructure make adopting LoRa® problematic.



Applications

- Asset track and trace, transportation, and fleet logistics
- Infrastructure monitoring (road, rail, utilities)
- Agriculture
- Remote locations and low-density deployments

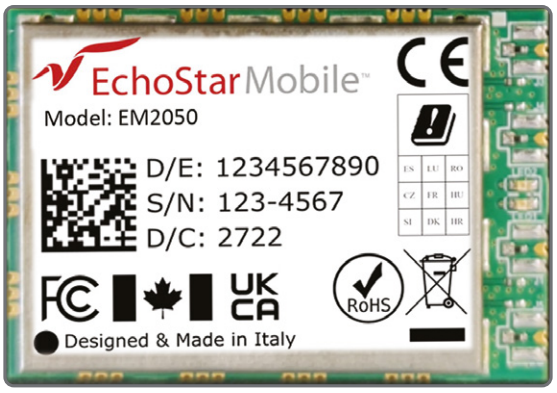
EM2050 OEM Module

The EM2050 OEM module is capable of transmitting LoRa®-FHSS and LoRa® signals and receiving LoRa® signals on both licensed 2GHz satellite spectrum (S-band) and terrestrial sub-GHz EU/US ISM bands.

The EM2050 OEM module is designed for soldering directly to a PCB, to enable the System Integrator to complete a application or product specific design with antennas, GNSS receiver (if required), Application MCU and other components according to their specific product requirements.

Based on the Semtech LR1120 radio chipset, the EM2050 includes all the RF components for operation on satellite S-Band and on LoRa® sub-GHz EU/US ISM bands, compliant to ETSI, UKCA, FCC and ISED regulations.

Low-power operation and sleep mode are active whenever possible, allowing a finished product to work on battery for years.



Features

- **Single CPU Multi-Region Protocol Stack Module**
- **Easy interface using AT-Commands over UART**
- **Low Power Consumption:**
  - Max 320mA Active Transmit @27dBm S-Band,
  - 25µA Sleep,
  - Adaptive Power Control to minimize current consumption (average 100mA @10dBm S-Band)
- **Small single board form factor: 32 x 47 x 4mm including RF Shield**
- **Dual mode device supports both satellite and terrestrial LoRaWAN bands:**
  - EU868, US915 ISM bands
  - Licensed S-band (2GHz)
- **Class A device with secured safe storage of key parameters such as DevEUI, JoinEUI and Root Key**
- **Message size up to 50 bytes of usable payload @ SF12 and LR-FHSS**
- **Built-in sensors for temperature, supply voltage and RF power**
- **Temperature compensated crystal oscillator for maximum frequency accuracy**
- **Fully Compliant with ETSI, UKCA, FCC and Canadian ISED Requirements. Class 1.5 according to ETSI 300 220 for ISM band**

Technical specification

Dimensions	32 x 47 x 4mm
Weight	6 gr
Power supply	3.3VDC +/-10%
Operating frequencies	TX 1980-2010MHz for S-band EU TX 2000-2020MHz for S-Band US RX 2185-2200MHz for S-Band EU/US TX/RX 863-870 MHz for ISM in EU TX/RX 902-928 MHz for ISM in US
TX output power	Up to 27dBm in S-band Up to 14dBm in ISM EU Up to 22dBm in ISM US
Modulation	TX: LoRa®, LR-FHSS RX: LoRa®
User Interface	AT-Style Command Set over UART
Antenna ports	PCB edge or U.FL connectors on request
Protocol Stacks	LoRaWAN™ 1.0.4 on ISM bands LoRaWAN™ compatible on S-Band
LEDs Signalling	LED1, green, indicates radio RX active LED2, red, indicates radio TX active
Operating Temperature Range	-30 to 70°C
Operating Humidity Range	Up to 90% RH not condensing
Storage Temperature Range	-40 to 85°C
Storage Humidity Range	Moisture sensitive device, it must be handled according to JEDEC MSL-3 requirements. Shipped in moisture barrier bags

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Want to know more?

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About EchoStar: EchoStar Corporation (NASDAQ: SATS) is a premier global provider of satellite communication solutions. Headquartered in Englewood, Colo., and conducting business around the globe, EchoStar is a pioneer in secure communications technologies through its Hughes Network Systems and EchoStar Satellite Services business segments. For more information, visit EchoStar.com. Follow @EchoStar on Twitter.