Ultra-small cellular modem
Smallest, highly integrated cellular modem

Modem features low and mid bands, low current consumption (eDRX and PSM), and long battery life (10+ years), which is ideally suited for small, battery operated IoT devices and applications.

Features
- LTE Cat M1 - 23 dBm
- NB-IoT (NB1) Rel. 13 (Rel. 14 – SW Upgrade)
- GNSS
- VoLTE
- Dimension: 11.1 x 11.4 x 1.4 mm (typ), 1.5 mm (max)
- Package: LGA
- Antenna configurations: external
- 3GPP eDRX and PSM modes
- Power Consumption: enables up to 10 year battery life
  - Hibernation current: 3 μA
  - eDRX current: <25 μA @ 8 hyperframes
  - PSM current: dormant window configurable
- Modem features global coverage in low and mid bands, low current consumption (eDRX and PSM), and long battery life (10+ years), which is ideally suited for small, battery operated IoT devices and applications
- Operating temperature range: -40 ºC to 85 ºC
- OTA firmware upgrade
- Global Carrier Certifications: GCF and PTCRB

Applications & Benefits
- Smallest/Highly integrated LTE Cat M1/NB1 modem available in the market (~21% less square area than nearest competitor)
  - Ideally suited for miniaturized battery operated devices, such as wearables and tracking applications
  - Low current consumption that can provide up to a 10 year battery
  - eSIM included in certification
- Multi-band (low and mid-band) support that covers approximately the globe
- Dual mode (LTE Cat M1/NB-IoT)
- Provides options within a single modem that allows end customers flexibility of switching between modes globally, especially for those carriers planning to support both modes

Specification

<table>
<thead>
<tr>
<th>Part Number</th>
<th>LBAD0XX1SC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectivity</td>
<td>3GPP Release 13/Optimized for LTE Class 3 output power (+23 dBm)</td>
</tr>
<tr>
<td>GNSS</td>
<td>GPS and Glonass</td>
</tr>
<tr>
<td>Voltage Input</td>
<td>3.3V</td>
</tr>
<tr>
<td>Antenna</td>
<td>Off board multi-band antenna</td>
</tr>
<tr>
<td>Dimensions</td>
<td>11.1 mm x 11.4 mm x 1.4mm</td>
</tr>
<tr>
<td>Operating Temp</td>
<td>-40º to 85º C</td>
</tr>
</tbody>
</table>
LTE Cat M1/NB1 End Device (Type 1SE)

Ultra-small cellular end device
Smallest, highly integrated cellular end device

Certified End Device with antenna connection for ease of integration with several different types of applications.

Features
- LTE Cat M1 - 23 dBm
- NB-IoT (NB1) Rel. 13 (Rel. 14 - SW Upgrade)
- STM32L 462RE/Cortex M4 w/512KB Flash and 160 KB SRAM
- 1MB on-board Serial Flash
- GNSS
- VoLTE
- Dimension: 15.4 x 18.0 x 2.5mm (max)
- Package: LGA
- SIM card: internal eSIM (WLCSP)
- Antenna configurations: U.FL antenna connection
- 3GPP eDRX and PSM modes
- Power Consumption: enables up to 10 year battery life
  - Hibernation current: 3 uA
  - eDRX current: <35 uA@ 8 hyperframes
  - PSM current: dormant window configurable
- Operating temperature range: -40 °C to 85 °C
- OTA firmware upgrade
- Global Certifications: GCF and PTCRB

Applications & Benefits
- Certified as a host device for ease of integration with several different types of applications
  - Quicker time to market (no additional carrier or regulatory certification)
  - Less development time and costs for developer/device manufacturer in need of LTE Cat M1/NB-IoT connectivity
  - eSIM included in certification
- Build/Develop applications with the use of ST’s vast set of software modules
- Availability of ST’s Community and Development Forums
- Secure boot architecture and a robust hardware-based security framework

Specification

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<td>Off board multi-band antenna</td>
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<tr>
<td>Dimensions</td>
<td>15.4 mm x 18.0 mm x 2.5mm(max)</td>
</tr>
<tr>
<td>Peripheral I/F</td>
<td>ADC, GPIOs, 12C, 12S, JTAG, PWM, SPI, UART</td>
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<tr>
<td>Operating Temp</td>
<td>-40° to 85°C</td>
</tr>
</tbody>
</table>

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