

# C-IoT 2023



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## THIS REPORT PROVIDES:

- A ten-year global forecast for Cellular IoT devices
- Detailed data on revenue, shipments, and market shares
- Information about 12 vertical markets/applications for C-IoT
- Analysis of LPWA, NB-IoT, Cat-M (LTE-M), Cat-1, 5G, RedCap, and other technology options for match with key applications
- Cost analysis of C-IoT modules
- Analysis of unique features of the China market
- Profiles of key players in modules and semiconductors

# Cellular IoT Devices 2023

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# METHODOLOGY

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Mobile Experts conducts research in multiple areas in order to fully understand the IoT market:

- We analyze the market for Private Cellular networks, in 13 different vertical markets, in order to understand the priorities of key enterprise customers in each vertical market. See our reports on [Industrial Private Cellular](#) and [Enterprise Private Cellular Networks](#).
- We investigate the interaction between telecom operators, hyperscalers, and enterprises, paying special attention to the business models developing between the players. These insights inform our understanding of the maturity of the business relationships, to aid in accurate forecasting of growth in each vertical market. See our report on [Private Network Services](#).
- We track the deployment of Edge Computing by network operators, hyperscalers, and enterprises in order to understand the maturity of the software platforms, server equipment, and business models. See our report on [Edge Computing](#).
- In this report, we investigate the availability, technology trends, and size of the IoT device market.

Mobile Experts investigates the IoT market in two distinct ways, in order to compare the results and create the most accurate forecast possible.

1. First, Mobile Experts investigates the market according to vertical market segments. We conducted a series of ‘deep dive’ market studies in specific vertical markets, and recently have conducted numerous interviews with companies deploying private networks in each of these vertical markets:
  - a. Utilities
  - b. Healthcare
  - c. Transportation
  - d. Logistics
  - e. Manufacturing
  - f. Public Sector
  - g. Mining
  - h. Oil & Gas
  - i. Education
  - j. Office Buildings
  - k. Large Venues
  - l. Retail
2. We also investigate the number of devices used in each technology area. We routinely interview about 15-20 IoT semiconductor suppliers related to various markets in order to verify pricing, market shares, and shipment numbers.

Mobile Experts estimated the pricing and revenue of C-IoT modules by technology (Cat-4, Cat-1, LTE-M, etc.) and then separately estimated pricing/revenue by application (automotive, healthcare, industrial, etc.). We adjusted our module pricing assumptions until these two estimates matched within 5%. In this way, we arrived at average market prices instead of using only the anecdotal data obtained from suppliers.

Overall, Mobile Experts compares the technology-based forecast with the vertical market forecast, in order to validate each approach. When these two methods do not match, we do more direct investigation with suppliers in the industry to determine why they are different.

Note that the Mobile Experts forecast figures for module revenue by air interface standard do not match exactly with the module revenue by application. This comes from our two-pronged investigation in which we develop the forecast from two different starting points, in order to assure overall accuracy in the fast-changing IoT market. We do not consider the precision of our <5% difference to be meaningful in our overall forecast.