



Farhan Ahmad, Vice President, Investor Relations

Thank you, and welcome to Micron Technology's fiscal fourth-quarter 2021 financial conference call. On the call with me today are Sanjay Mehrotra, President and CEO, and Dave Zinsner, Chief Financial Officer. Today's call will be approximately 60 minutes in length. This call, including the audio and slides, is also being webcast from our Investor Relations website at investors.micron.com. In addition, our website contains the earnings press release, and the prepared remarks filed a short while ago. Today's discussion of financial results will be presented on a non-GAAP financial basis unless otherwise specified. A reconciliation of GAAP to non-GAAP financial measures may be found on our website. As a reminder, a webcast replay will be available on our website later today. We encourage you to monitor our website at micron.com throughout the quarter for the most current information on the company, including information on the various financial conferences that we will be attending. You can follow us on Twitter at [MicronTech](https://twitter.com/MicronTech). As a reminder, the matters we will be discussing today include forward-looking statements. These forward-looking statements are subject to risks and uncertainties that may cause actual results to differ materially from statements made today. We refer you to the documents we file with the SEC, specifically our most recent Form 10-K and 10-Q, for a discussion of risks that may affect our future results. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance, or achievements. We are under no duty to update any of the forward-looking statements after today's date to conform these statements to actual results.

I'll now turn the call over to Sanjay.

Sanjay Mehrotra, President and Chief Executive Officer

Thank you, Farhan.

Good afternoon.

Intro/FQ4 Highlights

We delivered outstanding results in fiscal Q4, achieving robust profitability and the second-highest quarterly revenue in Micron's history. Strong execution drove healthy results across segments, including record quarterly revenue in NAND as well as in our embedded business.

Fiscal 2021 was a year of many records for Micron. We achieved our highest-ever mobile revenue, driven by all-time-high managed NAND revenue and multichip package (MCP) mix. Our embedded business had a tremendous record-breaking year, with auto and industrial businesses both at substantial new highs. And our Crucial-branded consumer business and overall QLC mix in NAND all hit records in fiscal 2021.



Through the year, we successfully navigated multiple obstacles brought on by the pandemic and reached several key milestones. For the first time in Micron's history, we established technology leadership concurrently in both DRAM and NAND. Micron's 1 α (1-alpha) DRAM and 176-layer NAND are the industry's most advanced nodes in high-volume production. And we further strengthened our product leadership by becoming first to introduce LP5X DRAM and uMCP5 managed NAND in mobile, and the industry's first functional safety-capable LP5 for automotive applications.

The secular demand for memory and storage, combined with Micron's focused execution and our rock-solid balance sheet, positions us well to deliver strong financial performance and create significant shareholder value in fiscal 2022 and beyond. Demonstrating our confidence in our business trajectory, we initiated a quarterly dividend that we aim to grow over time.

Technology and Operations

Memory is at the leading edge of semiconductor manufacturing, and Micron has leadership in both DRAM and NAND technology. This quarter, we reached mature yields in our ramp of 1 α DRAM and 176-layer NAND 20% to 30% faster than prior nodes and delivered performance and feature improvements that will help unleash customer innovation. We believe we are several quarters ahead of the industry in deployment of these process technologies. Additionally, through deeper customer collaboration, we have further accelerated the time to market for value-added solutions built using these nodes. 1 α and 1z DRAM nodes combined now represent the majority of our DRAM bit production driven by strong growth of 1 α production, and by the end of the calendar year, 176-layer NAND will make up the majority of our NAND bit production.

Looking beyond 1 α DRAM and 176-layer NAND, we are investing to sustain scaling in both technologies for the next decade. Adding momentum to our years of R&D in extreme ultraviolet (EUV) lithography, we recently took delivery of the industry's latest EUV system, NXE 3600, at our Boise headquarters, where we operate one of the world's most advanced centers for semiconductor research and development. The delivery of this tool is an important milestone toward our previously disclosed plan of implementing EUV in high-volume manufacturing in the 2024 time frame. We expect that the integration of EUV with our existing multipatterning immersion lithography expertise will help us maintain DRAM technology leadership for many years to come.

In addition to being a technology leader and an innovation partner, we are uniquely positioned as a strategic supplier to our customers. Micron is the only U.S.-based memory company, and our strong global manufacturing network provides us with a diversified source of supply, which has become increasingly critical to ensure that we continue to deliver product reliably to our customers. The advantages of this unique position have been proven throughout the past 18 months, as we have successfully navigated the challenges of COVID-19 across our global manufacturing network while maintaining continuity of supply to our customers.



End Markets

Now let us review our end markets. The demand for memory and storage has evolved dramatically from the PC-centric era. Today, demand for memory and storage is driven from diversified end markets that extend from the data center to the intelligent edge and to a growing diversity of user devices. As a result of growing memory and storage content per device, DRAM and NAND now account for an ever-increasing portion of the bill of materials for our customers. DRAM and NAND total addressable market (TAM) share of the semiconductor industry has steadily grown over the last two decades from around 10% to approximately 30% today. The artificial intelligence (AI) and 5G revolution is only in its infancy, and as these secular growth drivers gain further traction, we expect new data-intensive applications to continue to fuel significant increases in DRAM and NAND TAM.

Data Center

In the fiscal fourth quarter, data center revenue grew sequentially and year over year, fueled by secular drivers in cloud demand and a resurgence of enterprise IT investment linked to improving economic growth. Data center has become the largest market for memory and storage, driven by the rapid growth in cloud. With our broadening portfolio of differentiated products across memory and storage, we are in a strong position to drive strong growth and profitability in this important segment. We have been engaged on DDR5 from initial specification development and are well placed to support customer transitions to DDR5-enabled platforms starting later this calendar year. We are also enhancing our NVMe SSD portfolio and will soon introduce PCIe Gen4 data center SSDs with Micron-designed controllers and leveraging the full benefit of vertical integration. These SSDs will strengthen our market position over the course of the coming quarters and years in the fast-growing data center NVMe storage market.

PC

Work- and learn-from-anywhere trends are driving a second consecutive year of double-digit PC unit sales growth in calendar 2021. In the fiscal fourth quarter, PC DRAM revenue was up significantly year over year. We are making strong progress transitioning our PC DRAM to our 1 α node, which represented a meaningful portion of our FQ4 PC bit shipments. Client QLC SSD bit mix hit a new record and made up the majority of our client SSD bit shipments in FQ4. Our QLC leadership enhances our bit supply capability and product profitability. We also have continued momentum ramping 176-layer NAND products for the PC market, and we qualified our 176-layer NAND-based Gen4 NVMe client SSDs with several PC OEMs during the quarter.

Graphics

In graphics, revenue increased sequentially and year over year, driven by a continuation of last quarter's strong next-generation game console and graphics card shipments. Micron holds an excellent position in



the fast-growing graphics market, with a broad product portfolio featuring our proprietary GDDR6X product line and deep partnerships with leading GPU suppliers.

Mobile

FQ4 mobile revenue increased more than 25% year over year, driven by continued unit sales and content growth. We expect overall smartphone unit sales to grow this year, with sales of over 500 million 5G mobile phones forecasted. These content-rich 5G phones feature more than 50% higher DRAM and double the NAND content than 4G phones. We expect 5G and AI to drive new innovation in applications such as AI-optimized video capture and editing that will fuel DRAM and NAND content growth for years to come. Our 1 α LP4 16Gb design is now fully qualified and ramping at multiple OEMs, while our 176-layer NAND achieved its first UFS 3.1 qualifications at two OEMs. These wins demonstrate Micron's leadership in the mobile market and our continued strength in managed NAND products, where MCP sales surpassed \$1 billion for the third straight quarter.

Auto & Industrial

We are continuing to see strong demand in our edge markets, which include automotive and industrial IoT. We expect the automotive and industrial markets to be the fastest-growing memory and storage markets over the next decade. As the No. 1 player in these markets, Micron is exceptionally well positioned to benefit from these secular growth trends.

Our automotive business delivered a fourth consecutive record quarter, driven by continued recovery in auto manufacturing and the growth of memory and storage content driven by in-vehicle infotainment and driver-assistance applications.

Industrial IoT revenues also set records in the fiscal fourth quarter, benefiting from the continued growth of applications such as point-of-sale devices, factory automation and surveillance. We expect industrial demand trends to accelerate further as 5G speeds the adoption of data-intensive applications powered by intelligent edge infrastructure. We are also seeing an acceleration in our consumer IoT business, driven by rapid growth in devices such as VR headsets, smart exercise equipment and smart speakers.

Market Outlook

Turning to market outlook, calendar 2021 is shaping up to be a strong year. We expect calendar 2021 industry DRAM bit demand growth to be in the low 20% range and industry NAND bit demand growth to be in the high 30% range.

Overall, our preliminary view is that calendar 2022 industry bit demand growth will be consistent with long-term industry bit demand growth compound annual growth rates (CAGRs) — in the mid to high



teens for DRAM and approximately 30% for NAND. We anticipate underlying demand in calendar 2022 to be led by increasing data center server deployments, 5G mobile shipments and continued strength in automotive and industrial markets. Additionally, non-memory supply shortages that are constraining customer builds across various end market segments and that are pushing out some demand should ease throughout 2022, supporting demand growth during the year. Given prudent industry capex and very lean supplier inventories, we expect healthy industry supply-demand balance and robust profitability for both DRAM and NAND in the year.

In the near term, our FQ1 bit shipments will decline modestly in both DRAM and NAND from very strong levels in FQ4. Some PC customers are adjusting their memory and storage purchases due to shortages of non-memory components that are needed to complete PC builds. We expect this adjustment at our PC customers to be largely resolved in the coming months. We are also seeing constraints within our supply chain for certain IC components, which will somewhat limit our bit shipments in the near term. Bit shipment growth will resume in the second half of the fiscal year, and we are planning to deliver record revenue with solid profitability in fiscal 22. Our CY22 bit shipment growth for DRAM and NAND will be inline with the industry. However, due to the strong shipments in FY21 and our below-normal current inventory level, for FY22, our bit shipment growth for DRAM and NAND will somewhat lag the long-term CAGRs.

In FY22, the continued ramp of 1 α and 176-layer NAND should provide us with good front-end cost reductions. Our efforts to increase supply chain resilience and provide business continuity to our customers will cause headwinds to our assembly and packaging costs, consistent with the trend in the overall industry. Overall, we expect annual cost per bit reductions to be competitive with the industry in FY22 and over the long term.

Turning to capital expenditures. We expect FY22 capex in the range of \$11 billion to \$12 billion. The year-on-year increase in capex is driven by our continued 176-layer NAND transition, pilot line enablement for next-generation NAND and DRAM, and continued infrastructure and prepayments to support the introduction of EUV. FY22 DRAM equipment capex for manufacturing will decline from FY21, as we benefit from the capital efficiency of our mature 1 α node.

For FY22, our bit supply growth will be achieved through node transitions alone, as we are a few years away from needing wafer start additions to keep up with the industry demand. We also expect to increase FY22 R&D investment by approximately 15% from FY21 to deliver bold product and technology innovations designed to fuel the data economy, as well as to expand our portfolio to capitalize on opportunities such as high-bandwidth memory and Compute Express Link (CXL) solutions.

Our leadership portfolio, product quality, supply chain agility and deep customer relationships make us a preferred partner in many of our markets, and we are confident in our ability to continue to create long-term, sustained profitability and returns built on that leadership.



I will now turn it over to Dave.

Dave Zinsner, Senior Vice President and Chief Financial Officer

Thanks, Sanjay.

Opening

Micron delivered excellent FQ4 results highlighted by our second-highest quarterly revenue, strong gross and operating margins, and substantial positive free cash flow.

Revenue

Total FQ4 revenue was approximately \$8.3 billion, up 11% quarter over quarter and up 37% year over year. As a reminder, FQ4 of last year was a 14-week quarter and impacts our year-over-year comparisons. FQ4 revenue growth was broad-based with solid demand and price increases in both DRAM and NAND.

Our robust growth in FQ4 contributed to strong performance in FY21 with revenue of \$27.7 billion, which was up 29% from the prior fiscal year.

DRAM

FQ4 DRAM revenue was \$6.1 billion, representing 74% of total revenue. DRAM revenue increased 12% sequentially and was up 39% year over year. Bit shipments increased in the lower single-digit percentage sequentially, and average selling prices (ASPs) increased in the high single-digit percent range quarter over quarter.

For the fiscal year, DRAM revenue increased 38% year over year to \$20 billion, representing 72% of total fiscal year revenue.

NAND

FQ4 NAND revenue was approximately \$2 billion, an all-time high and representing 24% of the total revenue. NAND revenue increased 9% sequentially and was up 29% year over year. Bit shipments increased by low single-digit percentages sequentially, while ASPs increased in the mid single-digit percent range quarter over quarter.

For the fiscal year, we achieved a new company record for NAND revenue of \$7 billion, an increase of 14% year over year. NAND revenue represented 25% of our total fiscal year revenue.



Revenue by Business Unit

Now turning to our FQ4 revenue trends by business unit.

Revenue for the Compute and Networking Business Unit was \$3.8 billion, up 15% sequentially and up 26% year over year. Growth was led by the data center and graphics markets.

Revenue for the Mobile Business Unit was \$1.9 billion, down 5% sequentially and up 29% year over year. Mobile demand remained healthy in the quarter with continued momentum from the rollout of 5G. MBU revenue for FY21 exceeded \$7 billion and set a new record.

Revenue for the Storage Business Unit was \$1.2 billion, up 19% from the prior quarter and up 32% year over year. Data center SSDs had strong growth in the quarter driven by enterprise and cloud strength. QLC shipments set a new record in the fiscal year, in terms of percentage of our NAND shipments.

Finally, the Embedded Business Unit generated record revenue of \$1.4 billion, which was up 23% sequentially and more than doubled year over year. We continue to experience strong demand across the automotive and industrial markets. For the fiscal year, EBU revenue easily exceeded \$4 billion, setting a new revenue record.

Operating Results

Gross Margin

The consolidated gross margin for FQ4 was 47.9%, up 500 basis points from the prior quarter. Pricing increases across DRAM and NAND as well as strong execution in our ongoing product portfolio transformation drove margin expansion in the quarter.

Opex

Operating expenses in FQ4 were \$891 million, on the lower end of the range we provided in last quarter's earnings call.

Operating Income

FQ4 operating income was \$3.1 billion, resulting in an operating margin of 37%, up from 32% in FQ3 and up from 21% in the prior year.

FQ4 EBITDA (earnings before interest, taxes, depreciation, and amortization) was \$4.7 billion, resulting in an EBITDA margin of 57.1%, compared to 53.3% in the prior quarter and 47.4% in the prior year. For the



fiscal year, total EBITDA was \$14 billion, up from \$9 billion in the prior fiscal year, and represented 50.4% of revenues.

Earnings Per Share

Non-GAAP earnings per share (EPS) in FQ4 were \$2.42, up from \$1.88 in FQ3 and up from \$1.08 in the year-ago quarter. EPS included approximately \$0.02 of gains from investments in our venture arm, Micron Ventures.

For the fiscal year, total EPS was \$6.06, up more than 100% from the \$2.83 achieved in the prior fiscal year.

Operating Cash Flow

Turning to cash flows and capital spending, we generated \$3.9 billion in cash from operations in FQ4, representing 47% of revenue. For the fiscal year, cash from operations totaled \$12.5 billion, up from \$8.3 billion in the prior fiscal year.

Capital Allocation

Net capital spending was \$2 billion during the quarter and \$9.7 billion in FY21.

We generated positive free cash flow of \$1.9 billion in FQ4 and over \$2.8 billion for the fiscal year. The increased cash flow was driven by strong revenue growth, increased profitability and efficient working capital management.

As Sanjay mentioned, we expect our FY22 capital spending to be between \$11 billion and \$12 billion. Like FY21, we expect our capital spending to be weighted more to the first half of the fiscal year, which will constrain free cash flow in FQ1 and FQ2. We do expect to generate healthy free cash flow in FY22 but weighted toward the back-half of the year. We also expect to close our Lehi fab sale within FQ1, and we will receive approximately \$900 million in proceeds from the sale.

We completed share repurchases of \$1.1 billion, or approximately 13.9 million shares, in FQ4. For the fiscal year, we repurchased \$1.2 billion or approximately 15.6 million shares.

From FY17 to FY21, we generated over \$20 billion of free cash flow. During this period, we used approximately \$5 billion of that cash flow to retire debt and \$7 billion toward buying back stock and eliminating the dilution from convertible debt, reducing our share count by 148 million shares. We also improved our total cash and investment position by \$5.5 billion. We expect that we will continue to generate strong free cash flow in the future, and as we discussed on our capital return strategy call in early August, we are committed to returning more than 50% of cross-cycle free cash flow to shareholders through a combination of buybacks and a quarterly dividend that we expect we can grow over time. The



first dividend payment of \$0.10 per share will be paid on Oct. 18 to shareholders of record as of Oct. 1. The initiation of a dividend is an important milestone that reflects the structural transformation Micron has undergone over the last several years, and it shows our confidence in the sustainability of our cash flow generation.

Inventory

Our ending FQ4 inventory was \$4.5 billion and average days for the quarter were 94 days, below our normal range of 95 to 105 days. FQ4 finished-goods dollar inventory ended at the lowest level since the Elpida acquisition in 2013.

Total Cash/Debt

We ended the fiscal year with \$10.5 billion of total cash and investments and \$13 billion of total liquidity. Our FQ4 total debt was \$6.8 billion.

Outlook

Now turning to our outlook. End demand across our major markets remains strong. As Sanjay mentioned, our bit shipments are expected to decline modestly in FQ1, as we normalize our inventory position and work with PC customers as they manage through their supply chain challenges. And, on the gross margin side, our outlook is similar to how we viewed FQ4. While we will benefit from our node transitions on both DRAM and NAND, we will continue to see near-term headwinds from COVID-related expenses in assembly and packaging. As a result, we expect the gross margins in FQ1 to be largely a function of the mix.

Non-GAAP Guidance

With all these factors in mind, our non-GAAP guidance for FQ1 is as follows. We expect revenue to be \$7.65 billion, plus or minus \$200 million; gross margin to be in the range of 47% plus or minus 100 basis points; and operating expenses to be approximately \$915 million, plus or minus \$25 million. Excluding the impact of any potential new tax legislation, we expect our non-GAAP tax rate to be approximately 10% for FQ1. Based on a share count of approximately 1.14 billion fully diluted shares, we expect EPS to be \$2.10, plus or minus \$0.10.

Closing

In closing, fiscal 2021 was a year of considerable growth and success for Micron. Looking at four-year average metrics reveals the sustained cross-cycle performance of our business. Over the last four years, our gross margins have exceeded 40% and our operating cash flow margins have been approximately 50%. Despite the challenges stemming from the ongoing pandemic, we have continued to generate



significant positive free cash flow while making substantial investments to grow our business. Our technology, product and financial position provide strong momentum as we enter the new fiscal year.

I will now turn it back to Sanjay.

Sanjay Mehrotra, President and Chief Executive Officer

Thank you, Dave.

I would like to share a recent accomplishment that makes me especially proud of our company. Our strong Micron culture has played a significant role in driving our results aligned to our broader vision to transform how the world uses information to enrich life *for all*. Our company culture, community leadership and business performance are being recognized globally, earning multiple industry awards and recognitions this year. This month, we were ranked by Fortune as one of the top 20 best places to work in manufacturing and production, the only semiconductor company to earn this recognition.

Fiscal 21 was an excellent year for Micron. As our fourth-quarter results clearly demonstrate, we are delivering strong financial results. We are planning to deliver record revenues and solid profitability in FY22. Demand for memory and storage is solid across market segments. Industry trends like the broad integration of artificial intelligence into all computing, proliferation of the intelligent edge, continued data center growth, and deployments of 5G networks create new and expanding opportunities for Micron. The importance of semiconductors to these markets is underscored by government initiatives to invest in domestic semiconductor production, both here in the U.S. through the CHIPS Act and in other countries around the world.

We are focused on building our technology leadership to deliver bold new solutions that offer unique value to our customers. Our business is robust, and we are energized to seize the opportunities ahead of us, at a truly exciting time in the semiconductor industry.

We will now open for questions.