

**Farhan Ahmad, Vice President, Investor Relations**

Thank you, and welcome to Micron Technology's fiscal fourth quarter 2020 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](http://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](http://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, everyone.

**Highlights**

Micron delivered solid fiscal fourth quarter revenue and profitability, driven by strength in DRAM shipments to cloud, PC and game console customers. As I reflect on the FY20 accomplishments, I am extremely proud of our Micron Team, whose dedication and tenacity enabled the New Micron to deliver customer value and



healthy financial results throughout FY20. In DRAM, we introduced the industry's first 1z node. We were first to market with mobile LP5 products and shattered industry performance records with our graphics GDDR6X innovation. In NAND, we began shipping our first replacement gate-based products and drove significant increases in our QLC mix. In addition, in FQ4 we already achieved our high value solutions mix target. We are entering FY21 with momentum in our product portfolio and confidence in our technology roadmap and manufacturing capabilities.

### **Operations**

This year, COVID-19 presented a real-life stress test of the New Micron's resilience. Thanks in large part to the commitment and innovation of our team members around the globe, we continued to operate our fabs at normal capacity and achieved record production from our assembly and test facilities in Xi'an, Taiwan and Singapore. Stringent, industry-leading safety protocols have enabled us to gradually return to work on-site. As of today, almost three quarters of Micron team members are back on-site, with our manufacturing operations running close to fully staffed levels. The New Micron is also making solid progress toward our goals to bring differentiated industry-leading products to our customers, and to improve our product mix and cost structure so that we can grow our share of industry profits, all while maintaining stable bit share.

### **Tech Roadmap**

In DRAM, we are leading the industry in 1z production mix, and this node was a significant contributor to our FQ4 sales. We are making good progress on our next generation 1-alpha node which remains on track for introduction in FY21. We are further strengthening our DRAM product portfolio. This quarter we announced GDDR6X, the world's fastest discrete graphics memory solution and the first to power system bandwidth up to 1 terabyte per second. GDDR6X is a great example of close customer collaboration on differentiated technology that significantly improves the end user experience. Our innovative GDDR6X memory is featured in the NVIDIA GeForce RTX 3090 and 3080 graphics cards that deliver an immersive, real-life gaming experience. Our strength in graphics DRAM also positions us well for the data center market, where growth in GPU computing is being driven by AI workloads. We are also excited about our progress with high-bandwidth memory to serve the fast-growing AI market and remain on track to commence volume shipments by the end of this calendar year.

In NAND, we are on track for replacement gate (RG) to make up a meaningful portion of our NAND output by the end of calendar 2020. Our 128-layer first-generation RG NAND technology entered volume production in FQ3, and in FQ4 we began shipping RG-based consumer SSDs. We are also making good progress on our second-generation RG node, which we expect to introduce into volume production during FY21. This industry-leading technology will be broadly deployed across our product portfolio and drive NAND cost reduction later in FY21 and into FY22.



We are also driving product innovations and cost reductions through an increased mix of QLC NAND. Our QLC innovations offer PC customers a more cost-effective, high-capacity SSD solution, and data center customers a highly effective HDD replacement option with a compelling value proposition. We are leading the industry with the broadest portfolio of QLC SSDs across client, consumer and data center, and are seeing QLC adoption accelerate. Our mix of QLC SSD bits more than doubled quarter-over-quarter, surpassing our expectations.

Fiscal 2020 has been an extraordinary year for our high-value solutions, which now make up around 80% of our quarterly NAND bits, achieving the goal we had set for ourselves ahead of schedule. We are now intensifying our focus on profitability enhancement through further improvements to our product mix within our high value solutions portfolio. Over the next several quarters, we will be introducing a slate of new SSD and mobile NAND products that leverage increased vertical integration, using our own internally developed controllers and our industry-leading second-generation replacement gate TLC and QLC technology.

Turning to end markets:

### **End Market Highlights**

#### **SSD**

Fiscal 2020 was a strong year for our SSD business. We expanded our NVMe portfolio and continued our SATA market leadership. Fiscal Q4 SSD revenue almost doubled year-over-year, led by data center SSD sales. Client SSD average capacities grew almost 30% quarter over quarter, driven by QLC growth. Consumer SSD had another record quarter in volume shipped, with NVMe bits more than doubling quarter-over-quarter.

#### **Data Center & Networking**

Turning to data center memory and networking:

The data center market continues to be a growth engine for Micron, and this year COVID-19 accelerated this growth, specifically in cloud. Leveraging our industry leading 1Z DRAM, Micron executed well to drive robust sequential growth in cloud DRAM bit shipments, which more than doubled year-over-year in FQ4. Meanwhile, traditional on-premise enterprise demand was weaker in FQ4 with lower IT investment from businesses due to the impact of the pandemic. Looking ahead, the data center market is expected to start its transition to DDR5 in the second half of FY21, and we have begun sampling DDR5 server modules to customers. In networking, 5G deployments, particularly in Asia, drove healthy DRAM bit growth quarter-over-quarter.

**Mobile**

In Mobile, Micron is well positioned to win in the 5G era as a supplier to all the major smartphone manufacturers, with an outstanding portfolio of industry-leading low power DRAM and managed NAND solutions. We have been diversifying and broadening our mobile business for some time and achieved a record number of design wins in FQ4. We are also excited about our product momentum in mobile MCP solutions, which combine DRAM and NAND solutions into one efficient package. The smartphone market has been impacted by the pandemic in a meaningful way in calendar 2020, but as we look ahead to calendar 2021, we expect a rebound in smartphone unit volumes, coupled with robust average capacity growth across both DRAM and NAND solutions. 5G handset volumes could grow to approximately 500M units in 2021, from around 200M units in calendar 2020, and these 5G products feature higher memory and storage content to enable enhanced consumer experiences.

**PC & Graphics**

In the PC market, the work from home trend drove strong demand for notebooks, with pockets of non-memory component shortages in the supply chain. Desktop PC sales are weak due to pandemic-driven changes to customer buying patterns.

In Graphics, GDDR6 shipments to support next-gen gaming consoles, in addition to the initial shipments of our breakthrough GDDR6X product, helped drive strong quarter-over-quarter and year-over-year bit growth. We expect this market to drive growth for us in FY21.

**Auto**

DRAM and NAND content growth continues to be a secular trend in the automotive market, supported by advanced infotainment systems and increased automation in cars. COVID-19 has significantly impacted both auto production and demand in FY20, but we saw a strong recovery toward the end of FQ4 and expect sequential growth in sales of our products into the automotive market in FQ1.

**Market Trends**

Turning to market trends.

Economic recovery from the sharp recession in calendar Q2 is underway, but the pace has been limited by the continuation of the pandemic. Smartphone, auto, and consumer end markets have started to recover, and we see further demand improvements ahead. Cloud and laptop demand continues to be healthy, supported by the work from home and shop from home trends. Gaming demand is robust. However, our short-term outlook has weakened due to a combination of factors. First, the ongoing pandemic is taking a toll on certain segments of the economy. Consequently, enterprise demand has weakened due to lower IT



spending and somewhat higher inventories at certain customers. In addition, due to the previously announced U.S. administration restrictions on Huawei, we halted shipments to Huawei on September 14. Huawei has been a large customer, at approximately 10% of FQ4 sales. Given that we only had a one month notice before halting shipments, we had limited ability to shift supply to other customers. As a result, we expect a negative impact to FQ1 sales, and to a lesser extent, FQ2 sales. Our well-established relationships with mobile customers worldwide will allow us to offset the impact of these restrictions by the end of FQ2.

### **Industry Outlook**

Now turning to our industry outlook.

We now estimate that calendar 2020 industry DRAM bit demand growth is likely to be in the mid-teens percent range, while NAND bit demand growth is likely to be in the mid-20s. Due to the shift of industry production capacity to a more efficient 16Gb die, we are seeing industry supply constraints for 8Gb-based DRAM products.

We are optimistic that overall market demand will improve throughout calendar 2021, following the seasonal patterns of the first calendar quarter. We are very excited by the combination of growth drivers coming into alignment for the industry for calendar 2021. These growth drivers include: economic recovery from the pandemic; new CPU architectures, which are enabling higher server content; cloud, AI and machine-learning growth; robust mobile demand driven by 5G; and strength in gaming and automotive.

We expect calendar 2021 industry DRAM bit demand growth of approximately 20%. We further expect that disciplined industry CapEx will result in improving DRAM market conditions and industry profitability throughout calendar 2021.

Calendar 2021 industry NAND bit demand growth is expected to be approximately 30%. Unless industry CapEx moderates from current levels or demand exceeds our expectations, we see a risk of challenging NAND industry profitability levels.

### **Micron Outlook**

Turning to Micron supply, we target our bit supply growth CAGR to be in line with industry bit demand growth CAGR for both DRAM and NAND. However, there can be year-to-year variability caused by node transition timing. For example, we expect our DRAM bit supply growth to be above industry demand in calendar 2020 but to moderate-to-less-than industry demand in calendar 2021. In NAND, we expect our bit supply growth in calendar 2020 to be well below the industry demand due to our ongoing RG transition. In calendar 2021, we expect our NAND bit supply growth to be somewhat below the industry demand and we plan to use inventory to support a bit shipment growth that is in line with the industry demand.



For FY21, we expect DRAM cost reduction in the mid-single-digit percent range, with somewhat higher levels of cost reductions on a like-for-like basis. Our higher mix of LP5, graphics and our early ramp of high-bandwidth memory will impact overall DRAM costs. We anticipate NAND cost reduction in the low to mid-teens percent range, even after accounting for the cost impact of our mix shift as we continue our focus on optimizing our high value solutions portfolio.

We are targeting FY21 CapEx to be approximately \$9 billion to support our long-term goal of maintaining stable share of industry bit supply, which will be achieved through node transitions alone and without a net increase to wafer starts. This CapEx target is significantly lower than our pre-COVID expectations and reflects our continued commitment to exercise supply discipline while staying focused on deploying our leading-edge technology nodes which deliver strong ROI. Within this CapEx envelope, fab building CapEx will remain elevated relative to historical levels. We are also continuing investments in back-end assembly and test capacity that do not impact bit growth but have strong ROI. Should demand expectations change, we remain flexible to adjust our bit supply growth to align with bit demand growth, using CapEx and utilization as levers.

Despite COVID-19's broad impact on our lives and the business environment, we believe it has accelerated demand growth in some parts of the markets we serve. This is certainly true in cloud deployments, where some trends that would have taken two to four years to develop have been accelerated into months and will likely persist into the future. As we look ahead, we remain extremely excited about the growth and health of our diverse end markets, which will benefit from powerful secular technology trends including AI, 5G and IoT. These trends will enable the data economy and increase the importance of DRAM and NAND, supporting a long-term DRAM bit demand growth CAGR of mid to high teens, and a NAND bit demand growth CAGR of approximately 30%.

I'll now turn it over to Dave to provide our financial results and guidance.

#### **DAVE ZINSNER, SENIOR VICE PRESIDENT AND CHIEF FINANCIAL OFFICER**

Thanks Sanjay.

#### **OPENING**

We generated solid results in FQ4 with revenue and earnings per share coming in above the mid-point of our guided range despite significant demand variability as customers continue to react to the impacts of COVID-19.

#### **REVENUE**



Total FQ4 revenue was approximately \$6.1 billion, up 11% sequentially and 24% percent year-over-year. As a reminder, our FQ4 results reflect a 14-week quarter and the extra week contributed to revenues, costs and expenses for the quarter. Sequential revenue growth was led by strong DRAM shipments. Revenue was back-end loaded based on timing of customer demand. For the FY20, total revenue was \$21.4 billion, down 8% from the prior fiscal year.

## **PERFORMANCE BY TECHNOLOGY**

### **DRAM**

FQ4 DRAM revenue was \$4.4 billion, representing 72% of total revenue. DRAM revenue increased 22% sequentially and 29% year-over-year. Bit shipments were up in the mid-20% range sequentially and ASPs were down in the lower-single-digit percent range quarter-over-quarter.

For the fiscal year, DRAM revenue was \$14.5 billion, representing 68% of total revenue. DRAM revenue declined 14% from the prior fiscal year.

### **NAND**

FQ4 NAND revenue was approximately \$1.5 billion, representing 25% of total revenue. NAND revenue declined 8% sequentially and was up 27% year-over-year. Bit shipments were approximately flat sequentially, and ASPs declined in the upper single-digit percent range quarter-over-quarter.

For the fiscal year, NAND revenue was \$6.1 billion, representing 29% of total revenue. NAND revenue increased 14% from the prior fiscal year.

## **REVENUE BY BUSINESS UNIT**

Now turning to our revenue trends by business unit.

Revenue for the Compute & Networking Business Unit was approximately \$3.0 billion, up approximately 36% sequentially and up 59% year-over-year. CNBU revenue was driven by continued strength in the Cloud and Client segments following the work-from-home infrastructure build out, as well as growth in demand from gaming consoles. For the fiscal year, CNBU revenue was \$9.2 billion, down 8% from the prior fiscal year.

Revenue for the Mobile Business Unit was \$1.5 billion, down 4% sequentially and up 4% year-over-year. For the fiscal year, MBU revenue was \$5.7 billion, down 11% from FY19.



Revenue for the Storage Business Unit was \$913 million, down 10% from FQ3 and up 8% year-over-year. For the fiscal year, SBU revenue was \$3.8 billion, down 2% from FY19.

Finally, revenue for the Embedded Business Unit was \$654 million, down 3% sequentially and down 7% year-over-year. Demand continued to be below historical levels due to the impact from COVID-19. Exiting the quarter, we began to see a sharp recovery in auto and consumer market demand, while industrial markets remained lackluster. For the fiscal year, EBU revenue was \$2.8 billion, down 12% from FY19.

## **OPERATING RESULTS**

### **GROSS MARGIN**

The consolidated gross margin for FQ4 was 34.9%, up approximately 170 basis points from the prior quarter. Sequential gross margin improvement was driven by solid DRAM cost execution which benefitted from our 1Z ramp. The impact of underutilization at our Lehi fab was \$135 million or approximately 220 basis points in FQ4. We expect underutilization to gradually decline through FY21 as we redeploy equipment and continue to right-size our capacity.

### **OPEX**

Operating expenses were \$809 million in FQ4. While we've taken actions over the past several quarters to control our operating expenses, we expect operating expenses to increase over the course of FY21 as we make several investments in R&D to fund technology spending and to further grow and improve our product portfolio.

### **OPERATING INCOME**

FQ4 operating income was \$1.3 billion, resulting in an operating margin of 21.5%, compared to 18% in the prior quarter and 14% in the prior year.

### **NET INTEREST EXPENSE**

Net interest expense increased to \$31 million, compared to \$24 million of net interest expense in the prior quarter. The increase was due to the lower yields on our cash investments, which reduced interest income. We expect net interest expense to increase modestly to approximately \$35 million in FQ1.

### **TAXES**

Our FQ4 effective tax rate was 3.6%, which benefited from approximately \$16 million of one-time items. Going forward into FY21, we expect our tax rate to be in the high single-digit range.



**EARNINGS PER SHARE**

Non-GAAP earnings per share in FQ4 were \$1.08, up from \$0.82 in FQ3 and \$0.56 in the year ago quarter. For the fiscal year, EPS was \$2.83, down from \$6.35 in FY19.

**OPERATING CASH FLOW**

Turning to cash flows and capital spending, we generated \$2.3 billion in cash from operations in FQ4, representing 38% of revenue.

For the fiscal year, we generated \$8.3 billion in cash from operations, down from \$13.2 billion in the prior fiscal year.

**CAPITAL ALLOCATION****CapEx and Free Cash Flow**

Net capital spending was approximately \$2.2 billion during the quarter and approximately \$7.9 billion for the FY20.

Our future CapEx plans have come down versus our pre-COVID expectations. We now expect FY21 CapEx of approximately \$9 billion. This CapEx investment will support our 1-alpha DRAM and second-generation replacement gate NAND ramps. NAND and backend equipment CapEx will increase year-on-year, while DRAM equipment CapEx will be roughly flat year-on-year.

These investments will skew our CapEx spending toward the first two quarters of the fiscal year. As a result, we expect capital spending to outpace our operating cash flow in FQ1 and FQ2. We expect to return to healthy free cash flow levels in the second half of the fiscal year as we benefit from improved market conditions, declining costs, and lower capital spending.

Free cash flow in the quarter was \$111 million, compared to \$101 million in the prior quarter. This represents the 15th consecutive quarter of positive free cash flow. For the fiscal year, we generated \$361 million of free cash flow.

**SHARE REPURCHASE**

We repurchased approximately 824,000 shares for \$41 million in FQ4 at an average price of \$49.91.

In FY20, we've returned \$176 million of capital through repurchases, representing approximately 50% of our free cash flow.



Combining the convert premiums and share repurchases, we have used approximately \$380 million or 105% of FY20 FCF toward reducing our fully diluted share count.

### **INVENTORY**

Ending FQ4 inventory was \$5.6 billion or 135 days versus 131 days last quarter. This is above our 110-day target due in part to elevated NAND inventory as we continue to transition to replacement gate. We are also holding higher levels of raw material during this period of supply uncertainty. We expect inventory levels to normalize over the course of the fiscal year.

### **TOTAL CASH/DEBT**

We ended the quarter with total cash of \$9.3 billion and total liquidity of approximately \$11.8 billion, flat quarter-over-quarter. FQ4 ending total debt was \$6.6 billion.

### **NON-GAAP GUIDANCE**

#### **OUTLOOK**

Now turning to our outlook. As a reminder our fiscal first quarter will be a usual 13-week quarter, down from the 14 weeks in the fiscal fourth quarter. We have started to see recovery in the Mobile, Auto and Consumer markets, but the pace of recovery has been moderated by the continued impact of the pandemic, and shortages of certain non-memory components in some end markets. Enterprise demand is weak and some of our customers may be carrying higher inventory. We continue to be disciplined on pricing; walking away from certain deals that are below our profitability targets. Compared to our FQ4 results normalized to adjust for the extra week, we expect DRAM shipments to be relatively flat and NAND shipments to grow somewhat in the first half of FY21 due to market conditions and the impact of the Huawei restrictions. We face headwinds in our gross margins in the first half of FY21 due to a mix shift toward NAND revenue, our pricing assumptions in the near term driven by market conditions and temporarily higher costs related to our ramp of first-generation RG node and yield learning on new DRAM products such as graphics. We expect improved financial performance in the second half of FY21 as we benefit from improved market conditions and declining costs.

#### **GUIDANCE**

With all these factors in mind, our non-GAAP guidance for FQ1 is as follows. We expect revenue to be \$5.2 billion, plus or minus \$200 million; gross margin to be in the range of 27.5% plus or minus 100 basis points; and operating expenses to be approximately \$825 million, plus or minus \$25 million. Finally, based on a share count of approximately 1.15 billion fully diluted shares, we expect EPS to be \$0.47, plus or minus \$0.07.

**CLOSING**

In closing, Micron continues to execute well despite continued market uncertainty and geopolitical challenges. Against the backdrop of a severe global recession caused by COVID-19, Micron has delivered solid performance in FY20, with revenues 70% higher, and operating margins 12 percentage points higher than FY16. As we assess our cross-cycle performance over the last four years, we have delivered average gross margins of 40%, EBITDA margins of 50% and return on invested capital of 20%. Our cross-cycle performance has benefitted by the \$9 billion in structural profitability improvements achieved from FY16 to FY19, and we intend to continue to improve our cost competitiveness in the coming years. Our strong technology, dramatically improved product portfolio and financial strength position us well to capitalize on the long-running demand trends driving the memory and storage industry.

I'll now turn the call over to Sanjay for closing remarks.

**Sanjay Mehrotra, President and Chief Executive Officer**

Thank you, Dave.

The positive momentum in our financial performance in calendar year 2020 has been interrupted by the unprecedented combination of a global pandemic, and US restrictions on shipments to Huawei. As we look toward the second half of FY21, we expect that the underlying momentum in our product portfolio and secular industry drivers such as AI and 5G will drive materially better financial and business performance.

We are confident in the long-term growth trajectory of our industry. Memory and storage have become increasingly important across diverse end-market applications, spanning from the data center to the edge and from business to consumer.

Within this context, Micron is getting stronger, not only financially as Dave indicated, but also competitively. Micron is transforming into a product leadership company that is a trusted partner to our customers both for differentiated solutions and for continuity of supply. We are confident that our upcoming node transitions, our strengthening product portfolio and deeper customer engagements will further enhance our competitive position.

Micron's transformation is taking place against a global backdrop of unprecedented environmental challenges. It is imperative that we are also environmentally responsible in our operations and Micron is playing a leadership role in this area. Last month, we solidified our commitment to Sustainability, announcing specific and measurable environmental sustainability goals for calendar 2022 and 2030. These commitments will be a milestone toward our aspirational goals of reducing absolute greenhouse gas emissions by 40% from our calendar 2018 baseline; transitioning to 100% renewable energy where available;



conserving 100% of our water use; and sending zero waste to landfills. Reaching our goals will require investment, and as we've previously discussed, we plan to devote approximately 2% of annual capital expenditures to environmental sustainability initiatives, amounting to about \$1 billion over the next five to seven years.

We will now open for questions.