

【Samsung Electronics 4Q Earnings Call】

Byung-Hoon Ben Suh

Good morning.

This is Ben Suh, the new head of investor relations. I am succeeding Robert Yi, who, after 11 years of distinguished service as the head of IR, will remain with the Company as a resident advisor.

Thank you for joining our earnings call for the fourth quarter of 2019.

With me, Representing each of the business units, are

Mr. Jinman Han, Senior Vice President of the Memory Marketing Team,

Mr. Dongho Shin, Senior Vice President of the System LSI Marketing Team,

Mr. Shawn Han, Senior Vice President of the Foundry Marketing Team,

Mr. Kwonyoung Choi, Vice President of Samsung Display,

Mr. Jongmin Lee, Vice President of the IT and Mobile Business, and

Mr. Louis Kim, Vice President of the Visual Display Business.

In addition, Mr. Tae Gyu Kang from Investor Relations is present on this call as well

I would like to remind you that some of the statements we will be making today are forward-looking, based on the environment as we currently see it, and all such statements are subject to certain risks and uncertainties that may cause our actual results to be materially different from those expressed in today's discussion.

Let me begin with our fourth quarter results.

Total revenue increased slightly year-on-year to 59.9 trillion won backed by strong sales of premium set products, despite weaker component sales caused by unfavorable conditions in the memory and large display markets.

Gross profit fell 3.9 trillion won year-on-year to 21.3 trillion won, due to a drop in memory chip prices, with a corresponding decline in gross margin.

SG&A expenses decreased slightly year-on-year in both absolute terms and as a percentage of sales led by a reduction in marketing costs and other expenses.

Operating profit came in at 7.2 trillion won, a 3.6 trillion won year-on-year decline, with operating margin falling to 12%.

Relative to the Korean won, weakness in the US dollar, euro, and currencies of some major emerging markets negatively impacted our operating profit quarter-on-quarter by approximately 300 billion won.

I will now briefly review the performance of each business unit.

In the memory business,

Higher server and mobile demand helped increase shipments, but earnings fell sharply year-on-year as DRAM prices remained on a downward trend that started at the end of 2018. Quarter-on-quarter, however, earnings improved as we focused on addressing increasing demand led by data centers, saw cost reductions from process migration, and had some favorable expense items

compared to the previous quarter.

For system semiconductors, profits increased year-on-year, boosted by rising demand for high resolution image sensors and HPC chips.

In the display business,

Mobile panel earnings decreased slightly year-on-year under weak demand for some premium product groups, despite further diversification of our customer portfolio. The large panel business suffered another significant year-on-year reduction in earnings as persistent capacity expansions in the industry keep exacerbating the supply-demand imbalance.

For the mobile business,

Earnings improved considerably year-on-year thanks to rising sales of flagship devices and a revamp of the A-Series lineup. Sequentially, profits were lower due to the fading of new-product effects of a flagship model, however, the magnitude of the drop was reduced by more effective use of marketing expenses.

In the CE Division, earnings grew with expanding sales of premium TVs, including QLED and ultra-large models, as well as with rising sales of new lifestyle appliances and improved margins in refrigerators and other products.

Next, I would like to share our business outlook.

In the first quarter of 2020,

Earnings are forecasted to be weaker sequentially due to low seasonality for

the Memory, Display, and CE businesses as well as an increase in some expense items compared to the previous quarter.

In the component business,

For memory, we expect earnings to decline quarter-on-quarter due to weak seasonality even though we are seeing firm demand for some server and mobile products.

Demand for APs, image sensors, DDIs, and other system semiconductor products are expected to rise as our major customers launch flagship smartphones.

We expect mobile display earnings to be significantly lower than last quarter due a decrease in utilization resulting from seasonally slowing demand from major customers. The large display business is likely to continue to struggle as sales will probably remain stagnant under weak seasonality.

In the set business,

Mobile operating profit is expected to remain flat quarter-on-quarter, as rising marketing costs to boost flagship sales offset the effects of an improved product mix with the release of new flagship and foldable models.

CE earnings are forecast to decline quarter-on-quarter amid low seasonality.

For the full year 2020,

We expect to see improvements in the Company's overall performance, however, global uncertainties do remain.

In the Memory business,

Market conditions are forecast to improve gradually on the back of stronger

data center demand and increasing adoption of 5G smartphones. However, the actual pace of 5G expansion and its effects on DRAM content requires further monitoring. As planned, we will work to normalize our inventory level within 1H20 and focus on strengthening our technology leadership through migration to 1z nano DRAM and 6th generation V-NAND.

System LSI will actively address demand for 5G SoCs and high resolution sensors with its differentiated products. The Foundry business will continue to expand production of 5 and 7 nano EUV chips and work to diversify its customer base, while also enhancing technology competitiveness by developing 3 nano GAA technology.

In Display,

Smartphone makers are likely to increase adoption of OLED panels as the 5G phone market expands. We will continue to extend our leadership with differentiated technologies and designs, and will also actively embrace demand from new applications such as foldable devices. For large displays, earnings will remain weak due to a persistent supply glut and added costs from reorganizing our business structure to focus on QD-Display.

The mobile business will strive to improve earnings by expanding sales of premium models, including ones in our enhanced lineup of 5G devices as well as new foldable designs. At the same time, we will strengthen our mid-range to low-end lineup through continued innovation.

For Network,

We expect our 5G business in the domestic market to shrink somewhat compared to last year, however, we will expand our 5G business overseas by enhancing our core competencies and investing in the infrastructure required for additional growth.

For TVs,

We will solidify our leadership in the premium market by expanding global sales of QLED 8K TVs and by showcasing products using innovative technology such as MicroLED.

The home appliance business will strive to accelerate growth by boosting sales of premium products which include new lifestyle appliances such as our Bespoke product series.

Now, I will address capital expenditures.

Capex in 2019 was approximately 26.9 trillion won, with 22.6 trillion won allocated to semiconductor and 2.2 trillion won to display.

For memory, while we made significant investments to expand DRAM capacity in 2018, our investments in 2019 decreased as our primary focus was on process migration. Foundry investment increased year-on-year as we expanded capacity of advanced process nodes, including that for 7 nano EUV.

Expenditures on OLED declined compared to last year as investments in the A4 line for mobile panels were completed in 2018.

For this year,

We will maintain a flexible approach to investing that allows us to respond to market conditions. For Memory, we will keep investing in infrastructure to ensure mid- to long-term readiness, but investments in equipment will be made flexibly based on a recovery of market conditions. Investments to enhance the mid-to-long term competitiveness of the System semiconductor, Display, and emerging businesses, such as AI and 5G, are intended to be executed as planned.

Next, I would like to address shareholder return.

First, the Board of Directors today approved year-end dividend of 354 won for common stock and 355 won for preferred stock.

As with the three prior quarters, 2.4 trillion won, or one-fourth of the annual total of 9.6 trillion won, will be paid out based on our current shareholder return policy.

As for our shareholder return plan covering 2018-2020, our commitment to return 50% of FCF over the 3-year period to shareholders remains unchanged from when it was first announced in 2017.

At this point, however, it remains a challenge to estimate the amount of return beyond committed dividends and execute its early distribution.

The determination of this additional return is forthcoming—we are closely monitoring the projected free cash flow level and plan to provide details of our total return plan at an appropriate time within the year.

Lastly, I would like to inform you that we have decided to adopt electronic voting.

This was resolved by the Board of Directors earlier today, and will allow our shareholders to more conveniently exercise their voting rights. We will start using electronic voting at our 51st AGM, which is scheduled for March.

The adoption of E-voting is part of our continued efforts to strengthen the rights and interests of our shareholders.

Before we move on to presentations from each business unit, I would like to share several data points in key business areas.

For DRAM, in the fourth quarter of 2019, our bit growth was in the low-single digits percentage while ASP saw a high-single digit decline. For the first quarter of 2020, we expect a high-single digit drop in the market's bit growth, and our result is likely to be similar. On a full-year basis, market bit growth is forecast to increase in the mid-teens, and once again, we expect to be in line with the market.

For NAND in 4Q, we recorded bit growth in the high-single digits, while ASP in the quarter rose a mid-single digit. For 1Q20, we expect our bit growth and the market to be similar, declining a mid-single digit. For the full year, bit growth is likely to reach the upper-mid-20s for both Samsung and the market.

In the Display Panel business, our OLED portion of sales was in the mid-80% range in the fourth quarter of 2019.

For wireless, sales volume came in at 75 million units for handsets and 7 million units for tablets in the fourth quarter of 2019. The blended ASP of handsets

and tablets was USD 216; and the smartphone portion of handset sales volume was in the low 90% range.

In 1Q20, we expect shipments of both handsets and tablets to decline quarter-on-quarter, but forecast that the blended ASP will rise compared to 4Q, with the smartphone portion staying similar in the low 90s.

In the TV business, our 4Q shipment growth was in the mid 30% range, but we expect to see a mid-20% decline in 1Q20. On a full-year basis, we project our sales volume will grow in the high single-digits.

I will now turn the conference call over to the gentlemen from each business unit to present fourth quarter performances and outlooks for their corresponding business segment. Thank you.

Good morning,

This is Han Jinman from the Memory Marketing Team.

In the fourth quarter, Overall memory demand was solid led by increasing demand from server customers, with gains also coming from demand for major applications including ones related to 5G network expansion.

For DRAM,

Server demand increased mainly for high-density products as purchasing from datacenters and customers in China increased thanks to the expanded adoption of a new CPU

For PC, Despite some negatives, which include a CPU shortage, purchasing demand remained solid thanks to an increase in set-builds at OEM customers.

For Graphics, demand stayed solid, mainly for GDDR6, with the launch of a new GPU.

In mobile, along with positives related to 5G network expansion, the high-density trend in mid-range and high-end smartphones drove up content per box. Moreover, purchases prior to the Lunar New Year holiday alongside a shortened smartphone launching schedule by Chinese vendors helped keep demand solid.

We focused on maximizing sales volume by leveraging our flexible product mix, and we also enhanced profitability and strengthened our market leadership by expanding sales of differentiated products such as GDDR6 and 16Gb-based

high density server products.

For NAND,

The launch of new smartphones contributed to higher-than-expected demand, which centered on high density solution products. SSD demand also increased mainly from server applications.

We exceeded our previous bit guidance by responding proactively to demand in all applications. We thus focused on solution products such as 2TB-or-higher high-value/high-density server SSDs for datacenters, and high-density eStorage for newly launched smartphones.

Next, I would like to talk about the first quarter of 2020.

In the case of DRAM,

Demand for mobile and server applications is likely to be relatively solid but overall demand will decrease compared to the previous quarter amid soft seasonality.

For PC, Set-build demand is likely to be limited Due to pre-builds in the fourth quarter related to the termination of Windows7 support and a CPU shortage, But there could be some possibilities of additional inventory building from customers, given forecasts for DRAM undersupply later this year.

For server and mobile DRAM, capex plans and stabilizing inventory levels at datacenters and major mobile manufacturers' launch of new models alongside continued 5G expansion will ease soft seasonality.

Not only will we continue to strengthen our cost competitiveness by expanding node migration to 1Ynm-scale products, we will also actively respond to demand for LPDDR5 mobile DRAM and high density server products such as 64GB server DRAM, capitalizing on our flexible product mix, which aligns with changes in demand for overall applications, to minimize the effect of demand decrease.

In the first quarter of 2020,

We expect overall NAND prices to keep rising, thanks to strong demand mainly from server amid a stabilizing market.

For SSD, content per box for Client SSD will keep increasing even amid weak seasonality; and the adoption of high density and high performance products for datacenter SSD should expand.

Mobile is also expected to see a continuation of the trend toward high density thanks to launches of high-end smartphones by major manufacturers.

We will actively respond to expanding demand for applications such as newly launched PCIe-based products for server and high density eStorage for flagship smartphones.

Moreover, our 5th generation V-NAND is in the mass production stage for all applications and we aim to bolster our profitability and technological competitiveness by accelerating migration to 6th generation V-NAND in the first half of this year.

Next, I will share our market outlook for 2020.

For DRAM,

Server demand is likely to show solid growth in 2020, given increased investments by datacenters. In particular, we expect demand growth to be driven by an increase in content per box via a newly launched CPU as well by seasonal effects in the second half.

Although we believe growth in content per box, will pick up momentum centering on Volume zone models as major manufacturers expand their 5G smartphone line-ups, we should keep an eye on the pace of 5G expansion and its effects on DRAM demand.

We expect demand to be solid from consumer products, especially ones driven by the construction of 5G networks in China. Graphic demand, centering on GDDR6, will also increase on the back of rising content per box and the launch of new gaming consoles in the second half.

For NAND,

Server SSD demand centered on datacenters is expected to continue rising. And for PC, SSDs penetration will increase in the mid-range segment.

Furthermore, alongside the expansion of 5G networks, the trend toward high density in mobile will continue, and we expect to see new demand from applications such as gaming and automotives.

We plan to manage our investment and capacity flexibly according to changes

in demand by application, and we will keep expanding sales of differentiated products such as LPDDR5 for 5G mobile, HBM2E/GDDR6 for AI, and high-density storage.

We will also focus on enhancing our technology and cost competitiveness by stably ramping-up production and achieving high-quality output of our cutting-edge 1Znm products and 6th generation V-NAND.

Thank you.

Good morning, this is Dongho Shin from the System LSI Business.

In the fourth quarter, S.LSI earnings decreased quarter-over-quarter, which is a result of weaker seasonality of the mobile industry.

During the quarter, however, we secured growth engines through our commercialization of the world's first 108-mega pixel image sensor and expansion of our global customer base for 5G 1-Chip SoCs.

In the first quarter of this year, we aim to improve our earnings by maximizing our shipments of major components, such as APs, image sensors, and DDIs, that have been adopted by our major customers for their new flagship smartphones.

In particular, demand for high resolution image sensors, like our 64Mp product, has centered on Chinese customers and is still rising, so we will strive to bolster revenue through efforts to increase capacity.

In 2020, we expect the 5G market to grow considering the rapid rise in the number of subscribers following the launch of mid-range 5G smartphones in China. Accordingly, we plan to expand our 5G Chip business by promoting our competitive 1-chip solutions for mass-market devices to multiple customers.

For the image sensor business, smartphone makers are likely to continue to adopt high resolution sensors as competition to upgrade camera specs intensifies. Meanwhile, we forecast that demand will rise for multiple cameras that can support differentiated functions such as a high-multiple optical zoom

and ultra wide angle, 3D, and macro shooting.

In order to address strong demand in these areas, we plan to extend our leadership in high resolution technology through the development of finer pixels and to expand our multiple camera lineup, which includes our 3D ToF products.

Thank you.

Good morning, this is Shawn Han from the Foundry Business.

In the fourth quarter, the Foundry business achieved solid results backed by rising demand for 5G chips and high-resolution image sensors from major mobile customers; and rising demand for HPC chips from customers in China.

This quarter, we have increased mass production of 6 and 7 nm EUV based mobile AP products. We also bolstered our technological leadership by extending the application of our 4 and 5nm chips to network; and by completing additional designs for 5nm mobile AP products.

In addition, we further expanded our customer base for mainstream processes by securing new orders for 8-nano chips, which boast an ideal balance between performance and price.

In the first quarter, we expect demand for APs and high-resolution image sensors to increase as our major customers launch new flagship smartphones. Accordingly, we plan to focus on optimizing our fab operations to maximize the supply of 5G-related chips.

In addition, we will continue our efforts to keep adding to our technology leadership by completing the 4-nano process development and initiating the design of the 3-nano GAA process.

In 2020, we are scheduled to start mass production of 8-nano computing chips for large-scale customers; and demand for 5G related chips is forecast to keep rising. Based on these factors, we expect revenue growth to accelerate and

reach double-digits for the year.

Moreover, we will complete the product design of the 4-nano process as well as a number of 5-nano based product designs not only for mobile but also for HPC and consumer applications. By doing so, we aim to diversify our customer base and expand the number of applications using our products, laying the foundation for future growth.

Thank you.

Good Morning.

I'm Kwonyoung Choi from the business planning department of Samsung Display.

In the 4th Quarter, Display earnings decreased QoQ, Weighed on by weak profitability business wide.

Specifically, Earnings in the mobile display business slipped, Due to a higher cost burden caused by lower fab utilization Amid softer demand for some premium products.

In large display business, our operating loss widened, as the industry's ongoing supply glut caused both ASP and shipments to decline.

Looking at the 1st Quarter of 2020, mobile display earnings are likely to come in lower QoQ due to a decrease in demand from some customers.

Thus, We will strive to enhance profitability By increasing shipments of our OLED panels for smartphones with differentiated designs, And by broadening our customer portfolio To include other IT applications; At the same time, we will also work to strengthen our cost competitiveness.

The Large Display Business, facing weak seasonal effects and stagnant sales Is likely to stay in the red

So, We will bolster our efforts to secure profitability by responding proactively to demand related to newly launched TVs from major customers as well as by

increasing shipments of monitor panels.

Next, I would like to share our outlook for the display market and our core strategies for 2020.

In the mobile display industry, New entrants are adding to already intense competition. Despite this, we expect the OLED market to grow as smartphone makers increasingly adopt OLED panels to address rising replacement demand, which is focusing on 5G smartphones

Hence, We will seek to boost utilization and shipments by expanding our customer portfolio based on our differentiated technologies, outstanding designs, and strong cost competitiveness.

In particular, We aim to grow the overall OLED market and widen the gap with competitors, by actively addressing the needs of our customers in new areas such as foldable devices and other IT applications.

Operating profit in the large display business is likely to remain weak, given the industry's oversupply, and costs related to our transition to QD-Display.

Accordingly, We will focus on securing profitability by expanding our value-added portion of products, which include ultra-large and 8k ultra-high resolution panels as well as by lifting sales of premium panels for use in curved or gaming monitors.

Thank you.

Good morning.

I am Jongmin Lee from the Mobile Communications Business.

I would like to share our 4th quarter results, and our outlook for the IM Division.

In the 4th quarter, overall demand for smartphones and tablets increased QoQ as a result of year-end seasonality.

Revenue for the Mobile Business decreased QoQ due to diminishing new model effects of flagship models, but profits fell only slightly as marketing costs during the holiday season were more efficiently managed, and key models, including A-Series, maintained their profitability.

For the Network Business, although total revenue decreased QoQ as 5G expansion in South Korea concentrated in the first half of 2019, our 5G revenue increased in overseas markets, including the US and Japan.

Now, let me address the outlook for the 1st quarter of this year.

As 1st quarter is a seasonally weak period for mobile, market demand for both smartphones and tablets will probably decline QoQ.

For our mobile business, we expect our revenue to increase on likely improvements in both our sales and product mix with new launches in our Galaxy S and Foldable series.

Profit, however, is likely to stay similar QoQ due to the trend toward higher-specs and the marketing costs to boost sales of flagship models.

At the Galaxy Unpacked event in San Francisco on February 11th, we will unveil new and innovative Galaxy devices that will lead the next decade of mobile experiences.

Over the past 10 years, we have continuously introduced meaningful innovations in our Galaxy devices; and our new Galaxy models will embrace our philosophy on innovation and provide our customers with whole new experiences.

Finally, let me move on to our outlook for this year.

Accelerating commercialization of 5G is likely to increase demand for 5G smartphones.

However, we expect competition to keep intensifying especially within the trend of offering high specs in main components such as APs, memory, and cameras.

We plan to differentiate our premium smartphones by adding more 5G models and introducing new designs for foldable products to set the trends in changing markets and overcome the fierce competition.

Moreover, we will expand our 5G product portfolio across a wide range of price points and further enhance competitiveness of our mass-market lineup

by quickly adopting innovative technologies based on market needs.

With these efforts, we will strive to improve our results YoY by expanding sales of premium smartphones and focusing on up-selling in the low-end to mid-range markets.

For the Network Business, although our domestic 5G business is expected to decline YoY, we will foster our overseas 5G business by enhancing our core competencies and laying the foundation for global expansion.

Thank you.

Good Morning. I am Louis Kim, Vice President of Visual Display Sales and Marketing Team at Samsung Electronics.

First, I'd like to share the market condition and our performance in Q4 of 2019. The Q4 TV market demand showed double-digit growth thanks to the year-end promotions, but decreased year-on-year because of reduced consumption from developed markets.

Samsung achieved growth for both quarter-on-quarter and year-on-year with successful promotions during the peak season.

We also had better performance than last year with an improved product mix and increase in sales of premium products like our QLED TVs and super large screen TVs.

Sales for QLED TVs have doubled as QLED TVs provided the best picture quality and offered a wide range of models. The QLED TV has become the standard for consumers looking for premium TVs.

Samsung, while maintaining a dominant market share for big screens, continues to satisfy consumers' need for large screens with a wide range of models for 75 inch and above.

For the digital appliances

Even through a long trade war between the US and China and other under uncertain circumstances, the overall market demand increased with growth in emerging markets such as India.

Samsung improved both revenue and profit by strengthening our marketing strategy

for regional peak season promotions and expanding sales for premium products like the Bespoke and large driers.

I will now share our market outlook for Q1 and the year 2020.

Q1 TV market is projected to decline from last quarter after the peak season and to decrease year-on-year because of lowered consumption in developed markets.

Under these circumstances, Samsung will create growth and generate profit by successfully launching new models and expanding sales of high-value products that include super large screen TVs, Lifestyle TVs, and the QLED 8K with improved picture, design, and sound.

Q1 Digital Appliances market

is expected to grow with the fast urbanization of new cities in emerging markets.

Samsung will successfully launch new products by working closely with our partners and continue to expand sales for new-life and premium products.

We will also secure future growth engines by reinforcing our B2B business and expanding online sales.

The 2020 TV market may have risks with global economic uncertainties, but we expect sporting events like the European Cup and Olympic Summer Games to help create positive growth.

Samsung will maintain leadership in the premium market with QLED 8K and super large screen TVs as well as Lifestyle TVs such as The Frame, The Serif and The Sero.

As we presented at CES, Samsung will pioneer the home entertainment market with a Micro LED product for the home under our vision for “Screen Everywhere.” As the market leader, we will continue to innovate products that offer the best experience for consumers.

For Digital Appliances,

there may have been uncertainties caused by the global economy.

However, Samsung will expand the premium line up with products like

Bespoke and new life home appliances, and will find more B2B opportunities for sustainable growth.

Thank you.

Q&A

<Q – Dongwon Kim >:

I have 2 questions.

- One question for the Display; second question for the Consumer Electronics. First of all, regarding the Display Business, as you know the sales price for the LCD is continuing to drop. It is below the cash cost now. In that context, is the company considering accelerating its reduction of its LCD capacity?
- Second question is regarding your plans of launching a micro TV -- MicroLED TV for consumers for the household. Regarding that business plan, what do you think is the right inch size for the household application? When do you think you'll be able to launch that commercially, a household MicroLED TV? And if it is launched, what will be the price range for it? And how are you planning to reduce the cost? And also in that context, what would -- what do you think the price range would be compared to other competing products?

<A>:

- To answer your question, in the mid- to long term, we are continuing the conversion to QD-Display-focused business structure. That will be done in phases gradually. Depend -- considering the market needs as well as the business competitiveness, we will start with a size around 30K and gradually expand and move forward. We are also, at the same time, preparing the technology and the mass production capabilities so that we are able -- and continue to cooperate with the major customers so that we are able to launch the new products in a competitive manner.

Meanwhile, while we make that transition, our remaining LCD capacity will be focused more on the high-value, high-end products such as the ultra-large size,

the ultra-high picture quality LCD TV or curved and gaming monitors, and we will continue to leverage our differentiated technology to secure profitability in the LCD business.

- Regarding your second question of our household MicroLED TVs. As we mentioned, as we announced in the CES this year, we are preparing a large range of different sizes for the household, including 75-inch, 88-inch, 93- and 110-inch. We believe that this will create a new momentum in the home entertainment market. Regarding the timing of launch, we're currently working towards launching it in the second half of this year.

Also, given that MicroLED is a next-generation technology, our focus is to continue develop our technology and also improve the processes so that we're able to deliver a product that has a high level of completeness. And at the same time, provide us with a material cost advantage.

You've also asked about the expected price range when it becomes commercially available. We're currently thinking that it probably will be at a higher price range than what is currently the price range for premium TVs in the market. But given that MicroLED is the product that can provide the best viewing experience to consumers, we think that even at that price range, there will be sufficient demand for MicroLED TVs.

<Q – S. K. Kim >:

I have 2 questions for the Semiconductor business.

- So the first question is regarding your fourth quarter results. First of all, congratulations on the strong performance in the fourth quarter. Regarding the better-than-expected earnings, especially in terms of operating profit, even if we take into account that your NAND shipments increased quite significantly, still, I think your operating profits improved more than expected. Can you give

us any detail, more color into how the earnings, especially the profitability improved so much? Were there any, for example, additional cost-saving effects that you enjoyed in the fourth quarter?

- My second question regards the server DRAM demand outlook going forward. Server DRAM demand has improved, and there are people that are expecting this recovery to continue and to actually be strong. But there are also other factors to consider, for example, the fact that the new 10-nano-based CPU has not been fully released. Also, some are saying that what we're seeing now in terms of the demand recovery is more driven by the restocking demand of OEMs and once they reach their comfortable inventory levels, the demand would actually become weak again.

What are your views? Do you think that this is the case? Or do you actually think that we've entered into a full demand up-cycle? If it's so, then can you explain your reason for thinking that?

<A>:

- To answer your first question about our results in the fourth quarter, as you mentioned, yes, in the fourth quarter, our NAND shipments did increase more than originally expected. And so our overall sales improved, that's one factor.

But also, we were able to smoothly move on with our process migration on the 10-nano class DRAM as well as the fifth-generation V-NAND, and that actually gave us considerable cost-saving effects.

On top of that, there were also some one-off positive factors. For example, with the 1x-nano DRAM defect issue being resolved, we were able to reverse some of the provisioning that we had set aside.

- To answer your second question about the DRAM demand outlook, it is true that we're also seeing increasing demand from the data center customers for

server DRAM. We think that it is -- there are too many factors that need to be considered to conclude that we have entered into a definite demand up-cycle. And that's why we maintain a prudent position regarding future server DRAM outlook. Whether the current demand expansion trend will continue until the second half of this year, that is, I think, a question that needs further monitoring.

Regarding the data center demand growth that we're seeing, we do see that some of it is coming from the OEMs restocking after completing their inventory adjustments, but also part of that demand growth that we're seeing is driven by the adoption of the Cascade CPU.

So as we mentioned, in these 2 sources of demand growth, once the restocking demand goes down, which does -- restocking demand accounting for not a small portion of the demand growth we're seeing, there is a possibility. So we cannot fully rule out the possibility that this demand growth that we're seeing may slow down once the restocking is completed.

You mentioned during your question one of the factors to consider in terms of future demand outlook is the 10-nano-based new CPU platform launch. Regarding that, I would like to add that, actually, the 8 channels supporting 14-nano-based CPU is being launched as scheduled. And so we think that a negative impact that could happen by a possible delay or a rollout of the 10-nano-based new CPU platform would be limited if it does happen.

<Q – Sei Cheol Lee >:

I also have 2 questions for the semiconductor side.

- First of all is can you give us your outlook in terms of the memory supply and demand situation going forward? With the spot prices going up, there are some that are having more optimistic outlook for the memory supply and

demand situation. In that context, can you share with us the company's view by product in terms of future demand and supply and also the inventory situation for each product?

- Second question is about the recent events that happened in the industry. For example, there was the power outage on one of your sites as well as a fire in another competing site. Has there been any impact due to these disruptions to the memory supply side or any other type of impact?

<A>:

- Well, to answer your first question, as we said, we think that the rapid change in industry situation that we've been going through is basically a temporary situation that happens because of the big swing the data center industry demand went through recently. And because this is a temporary situation, the recent increase in the spot prices is also a part of that process of returning to normal levels or normalizing after this big swing that we saw.

It's difficult to specifically forecast the magnitude of a turnaround in the market situation. But because there is very solid demand overall for DRAM, we think that we will be able to enjoy a stable market environment going forward.

Now regarding the NAND side, we're seeing continuous demand that's elastic to the prices. Also, considering the fact that the overall profit margins of the suppliers are lower than that on the DRAM side, we think that the supply situation on the DRAM market -- or excuse me, the NAND market would actually be more friendly or favorable versus the DRAM market. However, given the fact that there are various factors that could impact the future market supply and demand situation, our position is that we need to continue to sense the market and respond flexibly.

- You've also asked about the inventory situation. Regarding inventory, as we

mentioned before, we're expecting that the DRAM inventory would normalize during the first half of this year. And in the case of NAND, we think that this current normal level in terms of inventory will continue.

Your second question was about some of the production disruptions in the industry. We cannot comment on what happened in other companies. Regarding our power outage, we have recovered to normal operation. Currently, our operation is going forward without any issues. And so in terms of any impact to memory supply due to this power outage, we could say that there was no impact.

<Q – J.J. Park>:

I have 2 questions.

- The first question is for the memory side regarding memory investment. How much of investment CapEx are you planning this year for DRAM as well as NAND, respectively? Also during the presentation, you mentioned that basic direction is to manage the investments and capacity flexibly. But if we assume, hypothetically, that the market demand increases more than what's expected, how fast can you actually increase and bring your capacity online?

- Second question is for the mobile side. I have several questions on the mobile side. First of all, you went through a campaign. You've went through an effort to revamp and streamline your low- to mid-end product lineup since last year. How much progress has that made? Second question is about -- you've also been using ODM production and announced plans of expanding ODM. How much of an expansion have you achieved? And how much do you plan to increase ODM production going forward?

Third question on mobile is about the Indian market, which is becoming a very

fierce competitive market? What are your plans on responding to India?

<A>:

- Regarding your first question about DRAM and NAND capacity capital investment plans, we are actually still in the process of reviewing our investment plans for this year. And because they are not decided, it's difficult for us to provide you any, for example, specific guidance by product. But as you know, our basic position regarding investments is that we will continue to manage and operate our investment as well as capacity in order to strengthen our sustainable profit base.

Regarding our investments going forward, the base that we are operating in is that the demand we're expecting, as we mentioned during the presentation, is around mid-10% growth for DRAM and mid- to high-20% growth for NAND. Basically, our default is to meet the demand growth through process migration as well as using our inventory.

Now to answer the hypothetical question that you posed about, for example, this year, demand going far over what's expected overall, then we will have the option, for example, to respond to market demand flexibly using Phase 2 of Pyeongtaek or Phase 2 of Xi'an, these new fabs, so that would be an option in that situation that you've proposed. But in addition to that, in the mid- to long-term demand, we all will continue, for example, the infrastructure investments, for example, in clean rooms, while we continue to respond flexibly to changes in the demand this year.

- To answer your question, first of all, regarding the smartphone, the mid- to the mass segment smartphone lineup. The streamlining of that which we started from the first half of last year, we think that we have been able to wrap up that to a certain degree. And that has actually helped us improve the

profitability of the mid- to low-end smartphones during the second half of last year.

Regarding the ODM, we are continuing to use ODM for the low-end models on a limited basis. Regarding our ODM approach this year, we will probably maintain the same operating tone and approach this year as well. And we will also, at the same time, continue to cooperate with our ODM suppliers in order to implement the high-quality standards that meet the customers' trust and expectations when -- for our company, and also continue to monitor the market feedback and product competitiveness to decide our future direction.

As you mentioned, yes, the Indian smartphone market competition is becoming more fierce. We are planning to respond actively to the changing market environment by launching new models that reflect the needs of Indian consumers; also obtaining the price competitiveness that suits the market situation; and also further strengthening our collaboration with a local service as well as the distribution.

Especially in order to respond to the increasing share of the online distribution channel, last year, we newly introduced the M series. And this has actually resulted in achievements, for example, in increasing the share of online sales versus the previous year. We will build on this momentum to continue to make our products more competitive and also improve our sales competitiveness through the online channel.

<Q – Hyunwoo Doh >:

I have 2 questions.

- First question is for the memory. I think in the market, there's a lot of expectations for a positive impact from the 5G rollout on smartphone memory. And that -- but then there are other views that say that the OEM, the

customer's inventory is already built up to a certain level, and that could actually weigh on the market demand going forward. So we would like to hear what the company believes would be the potential impact of this 5G rollout to mobile memory demand going forward?

- Second question is to the System LSI side, which also ties with the 5G adoption and rollout. As 5G rollout picks up its pace, I think there are a greater interest in your SoC as well as modem chip businesses. Can you give us a bit more view or color on your plans and approach for your SoC as well as modem chip businesses? Especially, can you share with us some of your experiences that you have been gaining by supplying to new customer recently?

<A>:

- To answer your first question about the impact of 5G smartphones on the memory demand, we are looking to various demand forecasts that's provided by outside research firms, and there's a wide divergence. Some are saying that the 5G smartphone would be around the mid-100 million units. Others on the higher-end forecast, it would reach 300 million units. I think, overall, in terms of majority, most of them are saying that it would be around at least 200 million plus.

And so as we mentioned during the last conference call, I think there is still a wide divergence in the future forecasts of the 5G and the smartphone market. But given the fact that major handset makers, OEMs, are launching 5G smartphone offerings and also that many carriers are now bringing in subsidies for 5G plans, I think there is no difference of view that this year, 5G adoption in terms of handsets will be much larger in terms of pace of growth than we saw last year.

Now if we take a mid- to long-term approach of the impact of 5G smartphone

sales on memory demand, if we take a mid- to long-term approach, then at one point, the 5G smartphones would actually take position in the volume zone within the overall smartphone market. This would mean that there will actually be more applications that leverage the 5G smartphone capabilities, so applications that are optimized and require the high specifications of a 5G handset would then become more widespread in the market. That would actually then be a momentum for demanding higher memory content on the handset, which will actually then drive the solid demand for memory.

But that will be the mid- to long-term view. If we just look at this year, there is, as you mentioned, the risk of increasing inventory at some customers. And also, for the time being, actually, the high-spec cameras, and the fact that it supports 5G itself, could be the key differentiating point of a 5G smartphone versus other phones. And therefore, if we consider that, and on top of that, the base effect against 2019 when there was already a significant increase in memory content on the handset level, this year alone, the increase of memory content by 5G may be limited. And so what we need to carefully watch going forward is how down the price range, price segment of 5G smartphones spreads out and also the impact on memory content due to this spread.

- To answer your second question about the System LSI, our system -- the SoC business, we have been making several moves to enhance the competitiveness of our SoC offering. For example, we have received license from AMD to further strengthen the competitiveness of our GPU. And also, we have been able to secure a 1-Chip technology faster than competitors based on our excellent 5G modem technology competitiveness.

And so what we are pursuing is also to use the track record that we have of mass producing for Chinese customers, to use that to expand our supply to global customers.

Regarding plans of diversifying, increasing our customer base, currently, we're receiving positive feedback from the Chinese customer, Vivo. We're currently engaged in discussions of a follow-up model adoption. And based on that experience and track record, we are currently working on adding major global customers going forward.

<Q – Jong Woo Yoo >:

Yes, I have several questions for the mobile, the IM business.

- First of all is a set of questions about your 5G strategy. First of all, can you give us your guidance on the quantity, the volume of 5G smartphones that -- for you this year? Also, what are your plans in terms of the 5G product lineup this year? And how are you planning to differentiate in terms of service?

- Second question is, as the 5G product offering spreads down to the mid- to low-end segments, I would assume that the BOM cost, the B-O-M cost, will become more of an issue. So how are you planning to secure profitability of 5G handsets even at the mid- to low end, say the mass segment?

- Second, the other question about 5G is the network side of the 5G business. We're being told that the U.S. carriers will start investing in their 5G networks this year. When do you think will be the timing in terms of the U.S.-carrier 5G investments? And how does the company plan to respond to that demand?

Also, do you have any views regarding the investments -- 5G network investments in Europe or Japan?

- The third question regards the recent change of the head of the Mobile division. We're being told that his background is more on the smartphone development side. And can you give us a bit more color in terms of your new product lineup and launch plans this year, including the foldable as well as

other new products, given the new person as the head of the Mobile division?

<A>:

- To answer your question regarding our 5G strategy, first of all, as you mentioned, we also expect that the 5G demand growth will become full-scale this year as 5G service is rolled out not only in Korea and the U.S., but also China and Japan and other major countries. In line with this market environment, we are planning to introduce the 5G lineup on the mass A Series as well in addition to the high-end level, and this will drive up global sales.

Also, in order to differentiate our experience, we will be leveraging not only our experience of optimizing the 5G product but also offer differentiating experiences in terms of high-quality content, game, AR and also communication and computing experiences so that the consumers are able to appreciate 5G much more.

- With the adoption of 5G, higher-spec components are required. And also, there could be additional cost burdens depending on the market situation of these major parts. But we will respond by securing as much profitability as possible, by focusing on upselling based on the higher product competitiveness that we'll be offering, and also continue to enhance the operational efficiency in all areas, including manufacturing, R&D and marketing.

- Regarding your question about 5G network investments, as you know, Verizon started the 5G commercial service in the U.S. last April. That's 2019 April, but the other carriers have also continued to announce their 5G installation cities. And that's why, as you mentioned, we expect this year, the 5G market in the U.S. to expand. We will focus on increasing our 5G footprint in the U.S. as that infrastructure market unfolds.

Regarding Japan, we're expecting that the 5G commercial service will probably

start before the Tokyo Olympics. And last October, we were selected as the 5G supplier to KDDI, our existing carrier.

And in the case of Europe, we are continuously monitoring for opportunities of participating in the European 5G market.

- And your question regarding the new leader of the Mobile division, as you know, the new head actually has been personally leading the development of the Galaxy series for quite a long time, and he has been going through an empowerment process also for a long period. Given the fact that he already has rich experience in working with the carriers and also quite a lot of leadership experience, we look very much forward for -- to enhance our global competitiveness under his leadership.

<Q – Nicolas Gaudois >:

- First question relates to semis. According to a market analysis, the use of EUV lithography for 1a-nanometer DRAM could not only help cost per bit, but also potentially performance. Could you elaborate how single patterning lithography using EUV could actually lead to performance benefits for DRAM devices? Is this also meaningful enough for you to potentially pull in, and by how much in terms of time frame, your time line for 1a nanometer?

- And then the second question relates to Mobile. You'll be launching next month your first foldable display clamshell smartphone. How do you intend to position it versus the Galaxy S series, notably in terms of price points? And what are your volume expectations within -- your total volume expectations for Samsung mobile foldable products in 2020?

<A>:

- Regarding your first question about EUV and the 10-nano DRAM, as we've mentioned, we have continuously been testing EUV on our 10-nano class DRAM. We are partially using EUV on our 1z nano, and we will be deciding how much to adopt EUV depending on the economics that we gain.

As you know, because we have already EUV experience on the foundry side in mass production, in terms of the memory industry, we have the benefit of having built up, step-by-step, quite a lot of know-how working with EUV. And that's why we believe that we will be offering the most competitive EUV-based process technology in the memory industry.

As we mentioned, the advantage of using EUV is that we can actually very aggressively push towards the advanced nodes in terms of migration. That will enable us to develop products with low power and higher performance. And also, we will be able to enjoy cost savings continuously by reducing the number of multi-patterning steps.

Of course, it will depend on the economics of EUV as well as the number of EUV layers that we will be using. But our basic direction regarding EUV and memory is that we will continue to use it at a wider scale, too, as a source of gaining cost competitiveness.

- To answer your question about the foldable. As you know, since we launched the Galaxy Fold last September, the market has shown quite a high level of satisfaction regarding the innovation and the level of completeness that we've been able to deliver. Also, we are quite aware that the market has quite high expectations for a launch of various different foldable form factors, possible lowering of prices and increasing of supply.

Currently, we are focusing on launching the new foldable model of a new form factor and also focusing on further enhancing the level of completeness of the product in terms of the display, the design and also the UX.

As we know, the foldable phone has actually opened a new category of a superpremium product that's differentiated from the existing smartphone offerings. And we believe that going forward, the foldable phone will become a main category in the overall mobile market. That's why we will continue to focus and introduce new products that meets the customers' needs, together with innovating technology.

It's difficult at this point of the year to share with you a specific volume or sales expectation. But we are also -- at the same time as preparing the new product, also increasing our capacity for production of foldable products. And we hope to supply our foldable products to more customers this year.

<Q – Kyung Min Kim>:

Yes, I have 2 questions.

- The first question is to the Foundry business. It seems that with the adoption of the EUV at the foundry process, your competition against competitor, TSMC, is becoming more fierce. In that context, can you share with us what differentiates Samsung's foundry in terms of, for example, the road map for the advanced nodes versus the competitors?

- The second question is about the DRAM capacity plans. Previously, you had announced plans of converting some of your DRAM capacity to image sensor capacity. But given the recent turnaround in the DRAM demand, we -- I'm just wondering whether you have any plans of, for example, changing that capacity operation plan? And as a separate question from that, can you share with us your Pyeongtaek Phase 2 plans? When do you think that will be in operation? And what kind of scale or capacity are you planning for Pyeongtaek Phase 2?

<A>:

- Regarding your first question about the foundry and EUV, as you know, we were the first in the industry to mass produce using EUV on the 7 nano from 2019. This year, our focus will be to expand our mass production on the EUV 5 nano so that we are supplying to a wider range of customers and applications. And also, this year, our goal is to complete our 4-nano design process so that we maintain our leadership in these cutting-edge nodes.

Another key point in our road map is the GAA, Gate-All-Around technology, which will be the next-generation architecture to follow the FinFET going forward. So our focus is to continue to develop the core and key technologies for the GAA so that we are able to achieve the world's first GAA at 3 nano, and also to focus on design infrastructure that can maximize the benefits of GAA in terms of performance and power.

- Now if I understand your question correctly, I think you're asking whether we have any plans of our capacity operation, given the fact that the DRAM demand has been recently rebounding. And I guess, your question is under the assumption hypothetically if demand actually grows beyond what forecasted, whether we have any plans of changing.

First of all, what we see in the market is that there is definitely a clear increase in demand from applications such as data centers, graphic and consumers. Also on the mobile side, which does account for the largest share in the memory market, there are some positive upside factors such as the possible rollout of the 5G smartphones and positive impact to demand from there, but also there are some uncertainties that coexist.

For example, some uncertainties would be the fact that some of the customers appear to have built up their inventory during the second half of last year. And if they start to consume their inventory first, that could actually lead to a

possible adjustment of demand.

Although, as you know, the macro environment and geopolitical issues still remain quite out there, even though some of them are deemed to have relatively eased, I think it's too early to completely rule out the possibility of a negative impact from these macro uncertainties.

And so given all of that outlook on demand and the possibility of change, and also considering the need to achieve the efficiency of the overall semiconductor line operation, our plan of converting some of our capacity to image sensors will be maintained as originally planned.

Regarding the second part of your question about Pyeongtaek Phase 2, we are planning to continue to actually approach that flexibly depending on market demand changes rather than fixing down specific numbers that we will have to stand by.