

【Samsung Electronics 3Q Earnings Call】

Robert M. Yi

Good morning.

This is Robert Yi from Investor Relations

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

With me,

representing each of the business units, are

Mr. Se Won Chun, Executive Vice President of the Memory Marketing Team,

Mr. Ben Hur, Senior Vice President of the System LSI Marketing Team,

Mr. Sang Hyun Lee, Vice President of the Foundry Marketing Team,

Mr. Kwon Young Choi, Vice President of Samsung Display,

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

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

and Mr. Ben Suh, Senior Vice President and Mr. Tae Gyu Kang, Vice President of Investor Relations.

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.

Before going over the results, I would like to address the third quarter dividend.

The Board of Directors today approved a third quarter dividend of 354 won per share to be paid in November for both common and preferred stocks.

The total amount of payout is the same as it was in the first and the second quarters, which is 2.4 trillion won, or one-fourth of the planned annual total of 9.6 trillion won.

With that, let's move on to our results.

Total revenue in the third quarter decreased about 5% year-on-year to 62 trillion won, despite strong sales of set products, including smartphones, as conditions for the memory business remained weak.

Sequentially, total revenue increased 10%, mostly due to the mobile and OLED businesses.

Gross profit fell sharply year-on-year to 22 trillion won with a corresponding decrease in gross margin, mainly due to soft conditions in the memory market.

SG&A expenses were up year-on-year in both absolute terms and as a percentage of sales primarily due to increased R&D expense for development of advanced semiconductor nodes and technologies, as well as strengthening our product competitiveness in areas such as 5G and foldable technologies.

Operating profit in the third quarter was 7.8 trillion won and operating margin came in at 12.5%, both down significantly year-on-year due to relative

weakness in the memory business but up quarter-on-quarter from robust smartphone sales and increased OLED utilization.

A strong US dollar and euro against the Korean won in the third quarter positively affected operating profit quarter-over-quarter by approximately 0.4 trillion won, mainly in the component business.

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

In the memory business, earnings fell sharply year-on-year as prices continued to decline amid an industry-wide weakness that has persisted since the end of 2018. However, we did see higher-than-expected demand due to customer inventory build ups.

For system semiconductors, demand increased year-on-year for mainstream products such as image sensors and DDIs, but, earnings came in lower due to large price declines for mobile APs as a result of intensified competition.

In the display business, Mobile panel profit improved year-on-year due to cost reductions from rising utilization and increased productivity. However, the large panel business recorded a larger loss quarter-on-quarter as ongoing capacity expansions in the industry continue to weigh on profitability.

For the IM Division,

Mobile earnings grew due to strong sales performances by the Galaxy Note 10

and A Series, as well as higher profitability in the mass market segment.

In addition, we extended our technology leadership with the expansion of our 5G lineup and the launch of Galaxy Fold.

In the Network business, earnings improved year-on-year, boosted by the rapid commercialization of 5G in Korea.

For the CE Division,

Profits in the TV business dipped slightly year-on-year amid aggressive price competition despite growing unit sales of premium models such as QLED and ultra-large TVs.

For Home Appliances, earnings edged up year-on-year with robust domestic sales of new products, such as dryers and air purifiers, coupled with improved profitability for refrigerators and washing machines.

Next, I would like to share our business outlook.

First let me cover the fourth quarter.

In the component business,

despite weak seasonality, Memory demand is expected to increase slightly quarter-on-quarter, as customers build up inventory in response to global uncertainties.

In System semiconductor, 7-nano EUV products will be mass-produced in earnest, however, earnings are more likely to feel greater effects from weak seasonality.

Mobile display earnings are expected to weaken due to lower-than-expected demand for certain premium products and rising costs from lower utilization of rigid lines. In the large display business, we forecast that earnings will further decline as ASPs continue to fall amidst weak seasonality.

In the set business,

We expect mobile earnings to decrease quarter-on-quarter due to an increase in marketing expenses and a slight decline in shipments, the latter a result of dissipating new-product effects of flagship models.

The Network business will work to expand its 5G business in overseas markets, based on our success of 5G commercialization in Korea.

CE earnings are expected to improve as there is seasonally strong year-end demand in 4Q.

In 2020,

For the memory business, while demand is expected to recover, global macroeconomic issues pose a risk of continued uncertainty in the industry.

To address increased CIS demand, we have reviewed an overall optimization of our semiconductor production, and plan to increase CIS capacity starting in 1Q20. Due to such optimizations, we expect DRAM inventory to normalize in 1H20.

We will continue to manage our Capex plan flexibly in response to changing market conditions, while remaining committed to investing in mid- to-long term readiness.

In non-memory semiconductors,

For System LSI, we will introduce differentiated products to the 5G SoC and high-resolution sensor markets, and in Foundry, we will expand mass production of 5 and 7 nano EUV chips while also diversifying our client portfolio.

In the display business,

Amid a likely increase in competition in mobile display, we will work to increase our year-on-year utilization by enhancing price competitiveness and leveraging our advantage in power, thickness and design to solidify our lead position in 5G and other premium devices.

For large displays, we will continue to reorganize our business structure around QD-Displays, and the LCD business will remain focused on differentiated products such as ultra-large TVs, 8K models, and value-added monitors.

In the IM division,

The mobile business will keep extending its leadership in the premium segment by expanding our 5G and foldable product offerings. At the same time, we will pursue improved profitability through activities such as enhancement of our mass-market lineup.

The Network business will strive to expand its 5G business overseas, including in the US and Japan, and continue to address additional 5G expansion in Korea.

In the CE Division,

We will continue to lead the premium TV market by expanding adoption of QLED 8K and ultra-large models. Home appliances will seek continued growth through the expanded launch of innovative products such as our Bespoke refrigerators.

Now, I will address capital expenditures.

Capex in 2019 is expected to be similar to that of last year, reaching approximately 29 trillion won, with 23.3 trillion won allocated to semiconductor and 2.9 trillion won to display.

Third quarter capex was 6.1 trillion won. The cumulative total for this year as of end 3Q is 16.8 trillion won, with 14 trillion won allocated to semiconductor and 1.3 trillion won to display.

The majority of 4Q capital expenditure is earmarked for building memory infrastructure to address mid- to long-term demand. Furthermore, we will invest to expand 7-nano EUV capacity to strengthen the competitiveness of our Foundry business and we will also push forward with our investment plan for QD-Display.

To secure future growth, we will keep investing for the mid-to-long term in key areas such as semiconductor and display as previously announced, as well as in burgeoning businesses including AI, 5G, and automotive components.

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

For the third quarter this year, DRAM, our bit growth came in low 30% while ASP decline high teens. For the next quarter, Q4, we expect the market DRAM demand growth to be low single digit, and we expect our bit growth to be in line with the market. This will bring the 2019 annual DRAM demand growth at about mid-teens, and I believe that our bit growth will be higher than that.

For NAND, third quarter, our bit growth came in at low teens while ASP declined mid-single digit. And for the Q4, we also expect to see NAND market demand growth to be low single digit, and we will be in line with the market. And for 2019, for the total year, it'll bring the NAND market demand to be high 30%, and we will be higher than that.

The -- for our Display Panel business, the OLED mix within the sales was about mid-80% in the third quarter.

And for our wireless, our handset sales in the third quarter was 85 million units. Tablet came in at about 5 million. The blended ASP for our handsets were about 230 -- mid-\$230, and the mix of the smartphone within the total handset was low 90%.

In Q4, we expect the shipment of our handset sales to decline quarter-on-quarter, while tablet, we do expect to see some increase. The blended ASP is more likely to decline quarter-on-quarter while the mix of the smartphone within total handset will be capped at low 90%.

And for our TV business, our sales in the Q3 -- shipment of volume in Q3 came in about mid-teens. And in Q4, we expect to see high 30%. This will make up the decline in first half so that the annual increase of total shipment of TV will be high single-digits increase.

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

Good morning, This is Sewon Chun from the Memory Marketing Team.

In the third quarter, Demand in the memory market grew considerably with strong seasonality and inventory restocking at some customers, after inventory adjustments at datacenters.

For NAND, Customers becoming increasingly aware of a price bottom led to better-than-expected demand growth, backed not only by launches of new smartphones and a continuing trend toward higher-density, but also by increased SSD adoption in PCs and expanded high density storage from server customers as price elasticity kicked in.

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We actively responded to increased demand for high-density eStorage related to the release of new smartphones, and for high value-added, high density SSD of over 2TB from datacenters, enabling us to achieve results above our previous guidance.

For DRAM, demand from all applications has greatly increased thanks to strong seasonal effects, as well as from inventory restocking at customers in preparation for global macro issues such as tariffs and semiconductor-material export regulations.

As inventory levels normalized, mainly at data centers, server demand increased mostly for high-density products due to effects of the expanding adoption of a new CPU.

For PC, alongside rising demand from an increase in set builds, mainly from large OEMs due to seasonal effects, replacement demand from Enterprise PC also increased because of the termination of Win7 service.

For Mobile, the launch of new models in the second half led to a quarter-on-quarter increase in set shipments, and demand stayed solid thanks to an increasing portion of smartphones featuring at least 8GB DRAM.

By actively addressing overall growth in demand from major applications and rising demand for inventory from customers, our sales far exceeded our previous expectations.

Now, I will talk about the fourth quarter of 2019.

In the fourth quarter,

For NAND, we believe price elasticity will result in solid demand for high-density storage, and we expect prices to rebound across all applications amid a stabilizing industry.

For SSD, the adoption of high density, high performance SSDs in datacenters is expected to expand, and attach ratio for client SSDs is also likely to increase steadily.

For Mobile, The high density trend is likely to continue considering launches of new high-end models by major manufacturers.

We will actively address rising demand across all applications, including demand for new products based on PCIe in the server market and demand for high density eStorage for Flagship smartphones, while we also remain focused on strengthening competitiveness in the premium market.

In addition, we currently mass produce 5th generation V-NAND for all applications, and we will enhance our technological competitiveness and strengthen profitability by transitioning toward 6th generation V-NAND within the year.

For DRAM, Although there may be some impact from recent inventory restocking at customers, Overall demand is likely to remain solid and is likely to show some increase quarter-on-quarter.

For Server, we expect demand from datacenters to remain solid, while that for 16Gb based high density products will keep rising, mainly from OEMs, with increased adoption of the new CPU.

For PC, set demand is likely to be limited following pre-purchases in third quarter caused by the US-China tariff issue, but overall demand seems to stay mostly flat quarter-on-quarter thanks to rising demand for the Holiday season, and continuing pre-builds enabled by a delay in the US-China tariff issue.

For Mobile, We expect to see solid demand thanks to year-end orders from major customers and pre-purchase effects for 2020 Chinese New Year alongside a continuing high-density trend with the release of new 5G smartphones.

We will continue to strengthen our cost competitiveness by expanding migration to the 1Y nano level, while also focusing on extending our technological leadership by increasing sales of high capacity server products and actively responding to early demand for mobile LPDDR5.

For the memory market in 2020,

It is still a challenge to offer a detailed forecast as various global macro issues keep clouding the outlook, but, here's what we're seeing at this point.

Datacenters are suggesting they have a quite positive outlook for demand in 2020, and the high density trend in the mobile market is also likely to stay strong considering the spread of 5G smartphones.

Even so, we think a more prudent approach toward demand is necessary, considering risks of stagnant set shipments under global macro uncertainties, and effects following rising inventory demand from some customers, which occurred in the second half of 2019.

Therefore, we plan to increase our focus on investing and managing capacity flexibly based on market conditions.

Furthermore, we will concentrate on stably ramping up production and achieving high-quality output of 1Z Nano and 6th generation V-NAND products, and we will continue to do our best to enhance our technology leadership by expanding sales of differentiated products such as high density server/mobile Solutions and HBM2E.

Thank you.

Good morning, this is Ben Hur from the System LSI Business.

In the third quarter of this year, S.LSI earnings improved quarter-over-quarter thanks to rising demand for high-resolution image sensors in China and mobile APs/PMICs/OLED DDIs for flagship smartphones amid high-seasonality.

In particular, we strengthened our technology leadership in the high resolution image sensor market by being the first to commercialize 108-mega pixel sensors.

In addition, we have laid the foundation to accelerate growth in the 5G market through close cooperation with major customers in China and Korea, targeting expanded adoption of our differentiated 5G solutions for smartphone models to be launched in 2020.

In the fourth quarter, demand for high-resolution image sensors, such as 64Mp and 108Mp products, should continue to increase, but earnings are likely to remain flat quarter-on-quarter due to a relative decline in demand for mobile APs and DDIs on leaving 3Q peak seasonality.

This quarter, we expect our 5G business to keep growing as our 5G 1-Chip solutions will be applied to new high-end smartphone models produced by Chinese and Korean clients.

In particular, Samsung 5G-1-Chip products, based on their price competitiveness, low power consumption, and reduced chip-size compared to existing 2-chip solutions, are expected to help popularize 5G in low- to mid-

priced smartphones.

In 2020, 5G devices are forecast to take an expanding share of the mobile market; and demand for our differentiated image sensor products should also grow significantly.

In line with market demand for increasingly high-spec smartphones, we will expand our line-up of differentiated products, which include 5G SoCs produced at EUV 5/7nm, high pixel products of 108Mp and above, and 3D/FOD sensors. We will also expand our mid- to long-term business scope by diversifying our product offerings by developing automotive- and IoT-use chips.

Thank you.

Good morning, this is Sanghyun Ryan Lee from the Foundry Business.

In the third quarter, earnings increased quarter over quarter thanks to increased demand for EUV 7nm mobile APs, high resolution image sensors, and HPC chips. In addition, shipments of computing and 5G Network chips to US customers also contributed to our favorable results.

In particular, we strengthened our advanced node technology leadership by completing the tape-out for the 5nm process and securing new orders for 5nm based consumer products.

As for the 10/14/28nm mainstream processes, we expanded orders to mobile, network, and consumer applications; and we also diversified customers and applications in specialty 8-inch processes by securing orders for automotive PMICs and power discrete chips.

In the fourth quarter, we expect to generate solid earnings backed by mass production of 7nm products including EUV 6nm project. In addition, we expect to secure new orders in HPC, AI, and Network applications.

Moreover, we will continue our efforts to achieve stable results by completing designs of additional 5-nano products; and we will solidify our foundation for growth by setting up 4-nano design infrastructures.

In 2020, we project that demand for mobile APs/modems/RFs and high-pixel image sensors will grow significantly amid an expanding 5G market.

We expect to begin mass production of computing /network products next year as a result of winning additional orders from large-scale clients this year. Also, we will accelerate the diversification of our customer base by expanding orders for 5G/AI/Auto/IoT/Power /fingerprint-recognition applications and continue gaining momentum in these areas.

Specifically, we will continue to widen our customer and product portfolios in EUV processes through mass production in 5nm and the tape-out of 4nm. Furthermore, we will continue to innovate to achieve rapid growth in the mid to long term by striving to complete the development of the GAA 3-nano process.

Thank you.

Good Morning.

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

First of all, As we announced earlier this month, We will invest 13 trillion won in next-generation technology QD-Display to strengthen our business competitiveness in the fiercely competitive large display market.

Amid a combination Of a global economic slowdown and rising uncertainties, we will do our utmost to commercialize QD-Display in a timely manner.

And now, Let me turn to our 3rd quarter results.

Overall display earnings improved quarter-on quarter thanks to increased sales of small-to mid-sized OLED panels, despite weakness in the large display business.

To add some detail, Mobile display earnings improved sequentially as it entered high season, on higher OLED utilization rates and increased panel shipments thanks to newly released products from major customers.

Meanwhile, Earnings in the large panel business remained weak amid stagnant demand and declining prices, with the latter a result of oversupply caused by 10.5G capacity expansions at competitors.

Looking ahead to the fourth quarter,

Earnings in the mobile display business are expected to be similar year-on-year, but profitability may weaken quarter-on-quarter under intensified competition due to a sales mix change as well as a cost increase caused by lower utilization of a few lines.

In response, we will work to shore up margin by lifting production efficiency, and by expanding adoption of our differentiated technologies.

With the large display sector under low seasonality, a sustained drop in ASP and demand for TV panels has heightened concerns over profitability.

Accordingly, we will strive to secure profitability by focusing more on supplying panels for items such as monitors and PIDs, among others.

Now, let me brief you on our outlook and core strategies for 2020.

For the mobile display business, We expect orders for OLED panels to expand as users increasingly look to replace their current smartphone with a 5G model. However, we also expect competition to intensify as industry capacity keeps expanding.

To address this, We will continue to focus on boosting utilization and shipments by strengthening cost competitiveness and leveraging our differentiated technologies and designs to broaden our customer base.

In addition, We will focus on minimizing seasonal impacts by striving to add more end applications like Tablet, Note PC and Automotive and actively

addressing the needs of our foldable display customers.

Regarding the large display business, We are reorganizing business structure to center on QD-Display, and we will emphasize profitability by increasing the sales portion of value-added products, such as ultra-large and high resolution panels, including those for 8K TVs and also by expanding shipments of premium panels for use in monitors like curved or gaming ones.

Thank you.

Good morning.

I am Jongmin Lee from the Mobile Communications Business.

I would like to share our 3rd quarter results, and our outlook for the IM Division.

In the 3rd quarter for the Mobile Business, market demand for smartphones increased QoQ as we entered a period of relatively strong seasonality.

Our smartphone shipments and revenue grew thanks to solid sales of the Galaxy Note10 and A series.

The Galaxy Note10 has been very well received by the market, since its August release, being highly praised for its sophisticated design and next-level technology.

As a result, the sales of Note 10 in the quarter exceeded its previous model by over double digit while recording a stronger product mix as well. Our profit also increased significantly as the A series lineup transition, which we had pushed in the first half, started paying off through cost reduction of inventory adjustments of older models.

We strived to not only improve our business performance, but also strengthen our technological leadership with the launch of Galaxy Fold and more 5G smartphones.

For the Network Business, we kept widening 5G coverage in South Korea

and supplying equipment for LTE expansion in overseas market.

Let's move to the outlook of the 4th quarter.

Although the mobile market in general will soon enter a period of strong year-end seasonality, demand is expected to keep trending down YoY due to persistent uncertainties in the global macro environment.

For our mobile business, we expect our mass-market smartphones, including new A series models, to maintain their solid sales performance.

However, the overall sales mix is likely to weaken because of fading new model effects of the Note10.

We also expect our profit to decrease QoQ as marketing costs will increase under strong seasonality.

For the Network business, we plan to leverage our leadership in commercializing 5G to keep solidifying the foundation of our global 5G business.

Finally, let me share our outlook for 2020.

For the mobile market, demand for 5G smartphones is expected to increase as commercialization of 5G accelerates. However, already fierce competition is likely to keep rising, especially within the trend of offering high-end specs.

Based on our experience with launching 5G smartphones, we will actively respond to the needs of the market and our customers by widening our 5G lineup.

Furthermore, we will increase sales by enhancing competitiveness throughout our entire lineup, from flagship to mass-market models, and add a foundation of growth with foldable products that have witnessed their potential in the market this year.

Alongside our efforts to expand sales of premium smartphones, we will enhance the mix of mass-market smartphones by focusing on mid-end to high-end models within the segment. For our low-end models, we will keep optimizing operations to improve profitability.

For the Network Business, we will remain active in the nationwide expansion of 5G coverage and foster growth of our 5G business overseas, including in the US and Japan.

Thank you very much.

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

Let me start with current market conditions and our results for Q3 of 2019.

The overall TV market stayed similar year-on-year due to weakened consumption in developed markets. For Samsung, TV profits were slightly down year-on-year related to rising price competition in the market.

However, profitability was solid and we generated year-on-year revenue growth by increasing sales of strategic products such as QLED and super-large screen TVs.

In particular, QLED TVs, with their superb picture quality and wide range of models, are leading the premium market with significant sales growth, improving the product mix and securing profitability.

In addition, in the 75-inch and above, we have been able to maintain our strong advantage in market share while leading growth by meeting consumer needs for larger screens.

For the Digital Appliances market in Q3, developed markets have been stagnant, but global demand has increased thanks to growth in emerging markets like India.

For Samsung, we are continuing to focus on boosting sales of premium products, and our growth has been solid in developed markets backed by rising sales of new and innovative products like Bespoke. In emerging markets, we achieved double-digit sales growth and improved our earnings on a year-on-year basis.

Now I will share market prospects for the Q4 and 2020.

The TV market in Q4 this year is projected to slightly weaken due to negatives such as slow global economy and unfavorable exchange rates resulting from an increase in trade protection.

To minimize effects of such negatives and maximize growth and profitability, we will actively address year-end peak season demand through close collaboration with our partners.

In particular, we will extend our leadership in the premium market while creating growth and generating profit by expanding QLED TV sales, which is positioned as the premium standard, and offering our strong lineup of super-large screen TVs.

For the Digital Appliances business, we will strengthen peak season promotions by co-operating with key partners, and continue to expand sales of new life products such as dryers and Air Dressers.

In addition, Samsung will continue to promote qualitative growth by increasing sales of premium products and further reinforcing our B2B business.

For 2020,

The TV market is projected to grow year-on-year thanks to global sporting events like a major European soccer competition and the Olympic summer games, despite risk factors such as economic instability in emerging markets.

Samsung will continue to expand sales of strategic products, such as QLED and super-large screen TVs while securing a new growth engine and solidifying leadership with 8K TVs, which are pioneering the ultra-high picture quality market; with MicroLEDs, which have no bezel, no limits in size, resolution or shape; and with Lifestyle TVs, which add value to the life of each consumer.

For the Digital Appliances business, Despite economic uncertainties, market demand is expected to grow in emerging markets. Samsung will strengthen its premium lineup such as Bespoke, and promote continuous growth by expanding sales of new life products and reinforcing our B2B business.

Thank you.

Robert M. Yi

Thank you. This concludes our part of the presentation, and now I will turn to questions-and-answer session.

Q&A

Operator

The first questions will be presented by Mr. SK Kim from Daiwa Capital Markets.

<Q – SK Kim >:

I guess I have 2 questions. The first question is for the memory side. Your DRAM, it's a question about your expectations for next year DRAM demand. Your third quarter DRAM shipment was actually higher than the guidance that you had provided, which really seems to be driven by the Chinese mobile demand. Do you think that this increase in Chinese mobile demand is mainly explained by stronger end demand? Or is it some of the customers just trying to build up inventory in case of their supply chain issues? And what do you think will be the impact of this in the fourth quarter?

Second question is about the Fold, the Galaxy Fold that was launched. Can you give us some details of what the market's response was from your perspective? And your plans next year of the foldable phone factor, for example, do you have any additional plans of launching phones next year? Some more details would be appreciated.

<A>:

To answer your first question. In the third quarter for memory, there was a positive seasonality. And so overall, we saw an increase of demand in all applications, but especially the demand was large in the mobile major customers because they were launching new products. And also, in the case of data centers, the data centers started to resume purchases after they went

through their inventory adjustments. But it is also true that the -- both demand as well as shipment was higher than what we had expected by a large amount. And it is true that Chinese mobile customers and also some OEM customers were buying and had demand for inventory due to concerns of potential customs duty issues, due to the trade dispute and concerns about future DRAM supply stability. Looking forward to the fourth quarter, we believe that with the effects of new smartphones, the high-density new smartphones being launched will be positive. And also, in the case of servers, with the new platform being rolled out wider, there will be solid demand even in the fourth quarter. Also, we think that it is likely that this demand of customers for inventory buildup would continue for the time being because of the continuing uncertainties in the external environment. We are carefully monitoring the impact that this would have on future markets and are carefully monitoring any changes in demand, and we'll focus on maintaining stable profitability through flexible operations of our investments in supply.

To answer your question about the foldable. As you know, the Galaxy Fold, which was the first foldable phone launched this year, quickly sold out the preorder and the first release quantities and received very positive reviews from both the press and users, and we were able to once again confirm the potential of the foldable market. And we are planning to leverage the experience of having commercialized the Galaxy Fold to continue to introduce new products into the foldable lineup to maintain our leadership. In terms of our foldable approach, we're focused not only in introducing new products but also focusing on optimizing the app of various areas such as multimedia and games and to engage in active collaboration to identify new content optimized for the foldable form factor to maximize the differentiated experience that

users can gain from the Fold. Also, we recently disclosed a compact foldable phone factor that's a flip type at the Samsung Developer Conference, and we will continue to focus on developing new form factors in the foldable category to expand our ecosystem and also provide a new and creative mobile experience.

Operator

The next questions will be presented by Mr. Nicolas Gaudois from UBS.

<Q – Nicolas Gaudois>

The first one is drilling down a little bit on server DRAM. As you said, we saw some upside in procurement in Q3, which we believe came from a couple of large cloud customers. Do you expect this trend to continue into the next 2 to 3 quarters? Or do you actually expect customers to somewhat pause until Intel Ice Lake 10-nanometer server processors refresh finally kick in? Conversely, if Ice Lake was to be delayed beyond the current targets that Intel has of an H2 '20 ramp, how would that, in your view, affect the server DRAM market in 2020 versus your current forecast?

And secondly, now that you made public your overall plans to move to QD-Display over the next few years, would you in that process convert the whole of your Gen 8.5 capacity for LCD to QD-Display over time and in which time frame? What will be the associated CapEx spending? And do you expect QD-Display to gain both technology and cost advantage over incumbent White OLED technology and why?

<A>:

To answer your first question about the server DRAM, as you mentioned, the server DRAM demand was quite solid as we expected, and this is mainly explained by how data center customers have resumed their purchasing after finishing their inventory adjustments, and also, there was a positive impact from the adoption of Cascade. Even though we can't mention or offer comments about the other companies' plans of their new product launches, if the premise of your question is a potential concern of a late Ice Lake delay delaying also the increase of number of channels which may potentially have a negative impact on server DRAM demand, then actually, we would like to point out that it seems Cooper Lake, the 14-nano Cooper Lake is going to be launched, it seems, on schedule. That also supports 8 channels. And therefore, we think that even if Ice Lake is delayed, the impact negative on demand due to the number of channels will be limited. Looking towards next year server DRAM, the customers that we have been talking to have been presenting positive outlook for their 2020 demand, and they're talking in quite a detailed level about the full year quantity. And so these are giving a positive outlook on server demand for next year. However, there are continuing external environmental concerns lingering, and therefore, we will continue to sense and monitor the impact that these factors would have in the server market next year.

To answer your second question about the QD-Display. As you mentioned through the event that we had earlier this month, we announced our plans of investing a total of KRW 13 trillion to the QD-Display technology until year 2025. This involves converting the LCD capacity that 8.5G LCD capacity that we have in Asan to QD-Display. And the scope is most of our LCD capacity in Korea

will be converted in the long term to QD-Display. If I break down the KRW 13 trillion, around KRW 10 trillion is investments for equipment and facilities, and KRW 3.1 trillion will be R&D-related investments. Initially, we're thinking of starting out with a monthly capacity of around 30,000 pieces and focus on building up our technology. And after that, gradually plan -- expand our supply while monitoring the market situation as well as the product competitiveness. You've also asked about the competitiveness of QD-Display versus other technologies. QD-Display is based on Samsung proprietary QD technology, and we believe that technology-wise compared to other competing technologies, the QD-Display technology has advantages in terms of color gamut, viewing angle and resolution, and actually can be expanded to not only TVs but monitors and other display applications. That's another advantage. Given the fact that Samsung has always had excellence in manufacturing, we believe that with our manufacturing excellence, QD-Display will be a very competitive offering, especially in the premium TV segment. And based on our mass production experience, we will achieve a quick and efficient cost efficiencies.

Operator

The next questions will be presented by Mr. Yoo Jong Woo from Korea Investment & Securities..

<Q – Yoo Jong Woo >

I have 2 questions. The first question is about the inventory, the semiconductor inventory. You said that you expect the inventory to reach normal levels in first half of next year. Can you first of all give us an update on your -- by product, by each product, the inventory situation as of second half

this year? And regarding the inventory next year, can you give us a bit more detail of, for example, your production plans and your expectations in terms of supply and demand that support your view of inventory normalization next year?

Second question is about the NAND. You've mentioned that you're expecting the NAND prices to rebound in all applications in fourth quarter. But I'm wondering how this ties in with your views before that the decrease in NAND prices are increasing demand given the elasticity of demand to price. But if, as you mentioned, prices started to rebound from the fourth quarter, with that, what will be the impact of higher prices to demand given the price elasticity of demand?

<A>:

To answer your first question about our inventory, first of all, NAND already reached normal inventory levels during the third quarter as we had expected. In the case of DRAM, especially with our shipments going beyond what we had originally expected during the third quarter by a large margin, the DRAM inventory as of where we stand decreased significantly versus the previous quarter. Regarding the timing of DRAM inventory reaching the normal level, as we mentioned during the speech, in the mid- to long term, one of the things we are expecting is that CMOS image sensor demand will remain strong for quite some time. And so we do need additional capacity to respond to this CMOS image sensor demand. And based on our review of our overall semiconductor line optimization, we are planning to increase our CIS capacity starting from first quarter of next year. So that will be one factor in terms of our DRAM inventory. On top of that, next year, the DRAM demand will remain

solid according to our expectations, especially around increasing content. And so with these factors considered, we are anticipating that our DRAM inventory will reach normal levels during first half of next year.

To answer your second question about the NAND price outlook, as we mentioned, our NAND inventory have already reached normal levels by third quarter. And overall in the industry, the supplier inventory is quickly reaching stable levels as well, and that is why NAND prices are expected to rebound during the fourth quarter. The oversupply of NAND that we saw until the first half of this year was the result of decreased demand overall in the market and increased supply. To look at how this oversupply happened during the first half, first of all, on the demand side, especially inventory levels climbed around data center customers which suddenly decreased purchasing demand. And the other hand, from the supply side, what happened in the first half was that overall in the industry, there was an increase of fourth-generation 3D NAND qualifications, and there was a ramp-up being completed by suppliers overall for major solutions, including server SSDs, that resulted in a very rapid increase in supply. Looking back at that oversupply situation, even though the drop in NAND prices did hurt the profit margins of the suppliers, if we look at the impact from the perspective of the overall IT industry, thanks to decreased NAND prices, the acceleration of mobile and SSD high-density adoptions happened. And also, we were able to increase markets that used to be a very limited market for NAND. And so if you look at the overall market demand perspective, the decrease in NAND prices actually had a positive effect. Through this experience, we learned that the NAND market has particularly a relatively strong price elasticity for demand. And this gave us the thought that if the prices rebound quite rapidly going forward, this may have a negative

impact on promoting the sound demand growth in the industry, for example, by decreasing the adoption rate and content increase rates. That is why we will focus on sensing the changes, fluctuations in market demand for NAND and managing our investments and supply flexibly in line with the market situation and market changes in the mid- to long term so that we are able to maintain a stable profitability in our business.

Operator

The next questions will be presented by Mr. Kim Dongwon from KB Securities.

<Q –Hyunwoo Doh>

I have a question that ties the IM and the System LSI regarding the low-end handsets. Can you share with us your mid- to low-end handset profitability currently and whether you have plans of increasing the quantities that you produce through ODM and JDM for cost competitiveness purposes?

And if the IM does increase its JDM volume, the question that I would like to post to the System LSI side is do you think that this will potentially decrease your share of IM division's business, especially at the low-end side?

<A>:

To answer your question about our mass models, as you know, this year, we went through a mass model lineup transition combining the J and A Series, and we've also focused on quickly introducing innovative technologies that consumers want on to our mass phones -- mass smartphones, and -- but thereby enhancing the competitiveness of our mass offerings. Also, based on

the stronger product competitiveness, we were able to increase our mass model sales versus last year. And also, with the transition between our old and new models being wrapped up during the first half, in third quarter, our mass sales volume and also profitability improved. You've also asked us whether we have plans of increasing our JDM volume. As you know, we have been using JDM as a method for some limited models in order to respond timely to the rapidly changing market environment and also to actively satisfy the demands of our customers and the market by operating our lineup more efficiently and using our internal resources more efficiently. Regarding whether to increase our JDM quantity, we have not reached any decision as of yet. And we will decide the future direction by closely analyzing next year's market situation, the product competitiveness and actually the feedback from real end consumers -- customers. And we will, even if we decide to expand, minimize the impact that this would have in our suppliers.

To answer that question from the System LSI side, already our products have quite satisfying price performance. And of course, we will continue to enhance our cost competitiveness so that we are able to actively defend our market share by delivering the price performance that our customers want. We also plan to increase our market share in the low-end segment by increasing -- or starting supply to not only ODMs but other local Chinese customers.

Operator

The next questions will be presented by Mr. Peter Lee from Citi Global Market Securities.

<Q – Peter Lee >

I have 2 questions. The first question is about your investments on DRAM side. You -- there were talks of new fab investments and some rumor in the market regarding Pyeongtaek Line 2. Can you give us an update on your investment plans?

Second question is about a process question. How's your ramp-up plans for the 1z nano? And can you also give us an update on your EUV?

<A>:

As we have mentioned several times, we still maintain a very solid market outlook in the mid- to long term, and our basic approach towards our investments remain the same that we will pursue our investments and capacity management in order to strengthen our sustainable profit base rather than focus on increasing the size of market share. Regarding our investment plans for next year, 2020, it is still being studied and reviewed, but we are going to continue our investments in order to secure our future technology leadership and also to respond to future demands on a forward-looking basis. And also, we will be focusing or putting more emphasis on flexible operation and management of our investments depending on the market situation next year. Under that basic direction, in order to respond to the mid- to long-term demand increases, our Xi'an Line 2 will be completing construction as planned within late this year and is planning to start operation from early next year. The actual size of that capacity increase will be determined flexibly considering the market demand situation. Regarding Pyeongtaek Line 2, it's also planning to start operation next year in 2020, and there may be some facility investments for tech production purposes, but we have not yet decided

regarding exactly when to start full mass production or the size of that mass production capacity which will be decided once again flexibly depending on changes in demand.

To answer your second question about our process migration update, our 1z nano is currently in mass production as we planned. And including 1z, we believe that according to our expectations as of end of this year, the share of the 10-nano class products will be around high 70s or 80%. Next year, we think we will continue -- we plan to continue our migration for 1y and 1z for the major applications. And starting from first half of next year, 1y NAND -- 1y processes will take position as our main process and even 1z, we will observe the qualifications status with our customers as we continue stable ramp-up. Regarding the EUV. As we mentioned before, we are currently evaluating EUV for especially a 10-nano class technology, including the 1z technology or the process. And we will be introducing or adopting EUV when we see the economics justifying it. Given the fact that the Foundry business has already been working with EUV and is in stable mass production, we look to leverage that experience and know-how so that once we do adopt EUV, we'll be able to overcome effectively difficulties such as process difficulties by using the cutting-edge latest technology so that we are able to continue to maintain our advantage in terms of cost.

Operator

The next questions will be presented by Mr. J.J. Park from JPMorgan.

<Q – J.J. Park >

I have 2 questions. First question is about the DRAM capacity. Assuming that there is no increase in capacity under that assumption, how much of a bit growth are you able to incrementally achieve versus process technology migration? And under that assumption, how much of a cost reduction could we expect this year and next year?

Second question is about the 5G handset, the smartphone market. Can you share with us your next year 5G market outlook, demand outlook? And what are your plans, for example, what kind of market share are you expecting to achieve next year in the 5G smartphone segment?

<A>:

To answer your question about the DRAM, we are -- regarding next year DRAM market outlook and sales plans, are currently still working on them. So it's a bit too early to share with you the detailed data. But looking towards next year, there is one factor the upside, the positive factors which is that the data center customers that we've been talking to especially are giving some positive demand outlook for next year. They're talking about quite detailed quantities for horizons for more than several quarters, talking about purchasing, so that's a positive factor for next year DRAM. But on the other hand, there is still demand uncertainties that linger due to various external factors, and there was this buildup of inventory that happened recently, and we need to wait and see the impact that would have in next year's demand. And so based on that basic outlook, demand outlook for next year, our plans is to supply in line with market demand growth through incremental increase in bit through process migration. In terms of cost advantages or cost saving, basically with each node migration, we are able -- we target net die gain of around 20% to 30%. But

given the fact that with each migration step, we're dealing with more difficult technology and increase of process steps, the actual bit growth that we get through node migration is a bit lower than the 20% to 30% target that we have. But that will be the high-level expectation. And when we actually look at the actual process migration and the relationship it has to bit growth and cost saving, one change that we have been noticing is that especially as our applications become more diverse and the level of quality that the customers demand become higher, more time is taking in the qualification process overall. And also, where in the past the process migrations happened with all applications before, we're now seeing that process migration is happening by application and by customer according to different time lines and schedules. And therefore, the amount of bit growth or cost savings we expect in practice through process migration is now being affected by a large number of factors, including the speed of how a new node is migrated. And therefore, actually, that connection between process or node migration and bit growth and cost saving depends. It's on more of a case-by-case situation.

Your second question was about the 5G market outlook and our plans. Next year, from 2020, 5G market demand is expected to increase quite rapidly because of the 5G commercialization in China and also the launch of 5G handsets by other manufacturers. But with this increase in demand, we're also expecting there to be more competition in the market as well. Last April, we were able to launch the world's first 5G smartphone, the S10 5G, and also we followed up with additional 5G models including the Note 10, the Fold and A90. Based on this experience of having commercialized 5G in especially the leading markets such as Korea, U.S. and Europe, we plan next year to introduce 5G models in not only the high-end segment but in wider priced segments so that

we will have a wider 5G lineup, which will help us respond timely to the 5G commercialization schedules by each country. And at the same time, we will strengthen our collaboration with carriers and also focus on identifying services that will differentiate the 5G experience.

Operator

The last questions will be presented by Mr. Doh Hyunwoo from NH Investment and Securities.

<Q – Doh Hyunwoo >

I have 2 questions tied with the 5G smartphone demand related with memory. For memory -- from the memory perspective, what is your outlook of the 5G smartphone market next year? And connected with 5G, what do you expect the memory demand to be?

Second question is towards the Foundry business. There's been some press reports especially from the overseas media that your EUV 7-nano yield is not as high as expected and that this may result in some disruptions in your 5G chipset supply. Can you give us an update on your EUV 7-nano yield and the supply situation for the 5G chips next year?

<A>:

To answer your first question. From the memory's perspective, looking at the 5G smartphone market, actually, the high-density product started to be adopted on the 5G smartphone already from 2019, and we do see many OEMs are preparing to launch their 5G smartphones next year, especially with more

subsidies being provided from next year. They are actually -- the 5G handset shipment outlook is being upward adjusted continuously, and we're expecting especially rapid growth around the Chinese market. If we look at some external sources that are providing data on outlook for next year 5G smartphone, 5G smartphone shipment quantities are ranging from some agencies saying that it will be around mid- to low 100 million and some others are expecting 5G smartphone shipments to be around mid- to high 200 million. So it's a very wide range. And it will probably take some time for that range to narrow down and the market to reach a consensus regarding next year's 5G handset shipments. But I think there will be no disagreement that especially compared to 2019, there will be a very significant growth in 5G handset shipments. So on top of that strong outlook for 5G handset demand and shipments next year, as the 5G smartphones were adopted from the flagship segment, they started out with high-density memory. And with more high-spec applications for 5G being rolled out, we think that there's still a quite strong momentum behind higher density adoption on the 5G smartphones. And so we expect the memory demand, especially for the high 5G smartphones, to remain quite solid for some time. On top of that, if we look towards other applications, the servers, server demand will probably remain solid. And so overall, we're expecting the memory demand to remain solid next year. However, we are carefully watching the impact that the recent macro factors would have and the possible impact that the inventory buildup that happened recently may have on next year's demand.

Regarding your second question about our EUV 7-nano. Since starting our mass production in first quarter this year, we have been maintaining a stable yield, and we've also -- with adding the new customer, we are planning to increase

our EUV 7-nano supply from the fourth quarter. We expect the 5G chipset demand -- chip demand to increase quite rapidly, and we're expecting the 5G chips to contribute significantly to our revenue. So currently, our focus is continuing to maintain stable supply of this product.

Robert M. Yi

With that, we'll be ending the conference call. Thank you very much.