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Q4 2022 Himax Technologies Inc Earnings Call

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PRESENTATION

Operator

Hello, ladies and gentlemen, welcome to the Himax Technologies, Incorporated Fourth Quarter and Full Year 2022 Earnings Conference Call. At this time, all participants are in a listen-only mode. Later, we will conduct a question-and-answer session and instructions will follow at that time. As a reminder, this conference call is being recorded.

I would now like to turn the conference over to your host, Mr. Mark Schwalenberg from MZ Group. Please go ahead.

Mark Schwalenberg ***MZ Group S.A. - Director***

Thank you. Welcome everyone to the Himax fourth Quarter and full year 2022 earnings call. Joining us from the Company are Mr. Jordan Wu, President and Chief Executive Officer, Ms. Jessica Pan, Chief Financial Officer and Mr. Eric Li, Chief IR/PR Officer. After the Company's prepared comments, we have allocated time for questions in a Q&A session. If you have not yet received a copy of today's results release, please email HIMX@mzgroup.us, access the press release on financial portals or download a copy from Himax's website at www.himax.com.tw.

Before we begin the formal remarks, I'd like to remind everyone that some of the statements in this conference call, including statements regarding expected future financial results and industry growth, are forward-looking statements that involve a number of risks and uncertainties that could cause actual events or results to differ materially from those described in this conference call. A list of risk factors can be found in the Company's SEC filings, form 20-F for the year ended December 31, 2021 in the section entitled "Risk Factors", as may be amended.

Except for the Company's full year of 2021 financials, which were provided in the Company's 20-F and filed with the SEC on March 23, 2022, the financial information included in this conference call is unaudited and consolidated and prepared in accordance with IFRS accounting. Such financial information is generated internally and has not been subjected to the same review and scrutiny, including internal auditing procedures and external audits by an independent auditor, to which we subject our annual consolidated financial statements, and may vary materially from the audited consolidated financial information for the same period. The Company undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

I would now like to turn the call over to Mr. Eric Li. Eric, the floor is yours.

Eric Li ***Himax Technologies, Inc. - Chief of IR/PR Officer & Spokesperson***

Thank you Mark and thank you everyone for joining us. My name is Eric Li, Chief IR/PR Officer at Himax. On today's call, I'll first review the Himax consolidated financial performance for the fourth quarter and full year 2022, followed by our first quarter 2023 outlook. Jordan will then give an update on the status of our business, after which we will take questions. We will review our financials on both, IFRS and the non-IFRS basis. The non-IFRS financials exclude share-based compensation, acquisition-related charges and the cash awards.

We pre-announced preliminary key financial results for the fourth quarter 2022 on January 12, 2023 where revenues and EPS both exceeded guidance while gross margin came in moderately below the guidance range issued on November 10, 2022. Today, our reported results for revenues, gross margin and EPS are all in line with the pre-announced results.

Fourth quarter net revenues of $262.3 million increased 22.8% sequentially, substantially exceeding our guidance of an increase of around 4.0% to 8.0% sequentially despite the macro headwinds continuing to challenge our business. The increased sales momentum was attributed to our continuous efforts to deplete inventory, particularly in the smartphone and tablet TDDI segments. IFRS and non-IFRS gross margins both came in at 30.5%, a decrease from 36% and 36.3% respectively last quarter, and the lower than the guidance range of 31.5% to 33.5%. Price erosion from offloading excess inventory was the predominant factor that adversely impacted our margin profile. Also contributing to margin contraction was higher cost of the inventory sourced primarily during 2021 and early 2022 when foundry and the back-end pricings were higher due to capacity constraints. Yet, IFRS profit per diluted ADS was 24.1 cents, exceeding our guidance of 17.8 cents to 20.8 cents. Non-IFRS profit per diluted ADS was 27.3 cents, beating our guidance of 21.0 cents to 24.0 cents.

Revenue from large display drivers was $43.5 million in Q4, an increase of 5.3% sequentially, exceeding our prior guidance of flat from last quarter. TV sales grew nicely as expected, increasing single digit quarter-over-quarter and appear to have bottomed following several quarters of sharp correction, while both monitor and notebook sales were better than guided. Large panel driver IC sales accounted for 16.6% of total revenues for the quarter, compared to 19.3% last quarter and 27.7% a year ago.

Moving on to our small and medium-sized display driver segment, revenue was $177.4 million, an increase of 25.5% sequentially, and ahead of our guidance of a single digit increase, primarily a result of increasing shipment of TDDI in all three sectors, namely smartphone, tablet and automotive. Despite the challenging macro environment, our fourth quarter revenue for the tablet was up more than 100% sequentially thanks to the strong shipment in higher-end TDDI products, an illustration of our leading solutions being adopted by more customers for their next generation products, supporting larger sized, high frame rate displays and high precision active stylus features. Meanwhile, the AMOLED total solution sales, including Tcon and DDIC, increased mid-teens quarter-over-quarter and accounted for more than 8% of total sales, mainly attributable to our tablet AMOLED total solution supporting the mass production of premium tablet models for a global leading customer.

Q4 automotive driver sales increased single digit quarter-over-quarter better than guided as customers restocked, especially for TDDI. Automotive driver business once again represented the largest revenue contributor with over 30% of total sales in the fourth quarter, a result of our comprehensive product coverage and increasing automotive TDDI design-wins across panel houses, Tier 1s and auto brands. It's worth noting that our automotive TDDI sales surged by more than 170% on a year-over-year basis, boosted by the robust adoption of the technology for customers' new generation car models. Small and medium-sized driver IC segment accounted for 67.6% of total sales for the quarter, compared to 66.2% in the previous quarter and 61.2% a year ago.

Fourth quarter non-driver sales also beat guidance with revenues of $41.4 million, up 33.8% from a quarter ago. Our Tcon business was up a solid double digit sequentially, bolstered by higher shipment of large sized display drivers, automotive drivers as well as tablet drivers for AMOLED. For automotive Tcon, we anticipate business momentum to accelerate in coming quarters, backed by a strong order pipeline and rapidly expanding design-wins across different continents. Tcon business represented over 8% of total sales in the fourth quarter. Non-driver products in Q4 accounted for 15.8% of total revenues, as compared to 14.5% in the previous quarter and 11.1% a year ago.

Our IFRS operating expenses for the fourth quarter were $52.5 million, a decline of 27.9% from the previous quarter and down 6.2% from a year ago. The sequential decrease was caused mainly by decreased annual bonus and salary expenses, partially offset by an increase in R&D expenses. As previously mentioned, we typically grant annual bonuses, including cash and RSUs, to our staff at the end of September each year, which can lead to higher IFRS operating expenses in the third quarter compared to the other quarters of the year. The year-over-year expense decrease was primarily related to the special bonus we awarded our employees at the end of Q4 2021. Excluding the special bonus paid in Q4 last year, the IFRS operating expenses would have increased 2% year-over-year during the fourth quarter. Non-IFRS operating expenses were $45.6 million for the fourth quarter, down 2.2% from the preceding quarter and down 6.0% from a year ago.

Fourth quarter IFRS operating income was $27.5 million, or 10.5% of sales, versus 1.8% of sales in the last quarter and 39.4% of sales from a year ago. Non-IFRS operating income was $34.5 million, or 13.1% of sales, compared to 14.5% last quarter and 41.1% same

quarter last year. IFRS after-tax profit was $42.2 million, or 24.1 cents per diluted ADS, compared to $8.3 million, or 4.8 cents per diluted ADS last quarter. We made a divestiture of long-term assets during Q4 2022, which resulted in a non-operating income of around $11 million on an after-tax basis. Fourth quarter non-IFRS after-tax profit was $47.7 million, or 27.3 cents per diluted ADS, compared to $29.8 million, or 17.0 cents in the previous quarter.

Now let's have a quick review on the 2022 full year financial performance. Revenues totalled $1.2 billion in 2022, representing a 22.3% decline compared to 2021. Unexpected lockdowns in China, geopolitical tensions and macroeconomic related factors created a challenging operating environment and impaired our business performance for the year. The halt in consumer demand and significantly reduced visibility at panel houses and OEMs towards the end of first quarter adversely impacted IC demand and consequently our sales. Given the nature of wafer production, which usually starts months in advance, the abrupt drop in demand resulted in a rapid increase in our inventory.

Revenue from large panel display drivers totalled $264.0 million in 2022, a decline of 33.7% year-over-year, representing 22.0% of total sales, as compared to 25.7% in 2021. Small and medium-sized driver sales totaled $778.9 million, a decrease of 19.2% year-over-year, representing 64.8% of our total revenues, as compared to 62.3% in 2021. Non-driver products sales totaled $158.4 million, a decrease of 14.7% year-over-year, representing 13.2% of our total sales, as compared to 12.0% a year ago.

Our automotive segment continued to see extraordinary business momentum in 2022. Automotive sales enjoyed the highest growth among all product lines, up more than 50% on top of the remarkable strength in 2021 when sales grew more than 110%. For the year, sales of traditional DDIC for automotive were up over 30%, while auto TDDI sales surged by more than 300%. As we mentioned repeatedly, automotive displays continue to be adopted at a rapid rate in number, size and technological sophistication, implying higher content value of display ICs per vehicle. As the market share leader in automotive display ICs, we continued to gain ground not only in DDIC but also in TDDI, supported by over 200 design-wins with the number still increasing as we speak.

While our overall annual sales declined due to the unusual and abrupt demand halt, several new sales streams have started to contribute during 2022, including ICs for AMOLED and the ultralow power WiseEye smart sensing. Both product lines enjoyed higher than corporate average gross margin in 2022. On AMOLED, we provided both AMOLED DDIC and Tcon for automotive and tablet displays. In addition, we are making good progress with leading panel houses for the development of AMOLED display drivers for smartphone, TV and notebook applications. We anticipate the shipment of smartphone AMOLED driver to start in the second half of 2023 for key customers in China and Korea. On the WiseEye product line, we continue to support Dell for its production ramp up in a range of newest models using our first generation WE1 solution. In addition, a host of leading laptop vendors and the CPU platform players, have shown strong interest in broadening AI use cases of future generation smart notebooks by adopting our next generation WE2 AI processor. Jordan will elaborate on this in a few minutes. Backed by a strong business pipeline and robust design-in activities in numerous AIoT applications with customers from all over the world, we expect strong sales momentum for WiseEye in 2023.

IFRS gross margin in 2022 was 40.5%, decreased from 48.4% in 2021. The decline was largely attributable to pricing pressure resulting from excess inventory levels following the sudden halt in demand beginning in the second quarter. In addition, charges related to unmet minimum purchase orders from contracts with foundries and backend suppliers entered during the unprecedented shortage in 2021 also led to the eroding margin. Non-IFRS gross margin was 40.6% in 2022, decreased from 48.5% in 2021.

IFRS operating expenses in 2022 were $229.5 million, up 12.8% from 2021. The increase was primarily a result of the vested portion of the annual bonus compensation awarded to employees in 2022 as well as previous years, along with increased salaries and R&D expenses. Non-IFRS operating expenses were $181.3 million, up 5.7% compared to 2021.

2022 IFRS operating income was $257.6 million, or 21.4% of sales, a decrease from $545 million, or 35.2% of sales, in 2021. Non-IFRS operating income was $306.8 million, in contrast to $578.3 million in 2021. IFRS net profit for 2022 was $237 million or $1.36 per diluted ADS, as compared to $436.9 million, or $2.50 per diluted ADS in 2021. Non-IFRS net profit for 2022 was $276.1 million, or $1.58 per diluted ADS, as compared to $463.6 million, or $2.65 per diluted ADS in 2021.

Turning to the balance sheet, we had $229.9 million of cash, cash equivalents and other financial assets as of December 31, 2022,

compared to $364.4 million at the same time last year and $227.9 million a quarter ago. The substantial decrease in cash was a result of annual cash dividend pay out of $217.9 million, partially offset by $82.9 million of operating cash inflow in 2022. We had $46.5 million of long-term unsecured loans as of the end of fourth quarter, of which $6 million was current portion.

Our year end inventories were $370.9 million, down from $410.1 million last quarter and up from $198.6 million a year ago. Accounts receivable at the end of December 2022 was $261.1 million, up from $253.3 million last quarter and from $410.2 million a year ago. DSO was 79 days at the quarter end, as compared to 97 days a year ago and 74 days last quarter. Fourth quarter capital expenditures were $2.3 million, versus $3.4 million last quarter and $2.0 million a year ago. The fourth quarter CapEx was mainly for R&D related equipment and in-house tester of our IC design business. Total capital expenditures for 2022 were $11.8 million, mainly for design tools, R&D related equipment as well as in-house tester of our IC design business as compared to $7.6 million in 2021.

As of December 31, 2022, Himax had 174.4 million ADS outstanding, unchanged from last quarter. On a fully diluted basis, total number of ADS outstanding for the fourth quarter was 175 million.

Now turning to our first quarter 2023 guidance. We expect first quarter revenue to decrease 12% to 17% sequentially. IFRS gross margin is expected to be around 28% to 30%, depending on the final product mix. The first quarter IFRS profit attributable to shareholders is estimated to be in the range of 3.5 cents to 7.0 cents per fully diluted ADS. Non-IFRS profit attributable to shareholders is expected to be in the range of 6.5 to 10 cents per fully diluted ADS. To note, the EPS guidance already accounts for certain foreign exchange loss attributable to NT Dollar appreciation against the U.S. Dollar based on the prevailing exchange rate. As a reminder, much of our locally incurred expenses, including the bulk of employee salaries, as well as the outstanding income tax payables are NT Dollar based.

I will now turn the call over to Jordan to discuss our Q1 2023 outlook. Jordan, the floor is yours.

Jordan Wu ***Himax Technologies, Inc. - Founder, CEO, President & Director***

Thank you, Eric. Historically the first quarter has seasonally been the slowest of the year due to the Lunar New Year holidays. On the backdrop of sluggish global demand and a surge of Covid-19 cases in China despite their government lifting COVID restrictions, many Chinese factories extended their shutdown period through the Lunar New Year. This added uncertainty to an already stagnant business environment causing our customers to hesitate to place new orders, while cautiously managing their inventory levels and further clouding our business visibility. As uncertainty persists, our objective first and foremost is to strictly manage our inventory level, and we have been aggressive in doing so by sacrificing short-term gross margin to offload excess stock. We also continue to curtail our wafer starts while striving to win more projects from customers specifically for the purpose of digesting our excess inventory. Our inventory position has much improved since its peak during the third quarter last year and we anticipate it will continue to decrease to near our historical average no later than the third quarter of 2023.

With that said, our Q1 gross margin remains under pressure. As Eric mentioned earlier, the cost of our excess inventory is high from being sourced during tight capacity constraint in 2021 when foundry and backend prices were at peak levels. Another contributing factor to Q1 margin contraction stems from market price decline of certain unsold inventories which will necessitate write-downs. However, we believe this effect will gradually diminish throughout the year as the market has shown signs of recovery across many business areas. Notwithstanding the pressure from the destocking process, we continue to work diligently towards improving our gross margin as a primary objective. Despite the expected short-term margin compression, we remain confident in our gross margin prospects, backed particularly by several high visibility product areas, most notably the higher margin automotive and WiseEye smart image sensing businesses which look set to outgrow other businesses.

Looking ahead, the semiconductor industry appears to be trending toward a post-pandemic era. While the supply chain gradually stabilizes and channel inventory reverts to healthier levels, we believe a decent recovery is forthcoming. On the revenue front, we expect the first quarter to be the trough of the year with sales rebounding in the second quarter and business momentum continuing to improve into the second half of 2023.

With that, I will begin with an update of our large panel driver IC business. Our first quarter 2023 large display driver IC revenue is projected to be up high single digit sequentially. We expect monitor IC business to be on a recovery trajectory as customers have started

to replenish chips due to reduced channel inventory after multiple quarters of destocking. Monitor IC sales in the first quarter are set to grow by a decent double digit. TV panel prices also show signs of stabilization from restocking demand, particularly for mainstream models, and will likely strengthen in Q1, bucking the seasonal factor. We anticipate our sales for TV segment to increase single digit sequentially in Q1. Conversely on notebook segment, the highly publicized downward trend lingers on with further declines from enterprise IT budget cuts in tandem with customers' continuous stringent inventory control measures.

Turning to the small and medium sized display driver IC business. We expect Q1 revenue for this segment to decrease by double digits sequentially. Q1 automotive IC sales are anticipated to be down mid-teens as our customers continue to reduce inventory for traditional DDICs. However, we see strong momentum for our automotive TDDI sales which are poised to grow by single digit, backed by our solid new design-in pipeline which has been rapidly expanding for many quarters. Additionally, we anticipate customers' inventory adjustment in DDIC will find equilibrium, leading to a strong recovery in the second quarter. Both smartphone and tablet IC sales are set to decline double digits quarter-over-quarter due to seasonality and customers' continuous destocking measures.

Now for a more detailed update on the automotive segment. The trend for the automobile interior continues to be in favor of more stylish and diverse designs, made possible with increasing quantity and size of panels inside the vehicles equipped with advanced interactive display technologies as we have previously discussed. As the leader in the automotive display IC market, we provide a one-stop-shop offering of the most comprehensive product portfolio for automotive display in the industry, ranging from traditional DDIC to new technologies such as TDDI, local dimming Tcon, LTDI and AMOLED. Our business visibility for automotive segment for 2023 remains much better than those of consumer centric products. In addition, we see a favorable trajectory in our automotive TDDI business, backed by our prompt expansion of TDDI adoption and our fast-growing new project-wins as TDDI technology is essential for large sized, interactive, stylish, curved and free-formed automotive displays required of future generation vehicles. We believe our automotive TDDI sales will be one of the primary driving forces for our long-term business growth. Moreover, we anticipate the market share of our automotive TDDI will surpass that of DDIC which has already reached 40% globally.

Furthermore, Himax is also the first in the industry to launch the LTDI (Large Touch and Display Driver Integration) automotive display solution, catering to the need for ever larger screens inside vehicles. LTDI solution requires even higher levels of integration of display and touch technologies for the next generation, typically larger than 30-inch automotive displays, where the solution can cascade up to 30 chips in support of ultrahigh-resolution displays, usually more than 7Kx1K, and high-precision touch sensitivity. United with a top-Tier automotive digital platform provider, our cutting edge LTDI technology was showcased at CES 2023 by one of our leading panel customers for a 55-inch pillar-to-pillar, in-cell touch display that provides seamless, intuitive and advanced tactile experience for future generation smart cabins. Our LTDI is scheduled to start mass production in the second quarter this year, substantially ahead of competition. More design collaborations in some of the most modish automotive vehicles are underway.

Next for an update on AMOLED. We continue to gear up for AMOLED driver IC development jointly with major Korean and Chinese panel makers in various applications. For tablet, we are seeing shipments on the rise for premium models that adopt advanced AMOLED displays, of which Himax offers both DDIC and Tcon and has commenced production to certain leading brands. For automotive AMOLED display, we continue to win project awards for our flexible AMOLED driver and Tcon with both conventional car makers and NEV vendors. Finally, we are making good progress with leading panel houses for the development of AMOLED display drivers for smartphone, TV and notebook applications. We expect to commence smartphone AMOLED driver production from the second half of 2023. Our AMOLED business, including display driver and Tcon, is slated for strong growth in the next few years. As a reminder, for smartphone AMOLED display driver, we already have secured meaningful capacity.

Now let me share some of the progress we have made on the non-driver IC businesses.

Starting with an update on timing controller. We anticipate Q1 Tcon sales to decrease by mid-teens sequentially, hampered by decreased shipment of tablet product for AMOLED displays. On a positive note, our position remains unchallenged in automotive Tcon for local dimming technology, which not only improves display contrast ratio, but also drastically reduces display power consumption, which is critical for larger displays and EV models. With years of strenuous work on this high entry barrier technology, we have developed comprehensive local dimming Tcon product offerings that can support a wide range of design covering super high frame rate of 240 Hz and resolutions of up to 8K. We have won numerous project awards from various named panel makers, Tier 1s and car makers for

premium new car models with a small number of which already commenced mass production recently. Local dimming Tcon is set for robust growth starting 2023. We anticipate Q1 automotive Tcon sales to increase more than 150% year-over-year and represent over 2% of our total sales.

Switching gears to the WiseEye AI total solution, which incorporates Himax proprietary ultralow power AI processor, always-on CMOS image sensor, and CNN-based AI algorithm. We continue to support the mass production of Dell's notebook and other end-point AI applications, such as automatic meter reading, shared bike parking, video conference device, door lock and medical capsule endoscope. We are more committed than ever to strengthening our WiseEye product roadmap and retain our leadership position in ultralow power AI processor and image sensor for end-point AI applications.

At this year's CES, we teamed up with several industry-leading ecosystem partners and customers to jointly introduce our neomodern ultralow power tinyML solutions in various real end-point AI applications, including surveillance camera with Novatek, a leader in surveillance system SOC, and smart home with Useful Sensors, a start-up founded by Pete Warden, the former Google TensorFlow tech leader. We also joined forces with Seeed Studio in smart agriculture and Wentai Technology in smart office, both leading players in their respective areas. These are just a few examples of real adoption of our ultralow power WiseEye solution in the emerging end-point ultralow power image AI era. We continue to see increasing deployment of our WiseEye solution in diverse applications, driven by the mega trend of AIoT and growing demand to add image AI capability to everyday objects.

To highlight our surveillance camera demonstration, Himax and Novatek jointly showcased a leading ultralow power pre-roll AI solution, enabling battery-operated surveillance camera with comprehensive event recording capability through what is called "negative time" recording. The pre-roll function, powered by our WE1 processor, features an always-on video recording operation at a slow frame rate, using only single digit milliwatts power consumption. Meanwhile, the WE1 AI processor intelligently senses specific motion events, such as certain human behavior or suspicious activities. All these are taking place while the core vision processor remains powered off. Once a classified event is identified, the WE1 processor activates the core processor which then initiates a high-resolution recording of the event while stitching the pre-roll video clips of the WE1 processor thereto. This is a substantial improvement compared to what existing surveillance solutions offer in terms of security as users receive a thorough video stream complete with pre-roll video clips of what preceded the motion events. It also significantly reduces the overall power consumption, made possible for battery-powered surveillance system. With these significant features in pre-roll and ultralow power, WiseEye is gaining traction in various surveillance fields, covering doorbell, door lock and dashcam. Numerous engagements and design projects have been in progress with surveillance customers across different domains after CES.

Also during this year's CES, we debuted our next generation WE2 AI processor that offers 40% peak power saving and 30-fold inference speed, implying over 50 times power efficiency on a per inference basis compared to the first generation WE1 processor which is already leading the industry among AI processors aiming for similar target markets. With the exceptional local inferencing capability, the new WE2 AI processor performs face landmark detection to identify facial regions, including eyes, mouth, nose, and jaw to enable advanced, accurate and precise facial expression recognition, such as head pose estimation, gaze direction, fatigue detection, et cetera. These new features provide additional vital intelligence to a broad array of applications on top of the success of Himax's leading WE1 AI processor that provides contextual awareness with the ability to visually detect user engagement levels based on presence, movements, and facial direction. Several leading laptop names have shown strong interest in our WE2 processor after witnessing our live demonstration at CES, leading to many follow-up engineering activities. Additionally, we continue to partner with leading notebook CPU and AP SOC players, with the aim of expanding our engagements with leading global laptop names and IoT players working on the enrichment of various new AI features and use cases for next generation smart notebook and IoT applications.

Given a consistent product roadmap, improving product performance and broader customer traction from various domains, we believe that WiseEye will emerge as a multiyear structural growth driver for Himax.

Lastly, for an update on our optical related product lines, including WLO, LCoS and 3D Sensing. Himax is one of the few companies in the technology industry with a wide array of optical related product lines that are critical for the realization of metaverse. Our technology leadership and manufacturing expertise are evidenced by the growing list of AR/VR goggle device customers and ongoing engineering projects. We continue to work on strengthening our optical related technology suite, while collaborating with some of the world's largest

technology companies that remain deeply committed to investing in its development. Now to look quickly review some of our recent progress.

First on 3D sensing. We see increasing adoption of our optical components and/or 3D sensing technologies that enable new ways people interact with AR and VR applications. At CES 2023, we introduced a series of next generation 3D vision processors to support a variety of state-of-the-art 3D sensing technologies in Time of Flight and structured light. Our structured light AI processor can provide 3D eye tracking functionality to report the exact eye positions with the industry's highest response rate and low-friction to enable high precision and dizzy-free spatial reality applications. We featured a live demonstration of a 3D naked-eye display at CES with our eye tracking technologies becoming a hot focus point. Viewers experienced a 3D holographic view from all angles without needing additional wearables to enjoy immersive and advanced visual experience without the side effect of feeling nausea or dizziness.

Moving on to WLO. On 3D gesture control, our WLO technology is deployed to empower 3D perception sensing for precise controller-free gesture recognition in VR devices. Our collaboration with a leading VR player is going smoothly and we expect volume production starting middle of this year. On 3D scanning for object reconstruction, our 3D sensing technology, which incorporates both our 3D projector and 3D decoder, is being deployed by a leading customer's 3D scanning device for the purpose of generating real time digital twins, avatars and 3D environment surroundings that ultimately help users transit and connect seamlessly between physical and digital worlds. The collaboration is ongoing with promising progress, and we expect it to hit the market next year.

As I mentioned before, metaverse related developments are early in the lifecycle but overall remains an attractive opportunity for us potentially. Himax is well positioned with years of research and development, a unique product portfolio, production history and key partnerships to capitalize on its growth as the industry continues to emerge and mature.

For non-driver IC business, we expect revenue to decrease mid-teens sequentially in the first quarter.

That concludes my report for this quarter. Thank you for your interest in Himax. We appreciate your joining today's call and are now ready to take questions.

QUESTIONS AND ANSWERS

Operator

(Operator Instructions) Our first question comes from Jerry Su, Credit Suisse. Your line is now open.

Jerry Su ***Crédit Suisse AG, Research Division - Director***

My first question is that in your prepared remarks, you mentioned that the fourth quarter gross margin was impacted by some charges related to wafer foundry and also the backend for some unmet minimum loading. I want to know if this still impacting your first quarter and also the second quarter margin?

Jordan Wu ***Himax Technologies, Inc. - Founder, CEO, President & Director***

Thank you, Jerry. So shall I address the first question first, right?

Jerry Su ***Crédit Suisse AG, Research Division - Director***

Yes, please.

Jordan Wu ***Himax Technologies, Inc. - Founder, CEO, President & Director***

Okay. To give you a sort of, a more comprehensive story, such charges i.e. the charges related to our not fulfilling the LTA obligation, volume obligation whether be our foundry or backend partners and the resulting penalty incurred. Such charges in 2022, meaning last year, total about 1% of total sales of last year. Okay? And certainty it is very much backend loaded as you can imagine, because in the first half, in the first quarter of last year, there was actually still a shortage of supply, so there was no such issue, and it was starting mostly in the second half that we started to have to face such issues.

The penalty, such penalty will still exist in Q1 this year, which will be a bit larger than that for Q4 last year. But we are not disclosing the detailed number here because they are not really the predominant factor leading to the slight contraction of our gross margin Q1 versus Q4. However, if you look ahead into the rest of the year, we believe when our inventory level becomes more normal and wafer start gradually normalizing, then there will certainly be less charges of this nature going forward for this year.

Bear in mind we, I mean, certainly all these contracts are entered into when the industry was suffering from serious capacity shortage. And we believe quite a number of such contracts, while they may appear to be a bit problematic in some cases in the short-term, they remain important contracts for us going forward, or in the long-term. I would point out to our 28 nanometer LTA for smartphone OLED, and certainly equally important for our DDIC for automotive sector, which is a very strong supporting factor for success in the automotive market. So, and there are other LTAs primarily in the areas of smartphone and tablet TDDI, we are indeed facing demand issues. And with this project, again, when the industry recovers over time and also when our inventory level comes down to a more normal position, then there will be a lot less problematic.

And in the meantime, we are certainly in discussion with our foundry partners, trying to achieve some flexibility in terms of execution of such contracts. For example, we may agree to extend the duration in exchange for a smaller penalty in the short-term, or we may exchange product line, by loading certain other products to them, more of certain other products to them in exchange for our shortage to meet our commitment for the LTA areas. So there are such negotiations and discussions going on, and we are in good progress so far. So I think while such penalty incurred throughout the year will depend largely on the market situation. But as we mentioned earlier, we believe the market will be recovered throughout the year, so we are not pessimistic about this going forward this year.

Jerry Su ***Crédit Suisse AG, Research Division - Director***

Okay, thank you. Second question is regarding the guidance outlook. For the first quarter revenue, I think you have guided large sized driver IC and also timing controller to decline sequentially. This seems to be a little bit different from your peers. I think they, I think they're guiding for up Q-o-Q. Can you give us some color on what you are seeing on the industry trend and why there is such a difference?

And then on the automotive side, I think last year had a very strong growth, 50% year-over-year. How should we think about the growth for 2023? And then I also want to know what's your opportunity in miniLED also the microLED display for automotive, and how should we think about the midterm growth rate for this automotive business? Thank you.

Jordan Wu ***Himax Technologies, Inc. - Founder, CEO, President & Director***

Okay. There are a lot of questions. Let me see. To recap, your first question is about the large panel display and Tcon, okay, being different from peers. The second question is about automotive prospect for this year, basically, right? And third question is microLED and miniLED?

Jerry Su ***Crédit Suisse AG, Research Division - Director***

Yes, correct.

Jordan Wu ***Himax Technologies, Inc. - Founder, CEO, President & Director***

Okay. Can I address the second question first, automotive? I think it's probably the most important among the three questions, given our exposures to automotive market. We did suffer from a few quarters of sequential decline. Bear in mind, in Q1 last year we were sure suffering from shortage with our supply being short of the demand. And, but there's a sudden stop of demand, major disruption in China particularly, because there was a sudden lockdown across a big geographical area, especially, for example, in Sichuan, which is a local, a major center for automotive manufacturing. So a lot of our customers are stuck. They didn't know how to react to the overall lockdown. So while we shipped a lot of ICs to them with their solid demand in hand at that time, they were not able to produce them or ship their products because of lockdowns. So, inevitably the second quarter ICs we shipped to our customers became their inventory. And such inventory will then be digested throughout Q3, Q4 and even up to Q1 this year. Okay?

So that explains big picture wise, why the automotive DDIC will suffer some decline sequentially over the last few quarters. However, our TDDI automotive, even during such period has demonstrated a very strong momentum, growing sequentially, certainly year-over-year strongly because it is a relatively new, and also it's in hot demand relatively speaking, because they are newer products, and which are

typically designed for newer models, which are, many of which are EV models. And EV models in difficult times are encouraged by the government, incentivized by the government. So they are in better demand compared to traditional models. So, and therefore, our TDDI for a few factors I mentioned, still enjoyed very good momentum and growth even during this period of difficulty. We believe DDIC will rebound strongly from Q2 because after about three quarters of inventory digestion, I think our, throughout the ecosystem, the inventory level has been back to normal. However, whether we will enjoy the similar strong growth as we enjoyed over the last two years? Bear in mind, in the year before we had 110% growth year-over-year, and last year, even the economy we are facing headwinds, we still enjoyed 50% automotive growth.

So in DDIC this year, such similar growth will be unlikely, I think for a few reasons. One, our market share is already close to 40%, is arguably as high as one can get. So our DDIC demand is now going pretty much in line with the market and the automotive market for a few factors, I think you know this better, are unlikely to see a major growth this year. So therefore, we don't think our DDIC will enjoy the similar growth rates compared to last year. However our TDDI for automotive will definitely continue to enjoy very strong growth with high double digits, very decent double digits year-over-year with quarter-by-quarter sequential growth and half over half sequential growth, I think very well expected. And that is because we simply enjoy very good design-win pipelines. In my prepared remarks I talked about more than 200 projects of design wins. Actually out of which only about 20% are currently mass production.

So there is still a lot of upside, not just this year, in the next few years. And so, for last year, our automotive TDDI already accounted for about 17% of our automotive sales. Bear in mind the industry average is single digit. So we are already 17%, and we expect by year 2025 or 2026, this number will be more than 40%. So that explains our confidence, that demonstrates our confidence that automotive TDDI will continue to enjoy very good growth going forward, not just this year, but also next few years.

And on top of that, there are a few things that are very exciting, equally exciting. In our prepared remarks we talked about the timing controller, with local dimming feature. We are clearly the industry leader or arguably the only company providing the solution right now in the marketplace. We are getting very good project wins across the board with customers starting from premium models and now certain customers even thinking about making it more into a mainstream model. So this, I think this year, it will be again, very high double-digit growth and strong growth for the next few years as well.

And LTDI, large display touch and driver IC integration. Likewise, we talked about our early mover advantage and CES demo, and the second quarter this year commencement of production ahead of the industry again. And this will be a long-term growth engine as well. And finally, OLED, OLED in our view, will continue to be a premium niche market for automotive. But we already have a few customers putting our product into mass production. We are design-in ASICs, collaborating with certain leading customers for OLED players. And so, I think this is long-term looking good as well. So I think, with automotive business, I think our overall market share is set to further grow from the existing already very high level of close to 40% and business visibility is among the strongest of all sectors. So this, I think will continue to represent our single biggest revenue contributor over the years.

As for large display, I think our view for the whole year is going to enjoy the growth and Q1 versus Q4, to us, is seasonality. And we have seen TV market stabilizing, price rebounding and all indications are basically saying, telling us that TV market, especially high-end point to point interface 4K TVs, I think where we have a good presence directly in partnership with leading brand name customers. I think starting from second quarter, and certainly in the second half, this is set to enjoy good growth.

Monitor and notebook prospect are more questionable. I'm saying they do, we do have limited visibility, although we are starting to hear from end customers, leading end customers that there's a good likelihood their destocking process will be coming to a conclusion probably towards the end of second quarter with hopefully, the third quarter and going forward slowly and gradually picking up their restocking process. But again, I think we are watching the market closely, especially for monitor and high-end monitor, where we enjoy a very good market position. But I have to say the business prospect is not very good for the time being, the visibility.

And microLED, we believe, we haven't talked about this in public and in our prepared remarks a lot. But we are actually doing a lot of work for microLED, but in short, we are a lot more focused on ultra large display microLED where we are developing a very comprehensive solutions, covering display drivers, timing controller, PMIC, and others for certain strategic partners. And also with various leading panel makers, we are working on, for example, ASIC timing controller designs, et cetera. But in the next year or two, this

remains a niche, very, very small niche market, is an emerging market only, and that is why in the interest of time, we have decided not to talk about it too much. Our view on very small displays, for example, AR, VR related microLED application, our view is a lot more negatives for a lot of technical reasons. That is our view. So we are putting a lot less resources into them, although there are inquiries from our customers for development. But we are a lot more hesitant and conservative in that regard. So for microLED, our focus will be in ultra large displays, and surely in the next few quarters, we will give people a lot more updates as our developments unfold into a more mature stage. But we are not very much into small size AR, VR kind of microLED because we are not cooking about such technologies prospect.

Operator

(Operator Instructions) Our next question comes from Jason Tsang with CLSA. Your line is now open.

Jason Tsang *CLSA - Analyst*

My first question is, can you give us some details on your pricing trend in coming quarters? Do we plan to lower the, maybe wafer price or packaging price in coming quarters or in Q1? I mean, maybe for your non-LTA shipment? Thank you.

Jordan Wu *Himax Technologies, Inc. - Founder, CEO, President & Director*

Whether is LTA or non-LTA, I think our foundry partners have made it rather public that they are not about to, in any meaningful way lower their listed price in this year. And I think the reason is quite simple. They are seeing high inventory levels across the board, with their customer, meaning IC design houses. So by lowering the price, they are unlikely to stimulate the demand. So why bothers? So whether it is LTA regulated price or non-LTA binding price, we are not anticipating the listed price from foundry to go down in any meaningful way this year. However, when it comes to good new orders, I think their doors are always open for specific deal by deal, case by case negotiations. Right? So that is first point on the supply side.

On the demand side, there are, I would say, three points I want to mention. One, there are indeed overall price pressure upon us, because the economy, the overall economy, the macro factor is just very bearish and we have all seen our panel customers are losing money. Right? In a rather meaningful way. So I think they are under a lot of cost pressure as well. So such pressure will, to some extent, be transferred to us. And certainly, I mean, we were not agreed to all their price demands, and there will be a lot of negotiations, but there are some, indeed some price pressure. That is my first point.

And my second point is, the products with excess inventory. I'm talking about mainly smartphone TDDI followed by tablet TDDI, primarily in these two areas where across the board we are seeing our peers are having certainly pretty meaningful excess inventory. So, and the demand is, the demand visibility is not positive either, right? So there will be price competition in order to offload everybody's inventory level. So that is certainly a price pressure. And we are taking a similar position, right? And not to mention, the inventory were prepared when our cost were at its peak. So the gross margin over here, certainly are not looking pretty in the foreseeable future. So all these have been factored into our guidance or our prospects for the whole year now. So that is the second question.

And however, there are other areas where the pricing environment is a lot more healthy. For example, our automotive sector, I talked about the demand and our revenue decline over the last few quarters, but even during those quarters, the price erosion, the extent of price erosion was nothing to compare with, the same for smartphone and tablet. Automotive has been a lot more stable. And I think we are seeing the same throughout this year, the rest of this year, as we anticipate, as I said earlier, good rebound starting from the second quarter and certainly second half versus the first half. And TDDI certainly, we are seeing very strong demand. So there are indeed certain sectors where the price environment is relatively healthy.

Our unique timing controller, our WiseEye certainly is unique product areas and some other things, AMOLED as well, more stable comparative to. So I would say, last year we suffered quite a bit for large display driver because the market was just not very good. And ditto for smartphone and tablet TDDI and the bearish environment still lingers on for smartphone and tablet TDDI, while large panel has been stabilizing, I would say. Does that address your question, Jason?

Jason Tsang *CLSA - Analyst*

And my second question is, during this down cycle, especially demand weakness, do we also see market competitions? I mean, maybe market share pressures for our large display or small display side?

Jordan Wu *Himax Technologies, Inc. - Founder, CEO, President & Director*

I think the pressure comes primarily, on large display first, our strategy has been, I cannot say there's no such pressure coming from competition, but our strategy for TV has been to form a strong partnership directly with the leading end customer, with leading end brand customer for their relatively high-end models. And certainly even with that, we are still subject to certain fluctuations, but I think the competition is a lot less compared to the mainstream TV models with the general panel maker customers or mainstream monitor or notebook models.

For monitor and notebook, what's interesting to note is that certain leading end customers, especially the Americans are facing the struggle in between the U.S. and China are hedging the bet by asking their supply chain to be away from China and that certainly benefits us somehow. But certainly, we are also working very hard with our Chinese ecosystem suppliers. But although panel makers are still predominantly Chinese. But when it comes to the components, especially IC components, there is still such discussion. So I think certainly we will shift our focus more towards leading non-China end customers.

Although we are all dealing with mainly Chinese panel makers, but leading non-China end customers and less on Chinese end customers. I'm talking about large panel, whether it's TV, notebook or monitor, I'm talking about large panel. So I think there appears to be this trend and actually, it's not coincidence, but we, even before the two governments struggle becomes apparent, before that, we have actually strategized ourselves as much by focusing, you know facing shortage, so we do make a choice, we need to bet on certain customers and in a way bet against certain other customers. And we have been strategizing our sales by forming partnerships with leading international end customers. So, such strategy kind of plays well when it comes to this new development in between China and the U.S.

Jason Tsang *CLSA - Analyst*

And my last question is, I know that LTPS LCD now it's migrating -- is improving on the automotive applications. So do we, can we expect that this kind of migration can boost the adoption rate on the automotive TDDI?

Jordan Wu *Himax Technologies, Inc. - Founder, CEO, President & Director*

Yes, indeed, as the resolution becomes higher and refresh rates becomes higher, touch panel, you know, fancier panel, I think the higher end fancier panels, there is a trend towards Low-Temp Poly panels as opposed to, I mean the traditional Amorphous silicon panels does enjoy cost advantage, but when it comes to higher end, higher resolution, higher refresh rate panels, Low-Temp poly does enjoy advantage and we are seeing many such projects together with our TDDI solutions going hand in hand, yes.

Jason Tsang *CLSA - Analyst*

And so I have one follow up question, do we have penetration rate of automotive TDDI? That some kind of number?

Jordan Wu *Himax Technologies, Inc. - Founder, CEO, President & Director*

For the overall industry, I don't have the number in hand, but I did mention earlier that for Himax alone, last year automotive TDDI accounted for about 17% of our total automotive sales. And certainly automotive TDDI in terms of ASPs are a bit higher than traditional DDIC, but in terms of revenue percentage not given the idea. However, bear in mind, our number is substantially higher than the industry average which we believe is well below 10%.

Jason Tsang *CLSA - Analyst*

Below 10%. Okay.

Jordan Wu *Himax Technologies, Inc. - Founder, CEO, President & Director*

Well below 10%, yes, so I would say our, such penetration number is probably kind of double the industry average and certainly we expect this number to steadily increase. It's not going to be as dramatic as how we saw in smartphone and tablet you know in the last few

years. But I mentioned for Himax our sales, we expect the number to be up from around 17% last year to about 40% or above by 2025 or 2026. So that is certainly a major good news for us, yes.

Operator

I show no further questions at this time. I would now like to turn the conference back to Jordan for closing remarks.

Jordan Wu *Himax Technologies, Inc. - Founder, CEO, President & Director*

As a final note, Eric Li, our Chief IR and PR Officer will maintain investor marketing activities and continue to attend investment conferences. We will announce the details as they come about. Thank you and have a nice day.

Operator

This concludes today's conference call. Thank you for participating. You may now disconnect.