



## Himax Technologies, Inc. Q4 and Full Year 2021

### Unaudited Financials and Investor Update Call

<p><b>Conference Details:</b> Conference Topic: Himax Technologies, Inc. Fourth Quarter and Full Year 2021 Earnings Conference Call Conference ID: 2597192 Date of call: 2/17/2022 Time of call: 08:00 a.m. EST Pre-Record Message: No Moderator: Mark Schwalenberg</p>	<p><b>Participant Dial-In Numbers:</b> TOLL-FREE: (866) 444-9147 TOLL/INTERNATIONAL: (678) 509-7569 CONFERENCE ID: 2597192</p>
<p><b>Moderator/Speaker Dial-In Numbers (for Mark Schwalenberg, Jordan Wu, Eric Li, Jessica Pan and Karen Tiao):</b> Leader Dial in (toll free) (855) 842-5904 Leader Dial in (international) (720) 634-2980 Conference ID number: 2597192</p> <p><b>Direct URL to Live Call Console</b> <a href="https://edge.media-server.com/mmc/p/o8xz8tbi">https://edge.media-server.com/mmc/p/o8xz8tbi</a> Conference ID number: 2597192 Web PIN: 1069</p>	<p><b>Replay Dial-In Numbers:</b> TOLL-FREE: (855) 859-2056 TOLL/INTERNATIONAL: (404) 537-3406 From: 2/17/2022 at 11:30 am EST To: 2/25/2022 at 11:30 am EST Replay Pin Number: 2597192</p>

**Operator:** Opening and standard introduction.

**Mark Schwalenberg:** Welcome everyone to Himax's Fourth Quarter and Full year 2021 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](mailto:HIMX@mzgroup.us), access the press release on financial portals or download a copy from Himax's website at [www.himax.com.tw](http://www.himax.com.tw).

Unless otherwise specified, we will discuss our financials based on non-IFRS measures. You can find the related reconciliation to IFRS on our website. 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. These factors include, but are not limited to, the effect of the Covid-19 pandemic on the Company's business; general business and economic conditions and the state of the semiconductor industry; market acceptance and competitiveness of the driver and non-driver products developed by the Company; demand for end-use applications products; reliance on a small group of principal customers; the uncertainty of continued success in technological innovations; our ability to develop and protect our intellectual property; pricing pressures including declines in average selling prices; changes in customer order patterns; changes in estimated full-year effective tax rate; shortage in supply of key components; changes in environmental laws and regulations; changes in export license regulated by Export Administration Regulations (EAR); exchange rate fluctuations; regulatory approvals for further investments in our subsidiaries; our ability to collect accounts receivable and manage inventory and other risks described from time to time in the Company's SEC filings, including those risks identified in the section entitled "Risk Factors" in its Form 20-F for the year ended December 31, 2020 filed with the SEC, as may be amended.

Except for the Company's full year of 2020 financials, which were provided in the Company's 20-F and filed with the SEC on March 31, 2021, 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 will now turn the call over to Mr. Eric Li. The floor is yours.

#### **Q4 Results**

**Mr. Eric Li:** Thank you Mark and thank you everybody for joining us. My name is Eric Li and I am the Chief IR/PR Officer. Joining me are Jordan Wu, our CEO, and Jessica Pan, our CFO. On today's call, I will first review the Himax consolidated financial performance for the fourth quarter and full year 2021, followed by the first quarter 2022 outlook. Jordan will then give an update on the status of our business, after which we will take questions.

Our fourth quarter revenues were at the upper end of the guidance range, while gross margin and EPS both exceeded the guidance issued on November 4<sup>th</sup>, 2021. The fourth quarter revenues, gross margin and EPS all reached new records. Full year 2021 revenues surpassed \$1.5 billion, along with record gross margin and EPS.

For the fourth quarter, we recorded net revenues of \$451.9 million, an increase of 7.4% sequentially and an increase of 63.9% compared to the same period last year. Gross margin was 51.8%, an increase from the already high level of 51.7% in the third quarter and above our guidance of around 50%. Non-IFRS profit per diluted ADS was 84.9 cents, exceeding the estimates of 78.0 cents to 83.0

cents. IFRS profit per diluted ADS was 81.5 cents, higher than guidance range of 74.5 cents to 79.5 cents.

Revenue from large display drivers was \$125.0 million in Q4, up 6.3% sequentially and nearly double year-over-year. Monitor revenue came in better than expected, up more than 30% sequentially, ahead of our prior guidance of a more than 20% increase, due to accelerated orders for high-end monitors from certain end customers. Notebook sales continued strong growth momentum, delivering double digit sequential growth as a result of strong shipment of high-end products to world-leading notebook vendors. As expected, the fourth quarter TV IC revenue was down single digit sequentially on the backdrop of a sluggish global TV market. In some cases where TV customers who borne shipment liability to us and suffered business headwinds, under mutual consent, we redirected their allocated foundry capacity towards IT displays where demand stayed strong. It was through such efficient operating execution that we were able to achieve sales growth for the large display driver business despite the slow TV market and further reinforce the business relationships with strategic customers. Large panel driver ICs accounted for 27.7% of total revenues for this quarter, compared to 27.9% in the third quarter of 2021 and 23.3% a year ago.

Small and medium-sized display drivers saw resilient sales with revenue of \$276.6 million, up 9.6% sequentially and up more than 50% year-over-year. The automotive segment has repeatedly been the fastest growing sector among our small and medium-sized display driver segment with the sales up more than 20% sequentially this quarter. It is worth highlighting that the e-paper business, another product in our small and medium-sized driver lineup and one with decent margin, enjoyed more than 80% sequential growth in Q4. Small and medium-sized driver IC segment accounted for 61.2% of total sales for the quarter, compared to 59.9% in the previous quarter and 64.5% a year ago. In Q4, smartphone, tablet and automotive driver businesses contributed about the same sales

with automotive significantly outgrowing the other two segments, a trend that we believe will continue over the next few years.

The fourth quarter smartphone sales reached \$91.3 million, up double digit sequentially and up more than 30% compared to the same period last year due mainly to higher shipment to key customers despite the outbreak of Covid-19 variants weighing down the worldwide smartphone market. The smartphone segment represented around 20% of our total sales in Q4. Our supply for smartphone was still limited by the total capacity accessible to us where we could only support shipment to select end customers.

Amidst a slow tablet market, our tablet revenue reached \$85.8 million, a decline of single digit sequentially but up around 30% year over year. The decline was caused by shrinking traditional DDIC shipment while TDDI sales were slightly better than the record level in Q3 and represented the eighth consecutive quarter of growth since initial production from the first quarter of 2020. We maintained our leading market share position in the non-iOS tablet market with accelerated TDDI penetration among leading name-brands. Tablet revenue in this quarter accounted for 19.0% of the total sales.

Our fourth quarter revenue for automotive set another record, amounting to \$89.1 million, up more than 20% sequentially and up more than 130% year-over-year, thanks to our strong shipment in higher-end DDIC products, rising TDDI shipment as well as market share gains across numerous automotive customers. As panels inside vehicles continue to grow in quantity, size, and include more advanced features, we expect to see sustainable robust growth in our automotive business.

Fourth quarter revenue from our non-driver businesses was \$50.3 million, slightly down sequentially and up around 50% year-over-year. We are pleased to report that our ultralow power AI image sensing total solution successfully entered into mass production in Q4 last year for a major tech name over a mainstream application. We reached this major milestone just one year after we delivered the first samples, a remarkable achievement and an illustration of the robustness of our AI solution. CMOS image sensor sales were up mid-teens while Tcon business decreased by low teens sequentially as a result of slow demand in TV and Chromebook. However, on a year-over-year basis, Tcon sales were up more than 70%, a reflection of our leading position across 4K/8K TV, gaming monitor, and low power notebook. Non-driver products in Q4 accounted for 11.1% of total revenues, as compared to 12.2% in the third quarter of 2021 and 12.2% a year ago.

Non-IFRS gross margin for the fourth quarter sustained at a high level of 51.8%, a continuation from 51.7% of last quarter and greatly increased from 31.2% of the same period last year. The higher gross margin was a reflection of better mix towards higher end product areas and a more favorable IC pricing environment resulting from tight foundry capacity. IFRS gross margin was also 51.8% for the quarter.

Our non-IFRS operating expenses for the fourth quarter were \$48.5 million, up 9.1% from the previous quarter and up 11.5% from a year ago. The sequential increase was a result of a one-time cash bonus at the end of December to further reward employees for the remarkable financial results while the year-over-year increase was caused mainly by increased salary. IFRS operating expenses were \$56.0 million for the fourth quarter, down 18.2% from the preceding quarter but up 27.9% from a year ago. The difference was mainly due to the annual bonus compensation which we award employees at the end of September each year. Reflecting the higher sales and better gross margin, the fourth quarter non-IFRS operating income was \$185.5 million, or 41.1% of sales, versus 41.2% of sales in

the last quarter. Again, the Q4 operating income reached a historical high. Non-IFRS after-tax profit was \$148.4 million, or 84.9 cents per diluted ADS, a new record high and increase from \$138.9 million, or 79.5 cents per diluted ADS, last quarter.

## **2021 Full Year Summary**

Now let's have a quick review on the 2021 full year financial performance. Revenues totaled \$1,547.1 million in 2021, representing 74.4% growth over that of 2020. The ongoing effects of the pandemic, coupled with foundry capacity shortage, created a challenging operating environment, yet also provided favorable conditions for IC vendors such as ourselves with overall market demand far outpacing supply. Among our three major product categories, small and medium-sized display drivers posted the highest growth of 86.8% in 2021 with sales totaling \$963.5 million. We saw extraordinary business momentum particularly in tablet and automotive areas in 2021 as leading non-iOS tablet brands all adopted our tablet TDDI solutions and automotive displays continued to evolve at a rapid rate in the number, size and sophistication. Automotive sales enjoyed the highest growth among all product lines in 2021, up more than 110% while sales for tablet IC, our top sales contributor in 2021, grew 77.0%. Smartphone and e-paper sales were up more than 85% and 23% respectively in 2021.

Revenue from large panel display drivers totaled \$397.9 million in 2021, representing annual growth of 65.3%. During the pandemic, the surge in IT demand boosted our notebook display IC sales significantly, up more than 370%, whereas monitor display sales increased more than 30%. TV sales were also up by more than 40% despite the dip in worldwide TV shipments during the second half of the year. Non-driver products sales totaled \$185.7 million, an increase of 42.0% from last year. The increase was mainly from Tcon sales, more than double amidst the growing needs for high frame rate and high-resolution displays. CMOS image sensor business, severely capped by

capacity constraint throughout the year, was up mid-single digit from the strong demand in notebook and web camera for work-from-home and online education. This annual sales increase was offset by WLO, as the legacy product of a major customer gradually decreased.

Non-IFRS gross margin in 2021 was 48.5%, greatly increased from 24.9% in 2020. The increase was mainly a reflection of more favorable IC pricing and product mix resulting from the tight foundry capacity as well as increasing contribution from high margin product lines, especially in automotive, notebook drivers, and Tcon.

Non-IFRS operating expenses were \$171.5 million, up \$15.2 million, or 9.7% due to higher salary expenses and a cash bonus we awarded our employees at the end of December. Despite the NT dollar appreciation against the U.S. Dollar during 2021, the currency fluctuations to Himax were of limited impact as our accounting was US dollar-denominated, the same as the bulk of our buying and selling activities, thereby creating a natural hedge. The stronger NT Dollar in 2021 did contribute to around \$4.6 million of operating expenses increase as we paid the salaries of the Taiwan-based employees and much of the Taiwan locally incurred expenses in NT Dollar. Yet, the non-IFRS operating expense ratio of 2021 was reduced to 11.1% from 17.6% in 2020, indicating our consistent and prudent management of operating expenses. IFRS operating expenses were \$203.6 million, up \$40.7 million, or 25.0% compared to last year. The increase came mainly from the vested portion of the annual bonus compensation we award employees at the end of September each year.

Reflecting higher sales and better gross margin, non-IFRS operating income was \$578.3 million, or 37.4% of sales, an increase of \$513.7 million from \$64.6 million in 2020. For the same reason, but partially offset by increase of annual bonus compensation, IFRS operating income was \$545.0 million, in contrast to \$57.9 million in 2020.



Our non-IFRS net profit for 2021 was \$463.6 million, or 265.1 cents per diluted ADS, up \$411.2 million from \$52.3 million, or 30.2 cents per diluted ADS in 2020. IFRS net profit for the year was \$436.9 million, or 249.8 cents, up \$389.8 million from \$47.1 million, or 27.2 cents per diluted ADS in 2020. The upswing in income was a result of better sales, higher gross margin along with well-managed operating expenses.

Turning to the balance sheet, we had \$364.4 million of cash, cash equivalents and other financial assets as of December 31, 2021, compared to \$201.4 million at the same time last year and \$250.8 million a quarter ago. The higher cash balance was mainly from \$182.2 million of operating cash inflow during the quarter and payments received from customers for the purpose of securing their long-term chip supply, partially offset by payments we made in order to secure our long-term foundry capacity. Restricted cash was \$154.1 million at the end of Q4, compared to \$156.8 million a quarter ago and \$104.0 million a year ago. The restricted cash was mainly used to guarantee the short-term secured borrowings for the same amount. We had \$52.5 million of long-term unsecured loans as of the end of Q4, of which \$6.0 million was current portion.

Our year-end inventories were \$198.6 million, up from \$160.9 million last quarter and up from \$108.7 million a year ago. Amidst tight foundry capacity where demand still far outpaces supply, we continue to pursue an aggressive inventory buildup strategy. The vast majority of our inventory position now is comprised of work-in-process goods, while finished goods are promptly shipped as soon as they are available. Accounts receivable at the end of December 2021 was \$410.2 million, slightly up from \$400.9 million last quarter and up from \$243.6 million a year ago due to higher sales. DSO was 97 days at the quarter end, as compared to 100 days both a year ago and from last quarter. Fourth quarter capital expenditures were \$2.0 million, versus \$2.1 million last quarter and \$0.8 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 the year were \$7.6 million, mainly for design tools, R&D related equipment as well as in-house tester of our IC design business as compared to \$5.8 million in 2020.

As of December 31, 2021, Himax had 174.3 million ADS outstanding, unchanged from last quarter. On a fully diluted basis, total number of ADS outstanding for the fourth quarter was 174.8 million.

### **Q1 2022 Guidance:**

Now, turning to our first quarter 2022 guidance. Coming off of the record revenue results from Q4 2021, we expect first quarter revenue to decline 5% to 9% sequentially, yet still better than the off-season sales we typically experience during the Lunar New Year season with fewer working days. The guided range implies a year over year increase of 33% - 39% in revenues. Non-IFRS gross margin is expected to be around 46% to 48%, depending on the final product mix. Non-IFRS profit attributable to shareholders is expected to be in the range of 67.0 to 73.0 cents per fully diluted ADS, down 21% to 14% sequentially but up 74% to 90% year over year. IFRS profit attributable to shareholders is estimated to be in the range of 63.5 to 69.5 cents per fully diluted ADS. I would now like to turn the call over to Jordan, Jordan the floor is yours.

### **Q1 2022 Outlook:**

Thank you, Eric. Our spectacular results in 2021 were achieved thanks to macro level tailwinds, our efforts to secure solid capacity, and a steadfast focus on optimizing product mix and solidifying strategic customer relationships. All of these factors contributed to the record sales and profit margins. Now as we look ahead into 2022, against the backdrop of the industry-wide foundry capacity shortage which is expected to extend well into 2022, the visibility into certain areas of consumer electronics is rather limited with global consumption potentially impacted by the ongoing COVID-19 pandemic, port

congestion, worldwide inflationary pressure and worries over geographical conflict. However, we are upbeat about our year ahead growth prospect, backed by a few product areas, notably the automotive and ultralow power AI image sensing businesses, which we feel confident will stay strong regardless of the macroeconomic concerns. We anticipate these two products, both with good gross margin, will outgrow other product lines in 2022. Robust demand for our traditional automotive driver IC is backed by strong foundry capacity support while automotive TDDI is on track to experience exponential growth throughout 2022 and beyond. We expect to reach 10 million units cumulative shipment in automotive TDDI in as soon as the second quarter of this year. In the first quarter of 2022, our automotive product sales, including traditional driver IC, TDDI, Tcon and OLED driver, are expected to represent more than 25% of our total sales. As the contribution of automotive revenue grows, it will better position our long-term product mix in terms of both profit margin and business visibility. Meanwhile, we are highly encouraged by the early success we have seen with ultralow power AI image sensing business thus far after a leading customer adopted it for a mainstream application. We expect to see more design-wins awarded across a broad customer base and a high variety of applications leading to robust sales growth for this new high margin product line.

Now let me quickly address the ongoing foundry capacity shortage. We expect the supply-demand imbalance to continue throughout 2022, especially on the mature nodes that we are primarily anchored to. Himax has been proactive in this regard, continuing to pursue new partnerships and agreements to increase our available capacity and achieve our 2022 business goals. In the meantime, we entered contractual agreements with the vast majority of panel makers and, in some instances, select leading end customers where they prepay or make a deposit to secure their long-term chip supply which in turn also improves our business visibility.

While pricing has stabilized recently on both the foundry and customer sides, we guided for a modest sequential decline in gross margin for the first quarter due to a couple of factors. First, our cost of goods sold this quarter represents pricing from the previous quarter when foundries were still raising their prices. Second, in the fourth quarter we benefitted from expedited orders from customers who paid a premium and we have since seen a decrease in such orders during Q1. On a year over year basis, however, our first quarter margin will still be substantially higher.

Looking ahead into 2022, backed by more secured foundry capacity than last year and an advanced product portfolio, we are well positioned to continue to grow our top line and will continue to work toward maintaining a high gross margin, one of our major long term business goals. Wherein, we anticipate further revenue and profit growth in 2022.

## **Display Driver IC Businesses**

### **LDDIC**

With that, now let us start with an update on the large panel driver IC business. Historically, the first quarter has seasonally been the slowest of the year due to the Lunar New Year holidays. In addition, we are seeing softness in certain market segments and intensified China local competition. Nevertheless, Himax is armed with a diversified and comprehensive product offering covering TV, monitor and notebook, which provides us with the flexibility to take actions in tandem with our customers and suppliers to direct production towards the sectors with stronger demand. For the first quarter, large display driver IC revenue is projected to be flat to slightly down sequentially, but this will represent an increase of around 70% year-over-year. Despite the low season, TV IC sales are expected to be around flat sequentially in the first quarter anchored by high-end and large-sized TV IC shipments to key accounts. Conversely, we expect both monitor and notebook IC sales to drop

from last quarter due mainly to panel customers' inventory adjustments in response to the slowing sales momentum after consecutive strong quarterly increases.

Foreseeing the continuation of the prevailing foundry shortage and the demand for advanced displays to remain strong, we continue to move toward higher end markets while providing advanced driver ICs and Tcons for a one-stop shopping experience, focusing on higher end displays and premium models for the respective leading end customers in TV, monitor and notebook markets. We are also supporting further feature upgrades for customers' next generation products, including high-speed interface, low power consumption, higher refresh rate, ultra-large-sized, high-aspect-ratio and curved-view design. All these will help boost our profit margins and represent a high barrier of entry that differentiates us from China local competition. We remain positive on our large display driver business for 2022.

### **SMDDIC**

Now let's turn to the small and medium-sized display driver IC business. In the first quarter, revenue is expected to slightly decline by mid-single digit sequentially but increase around 30% year-over-year. Sales for automotive drivers, again, are poised to post another quarter of strong growth, up over 30% sequentially while tablet sales are expected to be down mid-single digit and smartphone IC business to decline double digit sequentially.

Now let's review these three major product segments within the small and medium-sized display driver IC business. First on automotive sector. Order backlog and secured multi-year foundry capacity provide good long-term visibility for Himax in the automotive display driver IC market where we have a leading global market share of 40%. Backed by strong design-win coverage with all major panel houses and numerous car makers alongside an enlarged capacity, we expect the automotive sector

to be our No. 1 sales contributor starting 2022. We are now targeting to double our automotive sales again in 2022, on top of the already strong 2021 sales which went up more than 110% from the year before. For the first quarter, our automotive driver IC sales are expected to grow over 30% sequentially, an increase of more than 170% year-over-year. More specifically, we expect the Q1 automotive DDIC sales, still much larger than those of TDDI and AMOLED, to grow over 20% sequentially, on its own accounting for more than 20% of our total sales. Notwithstanding the decent growth, we are still suffering from a severe foundry capacity shortage for automotive DDIC which is the area with the most severe shortage for us right now. The automotive TDDI, where we are much better prepared in terms of foundry capacity, is set to outgrow DDIC going forward. Currently we are leading the market with hundreds of design-win TDDI projects across the board with world leading panel makers, Tier-1s and automotive OEMs with just a small portion of them already in mass production. We announced earlier that our Gen 2 automotive TDDI, which we started ramping as recent as Q3 last year, achieved 1 million units during the first quarter of shipment alone. The Gen 2 automotive TDDI has become the mainstream product shortly after introduction to the market and already dominates our shipments right now. Our automotive TDDI shipment reached around 1.4 million units in the fourth quarter last year and we expect to ship considerably over 3 million units in Q1 this year. Automotive TDDI brings us not only much higher content value on a per panel basis but is also harder to compete in for late comers. Automotive TDDI, still a relatively new technology, has become a major growth engine for us with the accelerating momentum expected to carry over throughout 2022 and the years ahead.

Looking at automotive display industry trends, the car market continues to embrace sophisticated display technologies and caters to interactive, stylish and curved designs with ever improving display resolution and image quality. There is also a shift towards more and larger size displays per vehicle than ever before, all indicating much more driver IC demands. Himax is the market leader in automotive display driver business covering the entire spectrum of products and technologies,

including the industry's most comprehensive traditional DDIC product offerings as well as leading solutions for new technology areas such as TDDI, local dimming Tcon, LTDI and OLED. For automotive TDDI, a technology that is essential for large sized, stylish, and curved automotive displays, we pioneered the mass production of the new technology back in 2019 and have shipped cumulatively millions of units since. We continue to dominate new project design-wins with direct and indirect customers across the continents. For larger than 30 inches, slim and curved automotive displays, we led the industry by introducing cutting-edge LTDI technology that strives for a seamless incorporation of sophisticated touch features with multi-chip design architecture. We are encouraged by the progress made in recent quarters, having increased design-win coverage across panel makers and engaged more Tier-1s and OEMs for them to incorporate our LTDI into their new vehicle models. Some of them are slated for mass production starting the first half of 2023. With the commencement of TDDI mass production and LTDI thereafter, we are confident that our overall market share in the automotive display driver market will continue to rise in the coming years.

Next on smartphone and tablet businesses. We expect Q1 smartphone IC business to decline double digit sequentially, challenged by slowing sales in the global smartphone market, inventory held in stock by smartphone makers and, last but not least, longer production cycle of a new product, a factor which is specific to Himax but only during this quarter. In Q1, amidst the worldwide smartphone slowdown, we strategically initiated a product transition plan for key customers' next generation new designs that support higher frame rate, ultra slim bezel and higher resolution features. The new generation product is designed with more masking layers and therefore requires longer production time, which, during the first quarter of production, will lead to less output. The product's output is expected to be back to normal starting from the second quarter.

Our tablet sales are expected to decline mid-single digit in Q1 due to worldwide tablet market adjustment from a high level. However, our TDDI sales, bucking the seasonality, are expected to be up low-single digit sequentially in the first quarter, benefitted by the proactive adoption by all leading non-iOS tablet names of our TDDI solutions. We continue to see an acceleration in TDDI penetration for tablets following surging needs for larger sized displays, higher frame rate and active stylus features. As the dominating tablet driver IC supplier for literally all non-iOS tablet vendors, our TDDI solutions continue to gain traction and are adopted broadly in customers' next generation tablet products. Among all, we are seeing fast expanding education tablets where our tablet TDDI with active stylus feature has been widely adopted by several leading Chinese players.

Turning to the e-paper driver business, another product in our small and medium-sized driver lineup. Our e-paper business, which currently only represents a small portion of total sales, is set to grow by more than 100% sequentially and more than 240% year-over-year in Q1, driven by the early ramp up of projects with leading customers and backed by long-term supply agreements. We are collaborating with world-leading e-paper customers for certain ASIC projects on their next generation products. This consolidates our market presence in the emerging e-reading and e-signage segments from 2022 and onward.

Next for an update on AMOLED. Himax continues to gear up for the AMOLED driver IC development in partnership with major Chinese and Korean panel makers. In Q1, our flexible AMOLED driver and Tcon for automotive application successfully ramped up for a customer's flagship EV model. The number of awarded projects for our automotive OLED ICs is growing with further EV vendors. In addition, our OLED for tablet is expected to commence mass production in the second quarter of this year with Chinese panel makers. As for smartphone, we continue to commit R&D resources to AMOLED driver ICs through engagement with top tier customers. In view of serious constraints on



OLED display driver capacity in the next few years, we have also secured meaningful capacity for smartphone OLED drivers.

### **Non-Driver Product Categories**

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

### **TCON**

Let's start from the timing controller. We anticipate Q1 Tcon sales to decrease single digit sequentially as a result of weaker demand in TV and Chromebook notebook sectors. However, on a year-over-year basis, Tcon sales will be up around 50%. We are optimistic about the long-term growth prospect of the Tcon business where we have successfully positioned ourselves for higher end and higher value-added areas including 4K/8K TV, gaming monitor, and low power notebook in view of consumers' pursuance of various new types of entertainment for film, television and gaming.

Additionally, we extend our Tcon product reach into automotive and gaming TV markets. Our cutting-edge automotive local dimming Tcon has won numerous awards and penetrated into OEMs and tier-1 car makers' new premium models, with some of them slated for mass production starting the second quarter of 2022. In the gaming TV market, we are also leading the industry by introducing the world's first 288Hz 8K TV Tcon in collaboration with major TV panel makers. We believe the Tcon segment will be one of the driving forces for our non-driver business moving forward.

### **Ultralow power AI image sensing**

Now switching gears to the ultralow power AI image sensing total solution, which incorporates Himax ultralow power CMOS image sensor, our proprietary AI processor and CNN-based AI algorithm. As reported earlier, the sizable order for a top-tier name customer's mainstream application successfully

entered production in Q4 last year, marking another impressive milestone for our new AI business within just one year since our initial release. We will give further details after the end customer's official announcement. We have also made good progress on this mainstream application with other leading vendors where the number of design-in projects is increasing as we speak. In addition to the success story I just mentioned, the second application we expect to see significant volume is in automatic meter reading (AMR) where our AI total solution has been widely adopted by numerous customers across a wide geographical area in China. Our power-saving AI cameras, deployed over the existing installed base of traditional water meters, enable the water meter to automatically collect consumption data with AI operating locally on the edge. The device transmits only byte-sized metadata to the server for billing and in-time detection of abnormal consumption or leakage, eliminating the need for manual reading. The battery pack has a lifetime of over 5 years, greatly outperforming conventional AMR solutions which usually are in a bulky form with large battery packs and, without local AI capability, have to transmit massive image data to the cloud to perform meter reading.

We are already seeing accelerated deployment of our AI solutions to a wide range of applications, including notebook, home appliances, utility meter, automotive, battery-powered surveillance camera, panoramic video conferencing, and medical, among other things. Moreover, new design-in sockets are on the way as we look to leverage the collaboration with leading cloud service partners, such as Microsoft Azure and Google TensorFlow, on their edge-to-cloud platform to drive further adoption on applications such as smart home, smart office, healthcare, agriculture, retail and factory automation. Last but not least, we are seeing numerous design-in activities of our AI solution for endoscope, an area we are extremely excited about that may represent an extraordinary game changer for the health examination industry. We will report more detail in due course. We are very encouraged by the traction this relatively new product line has generated in a short amount of time and expect to see increasing sales contribution through 2022 and beyond.

## **Optical product line-up/ Metaverse**

Lastly, given the recent surge of interest in the metaverse and immersive technologies, I'd like to give an update on our optical related product lines to which we have committed years of R&D efforts. Our LCoS, WLO and 3D Sensing, three separate optical related technologies, may individually or combined play a key role in enabling metaverse devices.

To help users transit and connect seamlessly between AR/VR devices and real-life, the right display and 3D technologies are vital. AR glasses, considered one of the ideal displays for metaverse applications, feature vision augmentation onto the real-world environment, where users see through the glasses with virtual objects and/or digital twins of real-life objects projected by AR engines onto the glasses. For this, Himax showcases Front-lit LCoS Microdisplay, one of the tiniest display modules that offers significantly higher brightness, lighter weight, and lower power consumption, all making the technology ideal for AR headsets. To further enable AR glasses, we offer WLO waveguide that propagates light patterns from the LCoS display in a pre-defined path towards the eyes. Furthermore, for virtual objects reconstruction or digital twin formation, Himax provides industry leading WLO and 3D decoding technologies which are essential in enabling both structured light and ToF (Time of Flight) 3D sensing. The 3D sensing technology, when combined with image sensors, can also enable 3D-based gesture recognition, eliminating the need for handheld controllers and enhancing perception of the environment, which make it an ideal technology for contactless interface for AR/VR devices. In all these technologies I just mentioned, we have a market-leading position with our technology already embedded in various products of quite a few of the biggest tech names in the business and have shipped hundreds of millions in volume with proven product development and manufacturing track records over the years.

While metaverse is still years away from mass volume deployment, Himax is at the forefront of these key technologies to enable the industry and we are ready to bring the metaverse to life through partnerships with tech industry's leading players who are aggressively investing in the space. We will not miss the "next big thing" and are ready to seize the opportunities ahead. We will report additional progress in this new arena as it continues to develop.

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

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

## **OPERATOR TO QUEUE QUESTIONS**

### **Jordan's closing remarks**

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