

## Second Quarter of FY2021 Presentation Q&A

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### [21Q2 Results and Outlook]

Q.What are the factors behind the decline in orders by application? I believe the factors can be broken down into end-user demand, customer production, and changes in inventory held at customers. I think the drop in the BB ratio in Q2 was largely due to production factors at customers. If production were to normalize and orders improve heading into the January-March or April-June period next year, is it possible the BB ratio returns to above 1x? Please give us your outlook for the BB ratio in light of comparisons with past cycles.

A.We are currently experiencing a decline in orders, particularly for smartphone applications. Orders have declined more than we expected in our July forecast from smartphone manufacturers in Greater China and North America. Orders for automobile applications are also on a downtrend. The downtrend is predominantly due to production factors at customers and in the supply chain, and it does not signify a weaker underlying demand. Thus, we believe the normalization of the supply chain over time will lead to an improvement in orders. We expect the current supply chain issues will not be resolved until FY2022 or later, and our forecast for the second half is premised on this outlook. Should supply chain issues be resolved, the production output would rise and profits could significantly overshoot our July forecast.

Q.In other words, orders for future receipts have fallen due to production constraints, but existing orders have not fallen and are being delivered. Is that correct?

A.Yes. There may be slight differences in timing, but we do not see any problems. As long as production constraints are resolved by the time orders increase every year, such as around the spring next year, there will be an increase in orders.

Q.I believe the appropriate inventory levels of MLCCs and general-purpose parts at customers are increasing from the perspective of BCP. Do you consider the current levels of distribution inventory for automobile applications to be appropriate, or do you think there could be adjustments soon? Alternatively, are such adjustments already occurring, or are they about to occur?

A.We believe the inventory level at customers is at an appropriate level within the context of supply chain concerns. We do not think that the current inventory level is excessive. We expect the current inventory levels to be kept at least until the semiconductor supply chain is normalized.

Q.Please let me organize the situation regarding smartphone in Greater China. Do you think that the drop in orders is because customers had stocked up on parts inventories in the April-June and July-September periods, and that, coupled with slow-moving smartphone sales, resulted in customers adjusting their inventories and reducing their orders, leading to a decline in shipments? Alternatively, do you think that production will subside even more, and orders will decline in tandem with production? Chipset manufacturers are saying that semiconductor shortages for smartphone-related applications have persisted. So, I would like you to clarify that gap between orders and production.

A.Our impression was that plants were operating to some extent from April to June. We have been supplying parts accordingly, and the situation started deteriorating significantly from about the middle of Q1. Based on our market research, we believe that the deterioration is predominantly due to production constraints in the supply chain. We expect this trend to continue for the rest of the year. We think sales will increase gradually in Q4 and recovery fully in early FY2022, partly aided by new platform of customer.

Q.On page 17, you provide a breakdown of the factors behind the change in operating income from Q1 to Q2. Could you likewise share the direction of operating income from Q2 to Q3?

A.We did not revise our forecast this time, so we do not have the numbers for Q3 at hand. However, it is clear that current orders are on a downtrend, so it is likely that sales will decline to a level close to Q1. Depending on the situation, sales may fall slightly below Q1 level. As for profits, the product mix will likely deteriorate a little in Q3, partly due to the peak season for modules. As for Q4, we will be drawing up a production output plan in anticipation of supply chain constraints in the next fiscal year, so it is difficult to give an answer at this stage.

Q.Should we think that sales in Q3 will come in at around the same or slightly below the level in Q1?

A.Yes. Based on our current projection, we expect sales to fall a little in Q3 and then to fall by a little more in Q4. As a result, we expect full-year sales of JPY1,730 billion, in line with our forecast in July.

Q.That is if you maintain the original forecast, correct?

A.Yes. Company-wide orders in October have fallen by about 15% to 20% compared to September, so we think that is the current trend.

Q.Please give us your image of production output in Q3. I believe you have stocked up a little on inventory in Q2, but how do you plan to set the production output in Q3 relative to sales? Of course, I think it is difficult to determine how much inventory to stock up unless you have a clearer outlook on the next fiscal year onward, but I would like to hear your thoughts on the production output in Q3.

A.I stated that whether Q3 sales undershoot or overshoot Q1 sales will depend on production output. We are still in the middle of determining whether to produce an amount corresponding to sales or, conversely, to work down the inventory as of Q3.

Q.I believe you will need to decide at some stage while monitoring the status of orders in November and December. Do you think that the time to decide is approaching?

A.Yes. Our basic stance is to keep the production volume at a level corresponding to or more than sales. However, we will need to reassess this stance depending on the continuation or aggravation of supply chain constraints.

Q. My question is about automotive applications in the next fiscal year. The shift to EVs has gathered more momentum than anticipated, and car parts are being electrified, including those around inverters, high voltage capacitors, inductors, and transformers. However, the industry falls significantly short in capacity. Please tell us how customers are requesting capacity from Murata and its suppliers for the next fiscal year. I understand that the change in the forecast for the percentage of EVs will require you to request a considerable amount of capacity from the supply chain.

A. As for automotive applications, the shift to EVs is proceeding at a rapid pace, as you say. In terms of our products, MLCCs, power inductors, and film capacitors are widely used in automotive applications. We will execute investments accordingly based on marketing data. We are raising the capacity for MLCCs at a rate of about 10% per year, which is a level that we believe will not cause inconveniences to customers.

### **[Capacitors]**

Q. I would like to hear your interpretation regarding the current level of sales. When looking at the number of PCs or cars produced, it appears that Murata's capacitors sales are higher than the number of sets produced. Of course, I guess the number of capacitors used per unit grows, but how would you explain the gap between your sales and the production volume of customers? Furthermore, how do you think that will change in the future?

A. It is a fact that MLCC sales in Q2 exceeded the number of PCs and cars produced, so our understanding is that there is a certain degree of inventory buildup in the market. However, our view is that this buildup is not excessive. In terms of the medium- to long-term trend of MLCC sales exceeding the growth in the number of units produced, we expect the demand for high-capacity and high voltage capacitors to increase. We also think the number of installed units per device is headed in the direction of increasing. We consider these to be medium- to long-term trends and understand them to be part of the reason for the expansion in sales.

Q. You have hinted at how there was a change in the order trend for MLCCs in September. What kind of changes is occurring on a monthly basis, including in October?

A. Regarding your second question about orders for MLCCs, in Q2, orders tend to fluctuate meaningfully due to orders from North American smartphone manufacturer. In August this year, we saw 5% to 10% rise in orders compared to last month, but in September, we saw 10% to 15% drop in orders. We believe the decline is attributable to the slowdown of smartphone demand in Greater China, resulting in decreased orders and distribution inventory reaching an appropriate level. Due to factors such as semiconductor shortages, customers are starting to arrange new orders corresponding to actual demand, leading to a decrease in orders. We think that new order arrangements will continue to correspond to actual demand for the time being. The BB ratio may fall below 1x for a little while, but we currently do not think there will be a major adjustment over a long period.

Q. What is your outlook on orders in October and beyond?

A. We believe there will be a solid recovery in demand as long as the semiconductor shortages ease, considering how smartphone demand in Greater China is likely to return in Q4 and end-user demand for cars is robust. Orders may be a little sluggish through the end of the year, but we expect a recovery from January or February 2022 or after the Lunar New Year.

Q. Could you explain the decrease in orders for MLCCs broken down by smartphone and automobile applications? There are differences in the product and supply chain in terms of automobile and smartphone applications. I think part of the reason for the decline in orders is excessive inventories. For example, orders for smartphone applications fluctuate significantly due to seasonality. The current situation is a case where that seasonal fluctuation is very sharp. On the other hand, there are automotive applications that are chronically short of semiconductors, while there are also applications that are not experiencing that shortage. Could you please give us a little more detail broken down by application?

A. There is a significant difference in MLCCs used in smartphone and automobile in terms of product size and average voltage capacitance. Even though both MLCCs are counted as the same unit, the reality is that the average production load is quite different. Smartphone demand tends to fluctuate rapidly. As for smartphone in Greater China, there is a sufficient level of distribution inventory, so customer inventories are being adjusted, also partly in consideration of sales trends. We believe that adjustments, including end-user demand, will continue until about the end of this year. On the other hand, end-user demand remains robust in the automobile industry. Because automakers have not been able to manufacture as many cars as they would like, end-user demand is extremely strong. Even though automakers would like to manufacture more units, they are unable to do so because of various obstacles. We are currently preparing for next year while steadily working through the backlog and meeting new orders corresponding to the actual demand. The situation may differ considerably if the semiconductor shortages were to grow even worse, but for the time being, under these circumstances, we expect to monitor demand trends in the next fiscal year and beyond.

Q. What is the status of the capacity utilization ratio, production capacity, and pricing environment for capacitors in Q3 and Q4?

A. As for the capacity utilization rate of MLCC plants, we expect a rate of 95% if operating 27 days of the month equals 90% utilization. We are continuing to ramp up production capacity, aiming for an annualized increase in capacity load of approximately 10%. We expect to continue to ramp up capacity at this level for the time being. In reality, however, there are slight obstacles to this goal, such as the lower attendance rates due to COVID-19 and power restrictions in China. There are also obstacles unique to the COVID-19 business environment, such as being unable to dispatch personnel overseas to start up facilities. As a result, our production ramp-up has been somewhat hindered compared to normal times. As for the pricing environment in the second half of the fiscal year, we expect price reductions at a normal rate on par with our expectation in July. The annual negotiated price of our customers in the automotive industry will switch to a new price starting in January 2022, so we may need to implement a certain degree of discounts to protect our position.

Q. You mentioned that the basic premise is for the capacity utilization of MLCC plants to remain at around 95%. Is it correct to understand that you have not made changes to the utilization plan so far because the trend in the second half is not clear yet?

A. As for the capacity utilization rate, we aim to operate at a rate of 95%, but due to exceptional circumstances under COVID-19, there is a high likelihood that we may not reach 95% full utilization in a true sense. We would like to monitor the situation for at least the remainder of this year.

Q. My question is about price reductions. The QoQ price reduction was minimal at around JPY2 billion, while the full-year forecast is for YoY price reduction of JPY75 billion. If the QoQ price reduction is small, then the cumulative amount on YoY basis should also be small, so I don't think price reductions would reach JPY75 billion. Do you consider this assumption for price reductions versus the full-year forecast as a buffer against shortfall, or alternatively, do you see any factors that might force you to implement further price reductions?

A. Based on the current situation, we expect price reductions for capacitors will be at moderate level. For the second half of the year, we will have annual price negotiations with Tier 1 automotive manufacturers. There will be some price moves following these negotiations. In addition, we expect there will be price reductions to the extent assumed in the July forecast, in anticipation of price cuts for some smartphone manufacturers where competition is fierce. This is not to say that we are willing to lower the price. Actually, we may not have to reduce the price as much as we had originally planned, but we are still in the negotiation phase, so that is why we have maintained our outlook.

## **[Modules]**

Q. How confident are you about the adoption of modules in the next fiscal year? Also, please tell us your outlook on expanding sales of RF modules in North America and Greater China, and the possibility of increasing the number of installed units of MetroCirc™.

A. As for MetroCirc™, we believe orders are at a bottom this year, though several of this year's models have been adopted. In addition to increased cost competitiveness, we believe the larger number of products in the high-frequency field will lead to an increase in the adoption of MetroCirc™. We have seen steady progress in the evaluation of RF modules but have not reached the point of getting a tangible outlook on orders. We believe the situation will become clearer by year-end or the start of next year.

## **[Eta Wireless]**

Q. Was the acquisition of Eta Wireless aimed at expanding Murata's business in the 6G domain, rather than 5G millimeter waves? When do you think the acquisition will lead to actual business, and at which timing do you expect commercialization and mass production?

A. The competition for front-end modules only includes Murata and a few companies in US. The latest acquisition is a major factor that will allow us to differentiate Murata against competitors. The technology can already be used at this stage for 4G and 5G. The bandwidth is getting wider and wider in advanced 5G, and the benefits will become clearer as the frequency range expands. Eta Wireless has 2 core technologies, including a unique algorithm related to software called Digital Pre-Distortion and a digital technology called Envelope Tracker related to hardware. There are no other products available that allow both technologies to be used in a device. There are already some base stations that use this Digital Pre-Distortion technology. We believe the technology can also be used in smartphone in order to digitally control power consumption while reducing consumption with a superior response. Our plan is to work toward providing samples by around FY2022 and translate that into business by FY2023.

Q. It is excellent that they have the technology to suppress noise and distortion and save power. What kind of changes would this bring to your business? For example, how would it change the hardware design inside PA modules, how would the algorithms change, and would it also change the power supply technology? Could you please lay out the necessary hardware and software elements to market this technology?

A. Regarding the Digital Distortion and Envelope Tracker technologies of Eta Wireless, the Envelope Tracking technology in particular will require collaboration with platform suppliers. It will also require the power management algorithms to be controlled, so changes will need to be made to power management. This will require collaboration between the platform supplier, the customer, and Murata. We are already advancing such collaborations in some areas, and we moved forward on the latest acquisition because we now have a clearer picture of how much power savings can be achieved.

Q.In your explanation about Eta Wireless, you mentioned that there would be a collaboration between 3 parties, including the platform supplier, Murata, and customers. If this technology were to be adopted, I think you would make noteworthy progress in customer retention. Is this understanding correct?

A.Yes, that is right. Customers are currently the evaluators of the technology. Our strategy is to make progress in retaining customers through the combination of our modules with the power management algorithms of platform suppliers.

Q.For example, if platform suppliers were to create a scheme in the technology to retain customers, then they would want to use Eta Wireless's technology. So, if other companies or competitors are going to use those functions, they would have to use your technology. Is that the kind of situation that you envision?

A.Yes. It is a technology that has never been developed before by others, so it may take some time until the technology is accepted. However, we hope to accumulate data and make progress as scheduled.

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