

**Advantest Corporation**  
**FY2018 3Q (Three months ended December 31, 2018) Information Meeting**  
**Q & A Summary**

January 30, 2019

Q: Regarding your tester forecast for 2019, how much influence from US and China trade friction are you assuming as a precondition for SoC tester demand, which was strong in 2018, and the timing of the recovery of the memory tester market, etc.?

A: We cannot predict how much the trade friction between the US and China will affect SoC tester demand. However, demand for high-performance smartphones equipped with 7nm-node application processors (AP) can be expected to grow in the future. Mid-range smartphones are also continuing to improve their performance, so AP test times will be longer. Although it may not rise to the level of 2018, the demand for testers related to new smartphone products will continue. We think memory inventory adjustments will end by June 2019, and assume that capital investment for memory devices will resume between June and September. This prediction excludes the possibility that the trade friction between the US and China will become even more intense. If that happens, and the macro economy deteriorates as a result, there is a possibility that the market will be lower than our present forecast.

Q: How do you view the future of micro LED test?

A: Although the driver circuits themselves seem to be unchanged from the past, technology to check the color of the LED displays is still under development, and our customers are seeking the best methods for this. We are also working on the challenge of incorporating color checking algorithms on our testers, and are planning to put more resources into this in the future.

Q: I'd like to confirm the reason why Advantest's SoC tester share rose in 2018. Did the markets where Advantest is strong grow, or did you take share from competitors? Please also share your market share forecast for 2019.

A: Our share rose steeply in 2018. Our mid-term management plan called for us to raise our market share more steadily. I believe that the biggest factor in the rise in share is that tester investment by major customers of our competitor has decreased. Not only that, but we also captured all the increase in SoC tester demand from the previous year. Our competitors seem to have commented that our gains resulted from extraordinary demand accompanying a change in the supply chain of a certain semiconductor maker, but this claim is not founded in fact. Actually, I believe our wide product portfolio enabled us to broadly capture expanding tester demand and thus increase our

share. However, as investment trends of major customers have a large influence on market share and fluctuations in market share are likely to occur in future, we hope to make use of our broad customer base, which is one of Advantest's great strengths, to maintain our market share.

Q: Please tell us your outlook for market share in 2019.

A: We expect to maintain our market share in SoC testers this year. Regarding memory testers, we already have over 60% of the market, but we expect an even higher share. As memory semiconductors become more and more high-end in the future, there will be opportunities for us to increase market share. We anticipate that the market will shrink, but that our sales will shrink less proportionately.

Q: Your marginal profit ratio is high, and any decrease in sales may lead to some decrease in operating profit level. Do you plan to implement cost reductions next fiscal year?

A: We have introduced a system that reduces personnel costs in step with any decline in sales. Frankly, we think that this is not the time to raise profits by suppressing large expenses. While sales may decline in 2019, we believe this is the right time for investment. Of course we will avoid wasteful expenses. We think we can reduce expenses in correlation with sales, and continue our efforts to expand sales through various measures, including M&A.

Q: If 2019 is only a pause in cyclical growth, as you indicated in your briefing materials, how do you picture the tester market in 2020? We expect memory will grow due to 5G related demand after inventory adjustments, but how about SoC? Won't test demand for APs with AI functions and TDDI (Touch and Display Driver Integration) reach a pause at that time? Or can we expect new demand sources?

A: We think that the SoC tester market will also be driven by 5G, which will take off from 2020. Memory devices will also have larger capacity, and the SoC tester market will enter a growth phase. 5G base station-related business, especially, is expected to be quite large. As base station investment takes off, tester demand will expand.

Q: Although 4Q has strong orders / sales momentum every year, you don't expect this seasonality this year?

A: Since capital investment is suppressed in the memory market this year, we cannot expect to receive large orders in 4Q. In addition, the situation is completely different from one year ago. At that time our production lead time was prolonged, so customers ordered testers earlier to be sure of getting them, resulting in an increase in orders received. Now, as uncertainty in the world economy increases, customers are moving less proactively to secure testers. Our 4Q forecast takes

all these factors into account.

Q: I would like to confirm the timing of full-scale demand for 5G smartphones and demand for 5G base stations. Also, I would like to confirm how much demand for 4G base stations there has been in the past.

A: For 4G, demand increased from 2015 to 2016, but 5G is just about to ramp up. This market is still at a rudimentary stage, and as a business it will ramp up in 2020, reaching full scale in the second half of 2020.

Q: Considering your market outlook for 2019, what will your gross profit margin be next term? Will it stay as is or decline to a certain extent?

A: SoC testers have a higher gross margin than memory. As we anticipate a stronger market deceleration in memory this time, we will aim for a gross profit margin that is about the same level or a little higher this year.

Q: The SoC tester market is predicted to fall -15% YoY in 2019, but how will this be spaced over the first half and the second half? What will the pace of recovery in the second half be, and what kind of semiconductors will drive that recovery?

A: The timing of new smartphone product introduction and the yield of advanced nodes are the key questions. We might see a demand ratio of about 4:6 in the first half vs the second half.

Q: Although AI functions on APs have increased test time, what kind of factors will lengthen test time in the future?

A: Although changes in the manufacturing process have the greatest influence on test time, customer efforts to reduce test cost and the yield of manufacturing processes also affect it. In 2019 adoption of EUV will ramp up, and we believe this will affect tester demand. With regard to DDIs (Display Driver ICs), while the CoF (Chip on Film) type of DDI requires doubled or tripled test times, parallelism is limited to up to 4 devices due to technological factors. Thus, advancing CoF conversion will increase test demand.

Q: What memory tester business opportunities will DDR5 DRAM create? Your competitor has commented that they want to enter the high-speed DRAM test market. What do you think of this possibility?

A: We expect DDR5 will ramp up at the end of 2019. Applications that use DDR5 or LPDDR5 are servers and smartphones. Two or three major smartphone makers will adopt LPDDR5 for new products to be released in 2020, and sample shipments from memory manufacturers will begin

from June 2019. We have already provided solutions for these new memory devices. Because they are high-speed DRAM, testers must support 8 Gbps test speed. We believe we have a technological lead here, and that we will gain market share.

#### Note

This document is prepared for those who were unable to attend the information meeting and is intended only for reference purposes. The original content has been revised and edited by Advantest for ease of understanding.

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