

The JFTC Closed its Reviews on the Proposed Business Combination between ASML Holdings N. V. and Cymer Inc.

I. Parties

ASML US Inc., (headquartered in the United States; hereinafter “ASML US”) belongs to the group of combined companies^{*1} whose ultimate parent company is ASML Holding N.V. (headquartered in the Netherlands) (hereinafter “ASML”) is an enterprise that runs business of manufacturing and selling lithography systems (hereinafter “lithography”) used in the front-end process^{*2} of semiconductor manufacturing.

Cymer Inc.(headquartered in the United States; hereinafter the said group of combined companies whose ultimate parent company is Cymer Inc. shall be collectively referred to as “Cymer”) is an enterprise that runs business of manufacturing and selling light sources composing an important part of the lithography systems (hereinafter ASML and Cymer shall be collectively referred to as “the parties”).

*Note 1: The group of combined companies prescribed in Article 10 (2) of the Antimonopoly Act (hereinafter the “AMA”).

*Note 2: The process of semiconductor manufacturing is categorized into front-end and back-end as follows: the front-end process is where electronic circuits are printed on wafers (thin circular plates) that are the basic structure of semiconductor integrated circuits by lithography systems, and the back-end process is where cutting offs, assemblings and final inspections of each chip are carried out by the chip (product).

II. Outline of the transaction and the provision of applicable laws

This is a case where ASML US is planning to acquire all the shares of Cymer Inc. (hereinafter the “Acquisition”).

In manufacturing lithography systems, ASML procures light sources from Cymer. Therefore, the Acquisition falls under the category of vertical business combination in which a market of manufacturing and selling light sources defined as the upstream market, a market of manufacturing and selling lithography systems defined as the downstream market.

The provision of applicable law is Article 10 of the AMA.

III. Reviewing process and outline of the review results

1. Reviewing process

Since November 2012, ASML US voluntarily submitted a written opinion to the Japan Fair Trade Commission (hereinafter “the JFTC”) stating that ASML US considered that the Acquisition would not substantially restrain competition in any particular fields of trade. The JFTC had meetings with ASML US upon the request of them. On January 30, 2013, following the meeting, ASML US submitted a notification concerning the plan on the Acquisition to the

JFTC under Article 10 (2) of the AMA. The JFTC received this notification and launched the primary review. In the primary review, ASML US asked the JFTC to explain the points potentially to argue and so on in order to enable the review of the Acquisition to smoothly proceed. The JFTC explained the points to argue to them. Then, the parties proposed measures to resolve the points potentially to argue. Thereafter, since the JFTC found that a more detailed review should be needed including that of the contents of the measures, on February 28, 2013, the JFTC requested ASML US to submit reports and other necessary documents and launched the secondary review. On the same day, the JFTC announced that it had launched the secondary review and it would accept opinions from third parties.

In the secondary review, the JFTC studied the impact that the Acquisition might have on competition in the particular fields of trade based on the proposed measures to resolve the points potentially to argue that ASML US proposed as well as information collected through interviews with users and competitors, etc.

As to the JFTC's request to ASML US, with the requested reports and necessary documents submitted on April 11, 2013, ASML US completed its obligation on the JFTC's request.

2. Outline of the review results

As to the Acquisition, the JFTC concluded that, taking the measures ASML US proposed which are mentioned in article V-2 (3), V-3 (3) and V-4 (2) below, etc. into consideration the Acquisition would not substantially restrain competition in the particular fields of trade.

The details of review results are as mentioned in the below from IV to VI.

IV. Particular field of trade

1. Upstream market (light source)

(1) Product range

Light source, a device that generates laser beams, is one of the essential and important parts of lithography systems as mentioned in IV-2, below, and is used to print electronic circuits on wafers. The light source in which the parties currently have transaction is DUV (Deep Ultraviolet Light) light source. DUV light source can be divided into two major types: KrF light source*³ and ArF light source*⁴.

Telling of a general nature of light sources, the shorter wavelength it generates, the higher resolution performance it achieves that enables print circuits to be done in more microscopic bandwidth. With regard to the wavelength of the light source, KrF light sources have wavelength light of about 248 nano meter (hereinafter “nm”) and ArF light sources have wavelength light of about 193nm. Light sources with longer wavelength light are used to print circuits with broad bandwidth. Light sources with shorter wavelength light are used to print circuits with narrow bandwidth.

Although there is another type of light source besides DUV light source called EUV (Extreme Ultraviolet Light) light source which has wavelength light of about 13.5nm, EUV light sources and EUV lithography systems are under technical challenge. Therefore, current sales of EUV light sources are marginal and made only for research and development purposes.

As mentioned above, due to the differences of resolution performances and price ranges between KrF light sources and ArF light sources, users which are manufacturers of lithography systems do not recognize KrF light sources and ArF light sources as substitutable. Therefore, the JFTC defined one product range as “KrF light sources” and another product range as “ArF light sources” both are separately subject to its review.

*Note 3: KrF light sources are a light source which generates light from the gas laser composed of krypton and fluoride.

*Note 4: ArF light sources are a light source which generates light from the gas laser composed of argon and fluoride.

(2) Geographic range

Light source manufacturers and retailers (hereinafter “light source manufacturers”) sell their light sources at a substantially same price all over the world. Moreover, lithography system manufacturers and distributors, domestic and overseas light source users (hereinafter “lithography system manufacturers”), give non-discriminatory treatment to domestic and overseas light source manufacturers. Therefore, for each of the light sources as defined in (1), above, the geographic range is, respectively for each, defined as “the whole world”.

2. Downstream market (lithography system)

(1) Product range

Lithography system is a device that makes an image of electronic circuit patterns (circuit original plate) in reduced size, projected through its lens and prints the image on a wafer which is the basic structure of semiconductor integrated circuits. Whereas mentioned in IV-1, above, in case of light sources, one with shorter wavelength light has higher resolution performance that enables the light sources to print circuits with narrow bandwidth, a lithography system with ArF light source called “immersion lithography system” exists. This lithography is designed to enhance high resolution via application of refraction index of water created when the area between the lens and wafer is immersed with water.

With respect to resolution performances of lithography systems by the light source, the lithography system attached with KrF light source (hereinafter referred to as “KrF lithography system”) is capable of resolution performance of approximately 100-250 nm, the lithography system attached with ArF light source (hereinafter referred to as “ArF lithography system”) is capable of approximately 65-90 nm and the immersion lithography system attached with ArF light source (hereinafter referred to as “ArF immersion lithography system”) is capable of approximately 45-65 nm. Therefore, the resolution performance of ArF immersion lithography system is the highest among the lithography systems.

With respect to KrF lithography systems, ArF lithography systems and ArF immersion lithography systems, since there are differences between resolution performances and price ranges among them, the substitutability for semiconductor manufacturers and distributors and semiconductor manufactures to produce by order (hereinafter both of them shall be collectively referred to as the “chipmakers”) which are customers of lithography systems does not exist. Therefore, the JFTC defined the product ranges as “KrF lithography systems”, “ArF lithography systems” and “ArF immersion lithography systems” individually for each.

Nonetheless, chipmakers which are customers of lithography systems can freely choose any light sources manufactured by each of light source manufacturers when they purchase lithography systems.

(2) Geographic range

Lithography system manufacturers sell lithography systems at substantially same price all over the world. Chipmakers which are domestic and overseas users give non-discriminatory treatment to domestic and overseas lithography system manufacturers. Therefore, for each lithography as defined above (1), “the whole world” is individually defined as a geographic range.

V. Review concerning substantial restraint of competition

1. The status of the parties and the competitive situation

(1) Upstream market (light source)

In the market for KrF light sources, the market share of Cymer would be approximately 60% (ranked in the first in the market) and the HHI would be approximately 5,300. In the market for ArF light sources, the market share of the parties would be approximately 75% (ranked in the first in the market) and the HHI would be approximately 6,300. Therefore, both products do not meet the safe harbor standards for vertical business combinations*⁵.

Company A(a domestic manufacturer) is the only competitor of Cymer.

*Note 5: See V-1 (3) of “Guidelines to Application of the Antimonopoly Act Concerning Review of Business Combination” (JFTC, May 31, 2004).

[Market share of KrF light sources in 2012]

Rank	Company name	Market share
1	Cymer	Approx. 60%
2	Company A	Approx. 40%
Total		100%

[Market share of ArF light sources in 2012]

Rank	Company name	Market share
1	Cymer	Approx. 75%
2	Company A	Approx. 25%
Total		100%

(2) Downstream market (lithography system)

In the market for KrF lithography systems, the market share of ASML would be approximately 90% (ranked in the first in the market) and the HHI would be approximately 8,300. In the market for ArF lithography systems, the market share of the parties would be approximately 45% (ranked in the second in the market) and the HHI would be about 5,100. In the market for ArF immersion lithography systems, the market share of the parties would be approximately 85% (ranked in the first in the market) and the HHI would be approximately 7,500. Therefore, all products do not meet the safe harbor standards for vertical business combinations.

With respect to KrF lithography systems, Company X and Company Y (both of them are domestic manufacturers) are the only competitors of ASML. With respect to ArF lithography systems and ArF immersion lithography systems, Company X is the only competitor of ASML.

[Market share of KrF lithography systems in 2012]

Rank	Company name	Market share
1	ASML	Approx. 90%
2	Company X	Approx. 5%
3	Company Y	0–5%
Total		100%

[Market share of ArF lithography systems in 2012]

Rank	Company name	Market share
1	Company X	Approx. 55%
2	ASML	Approx. 45%
Total		100%

[Market share of ArF immersion lithography systems in 2012]

Rank	Company name	Market share
1	ASML	Approx. 85%
2	Company X	Approx. 15%
Total		100%

2. Refusal of sale, etc. of light sources transaction

(1) Impact of refusal of sale on competition

In the downstream market, Company X and Company Y which manufacture and distribute KrF lithography systems, ArF lithography systems or ArF immersion lithography systems procure an appreciable extent of KrF light sources or ArF light sources from Cymer of the upstream market. As a result of the Acquisition, in case where Company X or Company Y are deprived of an opportunity to deal with Cymer or in case where Company X or Company Y is disadvantageously treated in transactions compared with ASML (hereinafter referred to as “input foreclosure” See 2 of Reference), Company X or Company Y are placed in a disadvantageous situation and there are some possibilities of resulting in market foreclosure or exclusivity.

Cymer occupies a high market share of the upstream market and there are few competitors in the upstream market. Therefore, if Cymer substantially sells light sources exclusively to ASML, and thus the competitors in the downstream market lose the primary procurement sources of light sources and result in market foreclosure or exclusivity, it is considered that such situation has a large impact on competition in the downstream market.

(2) Allegations of the parties and assessments thereof

A. Allegations of the parties

According to the parties' claim, upon selling lithography systems, as to a light source which constitutes an important part of lithography systems, whereas it is chipmakers who decide to choose which light source of which light source manufacturer, if the parties engaged in input foreclosure, the parties lose not only their light source profit causes but also lose trust from chipmakers and that leads to have impact on ASML's lithography sales. Therefore, the parties claimed that input foreclosures provide no incentive for them.

B. Review and assessment of the allegations of the parties

It is chipmakers that purchase lithography systems and choose light sources attached to lithography systems. According to the following facts, it is considered that chipmakers have countervailing power to a certain degree against the input foreclosure by the parties: (i) chipmakers state that, should the parties exercise an input foreclosure after the Acquisition, chipmakers are still able to give their opinions regarding the choice of light source manufactures to the parties since the state where multiple choices of light sources are retained contributes to price and performance competition; (ii) most of the sales of the parties are occupied by several major chipmakers and (iii) the development of lithography systems and light sources are carried out according to the roadmap of the whole semiconductor industry that includes such as chipmakers.

(3) Measures proposed by ASML US

After the JFTC explained to ASML US as saying that such input foreclosure might be a point potentially to argue in the review of the Acquisition, ASML US has proposed that it would take the following measures against the concern of the input foreclosure.

- (i) With respect to DUV light sources, Cymer will continuously do business with Company X and Company Y under fair, reasonable and non-discriminatory terms of trade as well as in the manner of paying regard to and being consistent with the existing agreements. Moreover, with respect to EUV light sources, after the Acquisition, Cymer will do business with Company X and Company Y under fair, reasonable and non-discriminatory terms of trade as well as in the manner of paying regard to and being consistent with the industry standard.
- (ii) Cymer will implement joint development activities with Company X and with Company Y under the reasonable terms of trade. With respect to DUV light sources, Cymer will implement it in the manner consistent with the existing agreements.
- (iii) For five years from the execution of the Acquisition, the parties will report the status of compliance with the measures mentioned above to the JFTC once a year.
- (iv) The report mentioned (iii) is to be created by an audit team independent from parties, which will be appointed subject to a prior approval of the JFTC.

(4) Assessment under the AMA

The measures proposed by ASML US mentioned (3), above, are as follows: Cymer will continuously deal with Company X and Company Y in a manner consistent with the terms of trade equivalent to that of prior to the Acquisition. Moreover, an audit team independent of the parties', which will be appointed subject to a prior approval of the JFTC, conducts an audit and Cymer will report to the JFTC regarding the result of audit for a certain period of time after the Acquisition, thus the effectiveness of the measures will be ensured. Moreover, as mentioned in (2) B above, there is competitive pressure from chipmakers to a certain degree.

Therefore, taking the measures proposed by ASML US, etc. into consideration, the Acquisition will not cause the input foreclosure.

3. Refusal of purchase, etc. of lithography systems transaction

(1) Impact of refusal of purchase on competition

In the upstream market, Company A which runs business of manufacturing and selling KrF light sources and ArF light sources sells an appreciable extent of KrF light sources or ArF light sources to ASML of the downstream market. As a result of the Acquisition, there is a possibility of placing Company A in a disadvantageous situation and resulting in market foreclosure or exclusivity, in case where Company A is deprived of an opportunity to deal with ASML or Company A is treated disadvantageously in transactions compared to that of Cymer (hereinafter “customer foreclosure” See 2 of Reference).

ASML occupies a high market share of the downstream market and there are few competitors in the downstream market. Therefore, if ASML virtually procure light sources exclusively from Cymer, and thus the competitors in the upstream market lose sale destinations and excluded from the upstream market, it is considered that such situation has a large impact on competition in the upstream and downstream markets.

(2) Allegations of the parties and assessments thereof

A. Allegations of the parties

As mentioned in 2(2) A above, the parties alleged that there was no incentive for the parties to engage in the customer foreclosure because if the parties engaged in it, there would be competitive pressure from the chipmakers due to the fact that the choice of the light source is dependent on the decision of chipmakers.

B. Review and assessment of the allegations of the parties

As mentioned in 2(2) B above, chipmakers have countervailing power to a certain degree against the customer foreclosure by the parties.

(3) Measures proposed by ASML US

After the JFTC explained to ASML US that such customer foreclosure might be a possible issue in the review of the Acquisition, ASML US has proposed that it would take the following measures against the concern of the customer foreclosure.

(i) When ASML develops in partnership with Cymer or Company A and places orders for products, parts and services of light sources to them, ASML will determine the supplier based on objective and non-discriminatory criteria, such as quality, logistics, technology, cost and chipmakers’ preferences etc.

(ii) ASML will continuously permit chipmakers to choose light sources of their choice, and not unduly exert influence on the decision of chipmakers with respect to the choice of light sources.

(iii) ASML will substantially simultaneously provide both Cymer and Company A with information which is necessary in research and development of light sources and order placements for light source products, parts and services.

(iv) For five years from the execution of the Acquisition, the parties will report the status of compliance with the measures mentioned above to the JFTC once a year.

(v) The report mentioned (iv) is to be created by an audit team independent from parties, which will be appointed subject to a prior approval of the JFTC.

(4) Assessment under the AMA

The measures proposed by ASML US mentioned (3) above represent its promise that after the Acquisition, ASML will continuously deal with Company A in a manner consistent with the terms of trade equivalent to that of prior to the Acquisition. Moreover, an audit team independent of the parties', which will be appointed subject to a prior approval of the JFTC, conducts an audit and ASML will report to the JFTC regarding the result of audit for a certain period of time after the Acquisition, thus the effectiveness of the measures will be ensured. Moreover, as mentioned in (2) B above, there is competitive pressure to a certain degree from chipmakers.

Therefore, taking the measures proposed by ASML US etc. into consideration, the Acquisition will not cause the customer foreclosure.

4. Access to confidential information

(1) Impact of access to confidential information on competition

Light source manufacturers and lithography systems manufacturers share various confidential information, such as product development, product specification, their customers, etc. with each other in terms of developing, manufacturing, and selling products. Thus, after the Acquisition, there is a possibility that, Cymer accesses to Company A's confidential information shared between ASML and Company A through ASML, or ASML accesses to Company X or Company Y's confidential information shared between Cymer and Company X or Company Y through Cymer. It is recognized that there is less possibility the parties and competitors take coordinated conduct because technological innovation is frequent in upstream and downstream markets and there is competitive pressure to a certain degree from chipmakers. However, there is a possibility that the parties may use the confidential information for their advantages, and thereby their competitors may be placed in a disadvantageous situation and foreclosure or exclusivity in market may be occurred.

The parties occupy high market shares of the both upstream and downstream markets and there are few competitors in these markets respectively. Therefore, if the confidential information of competitors is shared between the parties and market foreclosure or exclusivity are resulted in, it

is considered that such situation has a large impact on competition in the upstream and downstream markets.

(2) Measures proposed by ASML US

After the JFTC explained to ASML US that handling confidential information of competitors might be a possible issue in the review of the Acquisition, ASML US has proposed that it would take the following measures against the handling of confidential information.

- (i) Directors/Employees of Cymer who are responsible for the confidential information of Company X or Company Y will be prohibited from providing the confidential information to directors/employees of ASML and enter into a non-disclosure agreement.
- (ii) Directors/Employees of ASML who are responsible for the confidential information of Company A will be prohibited from providing the confidential information to directors/employees of Cymer and enter into a non-disclosure agreement.
- (iii) To comply with (i) and (ii) above, the parties will create a protocol of information blackout for its employees.
- (iv) For five years from the execution of the Acquisition, the parties will report the status of compliance with the measures mentioned above to the JFTC once a year.
- (v) The report mentioned (iv) is to be created by an audit team independent from parties, which will be appointed subject to a prior approval of the JFTC.

(3) Assessment under the AMA

The measures proposed by ASML US as mentioned in (2) above represent its promise that after the Acquisition, the parties implement measures to prevent disclosure of confidential information which includes their directors/employees to enter into a non-disclosure agreement. Moreover, an audit team independent of the parties', which will be appointed subject to a prior approval of the JFTC, conducts an audit and ASML will report to the JFTC regarding the result of audit for a certain period of time after the Acquisition, thus the effectiveness of the measures will be ensured.

Therefore, taking the measures proposed by ASML US, etc. into consideration, the Acquisition will not raise an issue of access to confidential information of competitors.

VI. Conclusion

The JFTC concluded that, taking the measures proposed by ASML US, etc. into consideration, the Acquisition would not substantially restrain competition in any particular fields of trade.

(Reference) Flowchart of Business Combination Review

