

***Case No COMP/M.5804 -  
SAMSUNG  
ELECTRONICS CO/  
SAMSUNG DIGITAL  
IMAGING CO***

Only the English text is available and authentic.

**REGULATION (EC) No 139/2004  
MERGER PROCEDURE**

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Article 6(1)(b) NON-OPPOSITION  
Date: 30/03/2010

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EUROPEAN COMMISSION

Brussels, 30.3.2010

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In the published version of this decision, some information has been omitted pursuant to Article 17(2) of Council Regulation (EC) No 139/2004 concerning non-disclosure of business secrets and other confidential information. The omissions are shown thus [...]. Where possible the information omitted has been replaced by ranges of figures or a general description.

PUBLIC VERSION

MERGER PROCEDURE  
ARTICLE 6(1)(b) DECISION

**To the notifying parties:**

Dear Sir/Madam,

**Subject: Case No COMP/M.5804 - Samsung Electronic Co/ Samsung Digital Imaging Co  
Notification of 24.02.2010 pursuant to Article 4 of Council Regulation No 139/2004<sup>1</sup>**

1. On 24 February 2010, the European Commission received a notification of a proposed concentration pursuant to Article 4 of Council Regulation No 139/2004 by which the undertaking Samsung Electronics Co, Ltd ("SEC", South Korea) enters into a full merger within the meaning of Article 3(1)(a) of the EC Merger Regulation with the undertaking Samsung Digital Imaging Co, Ltd ("SDIC", South Korea).

**I. THE PARTIES**

2. **SEC** is a manufacturer of household appliances, mobiles phones and communication systems, semi-conductors and LCD display panels. In particular, SEC sells memory semi-conductors,

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<sup>1</sup> OJ L 24, 29.1.2004 p. 1. With effect from 1 December 2009, Articles 81 and 82 of the EC Treaty have become Articles 101 and, 102, respectively, of the Treaty on the Functioning of the European Union ("TFEU"). The two sets of provisions are, in substance, identical. For the purposes of this Decision, references to Articles 101 and 102 of the TFEU should be understood as references to Articles 81 and 82, respectively, of the EC Treaty where appropriate. The TFEU also introduced certain changes in terminology, such as the replacement of "Community" by "Union" and "common market" by "internal market". The terminology of the TFEU will be used throughout this Decision.

including Dynamic Random Access memory semi-conductor chips (DRAM) and flash memories which are incorporated, *inter alia*, into digital cameras.

3. **SDIC** develops, manufactures and sells digital still cameras ("DSCs") comprising both compact digital still cameras ("CDSC") and digital single lens reflex cameras. ("DSLR"). SEC currently holds a non-controlling shareholding of 25.46% in SDIC. This holding consists entirely of ordinary shares to which no special rights are attached.

## **II. CONCENTRATION**

4. On 22 January 2010, SEC and SDIC (hereinafter "the Parties") entered into a merger agreement whereby the Parties agreed for SEC to merge with SDIC by granting SEC's treasury shares to SDIC shareholders in return for their SDIC shares (the Proposed Transaction). After this operation, SEC will retain its legal identity and SDIC will cease to exist as a legal entity. Hence, the proposed transaction constitutes a concentration within the meaning of Article 3(1)(a) of the Merger Regulation.

## **IV. UNION DIMENSION**

5. The undertakings concerned have a combined aggregate world-wide turnover of more than EUR 2.5 billion (SEC: EUR 75,521 million, SDIC: EUR 876 million). The Union-wide turnover of each undertaking concerned is more than EUR 100 million (SEC: EUR [...] million, SDIC: EUR [...] million). The combined turnover of the two undertakings concerned is more than EUR 100 million in each of at least 3 Member States; in each of at least three of these Member States (France, Italy, the Netherlands and the United Kingdom) each undertaking concerned achieves a turnover of more than EUR 25 million. Neither SEC nor SDIC achieve more than two-thirds of its Union-wide turnover within one and the same Member State. The Proposed Transaction therefore has a Union dimension pursuant to Article 1(3) of the EC Merger Regulation.

## **V. COMPETITIVE ASSESSMENT**

6. Given that SEC is not active in the market for Digital Still Cameras where SDIC operates, there is no horizontal overlap between the parties. Vertical relationships result from the fact that SEC is active in the upstream market for DRAM and flash memories which are incorporated, among other electronic devices, into DSCs.

### **1. Relevant product markets**

#### *a) DSCs*

7. SDIC is active in the production and sale of DSCs, sold under the Samsung brand. DSCs take still photographs by recording images via an electronic image sensor. SDIC mainly produces both compact DSCs (CDSCs) and digital single lens reflex cameras (DSLRs), though it is primarily focused on the production of CDSCs, which accounted for approximately [...] % of all cameras produced by SDIC in 2008. CDSCs are small lightweight cameras with a single lens and a relatively small image sensor which target amateur photography. DSLRs are larger cameras that accommodate interchangeable lenses and larger image sensors.

8. In a recent decision<sup>2</sup>, the Commission considered the DSC market as a whole since different models fall along a general spectrum of prices and performance characteristics but ultimately left the precise definition of the product market open.
9. Respondents to the market investigation in the present case indicated that there are differences between CDSCs and DSLRs in terms of product characteristics and prices. In general, CDSCs are smaller, lighter cameras with a fixed lens which is not interchangeable. On the other hand, DSLRs are larger cameras that accommodate an interchangeable lens. In terms of demand DSLRs are often preferred by professional photographers and photo enthusiasts because they allow the user to choose from a variety of interchangeable lenses. Consequently, the retail market price of DSLRs is generally higher than the price of CDSCs.
10. However, for the assessment of this case, it is not necessary to conclude on the exact product market definition, since it does not affect the competitive assessment.

***b) Memory semiconductors and other components for DSCs***

11. The Parties have identified as relevant, for the purposes of the assessment of the proposed transaction, the following components for the manufacture of DSCs: image sensors, digital signal processors, memory semiconductors, which include DRAMS and flash memories, and LCD displays. SDIC sources image sensors, digital signal processors, DRAMS and flash memories from SEC. In addition, SDIC sources the LCD displays for its DSCs from Samsung Mobile Display Co., Ltd. (SMD), a 50:50 joint venture formed by SEC and Samsung SDI Co., Ltd, a company active in panel display panels, rechargeable batteries and cathode ray tubes<sup>3</sup>.
12. The Proposed Transaction gives only rise to vertically affected markets in relation to memory semiconductors. SEC supplies SDIC with two types of memory semiconductors: (a) Dynamic Random Access Memory semiconductor chips (DRAMs) and (b) flash memories.

i) DRAMs

13. DRAMs are semiconductors that store binary data in a separate capacitor within an integrated circuit. DRAMs are volatile memory devices that only store data while a power source is connected.
14. In line with the reasoning of a previous Commission decision<sup>4</sup>, the parties submit that DRAMs could be differentiated by memory size and by intended applications. In this decision, the Commission also considered that other types of chips such as static random access memory (SRAM) perform different functions to DRAM and cannot therefore be regarded as substitutes. However, the Commission left open the precise definition of the DRAM market.
15. From the supply side, the Commission previously found that DRAM manufacturers seem able to switch production between different functional types of DRAM using the same manufacturing facility, as the technologies employed are similar<sup>5</sup>.
16. The market investigation carried out by the Commission in this case has confirmed that DRAM is not substitutable with other kinds of chips such as SRAM. Several respondents active in the

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<sup>2</sup> Decision in case COMP/M.5421 *Panasonic/Sanyo* of 29 September 2009.

<sup>3</sup> Decision in case COMP/M.5414 *Samsung SDI/Samsung Electronics/SMD* of 23 January 2009.

<sup>4</sup> Decision in case COMP/JV.44, *Hitachi/NEC-DRAM/JV* of 3 May 2000.

<sup>5</sup> Decisions in case COMP/JV.44, *Hitachi/NEC-DRAM/JV*, §19.

DSC sector submitted that SRAMs need more transistors in order to store the same amount of data than DRAMs. Therefore their costs and sizes considerably limit their usage for DSCs even if the performance of SRAMs is generally higher than DRAMs.

17. Furthermore, several DRAMs customers tend to consider that some kinds of DRAM are more adapted for their own production of DCSs but the market investigation did not reveal that some DRAMs are specifically adapted to DSCs. Customers make their choice of DRAMs with regard to the expected performance of the end-product with no apparent preference for a specific DRAM.
18. In any event, the precise market definition with regard to DRAM can be left open for the purposes of this case since the competitive assessment would not change.

ii) Flash memories

19. Flash memory is a form of non-volatile memory that retains its contents when power to a device is disconnected (and is therefore distinguishable from volatile memory, such as DRAM or SRAM, which can only retain its contents when powered).
20. The parties submit that there are two major types of flash memory: NOR and NAND. The contents of NOR memory can be read more rapidly than the contents of NAND memory, while data can be written to NAND more rapidly than to NOR. In a recent decision<sup>6</sup>, the Commission took the view that an overall flash memory market does not appear to be concretely established since the use of NOR versus NAND flash memory is dictated by the different end-application which from the outset is designed with the chosen component of flash memory (be it NOR or NAND). Separate markets could thus be considered for: (i) stand-alone NOR, and (ii) stand-alone NAND.
21. As an alternative market definition, the Commission considered in that decision that the following separate markets could be identified based on flash memory intensity/densities factors (i.e. depending also on the end-use application of flash memory): (a) code-intensive applications of flash memory: mostly lower density NOR solutions used for video-tapes, DVD players, digital TVs, and automotive systems; (b) code and data applications of flash Memory: NOR plus NAND coupled with volatile memory (RAM), also called Hybrid flash memory chipsets, representing some kind of “bridge” solutions and used for handset mobile telephones, routers and switches; and (c) data intensive applications of flash memory: mostly larger density NAND solutions used for MP3 devices, digital cameras, newer set-top-boxes, and USB devices.
22. The market investigation conducted in this case showed that all kind of flash memories (NOR and NAND or code intensive, hybrid and data intensive) are used in digital still cameras, depending mainly on a trade-off to be made by the DSC manufacturer between density, speed and costs. Furthermore, no homogenous delineation followed from the market investigation to distinguish code-intensive applications, code and data applications and data intensive applications in terms flash memory intensity/densities factors.
23. In any event, the precise market definition with regard to flash memories can be left open for the purposes of this case since under any of the alternative definitions of the product markets discussed above the competitive assessment would not change.

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<sup>6</sup> Decision in case COMP/M.4751, *STM/Intel/JV* of 10 August 2007.

## 2. Geographic market

### *a) DSCs*

24. The parties submit that DSCs sold throughout the EEA are essentially identical with the same main brands present in all Member States and no significant country-specific variations in retail prices or market presence of the various players. The question was left open in Panasonic/Sanyo and it is also unnecessary to reach a definitive conclusion on the geographic scope of these markets (EEA-wide or national) in this case given that the competitive assessment would not change.

### *b) Memory semiconductors (DRAMs and flash memories)*

25. In line with the Commission's previous decisions concerning the markets for DRAMs and flash memories<sup>7</sup>, the parties submit that the geographic scope of all possible products markets is worldwide. The market investigation did not reveal that the scope of these markets should be narrower than the world.
26. However, for the assessment of this case, it is not necessary to conclude on the exact geographic market definition, since whichever geographic market definition is retained, the competitive assessment would not change

## 3. Competitive assessment: Vertical effects

### *a) Input foreclosure*

27. SEC supplies DRAMs and flash memories to DSC manufacturers, as well as to manufacturers of other electronic devices, who incorporate them into their final products. Market shares are as follows:
- On the DRAM market, SEC's worldwide market shares would be [30-40]% facing mainly the competition of Hynix ([10-20]%), Elpida Memory ([10-20]%) and Micron Technology ([10-20]%).
  - On the flash memory market, SEC's worldwide market shares would be [30-40]% facing mainly the competition of Toshiba ([20-30]%), Spansion ([10-20]%) and Numonyx ([10-20]%)
28. If the flash memory market is broken down, SEC's market shares would be higher in some segments. Indeed, if the market for flash memories is defined more narrowly and segmented between NOR and NAND flash memories, SEC's worldwide share would be [10-20]% on the NOR market and [40-50]% on the NAND market. Alternatively, if the market is segmented between code-intensive applications, hybrid flash memory and data intensive applications, SEC would hold worldwide market shares of [10-20]% for code-intensive flash memories, [20-30]% for hybrid flash memories and [40-50]% for data intensive flash memories.
29. However, even if SEC's market shares would be relatively high on narrower markets, it does not appear that the new entity would have the ability or the incentive to engage into input foreclosure. First, as regards DRAMs, the new entity would face competition from significant suppliers (Hynix, Elpida technologies). The market investigation did not reveal that SECS holds a specific competitive advantage compared to these players.

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<sup>7</sup> Decisions in case COMP/JV.44, *Hitachi/NEC-DRAM/JV* of 3 May 2000 and case COMP/M.4751, *STM/Intel/JV* of 10 August 2007

30. In the flash memories market, SEC would still face powerful competitors as well, that constitute credible alternatives of supply. In the NAND market, Toshiba holds a share of [20-30]% and [30-40]% in the data intensive market. Hynix and Micron Technologies are also present in the flash memories sector with shares of the same magnitude as in the overall flash memories market. Again, despite the fact that SEC is the leading supplier in this market, the market investigation showed that SEC products can easily be substituted by competitors' products in terms of performance and price and that barriers to switching are low. Typical contracts between DRAM and flash memories suppliers and their customers are generally of short length (1 year) and non-exclusive. Furthermore, according to the parties' submission, SEC will continue to sell memory semiconductors to third parties that are active in a number of industries, including in the DSC market.
31. In that regard, it shall be observed that in 2008, approximately [5-10]% of SEC's revenues were related to sales of DRAM, of which DRAM sales to SDIC accounted for less than [0-5]% of total SEC's DRAM sales. Concerning flash memories, approximately [0-5]% of SEC's revenues in 2008 related to sales of flash memory that are incorporated into a number of end applications, including DSCs, and external memory cards. SEC's flash memory sales to SDIC accounted for less than [0-5]% of total SEC flash memory sales. It does not appear that SEC has an interest to favour SDIC to the detriment of other customers of flash memories and DRAM products given the limited share of revenues that SDIC represents in this area.
32. Furthermore, market participants stated that costs stemming from sourcing of DRAMs and flash memories represent on average between 0.5 and 3% of the final production cost of the DSCs. It appears therefore that these components do not have a crucial impact on the production costs of the final product.
33. Finally, according to the parties, most of the DSC manufacturers produce a number of electronic devices that incorporate memory semiconductors. Accordingly, the same memory semiconductor can be incorporated into a DSC or into another electronic device. Accordingly and given that such buyers are important customers to SEC, it would not make commercial sense for SEC to discontinue the sale of its memory semiconductors to entities that produce DSCs post-Proposed Transaction. Furthermore, according to SEC, it is not possible for it to determine the end product into which its memory semiconductors are incorporated in relation to sales to customers that produce a number of different electronic devices. This has also been confirmed by the main players active in the DRAMs and flash memories markets.
34. In the light of the above, the merged SEC/SDIC entity will have neither the ability nor the incentive to foreclose access to DRAM and/or flash memory input to its competitors in the downstream market for the production of DSCs.

***b) Customer foreclosure***

35. SDIC, pre-merger, already acquires approximately [80-90]% of its memory semiconductor needs from SEC. So, even in the case where SDIC would acquire the whole of its memory semiconductor needs through SEC, the current structure of the DRAMs and flash memories suppliers market would not substantially change.
36. In addition, SDIC holds a EEA share of only [10-20]% for CDSCs and [0-5]% for DSLRs.<sup>8</sup> SDIC cannot therefore be considered a sufficiently important customer for the transaction to raise customer foreclosure concerns. The market investigation confirmed that SDIC is not a very strong actor on the DSC market, regardless of whether a distinction is made between

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<sup>8</sup> At national level, its highest market share for CDSCs is in Bulgaria ([10-20]%) and in the UK ([10-20]%). As regards DSLRs, its shares are well below [0-5]% in each national market.

CDSCs and DSLRs, and faces competition of a significant number of well established and powerful DSC manufacturers.

37. Given the factors explained above, the transaction does not raise serious doubts as regards vertical effects, either through input or customer foreclosure.

## **VI. CONCLUSION**

38. For the above reasons, the Commission has decided not to oppose the notified operation and to declare it compatible with the internal market and with the EEA Agreement. This decision is adopted in application of Article 6(1)(b) of Council Regulation (EC) No 139/2004.

For the Commission  
*(signed)*  
Joaquín ALMUNIA  
Vice-President of the Commission