

Anticipated acquisition by Cirrus Logic Inc of Wolfson Microelectronics Plc

ME/6461/14

The CMA's decision on reference under section 33(1) of the Act given on 8 August 2014. Full text of the decision published on 7 November 2014.

Please note that [X] indicates figures or text which have been deleted or replaced in ranges at the request of the parties for reasons of commercial confidentiality.

Summary

1. Cirrus Logic Inc (**Cirrus**) intends to acquire Wolfson Microelectronics plc (**Wolfson**) (**the Merger**). They both (together **the Parties**) develop and supply audio semiconductors for the consumer electronics markets worldwide. They do not have any manufacturing facilities (they are 'fabless'). Both of them outsource the production of the semiconductors to third parties.
2. The Competition and Markets Authority (**CMA**) considers that it has jurisdiction to assess the competitive impact of the Merger as it creates a relevant merger situation according to the merger control provisions of the Enterprise Act 2002 (the Act). It will result in two or more enterprises ceasing to be distinct and the share of supply jurisdictional test is met.
3. The Parties overlap in the development and supply of audio semiconductors. In particular, low-power high-performance audio semiconductors with functionality to convert analogue sounds into digital format and vice versa (CODEC functionality or **CODEC semiconductors**). [END NOTE 1.] These audio semiconductors are used in consumer electronic devices such as smartphones and tablets. The Parties also overlap, although to a lesser extent, in the development and supply of audio semiconductors for amplifiers for use in low-power and non-low-power devices (**Amplifier semiconductors**).
4. In terms of the product frame of reference, these semiconductors can be classified in several different ways, including by functionality; the sector in

which they are used; level of integration with the overall system; whether the semiconductor has been developed on an application standard basis or bespoke designed for a specific customer or platform. For the purpose of this assessment, the precise definition of the product frame of reference is not outcome determinative and has therefore been left open. The assessment has focused on the impact of the Merger on the development and supply of CODEC and Amplifier semiconductors.

5. The geographic frame of reference in relation to the CODEC and Amplifier semiconductors appears to be worldwide. Suppliers and many customers operate globally and prices are negotiated on a global basis. However, for the purposes of this assessment the precise definition of the geographic frame of reference is not determinative of the outcome and has therefore been left open.
6. Innovation relating to the development of semiconductors is a key feature of the competitive dynamics in the marketplace the Parties and their customers operate in. The Parties are constantly driven to innovate to secure contracts for the next generation of consumer electronic devices. The CMA has therefore examined the impact of the Merger on innovation and has also assessed other parameters of competition between the Parties that may be removed as a result of the Merger.
7. Two competitors [END NOTE 2]ⁱⁱ were concerned about the Merger. They submitted to the CMA that the Parties compete in a high-end segment of the market and that there are fewer alternatives for customers in that segment. The CMA notes that the main customers operating in that high-end segment are supportive of the Merger and named several alternative suppliers, which they considered to be capable of satisfying their requirements.
8. The CMA estimates that the Parties' combined share in the development and supply of CODEC semiconductors is about [45–55]% (with an increment of [10–20]% to [10–20]%). These relatively high estimated shares of supply appear to reflect significant sales of electronic devices sold by the Parties' main customers (Samsung and Apple). The CMA understands that the Parties' (and their competitors') shares of supply can change rapidly and largely depends on the commercial success of the electronic devices into which the semiconductors are incorporated. With regard to Amplifier semiconductors, the Parties' combined share of supply is approximately [10–20]% with an increment of [less than 5]%).
9. Revenue data, other internal documents and third parties' views confirmed that customers have switched suppliers when developing new electronic device models and that the lack of success of particular models has had a

knock-on effect on the shares of supply of the Parties and their competitors. At present, that revenue data shows that each of the Parties has a main customer representing the majority of its revenues. Other alternative suppliers of audio semiconductors include Qualcomm and Maxim.

10. The Parties' main customers did not raise any competition concerns and some noted the possibility that the Merger would result in rivalry-enhancing efficiencies and/or relevant customer benefits. The CMA notes that these customers have reasonable knowledge of the Parties' development plans and the products they (and some of their competitors) are developing. Some customers have recently run product comparisons and design contests where they found other competitors with sufficient knowledge and R&D to compete with the Parties.
11. The CMA's assessment concludes that the merged entity will continue to face sufficient constraints, including in the high-end segment where both Parties have significant operations. Several competitors will remain viable alternatives after the Merger. The CMA considers that these constraints are sufficient to ensure that no realistic prospect of a substantial lessening of competition will arise as a result of the Merger.

Decision

12. This merger will therefore **not be referred** under section 33(1) of the Act.

Assessment

Parties

13. Cirrus develops and supplies semiconductors. Its headquarters are located in the USA with research and development (R&D) and commercial departments located worldwide. Its UK presence is limited to a single employee who covers several EU countries. [END NOTE 3.]ⁱⁱⁱ Its worldwide annual turnover to March 2014 was \$714 (£450) million.
14. Wolfson designs and supplies semiconductors worldwide. Its headquarters are located in Edinburgh and it has R&D and commercial offices in several countries. Its worldwide turnover for the year ended December 2013 was £112 million and its UK turnover was less than £70 million.

Transaction

15. Cirrus intends to acquire 100% of the share capital of Wolfson.
16. The CMA gave notice to Cirrus that its Merger Notice was satisfactory on 16 June 2014.¹ The deadline for the CMA's decision under section 34ZA(1) of the Act is 11 August 2014.

Jurisdiction

17. As a result of the Merger, Cirrus and Wolfson's enterprises will cease to be distinct. The Parties overlap in the development and supply of CODEC semiconductors. Cirrus estimates that the merged entity may have a share of supply of CODEC semiconductors in excess of 25% in the UK. The CMA therefore considers that the share of supply test in section 23 of the Act is met. Thus, the CMA believes that it is or may be the case that arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation pursuant to section 23(2) of the Act.

Product frame of reference

18. The CMA considers that market definition provides a framework for assessing the competitive effects of the merger and involves an element of judgement. The boundaries of the market do not determine the outcome of the analysis of the competitive effects of the merger, as it is recognised that there can be constraints on merging parties from outside the relevant market, segmentation

¹ Cirrus's Merger Notice of 11 June 2014 submitted to the CMA (the **Merger Notice**).

within the relevant market, or other ways in which some constraints are more important than others.²

19. The CMA's approach to market definition is to begin with the overlapping products of the Parties, taking this as the narrowest plausible candidate product market and then to see if this can be widened on the basis of demand-side substitution.³
20. The Parties overlap in the development and supply of CODEC semi-conductors.⁴ Cirrus submits that the transaction positions the merged group to be a global leader in audio signal processing across the entire audio signal chain with a portfolio of analogue-to-digital conversion (ADC),⁵ digital-to-analogue conversion (DAC), CODEC (which combines ADC and DAC and sometimes digital signal processing), as well as amplifier and micro-electro-mechanical system (MEMS) microphones.⁶
21. Audio semiconductors have a specific function compared to other semiconductors. There are different types of audio semiconductors and many different ways in which candidate product frames of reference can be segmented. They may differ as to whether they are standard or bespoke for a particular platform or device manufacturer and any other formalisation, level of integration with other components of the device and functionalities among other distinctive features.
22. Semiconductors can be designed and manufactured on an application-standard basis or can be designed for a specific customer or platform. In STM/NXP/JV, the European Commission (the Commission) noted that:

[a] further distinction can also be made between standalone circuits (**standalone semiconductor**) and circuits sold as a kit, where the semiconductor is not integrated to the chip [.../...] [but] at the system solution level and will include other circuits performing different functions (**integrated semiconductor**) realized in separate chips in often different technologies.⁷

² [Merger Assessment Guidelines](#), a joint publication of the Competition Commission and the Office of Fair Trading, September 2010 (**Merger Assessment Guidelines**), paragraph 5.2.2.

³ [Merger Assessment Guidelines](#), paragraphs 5.26 ff.

⁴ Both Parties are 'fabless'. This means that they, as most other designers and suppliers of semi-conductors, outsource the production of the products to third party manufacturers.

⁵ Analogue circuits are used to process real-world signal using electronic voltage patterns.

⁶ Merger Notice, paragraph 2.6.

⁷ Commission's decision of 27 June 2008 on case COMP/M.5173 – STM/NXP/JV, paragraph 13.

In other decisions, the Commission has also segmented the market either based on functions and features of semiconductors or based on end-use applications.

23. Digital baseband devices are employed to encode and decode voice data signals in and out of the transmission protocol,⁸ implementing the encoding technique supported by the device. Therefore, a segmentation following these different technologies could also be considered. Wolfson and Cirrus's audio semiconductors are often used in smart devices as a stand-alone (**DSP**) or, when both products are standard as opposed to bespoke or custom specific (**ASIC**), with an embedded DSP.
24. The configuration of the semiconductor can also set a different frame of reference. Some semiconductor manufacturers do not implement DSP Integrated circuits (**DSP ICs**) in digital baseband (**DBB**) chips, but rather use digital logic devices. The frame of reference can therefore be further segmented depending on the type of devices actually equipped on the chipsets.⁹
25. Cirrus submits that the narrowest reasonable market definition is 'low power audio semiconductors'. Low-power audio semiconductors are used in devices requiring low-power, primarily handheld smart devices to convert analogue sounds into digital format and vice versa.
26. Several third parties told the CMA that the frame of reference should be limited to the development and supply of audio solutions, including 'discrete' CODEC semiconductors (that is, audio CODEC functionality that is contained on fully autonomous semiconductors) and amplifiers for the high-end segment of electronic devices such as smartphones and tablets. [END NOTE.]^{iv} Both Parties offer low-power audio CODEC semiconductors that use oversampling to achieve high definition (HD) audio. A third party told the CMA that the options for the 'high-end' segment are not affordable for the mass market and therefore not seen as reasonably interchangeable.
27. In contrast, the audio solutions developed and supplied by some other integrated semiconductor suppliers [END NOTE 5]^v are not used in high-end performance devices. This would differentiate the 'high-end' segment and the

⁸ System processor is the chipset capable of performing multiple specific functions by receiving input and providing appropriate output. See also Merger Notice, footnote 12.

⁹ In its STM/NXP/JV decision, the Commission noted that, for example (in 2008), Texas Instruments and Qualcomm manufacture digital baseband chips for wireless handsets. Texas Instruments' devices are considered as DSPs while Qualcomm's are considered special purpose logic devices. The difference rests on how the devices are designed. p5, footnote 7.

rest of the frame of reference for the development and supply of low-power CODEC semiconductors.

28. As noted above, the frame of reference is not an end in itself. It merely provides a tool to determine the impact on competition of the Merger.
29. For the purpose of this assessment, the exact product frame of reference in relation to CODEC and Amplifier semiconductors can be left open as the CMA has not identified concerns under any plausible definition. The competitive assessment will focus on the level of closeness of competition between the Parties, including how the Merger might affect the Parties' incentives to innovate. It will also examine any impact on the constraint each Party imposes on other parameters of competition such as prices, if they are reviewable over the lifetime of the contracts. The CMA has examined the Merger on the basis of the supply of semiconductors delivering CODEC functionality and has focused particularly on applications requiring low power and a high level of performance that may be unsuitable for CODECs built into integrated circuits. [END NOTE 6.]^{vi}

Geographic frame of reference

30. Cirrus submits that the market for the supply of semiconductors is worldwide. The Parties develop and supply semiconductors across the world.¹⁰ The Parties' customers who design and supply smart devices also operate worldwide. Those customers agree with Cirrus's submission that R&D and procurement for the products in question is global.
31. The evidence before the CMA points to a global frame of reference for the development and supply of CODEC and Amplifier semiconductors and amplifiers.¹¹ Suppliers and many customers operate worldwide with global prices negotiated with these customers. The same applies to narrower segments relating to CODEC and Amplifier semiconductors. For the purposes of this assessment, the exact geographic frame of reference in relation to CODEC and Amplifier semiconductors can be left open. However, the geographic frames of reference in those markets appears to be worldwide.

¹⁰ As noted above (footnote 4), the Parties are both 'fabless' firms. They do not have their own production facilities and outsource production to third party manufacturers.

¹¹ This is consistent with the approach adopted by the Commission. In its decisions related to semiconductors, it has considered those markets as worldwide, although the precise scope of the geographic market has been left open. See, for example, Commission decision of 10 August 2007 on Case No *COMP/M.4751- STM/INTEL/JV*, paragraph 22; Commission decision of 27 June 2008 on Case No *COMP/M.5173- STM/NXP/JV*, paragraphs 25–28.

32. Without concluding on the exact frame of reference, for the purposes of this assessment two relevant frames of reference have been considered:
- 32.1 the global frame of reference for the development and supply of CODEC semiconductors for the high-end segment of electronic devices; and
 - 32.2 the global frame of reference for the development and supply of Amplifier semiconductors for the high-end segment of electronic devices.

Counterfactual

33. The CMA assesses the Merger's impact relative to the situation that would prevail absent the merger (that is, the counterfactual).¹² In this case, Cirrus submits that the appropriate counterfactual is the existing conditions of competition and the CMA has not found any evidence to depart from this. Therefore, the CMA considers the prevailing conditions of competition to be the relevant counterfactual.

Competitive assessment

Horizontal unilateral effects

34. Horizontal unilateral effects can arise where a firm merges with a competitor that previously provided a competitive constraint, and are more likely where the merger firms' products compete closely.¹³
35. The Parties are active in technology markets which evolve rapidly and involve innovation, R&D and integration with the electronic devices developed by the Parties' customers. Revenue data, other internal documents and third parties' views confirmed that the lack of success of a particular electronic device model incorporating the Parties' audio semiconductors have had a knock-down effect on the Parties' share of supply. At present, that revenue data shows that each of the Parties has a main customer representing the majority of its revenues. Also, during the due diligence of this Merger Cirrus noted that while Wolfson's initial expectations in relation to [a model]'s 3G compatible demand was to reach around [X]% of the 3G segment, its estimate of the actual demand is [X]%, due to an unexpectedly high demand for a 4G

¹² [Merger Assessment Guidelines](#), paragraph 4.3ff.

¹³ [Merger Assessment Guidelines](#), paragraph 5.4ff.

compatible [model] (also [✂]) which incorporated semiconductors supplied by Qualcomm.¹⁴ [END NOTE 7.]^{vii}

36. Cirrus submits that audio semiconductor customers will choose their audio suppliers for a particular product during the design phase of that product (such as a new smartphone). It also submits that when deciding to approach a customer or to respond to a customer request, the Parties generally make a judgement based on factors such as the strength of their relationship with that customer, and how closely their solution fits the customer's specifications.¹⁵ This has been confirmed by customers and other competitors.
37. Some customers noted that they approach possible providers because they become aware of the technical capabilities and areas of expertise of those companies. Based on the evidence available to the CMA, customers' main decision criteria ranked by priority are: (i) technical solutions on offer (in terms of implementation); (ii) relationship with supplier to integrate semiconductors; (iii) reliability; and (iv) price. Price was not listed as a primary concern by the largest manufacturers of smartphones and tablets. However, a number of competing semiconductor manufacturers told the CMA that other customers (including smart device manufacturers operating outside the top-end segment) are substantially more price sensitive.
38. The CMA's assessment has focused on the impact of this Merger on the competitive process and dynamics described by the Parties, competitors and customers. The CMA understands that at present the Parties and their competitors are competing to develop (often together with their customers) audio CODEC and Amplifier semiconductors for devices which are expected to be launched commercially in 2016/17.
39. The smart devices currently sold by the Parties' customers incorporate audio semiconductors developed around two years ago. While most customers are not subject to any minimum purchasing obligation, the CMA cannot dismiss that some competition remains in relation these mature products, including some price negotiation as prices can be annually reviewed in some cases.

Shares of supply

40. Evidence on estimated shares of supply is limited. The CMA has estimated that the Parties' combined share of supply in the development and supply of CODEC semiconductors is around [45–55]% (with an increment of [10–20] to

¹⁴ Merger Notice, Annex 8A, Document No 3, slide 11.

¹⁵ Merger Notice, paragraph 14.2.

[10–20]%).¹⁶ [END NOTE 8.]^{viii} This relatively high market share appears to reflect the recent commercial success of the Parties' main customers (Samsung and Apple) in the sale of electronic devices incorporating the Parties' products. Other manufacturers of these devices (such as Nokia or HTC) currently purchase the overlapping semiconductors from other suppliers such as Texas Instruments and Yamaha.

41. Looking at an even narrower sub-segment comprising smart CODEC semiconductors [END NOTE 9]^{ix} with some DSP functionalities often employed at the high-end segment, the CMA notes that Wolfson's internal documents (in [REDACTED]) estimated that the Parties and Qualcomm together account for approximately [70–80]% of the shipped volume of CODEC semiconductors for all smart CODEC semiconductors. In this narrower sub-segment, the Parties' combined share of supply would be just over [30–40]% (with an increment of [10–20]%) with Qualcomm having a share of supply of [30–40]%. Other unidentified suppliers hold the remaining [10–20]%. Qualcomm appears to have had continuing success in relation to both 3G and 4G compatible devices while Wolfson appears to have been less successful. [END NOTE 10.]^x
42. Cirrus submits that the Parties' estimated combined share of supply in the development and supply of stand-alone¹⁷ CODEC semiconductors in 2013 was [45–55]% (with an increment of [10–20]%) based on shipped volumes.¹⁸ This shows that the combined share of supply of the Parties will be the largest followed by Qualcomm with [0–10]% and with substantially lower shares of supply, RealTek ([0–10]%), Texas Instruments ([0–10]%) and Yamaha ([0–10]%).
43. In a wider frame of reference, when including integrated circuits with CODEC functionality with the CODEC semiconductors, the Parties' estimated combined share of supply in 2013 was [20–30]% (with an increment of [0–10]%), with Qualcomm accounting for [25–35]%, and other companies such as Broadcom, Samsung, Yamaha, Media Tek, Texas Instruments and Real Tek holding substantially smaller shares of supply between approximately [less than 5]%.¹⁹ [END NOTE 11.]^{xi}

¹⁶ These shares of supply do not include sales of the more basic integrated circuits that are sometimes used for audio semiconductors as well as simpler portable devices such as ebooks and are thus more likely to represent the 'high-end' frame of reference.

¹⁷ These shares of supply do not include that part of the high-end market that combines a focus on a CODEC semiconductors with additional functionality such as DSP. The high-end segment of the frame of reference appears to be moving towards these enhanced 'smart' CODEC semiconductor that the Parties and others are developing.

¹⁸ Merger Notice, Table 15.3.

¹⁹ These estimates are based on shipped volumes. Merger Notice, Table 15.3.

44. The CMA considers that the value of static share of supply data in these types of innovative markets is limited. However, a couple of preliminary conclusions can be made from the above data. First, there are several competitors with a material presence in some of the narrowest frames of reference where the Parties are particularly active, including the supply of stand-alone CODEC and Amplifiers semiconductors for the high-end segment. Second, these competitors appear to have sufficient expertise to develop and supply products for the high-end segment, even if their current estimated share of supply is significantly lower. This is assessed further below in examining the level of closeness of competition between the Parties and relative to competitors.

Closeness of competition

45. As indicated in paragraph 4 above, a merger of competitors may give rise to unilateral effects, potentially preventing customers from playing previously competing sellers off against each other in negotiations, thereby enhancing the ability of the merged entity to raise prices or reduce quality. In this case, any reduction in quality would likely relate to the technical development of the audio semiconductors. The degree to which this may happen depends on the extent to which the Parties represent a close alternative to each other. The CMA therefore considers the extent of the closeness of competition between the Parties.
46. As part of its assessment, the CMA has examined the Parties' internal documents, including in relation to business plans on product or research planning and transaction documents as well as bidding data. Historically, in terms of head-to-head competition over past contracts, the evidence indicates that the Parties did not compete against each other in many instances or were typically not each other's closest competitors. The CMA has evidence of [REDACTED] instances where both Cirrus and Wolfson have been accredited to supply a customer in relation to the same electronic device.²⁰ [END NOTE 12.]^{xii} At present, there appear to be no contracts where products from both Parties are approved to be incorporated in the foreseeable future in the same model of device. [END NOTE 13.]^{xiii}
47. An overview of the Parties' activities shows that each of them is a main supplier for the two current leading smartphones and tablet manufacturers in the high-end segment of the mobile device market.²¹

²⁰ In 2005 and 2006, they [REDACTED].

²¹ Cirrus is the main supplier of the current Apple smartphone models; and Wolfson is significant in many of the current Samsung smartphone models.

48. The CMA found in its market testing that some of the customers who have been working closely with the Parties support the development of competing products some way into the future, often three or four years. For this reason, it focuses its assessment on future opportunities rather than mature markets although the CMA considers that evidence of recent competition between the parties is probative in this regard.

Bidding/contract data

49. As to the most recent bidding/contract data, Cirrus's internal documents indicate that out of [X] CODEC semiconductor contract opportunities over the last three years, Cirrus won [X] contracts. [X] of these were uncontested bids to supply [X]. Out of the remaining [X] (of the [X] contracts won by Cirrus), Wolfson competed in [X], Texas Instruments in [X], Qualcomm in [X] and other companies such as Audience, Maxim, Mediatek, ESS, AKM and Realtek competed at least [X].²²
50. The CMA has focused its analysis on those bids/contract opportunities related to future devices incorporating stand-alone CODEC semiconductors. Out of [X] instances, Wolfson is listed as participating in [X], Texas Instruments in [X], Audience in [X] and Qualcomm in [X] instances. The CMA has reviewed details of these [X] instances and notes that there are at least [X] other companies participating in each case where Wolfson is present.
51. Wolfson supplied data on [X] contract opportunities related to customers and/or platform specifications for the last two years related to CODEC semiconductors. The data shows Qualcomm winning [X] times, Cirrus [X] and Wolfson [X] times. Other suppliers listed or winning some of these contract opportunities include Texas Instruments, Audience and Maxim.
52. In assessing the market position of the Parties by the encoding technique supported by the device, the CMA notes that Wolfson supplies the CODEC semiconductors for those Samsung S4 models compatible with 3G technology and Qualcomm supplies audio semiconductors for the LTE 4G version of the same model. The same split appears to occur in relation to the Samsung S5 model. Furthermore, the CMA understands that Wolfson faced competition from [X] and [X] when bidding/negotiating to use its CODEC semiconductor in the [X] models.

²² Mergers Notice, Annexes 9 and 11.

Customer switching

53. Data on customers' choice of audio semiconductors for smartphone models produced in the last couple of years shows that customers choose different suppliers for different models and types of semiconductor. In the case of all smartphone manufacturers (except Apple), different audio semiconductors are manufactured by different suppliers. These include Cirrus, Qualcomm, Wolfson, MediaTek and Broadcom. In the case of Samsung, Wolfson and Qualcomm supply different versions of the same model with CODEC and Amplifier semiconductors.
54. The above means that even the same phone from an end-user perspective has slightly different components (semiconductors, in this case). Apple told the CMA that it has a long-standing commercial relationship with Cirrus but also noted that earlier Apple iPhone models have incorporated other manufacturers' audio semiconductors and that [REDACTED].
55. Revenue data submitted by the Parties on its most popular products show significant fluctuations triggered by the commercial success of the electronic device models in which those audio semiconductors are installed.²³
56. As to customers producing electronic devices outside the high-end segment, the evidence before the CMA suggests that there is a greater choice of suppliers and thus enhanced negotiating strength. As long as a sufficient number of firms have the R&D capabilities to develop suitable products for the high-end segment, this will protect all purchasers by creating greater competition to supply models when they enter the mass market or are standardised. Therefore the CMA believes that there is no risk to customers operating outside the high-end segment which have less demanding technical requirements or who are not involved in designing bespoke products with these firms.

Parties' internal documents

57. Some internal documents of the Parties suggest that they both perceive [REDACTED] as [REDACTED] threat and that with this Merger, Cirrus expects to be able to [REDACTED]'s market position and [REDACTED].[END NOTE 14.]^{xiv} Other firms are mentioned in internal documents (as well as the other merging party) but [REDACTED].²⁴
58. The Parties have supplied the CMA with some internal assessments of the competition they perceive to be facing in these frames of reference. Cirrus

²³ Merger Notice, Annex 7B (ii).

²⁴ Merger Notice, Annex 9(i), Document No 5; and Annex 9B, Document No 1.

provided some analysis related to some specific audio semiconductor/ CODEC products when assessing its likely future competitiveness at the outset of development and confirming spending. The evidence above and some internal documents indicate that [REDACTED] as well as [REDACTED] and [REDACTED] will continue to exert a competitive constraint on the merged entity and will have the capacity to develop new products (either individually or together with device manufacturers or other technology companies).

59. A Cirrus internal document listed Wolfson²⁵ as a competitive threat. It also listed [REDACTED]. It does not conclude on the level of competitive threat imposed by [REDACTED] and notes that [REDACTED].²⁶
60. Wolfson's internal competition review (dated December 2013) lists Wolfson, Cirrus and [REDACTED] as the largest providers of comparable audio semiconductor CODEC products and [REDACTED] as a 'high threat'.²⁷ This suggests that beyond the size of the estimated market share at the time of this competition review, Wolfson stresses that [REDACTED] appear to be growing at a faster pace than the Parties or expect to be facing other firms when competing in future design competitions. Also, Wolfson states that 'Cirrus [REDACTED]' and only ranks them as a medium threat with its market share falling from the leading 2012 position to an estimated [20–30]% forecast for 2014.
61. The CMA does therefore not believe that the Parties' internal documents show that they are uniquely each other's closest competitors or that other alternative suppliers do not provide a similar (if not stronger) relative competitive constraint on each of the Parties.

Customer evidence

62. The majority of each Party's customers who responded to the CMA's information request did not consider the Parties to be competing more closely with each other than with other parties. Cirrus's main customers noted their long-term commercial relationship and submitted that Wolfson was not closer to Cirrus than other competitors. Those customers listed several other firms and noted that Wolfson was not particularly close to Cirrus.
63. Wolfson's customers listed other alternative suppliers as equal to or closer competitors than Cirrus. These included [REDACTED], [REDACTED] and [REDACTED] as well as [REDACTED].
64. Those customers procuring or who have procured in the past from both Parties told the CMA that they had suitable alternatives including firms with

²⁵ Its audio [REDACTED] and its [REDACTED]. Merger Notice, Annex 9A (i), Document No.5, December 2013.

²⁶ Merger Notice, Annex 9A (i), Document No. 5.

²⁷ Merger Notice, Annex 9B, Document No.1.

advanced products such as NXP (and others mentioned above). Firms with more standardised requirements (including some in the UK) listed more alternatives including several based in China.

65. The above findings are consistent with other evidence submitted by Cirrus on bidding/contract data and on the types of products both Parties have in their development pipeline.²⁸ Both Parties are trying to develop [X] but the CMA understands that [X] requirements. The CMA considers that overall, evidence from customers supports the view that the Parties do not compete uniquely closely. Other suppliers with sufficient proved technical capabilities represents equal (or even higher) constraint on each of the Parties.
66. The CMA has been told by companies competing with the Parties that they are actively developing new products and are being accredited as possible future suppliers by manufacturers of electronic devices. This is the case even when those competitors are not currently well established in the market or have low current sales. The future of competition in this market appears to be developing into a wider competitive set than a static view of the current market shares might suggest.

Conclusion on horizontal unilateral effects

67. Given the evidence above, the CMA found that the Merger does not give rise to a realistic prospect of a substantial lessening of competition as a result of horizontal unilateral effects in relation to the supply of CODEC and/or Amplifier semiconductors.

Barriers to entry and expansion

68. Entry, or expansion of existing firms, can mitigate the initial effect of the acquisition on competition, and in some cases may mean that there is no substantial lessening of competition. In assessing whether entry or expansion might prevent a substantial lessening of competition, the CMA considers whether such entry or expansion would be timely, likely and sufficient. In terms of timeliness, the CMA's guidelines indicate that the CMA will look for entry to occur within two years.²⁹
69. However, the CMA has not had to conclude on the sufficiency of entry or expansion as no competition concerns arise on any basis.

²⁸ See paragraphs 46 and 49ff above.

²⁹ [Merger Assessment Guidelines](#), paragraph 5.8.1 ff.

Third party views

70. The CMA contacted over 20 customers and competitors.³⁰ These contacts focused on the main customers who represent over [70–80]% of the Parties' revenues.
71. Those third parties included significant customers and competitors both in the UK and internationally and received responses from several leading international customers (who were supportive of the Merger) as well as UK distributors and competitors in response to its market testing. No customers raised concerns regarding, while one competitor was concerned and others were unsure of the impact of the transaction on them.
72. The main complaint focused on the effect of the Merger on CODEC semiconductors for a high-end segment of electronic devices. This complaint was refuted by the main customers that are active in this segment. The CMA investigation as regards market share information and the selection of bidding data was designed to take into account any possible impact the Merger may have on competition, including on a high-end segment.
73. Third party comments have been taken into account where appropriate in the competitive assessment above.

³⁰ In addition, it issued an invitation to comment to third parties which could be affected by this merger on 16 June 2014.

Decision

74. Consequently, the CMA does not believe that it is or may be the case that the Merger may be expected to result in a substantial lessening of competition within a market or markets in the United Kingdom.
75. This Merger will therefore not be referred under section 33(1) of the Act.

Nelson Jung
Director of Mergers
Competition and Markets Authority
8 August 2014

ⁱ END NOTE 1 - Paragraph 3 - The CMA stresses that the defined term CODEC semiconductor in this decision includes 'low power' devices only. This applies throughout this decision unless otherwise stated.

ⁱⁱ END NOTE 2 - Paragraph 7- The CMA notes that there is a typographical mistake in the original decision. It received concerns from one competitor rather than two as stated in the original decision. This is noted in paragraph 71 which was accurate at the time of announcement.

ⁱⁱⁱ END NOTE 3 - Paragraph 13 - Cirrus has noted that this employee was an administrative assistant in Cirrus's sales group.

^{iv} END NOTE 4 - Paragraph 26 - The CMA clarifies that the third parties referred to in this paragraph submitted that the frame of reference should be limited to the development and supply of audio solutions for 'discrete CODEC semiconductors' and separately for Amplifier semiconductors. Also, that further separate frames of reference for the above products should be considered for the high-end segment of electronic devices such as smartphones and tablets.

^v END NOTE 5 - Paragraph 27 - The CMA acknowledges that the Parties focus on stand-alone chips. They are not integrated semiconductor suppliers.

^{vi} END NOTE 6 - Paragraph 29 - The CMA has also considered the potential effect of the Merger on the market for Amplifier semiconductors for low-power devices (low-power Amplifier semiconductors).

^{vii} END NOTE 7 - Paragraph 35 - The CMA clarifies that the reference to the [model] is to the [version of this model], of which the 3G compatible model accounted for a significantly smaller share of total demand for the [model] than expected due to the unexpectedly high demand for the 4G compatible model of the [model].

^{viii} END NOTE 8 - Paragraph 40 - The CMA notes that its estimates are based on data contained in Chart 4.2 and Chart 4.3 of the SensiAn Research, SensiAn Research Ltd, March 2014. Merger Notice, Annex 9 Part A(i).

^{ix} END NOTE 9 - Paragraph 41 - In this paragraph, 'smart CODEC semiconductors' include stand-alone CODECs and 'audio-hub' semiconductors (that is CODECS with some DSP functionality).

^x END NOTE 10 - Paragraph 41 - The CMA clarifies that Cirrus had submitted that the remaining [10–20]% is held by Yamaha ([0–10]%), Texas Instruments ([0–10]%) and Maxim ([0–10]%), with a group of other unidentified suppliers making up the remaining [0–10]%.

^{xi} END NOTE 11 - Paragraph 43 - In this paragraph, the term CODEC semiconductors include low-power CODEC semiconductors used in devices targeting the ‘low end’ as well as the ‘high end’ of the market which is the focus of paragraphs 40, 41 and 42 of this decision. As to footnote 20, the CMA understands that the estimates of shipped volumes stated in Table 15.3 of the Merger Notice are based on research data produced by a consultant third party and adjusted by Cirrus with internal data related to the Parties only. This approach results in a more cautious assessment as the Parties’ figures are ‘scaled up’.

^{xii} END NOTE 12 - Paragraph 46 - The Parties had in fact told the CMA that there were [✂] instances, instead of [✂] as originally stated in the decision. This typographical error has been corrected.

^{xiii} END NOTE 13 - Paragraph 46 - The CMA understands that the Parties do not have any contracts in relation to which the ‘same component’ from both Parties will be featured in the same device in the foreseeable future.

^{xiv} END NOTE 14 - Paragraph 57 - The CMA states that the source of the second part of this statement is slide 2 of the Board presentation titled ‘CW’ contained in Merger Notice, Annex 8, Part A.

None of the amendments stated in these end notes has any material impact on the outcome of this case and thus, the outcome of this decision remains unchanged.