



EUROPEAN COMMISSION
DG Competition

Case M.11212 - QUALCOMM / AUTOTALKS

Only the English text is available and authentic.

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

Article 22
Date: 17/08/2023



EUROPEAN COMMISSION

Brussels, 17.8.2023
C(2023) 5706 final

PUBLIC VERSION

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 Where possible the information omitted has been replaced by ranges of figures or a general description.

Danish Competition and Consumer
Authority
Carl Jacobsens Vej 35
DK-2500 Valby
Denmark

Subject: **Case M.11212 – QUALCOMM / AUTOTALKS**
Request for referral by the Competition Authority of Denmark to the
Commission pursuant to Article 22(1) of Council Regulation (EC)
No. 139/2004¹ and Article 57 of the Agreement on the European
Economic Area²

Ref.: Letter of 25 July 2023 from the Danish Competition and Consumer
 Authority

Dear Sir or Madam,

1. INTRODUCTION

- (1) With the above-mentioned letter (the ‘Request to Join’), the Danish Competition and Consumer Authority (the ‘Danish Competition Authority’ or the ‘DCCA’) formally requests the European Commission (the ‘Commission’) to examine, in application of Article 22(3) of Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings (the ‘EUMR’), the concentration whereby Qualcomm Incorporated (‘Qualcomm’, US) proposes to acquire sole control of

¹ OJ L 24, 29.1.2004, p. 1 (the ‘EUMR’). With effect from 1 December 2009, the Treaty on the Functioning of the European Union (‘TFEU’) has introduced certain changes, 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.

² OJ L 1, 3.1.1994, p.3 (the ‘EEA Agreement’).

Autotalks Ltd (‘Autotalks’, Israel) (the ‘Transaction’). Qualcomm together with Autotalks are referred to as the ‘Parties’. In your letter of 25 July 2023 you have expressed your wish, pursuant to Article 22(2) of the Merger Regulation, to join the initial request made by the competition authorities of Belgium, France, Italy, the Netherlands, Poland, Spain and Sweden on 12 July 2023, requesting to refer the Transaction to the Commission (the ‘Referral Requests’).

- (2) Pursuant to Article 22(1) EUMR, one or more Member States may request the Commission to examine any concentrations as defined in Article 3 EUMR that does not have Union dimension within the meaning of Article 1 of the Merger Regulation but affects trade between Member States and threatens to significantly affect competition within the territory of the Member State or States making the request.
- (3) It follows from the wording, legislative history and purpose of Article 22 EUMR that this provision is applicable to all concentrations as defined in Article 3 EUMR and not only those that meet the jurisdictional criteria of the national merger control laws of the Member States. This has been confirmed by the General Court in the *Illumina* case.³
- (4) According to Article 22(1) EUMR, a Member State’s request shall be made within 15 working days of the date on which the concentration was notified. If no notification is required, a request shall be submitted within 15 working days of the date on which the concentration was otherwise ‘made known’ to the Member State concerned, which implies the active transmission to the Member State concerned of sufficient information to make a preliminary assessment as to the existence of the criteria for a possible referral pursuant to Article 22(1) EUMR.
- (5) Once it receives a referral request from a Member State, the Commission informs without delay the other Member States. Pursuant to Article 22(2) of the Merger Regulation, any other Member State may join the initial request within a period of 15 working days of being informed by the Commission of the initial request. Pursuant to Article 6(3) of Protocol 24 to the EEA Agreement, any EFTA State to which the EEA Agreement applies may join the request within a period of 15 working days from the day on which the Commission informed the EFTA Surveillance Authority of the initial request.
- (6) The Commission shall decide whether to examine the concentration within 10 working days after the expiry of the 15 working days period during which the other Member States have the right to join the initial request.
- (7) In the present case, the Parties did not notify the Transaction in Denmark, or in another Member State.⁴
- (8) After obtaining information on the Transaction from third parties and public sources, the Commission sent, on 23 June 2023, a letter pursuant to Article 22(5) EUMR to the Member States, informing them of the Transaction (the ‘Article 22(5)

³ Judgment of the General Court of 13 July 2022 *Illumina v Commission*, T-227/21, EU:T:2022:447.

⁴ The Commission notes that the Transaction was notified before the German competition authority on 2 May 2023 and subsequently withdrawn on 19 May 2023. See case number B7-50/23, available at: https://www.bundeskartellamt.de/DE/Fusionskontrolle/LaufendeVerfahren/laufendeverfahren_node.html;jsessionid=22EFEC09296B5C352C58AA935F74E7BF.1_cid362 (last accessed on 19 June 2023).

letter). By this Article 22(5) letter the Commission explained why in its preliminary view the Transaction appeared to fulfil the criteria of Article 22 EUMR, and invited Member States to make a referral request pursuant to Article 22(1) EUMR regarding the Transaction.

- (9) The Commission sent a first request for information (“RFI”) on 14 June 2023 to Qualcomm. Qualcomm provided partial responses to this RFI on 21 June 2023. The Commission sent another RFI to Qualcomm on 14 July 2023 to which Qualcomm responded on 18 July 2023. On 14 July 2023, the Commission sent a RFI to Autotalks to which Autotalks responded on 18 July 2023. The Commission sent two other RFIs to Qualcomm and Autotalks respectively, on 20 July 2023 to which the Parties responded on 2 August 2023, after having requested and obtained from the Commission a one-week extension.
- (10) On 12 July 2023, seven Member States, namely Belgium, Italy, France, Netherlands, Poland, Spain and Sweden sent Referral Requests pursuant to Article 22(1) EUMR.
- (11) On 13 July 2023, in accordance with Article 22(2) first indent EUMR, the Commission informed (i) the competent authorities of all Member States and (ii) the EFTA Surveillance Authority, of the Referral Requests sent by the seven Member States.
- (12) Also on 13 July 2023, the Commission sent a letter to the Parties summarizing the contents of the Article 22(5) letter and informing them that Belgium, France, Italy, the Netherlands, Poland, Spain and Sweden had made requests for referral under Article 22 in relation to the Transaction. The Commission invited the Parties to submit their observations by 28 July 2023.
- (13) After the 13 July 2023 eight EEA countries requested to join the Referral Request (the ‘Requests to Join’).⁵ These are (in chronological order): Romania (by letter of 18 July 2023), Denmark (by letter of 25 July 2023), Finland (by letter of 26 July 2023), Luxembourg (by letter of 28 July 2023),⁶ Czechia (by letter of 31 July 2023), Portugal (by letter of 1 August 2023),⁷ Slovakia (by letter of 2 August 2023) and Ireland (by letter of 3 August 2023).⁸ On 2 August 2023, the Commission informed the Parties of the requests lodged by Romania, Denmark, Finland, Luxembourg, Portugal, Czechia and Slovakia to join the Referral Request. On 3 August 2023, the Commission informed the Parties of the request lodged by Ireland to join the Referral Request.
- (14) In the evening of 28 July 2023, the Parties provided their observations on the Article 22(5) letter. Together with their observations, the Parties submitted a request to access documents related to the Article 22(5) letter. On 31 July and 1 August 2023, the Commission responded to the Parties’ request by providing access to documents related to the Article 22(5) letter and, on 2 August and 3 August 2023, to further documents. Specifically, the Commission provided non-

⁵ Latvia, Bulgaria and Cyprus formally refused to join the Referral Request on 21 July 2023, 25 July 2023 and 26 July 2023 respectively.

⁶ The letter dated 27 July 2023, was received by the Commission on 28 July 2023.

⁷ The letter dated 26 July 2023, was received by the Commission on 1 August 2023.

⁸ All these requests were sent within a period of 15 working days after being informed by the Commission of the Referral Request (on 10 March 2021), thus within the time limit of Article 22(2), second indent, of the EUMR.

confidential versions of the Referral Requests, Requests to Join, other formal positions received from Member States,⁹ the Article 22(5) letter and substantive submissions from third parties.

- (15) On 1 August 2023, the Commission provided the Parties with another opportunity to make their views known, by 7 August 2023. The Parties requested an extension until 8 August 2023, which the Commission granted. The Parties submitted their views on 8 August 2023 and requested access to further documents from the Commission's file. On 10 August 2023, the Commission provided the Parties with one further document (the letter sent by the Commission on 13 July 2023 to the competent authorities of all Member States and to the EFTA Surveillance Authority).

2. THE PARTIES AND THE OPERATION

- (16) The Transaction consists in the proposed acquisition of Autotalks by Qualcomm.
- (17) Headquartered in the US, **Qualcomm** is a global US-based semiconductor supplier active, among other things, in the automotive sector where it notably offers various Vehicle-to-Everything ('V2X') solutions, and in particular cellular V2X ('C-V2X') solutions, which are designed to allow manned and driverless vehicles to communicate directly with each other and their surrounding environment, to improve road safety. Qualcomm's offering also includes various vertically or closely related products to V2X, such as (i) telematics chips, i.e. chips used for the tracking device installed or built inside the vehicle which helps transmit and store real-time data, and (ii) Radio Frequency Front End Module ('RF FEM') for automotive industry, which are integrated devices that amplify the Radio Frequency ('RF') signal, to increase the range distance, strength, and robustness of a link connection for among others C-V2X and non-cellular V2X systems.
- (18) Qualcomm's global turnover in 2022 was of approximately EUR 40 636 million¹⁰ while the sales of Qualcomm's Code-Division Multiple Access ('CDMA') Technologies' ('QCT')¹¹ to the automotive sector represented USD 1 372 million, which is an increase by approximately 29% from 2021 (USD 975 million).¹² In the EEA, Qualcomm achieved in 2022 approximately EUR 1 668 million. Qualcomm operates offices in several EEA countries, including in Austria, Belgium, Ireland, Finland, France, Germany Italy, Romania, Spain and Sweden.¹³
- (19) Founded in 2008, **Autotalks** is a fabless semiconductor company devoted to V2X communications for manned and autonomous vehicles. It offers dual mode chipsets with built-in support for both V2X communication technologies, C-V2X and

⁹ The Member States concerned all agreed for their Referral Requests, Requests to Join and other formal positions to be shared with the Parties.

¹⁰ Qualcomm's response of 21 June 2023 to the Commission's request for information dated 14 June 2023, question 11.

¹¹ Qualcomm's QTC division develops and supplies integrated circuits and system software based on 3G/4G/5G and other technologies for use in mobile devices, wireless networks, devices used in the internet of things (IoT), broadband gateway equipment, consumer electronic devices and automotive systems for telematics and infotainment.

¹² See Qualcomm's Form 10-k, page 43, available at <https://investor.qualcomm.com/financial-information/sec-filings/content/0000804328-22-000021/0000804328-22-000021.pdf> (last accessed on 19 June 2023).

¹³ See <https://www.qualcomm.com/company/facilities/offices> (last accessed on 19 June 2023).

Dedicated Short Range Communications (‘DSRC’) standards.¹⁴ In addition to its offering to automotive customers, Autotalks also provides micro mobility V2X safety device (‘ZooZ’) for bicycles.¹⁵ In 2022, Autotalks achieved a global turnover of approximately EUR [0-10] million.¹⁶ Autotalks’ headquarters are in Israel with offices in Germany and France.¹⁷

- (20) On 8 May 2023, Qualcomm announced that its subsidiary, Qualcomm Technologies, Inc., has entered into a definitive agreement to acquire Autotalks. Qualcomm further explained that through the acquisition, the production-ready, dual mode, Autotalks standalone safety solutions will be incorporated into Qualcomm Technologies’ expanding Snapdragon Digital Chassis product portfolio.¹⁸ As a result of the definitive agreement to acquire Autotalks, Qualcomm would acquire sole control over Autotalks. The Transaction constitutes a concentration within the meaning of Article 3(1)(b) EUMR.
- (21) The Transaction does not have a Union dimension pursuant to Article 1 of the EUMR. As mentioned, Autotalks’ 2022 worldwide turnover was of approximately EUR [0-10] million.¹⁹ The Transaction thus does not meet the thresholds in Article 1(2) EUMR, which requires that each of at least two of the undertakings concerned generates at least EUR 250 million revenue in the EEA. The Transaction does not meet the thresholds in Article 1(3) EUMR either, which requires that in each of at least three Member States the aggregate turnover of each of at least two of the undertakings concerned is more than EUR 25 million. Given that Autotalks’ turnover does not meet this threshold in any Member State, the second set of thresholds set out in Article 1(3) EUMR are not met.

3. ASSESSMENT OF THE REFERRAL REQUEST

- (22) In order for a referral to be made by a Member State, one procedural (see Section 3.1) and two substantive conditions (see Sections 3.2.4 and 3.2.5) must be fulfilled pursuant to Article 22(1) of the Merger Regulation.
- (23) Once these conditions are fulfilled, the Commission has discretion whether to accept or reject the referral request. The Commission shall exercise its discretion based on the guidance of its relevant Notice on Case Referral in respect of concentrations (the ‘Referral Notice’)²⁰ and the Guidance on the Application of Article 22 (the ‘Article 22 Guidance’)²¹.

¹⁴ See <https://auto-talks.com/technology/global-solution/> (last accessed on 19 June 2023).

¹⁵ See <https://auto-talks.com/technology/global-solution/> (last accessed on 19 June 2023).

¹⁶ Qualcomm’s response of 21 June 2023 to the Commission’s request for information dated 14 June 2023, question 11.

¹⁷ Installed on the handlebar, Autotalks’ ZooZ V2X device gets drivers to notice the cyclists and vice versa. See <https://auto-talks.com/products/zooz/> (last accessed on 19 June 2023).

¹⁸ See <https://www.qualcomm.com/news/releases/2023/05/qualcomm-to-acquire-autotalks> (last accessed on 9 August 2023).

¹⁹ Qualcomm’s response of 21 June 2023 to the Commission’s request for information dated 14 June 2023, question 11.

²⁰ Commission Notice on Case Referral in respect of Concentrations (the ‘Referral Notice’), paragraphs 42-44 (OJ C 56, 5.3.2005, p.2).

²¹ Commission Guidance on the application of the referral mechanism set out in Article 22 of the Merger Regulation to certain categories of cases, 26 March 2021, COM(2021)1959 (‘Article 22 Guidance’).

3.1. Procedural pre-conditions

- (24) For the reasons detailed in this Section, the Commission considers that the Referral Requests by Belgium, Italy, France, Netherlands, Poland, Spain and Sweden were made within the time limit set out in Article 22(1), second indent, of the EUMR, since they were made within 15 working days of the date on which the concentration was made known to them.
- (25) Article 22(1) requires that: *‘the referral shall be made at most within 15 working days of the date on which the concentration was notified, or if no notification is required, otherwise made known to the Member State concerned’*.
- (26) In addition, Article 22(2) provides that the Commission shall inform the competent authorities of the other Member States without delay, when it receives a referral request from a Member State. Article 22(2) further states that any other Member State may join the initial request within a period of 15 working days of being informed by the Commission of the initial request.
- (27) As set out in the Referral Notice, the notion of *‘made known’* should be interpreted as implying the transmission of *‘sufficient information to make a preliminary assessment as to the existence of the criteria for the making of a referral request pursuant to Article 22’*.²²
- (28) The General Court confirmed this position in *Illumina/Grail* where it held that *‘the concept of ‘made known to the Member State concerned’, as set out in the second subparagraph of Article 22(1) of that regulation [EUMR], must be interpreted as meaning that it requires the relevant information to be actively transmitted to that Member State, enabling it to assess, in a preliminary manner, whether the conditions for a referral request under that article have been satisfied. Consequently, according to that interpretation, the period of 15 working days laid down in that provision starts to run, where notification of the concentration is not required, from the time when that information was transmitted’*.²³
- (29) In the present case, the Transaction was made known to Belgium, Italy, France, Netherlands, Poland, Spain and Sweden at the earliest on 23 June 2023, when the Commission sent to all Member States, including these seven Member States, an Article 22(5) letter describing the Transaction and explaining why, in the Commission’s preliminary view, this Transaction fulfils the legal criteria of Article 22 EUMR and it would be appropriate for the Transaction to be referred to the Commission.
- (30) The letter sent by the Commission under Article 22(5) EUMR to the Member States was based on publicly available information as well as information obtained from a variety of sources that were not immediately available to the competition authorities of Belgium, Italy, France, Netherlands, Poland, Spain and Sweden, as they are largely not public (for example, the Parties’ internal documents and information submitted by market participants). The information was organised and brought to the attention of the Member States in a way that allowed them to carry out a preliminary assessment of the substantive conditions of Article 22. There is a

²² Referral Notice, footnote 43.

²³ Judgment of the General Court of 13 July 2022 *Illumina v Commission*, T-227/21, EU:T:2022:447, paras 104 and 211.

substantive difference in the quality and scope of the information presented by the Commission in the Article 22(5) letter and what could be deduced from the press release announcing the Transaction,²⁴ which was referred to in footnote 2 of the Article 22(5) letter. It was only the compilation of all the publicly available information by the Commission in addition to the feedback from the Parties as well as market participants that did allow the Transaction to be “made known” to Belgium, Italy, France, Netherlands, Poland, Spain and Sweden within the meaning of Article 22 EUMR.

- (31) Since the Transaction was made known to the competition authorities of Belgium, Italy, France, Netherlands, Poland, Spain and Sweden on 23 June 2023 at the earliest, i.e., when they received the Article 22(5) letter from the Commission, and the competition authorities of Belgium, Italy, France, Netherlands, Poland, Spain and Sweden sent the Referral Requests on 12 July 2023, such Referral Requests were made 13 working days from the date the Transaction was made known to these competition authorities. Therefore, the Referral Requests were made within the time limit laid down in Article 22(1), second indent, of the EUMR.
- (32) Since the Commission informed the DCCA on 13 July 2023 of the Referral Requests submitted by Belgium, Italy, France, Netherlands, Poland, Spain and Sweden, and the DCCA sent its Request to Join on 25 July 2023, such Request to Join was made 7 working days of being informed by the Commission of the Referral Requests. Therefore, the Request to Join was made within the time limit foreseen in Article 22(2), second indent, of the EUMR.

3.2. Assessment of substantive conditions of Article 22

- (33) The application of Article 22 EUMR requires an effective and efficient examination of facts determining whether, on a *prima facie* basis, the concentration affects trade between Member States and threatens to significantly affect competition within the territory of the Member State. Consequently, an examination preceding the sending of an Article 22(5) letter and adopting a decision under Article 22(3) EUMR implies only a preliminary assessment of evidence available to the Commission at that early stage of the procedure.
- (34) For the Commission to accept an Article 22 referral request, two cumulative legal requirements must be fulfilled:
 - (a) the concentration must affect trade between Member States; and
 - (b) the concentration must threaten to significantly affect competition within the territory of the Member State(s) making the request.²⁵
- (35) As explained in paragraph 43 of the Referral Notice, a concentration satisfies the first criterion, when it is liable to have some discernible influence on the patterns of trade between Member States.

²⁴ See <https://www.qualcomm.com/news/releases/2023/05/qualcomm-to-acquire-autotalks> (last accessed 9 August 2023).

²⁵ Pursuant to Article 22(5) EUMR, the Commission may inform one or several Member States that it considers that a concentration fulfils the criteria for referral and invite Member States to request a referral pursuant to Article 22(1) EUMR.

- (36) As explained in paragraph 44 of the Referral Notice, a concentration satisfies the second criterion, when, based on a preliminary analysis, there is a real risk that the concentration may have a significant adverse impact on competition, and thus that it deserves close scrutiny. Such preliminary analysis may be based on *prima facie* evidence but does not prejudice the outcome of a full investigation.
- (37) When the above legal requirements are met, Member States and the Commission have discretion in deciding whether they consider appropriate to make or accede to a referral request, taking into account all relevant circumstances. In that respect, the Article 22 Guidance provides indications about the categories of cases that may constitute suitable candidates for a referral in situations where the transaction is not notifiable under the laws of the referring Member State(s) and lists additional factors that the Commission may consider when encouraging or accepting such a referral. These include for instance whether (i) the turnover of at least one of the undertakings concerned does not reflect its actual or future competitive potential,²⁶ (ii) the transaction has not been already notified in one or more Member States that did not request a referral or join such a referral request,²⁷ and (iii) more than six months have passed after the implementation of the concentration.²⁸
- (38) For the reasons detailed in this Section, the Commission concludes that the Transaction fulfils the substantive conditions set out in Article 22(1) EUMR. In that regard, the Commission's findings are based on a preliminary assessment of the evidence available to the Commission at this stage of the procedure to determine whether, on a *prima facie* basis, the concentration affects trade between Member States and threatens to significantly affect competition within the territory of the Member State, without prejudice to the outcome of the full investigation that the Commission will carry out following this decision accepting the referral request.

3.2.1. *The Parties*

- (39) The Parties are both active in the development and supply of V2X chipsets overall as well in the development and supply of (i) non-cellular (DSRC) V2X chipsets and (ii) cellular V2X (C-V2X) chipsets. In addition, Qualcomm is also active in the supply of other V2X components, including radio frequency front-end ('RFFE') and telematics semiconductors.
- (40) **Qualcomm** develops semiconductors and associated software in the field of wireless communications technology. Qualcomm's products are used in mobile devices and other wireless products as well as automotive applications and the internet of things. Qualcomm's automotive business offers primarily telematics (which include V2X solutions), infotainment (also known as digital cockpit), and

²⁶ The Article 22 Guidance, paragraph 19, explains that this is particularly the case if the undertaking concerned (1) is a start-up or recent entrant with significant competitive potential that has yet to develop or implement a business model generating significant revenues (or is still in the initial phase of implementing such business model); (2) is an important innovator or is conducting potentially important research; (3) is an actual or potential important competitive force; (4) has access to competitively significant assets (such as for instance raw materials, infrastructure, data or intellectual property rights); and/or (5) provides products or services that are key inputs/components for other industries. In its assessment, the Commission may also take into account whether the value of the consideration received by the seller is particularly high compared to the current turnover of the target.

²⁷ Article 22 Guidance, paragraph 22.

²⁸ Article 22 Guidance, paragraph 21.

connectivity semiconductor products. As an integrated part of its telematics offering, Qualcomm develops and sells V2X solutions. In particular, Qualcomm's product offering includes (i) DSRC V2X chipsets²⁹ and (ii) C-V2X chipsets integrated into Qualcomm's telematics solutions.³⁰

- (41) **Autotalks** is a fabless semiconductor company that develops standalone V2X communication solutions (i.e. a dedicated electronic control unit, containing only V2X solution) for manned and autonomous vehicles and roadside infrastructure. Autotalks offers (i) DSRC V2X solutions; (ii) C-V2X solutions; and (iii) combined solutions concurrently supporting both DSRC V2X and C-V2X.³¹

3.2.2. Background

- (42) V2X communications systems are products used in the automotive industry for wireless communications between vehicles as well as between vehicles and roadside infrastructure. The V2X communication system connects cars to various external stimuli (such as other cars, bikes, road works, infrastructure) enabling them to see past other vehicles, as well as around corners, obstacles, or turns on the road.
- (43) V2X communications systems make it possible for vehicles and infrastructure equipment to share information with one another within a radius of up to 1.5 to 2 kilometres. Unlike sensors on the vehicle itself (e.g., cameras, radar, or lidar), which have a limited line-of-sight range (e.g., objects blocking the 'view'), V2X communications systems can make use of the 'knowledge' of other vehicles and infrastructure, provided these vehicles and infrastructure are equipped with V2X technology.
- (44) As a result of the above, V2X communications systems are expected to play a critical role in modern cars to improve road safety, to help traffic congestion, to improve the driving experience and to support autonomous driving. This is why the development and adoption of the V2X technology is expected to grow substantially in the coming years.
- (45) According to one market analyst, the global automotive V2X market was valued at USD 2.6 billion in 2022 and is expected reach USD 19.5 billion by 2028.³² There are already several initiatives formed for accelerating V2X deployment in Europe. In 2016 the European Commission adopted European Strategy on Cooperative Intelligent Transport Systems (C-ITS), an initiative towards cooperative, connected and automated mobility.³³ Furthermore, to facilitate the rollout of C-ITS, 12 EU

²⁹ Qualcomm submits that while technically Qualcomm has a DSRC V2X solutions, this solution has [...]. Qualcomm explained that Qualcomm has [...]. Qualcomm's DSRC V2X chipsets has been sold in [...] (approx. USD [100,000-200,000] in total sales since 2012). See Qualcomm's response of 18 July 2023 to the Commission's request for information dated 14 July 2023, Annex 2,

³⁰ Qualcomm's response of 18 July 2023 to the Commission's request for information dated 14 July 2023, Annex 1.

³¹ Qualcomm's response of 2 August 2023 to the Commission's request for information dated 20 July 2023, question 1, para. 5.

³² <https://www.marketsandmarkets.com/Market-Reports/automotive-vehicle-to-everything-v2x-market-90013236.html>, last accessed on 6 August 2023.

³³ https://transport.ec.europa.eu/transport-themes/intelligent-transport-systems/cooperative-connected-and-automated-mobility-ccam_en, last accessed on 6 August 2023. The C-ITS Strategy is intended to facilitate the convergence of investments and regulatory frameworks across the EU, in order to see deployment of mature C-ITS services in the future.

Member States and road infrastructure operators joined forces to establish the C-ROADS Platform, a joint initiative to establish an integrated and interoperable C-ITS network that spans across European borders.³⁴ The Commission launched the High Level Group GEAR 2030 in January 2016, in an effort to ensure a coherent EU policy on vehicles.³⁵ The group gathered several Commissioners, Member States and stakeholders representing the automotive, telecoms, IT and insurance industries. The group made recommendations to ensure that the relevant policy, legal and public support framework is in place for the roll-out of highly automated and connected vehicles by 2030.³⁶ Europe's new car assessment program, Euro NCAP, announced in its 2030 Roadmap that beginning in 2026 all new cars must be equipped with V2X connectivity to receive a five-star safety rating⁴⁸ following the implementation of new criteria, which will enter into force in 2026, with a 3 year update cycle.

- (46) As of 2019 the first mass-market vehicles to be equipped with V2X as standard equipment have been launched on the market. For example, the latest electric series of Volkswagen cars are equipped with V2X technology. This is the largest global implementation of V2X in an electric vehicle line-up.³⁷ BMW recently announced plans to develop and deploy V2X technology in its vehicles.³⁸ Mercedes-Benz also has plans to deploy V2X, but has been so far promoting its cloud service as a medium to provide real-time vehicle-to-vehicle (V2V) warnings. Car OEMS are not the only ones implementing V2X.³⁹ According to one market participant, the V2X technology is currently being deployed on 20 000 kilometres of motorways.⁴⁰

3.2.2.1. Introduction to V2X communications systems

- (47) From a technical point of view, a V2X communications system is composed of several components including:⁴¹
- (a) a V2X chipset which includes:
- i. a V2X modem⁴² (sometimes called V2X chip)⁴³; and

³⁴ https://transport.ec.europa.eu/news-events/news/european-commission-member-states-and-industry-join-forces-deployment-connected-cooperative-and-2016-10-07_en, last accessed on 6 August 2023.

³⁵ https://ec.europa.eu/growth/content/commission-launches-gear-2030-boost-competitiveness-and-growth-automotive-sector-0_en, , last accessed on 6 August 2023.

³⁶ https://ec.europa.eu/growth/content/final-report-gear-2030-strategy-2015-2017_en, last accessed on 6 August 2023.

³⁷ <https://autocrypt.io/v2x-deployment-roadmap-europe-2024/>. last accessed on 6 August 2023.

³⁸ https://www.press.bmwgroup.com/usa/article/detail/T0417218EN_US/more-power-to-you:-bmw-of-north-america-and-pg-e-start-v2x-testing-in-california?language=en_US, last accessed on 10 August 2023. See also: <https://www.themanual.com/auto/bmw-begins-testing-new-tech-for-electric-cars-in-california/>, last accessed on 6 August 2023.

³⁹ <https://cdn.euroncap.com/media/69650/advanced-reward-mercedes-benz-car-to-x-communication.pdf>, last accessed on 10 August 2023.

⁴⁰ Annex to the letter of a third-party to the European Commission dated 28 June 2023 – Qualcomm/Autotalks Acquisition Concerns.

⁴¹ Minutes of a call with a third-party dated 15 June 2023, para. 9.

⁴² As explained below, when a V2X communications system is integrated, the mobile data modem ('MDM') plays the role of the V2X modem and of a telematics chip.

⁴³ Qualcomm's response of 18 July 2023 to the Commission's request for information dated 14 July 2023, question 9, para. 13 (where Qualcomm refers to a V2X chip) and question 22, figure 2 (where Qualcomm refers to the same component as a mobile data modem ('MDM')).

- ii. a radio frequency transceiver, which modulates and demodulates digital baseband signals to radiofrequency signal;⁴⁴
 - (b) a V2X radio frequency front end ('RFFE'), which combines a low noise amplifier ('LNA'), power amplifier ('PA') and an antenna switch.⁴⁵ While there are different properties for C-V2X and DSRC, the RFFE manufacturers have managed to develop devices that support both.⁴⁶
- (48) Within V2X communications systems, several distinctions can be made according to the technology used, the applications for which the V2X communications system is used and the architecture of the V2X communications system.

3.2.2.2. Distinction according to the technology used (DSRC or C-V2X)

- (49) A first distinction can be made within V2X communications systems according to the V2X radio technology used, namely: (i) DSRC V2X, which is derived from Wi-Fi technology, or (ii) Cellular V2X (C-V2X), which relies on the waveforms of either the 4G LTE or the 5G New Radio ('NR') technology to establish direct communication between any two devices (through an interface called P5).⁴⁷

3.2.2.3. Distinction according to the type of application (Day 1, 2 or 3 applications)

- (50) V2X communications systems can be distinguished according to the applications for which they can be used. In this respect, it is possible to distinguish three types of applications, from the less sophisticated to the most sophisticated, namely:
- (a) 'Day 1' applications (situational awareness alert)⁴⁸, which are the most basic and use the information received via V2X from other vehicles and road infrastructure to pass messages to a vehicle's driver. This includes, for example, warning the driver of a braking manoeuvre by the vehicle in front, an ambulance or roadworks as well as providing the driver with infrastructure data such as the time that will elapse until a red traffic light turns green. As these Day 1 applications are alert-only functions that do not have active control over the vehicle, V2X consists of a wireless connectivity sensor that does not have a functional safety certification.

Day 1 applications began to be deployed in approximately 2016⁴⁹ but according to Qualcomm only to a limited extent.⁵⁰

⁴⁴ Autotalks response of 2 August 2023 to the Commission's request for information dated 20 July 2023, question 4, para. 22.

⁴⁵ Autotalks response of 2 August 2023 to the Commission's request for information dated 20 July 2023, question 4, para. 22.

⁴⁶ Autotalks response of 2 August 2023 to the Commission's request for information dated 20 July 2023, question 4, para. 22.

⁴⁷ Qualcomm's response of 18 July 2023 to the Commission's request for information dated 14 July 2023, Annex 2, para. 81. Although the name C-V2X includes the term 'cellular', it does not rely on a cellular network of network operators that provide access to the internet.

⁴⁸ These applications use the information received via V2X from other vehicles and road infrastructure to pass messages to a vehicle's driver.

⁴⁹ Qualcomm's response of 18 July 2023 to the Commission's request for information dated 14 July 2023, Annex 2.

⁵⁰ According to Qualcomm's data, 250 million vehicles are currently in circulation in Europe and only 1 – 1.5 million in total (i.e. just over 0.4 – 0.6%) are equipped with V2X components (exclusively

- (b) ‘Day 2’ applications (vehicle control and automatic braking)⁵¹ involve vehicles exchanging information not only about themselves, but also about objects they detect using the vehicle’s sensors. For example, a Vehicle equipped with cameras, or a radar, could detect pedestrians and inform other vehicles of their presence via V2X.⁵²

For Day 2 applications, the information collected via V2X is used not only to warn the driver but also to perform automated driving manoeuvres. As a result, the Parties explain that the V2X system must meet strict functional safety requirements.⁵³ They refer in this respect to the automotive safety integrity level (‘ASIL’) classification framework which is based on the ISO262262 standard for functional safety for road vehicles.⁵⁴ This classification has four levels which can be listed from the lowest level of safety requirement to the highest, namely: (i) ASIL-A, (ii) ASIL-B, (iii) ASIL-C and (iv) ASIL-D. The Parties submit that for Day 2 applications, a an ASIL-B level of certification will be required in the future.⁵⁵

The Parties expect Day 2 applications to be introduced into vehicles on a commercial basis from around [...].⁵⁶

- (c) ‘Day 3’ applications (coordinated driving)⁵⁷ provide the basis for even more advanced communications between vehicles. These applications can be used to control complex automated driving processes, such as lane merging, and can also be used to permit fully autonomous driving.⁵⁸

The Parties estimate that Day 3 applications will be introduced around [...].⁵⁹

3.2.2.4. Distinction according to the architecture (integrated or standalone)

- (51) A distinction can be made according to the architecture of the V2X communication system which can be (i) integrated or (ii) standalone.
- (52) When the V2X communications system is integrated, it is embedded into a network access device (‘NAD’) within a telematics control unit (‘TCU’). The NAD

based on DSRC technology). See Qualcomm’s response of 21 June 2023 to the Commission’s request for information dated 14 June 2023, para. 7.

⁵¹ These applications involve vehicles exchanging information not only about themselves, but also about object they detect using the vehicle’s sensors.

⁵² Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2.

⁵³ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2.

⁵⁴ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2.

⁵⁵ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2.

⁵⁶ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2.

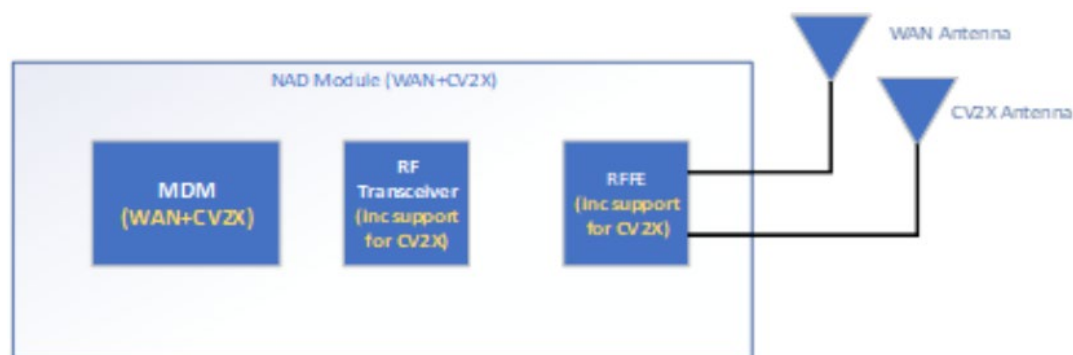
⁵⁷ These applications can be used to control complex automated driving processes.

⁵⁸ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2.

⁵⁹ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2.

connects the vehicle to the internet⁶⁰ to make an emergency call in the event of an accident. As illustrated below, the NAD is composed of (i) a cellular modem called the mobile data modem ('MDM'), (ii) a radio frequency transceiver and (iii) a radio frequency front end ('RFFE'):

Figure 1 – Integrated C-V2X communications system within a NAD module



Source: Qualcomm's response of 18 July 2023 to the Commission's request for information dated 14 July 2023, Annex 2.

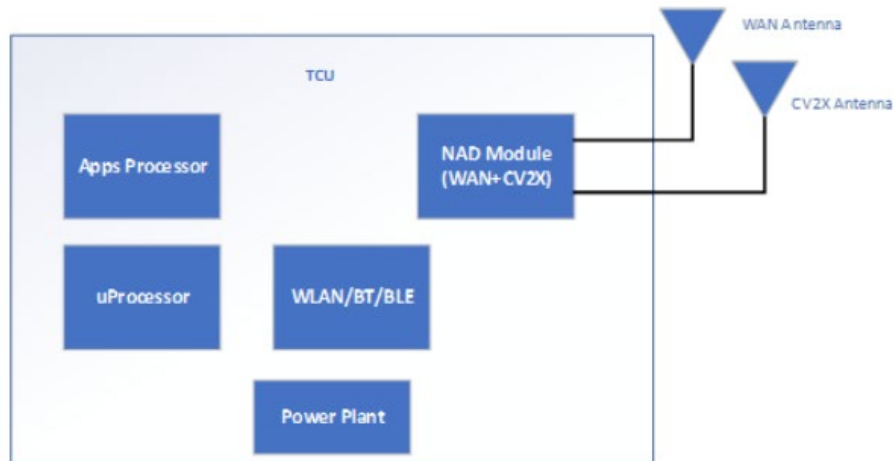
- (53) As a result, every time a C-V2X communications system is integrated,⁶¹ this means that the same module (i.e. the MDM) will be entrusted with the tasks to make an emergency call in the event of an accident (like a telematic chip) and to communicate with other vehicles through the C-V2X technology (like a standalone V2X chip).
- (54) The NAD forms part of the TCU, which is a special computer integrated into the vehicle that includes: (i) a microcontroller, (ii) a Global Navigation Satellite System ('GNSS') chip, (iii) as well as volatile and permanent memory. Within the TCU, the NAD plays the role of the modem that enables 4G/5G communications.⁶² In addition, when the C-V2X communication system is integrated into the NAD, this modem also enables C-V2X communications.

⁶⁰ Via a mobile radio connection relying on LTE or New Radio (5G) technology.

⁶¹ As DSRC V2X always has a 'standalone' architecture, 'integrated' V2X systems are C-V2X systems.

⁶² Memorandum for the European Commission dated 6 June 2023, page 3.

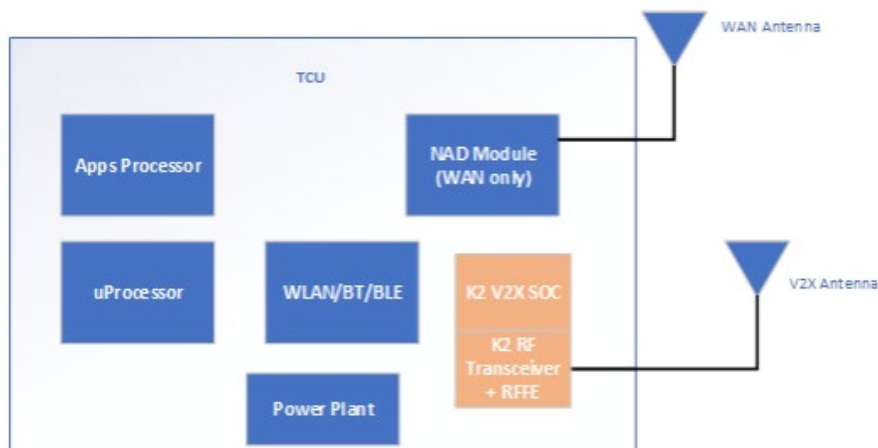
Figure 2 – Integrated C-V2X communications systems



Source: Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2.

- (55) Alternatively, C-V2X communications systems can be standalone, i.e. completely separate from the NAD and potentially also from the TCU (but not necessarily). Standalone V2X communications systems combine a standalone V2X modem, which is entirely independent of the MDM, with a standalone V2X transceiver. It is a standalone solution that requires no further support from any part of the vehicle’s TCU and that can (i) be used as a separate add-on to the TCU or (ii) be installed in its own box outside the TCU box.

Figure 3 – Standalone C-V2X communications systems



Source: Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2.

- (56) According to the Parties, only standalone C-V2X communications systems can satisfy the ASIL-B safety level required for Day 2 applications.⁶³ This is because any device capable of influencing vehicle control must undergo ISO26262 ASIL functional safety analysis. For integrated V2X communications systems, this would

⁶³ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2.

mean that the entire NAD and the TCU would have to be rated as functionally safe. Because in an integrated V2X solution, the V2X components perform both safety and non-safety functions, the Parties argue that it would be difficult for these components as a whole to successfully achieve the necessary ASIL certification.⁶⁴

3.2.3. Market definitions

3.2.3.1. V2X chipsets

(a) Product market

- (57) The Commission analysed semiconductors for automotive applications in previous cases.⁶⁵ In *Qualcomm / NXP Semiconductors*, the Commission assessed the possible segmentation of semiconductors for automotive applications by (i) semiconductor type and (ii) by field of application/end-use.⁶⁶
- (58) With regard to chips used in the safety function block, the Commission considered a possible distinction between (i) passive safety and (ii) active safety (Advanced Driver Assistance Systems, or ‘ADAS’). The Commission further considered whether the semiconductors for ADAS should be segmented in the following function blocks: (i) Ultrasonic; (ii) Lidar; (iii) Radar; (iv) camera; (v) V2X communications.⁶⁷
- (59) Within V2X semiconductors, the Commission also contemplated a possible further segmentation between semiconductors using a cellular technology (C-V2X) and those using a non-cellular technology (DSRC).⁶⁸ Ultimately, however, the Commission left the exact product market definition open.⁶⁹
- (i) Potential product market segmentation according to different technologies: C-V2X and DSRC chipsets
- (60) The Commission notes that the C-V2X and DSRC technologies appear to be largely incompatible as one vehicle equipped with a C-V2X chipset cannot communicate and interoperate with other vehicles or infrastructure using a DSRC chipset. Against this background, market participants expect the overall V2X chipset market to tip in favour of one of these technologies in the long run.⁷⁰ However, it appears that certain solutions, and in particular those developed by

⁶⁴ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2.

⁶⁵ See for instance Commission decision of 17 September 2015 in case M.7585 – NXP Semiconductors/ Freescale Semiconductor; Commission decision of 25 November 2008 in case M.5332 - Ericson/STM/JV; Commission decision of 2 December 2009 in case M.5535 - Renesas Technology/NEC Electronics; Commission decision of 23 November 2015 in case M.7686 – Avago/Broadcom.

⁶⁶ Commission decision of 18 January 2018 in case M.8306 – Qualcomm / NXP Semiconductors, paras 28, 33 and 35.

⁶⁷ Commission decision of 18 January 2018 in case M.8306 – Qualcomm / NXP Semiconductors, paras 40-41.

⁶⁸ Commission decision of 18 January 2018 in case M.8306 – Qualcomm / NXP Semiconductors, paras 42-44.

⁶⁹ Commission decision of 18 January 2018 in case M.8306 – Qualcomm / NXP Semiconductors, paras 45.

⁷⁰ See e.g. Minutes of a call with a competitor dated 7 July 2023, page 4 (‘*Since DSRC and C-V2X are incompatible technologies [...] each region will have to select one for deployment*’).

Autotalks through dual-standard chipsets,⁷¹ are compatible and can interoperate concurrently with DSRC chipsets and C-V2X chipsets.⁷²

- (61) Moreover, from a demand side-perspective, the Commission preliminarily considers that, until this date, the two technologies are both considered by customers in the EEA for deployment in road infrastructure or automotive applications.⁷³ As explained by one competitor, ‘*C-V2X is not necessarily a better technology for V2X compared to DSRC*’⁷⁴ and there is no common agreement on the choice of V2X technology in the EEA. The Commission understands that currently each industry player has his own stance and preference, leading to an ongoing rivalry between the two technologies. While DSRC has been initially deployed in the EEA,⁷⁵ some customers are contemplating a transition to C-V2X.⁷⁶ In the meantime, some customers, consider both radio technologies as part of their sourcing and plan to have them operating concurrently.⁷⁷ Therefore, in view of the above, both DSRC and C-V2X technologies continue to co-exist and appear to exert a competitive pressure on one another particularly in the EEA.
- (62) As a conclusion, for assessing whether the substantive conditions for the application of Article 22 EUMR are met, the Commission considers it appropriate to assess the impact of the Transaction both on a broad market for V2X chipsets encompassing C-V2X and DSRC chipsets, which would be strongly differentiated, and on a narrower plausible market limited to C-V2X chipsets only. This is without prejudice to the outcome of the subsequent full investigation that the Commission will carry out once the request for referral is accepted.
- (ii) Potential product market segmentation according to V2X applications (Day 1, Day 2 and Day 3)
- (63) In response to the Commission’s request for information dated 14 July 2023 (the ‘Request for Information’), Qualcomm submitted that the Parties’ activities are

⁷¹ In case of ‘dual-standard’ or ‘hybrid’ type of chipsets, the same hardware is used for both technologies, and through a simple configuration update, at a dealership or over-the-air, the chipset can switch the V2X technology. Qualcomm submits that, in addition to Autotalks, other suppliers such as Ettifos may be able to offer combined DSRC/C-V2X chipsets capable of Day 1 and Day 2 applications. However, the Parties are not certain if Ettifos is a supplier of V2X chipsets (Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, footnote 17).

⁷² Autotalks currently offers two generations of standalone V2X chipsets, known as second and third generation chipsets. Autotalks’ third generation chipsets, launched in early 2023, allows for the concurrent operation of both V2X radio technologies, DSRC and C-V2X.

⁷³ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023 image 3: ‘*Europe started with DSRC – some deployments, now contemplating 5G V2X R16*’.

⁷⁴ Minutes of a call with a competitor dated 7 July 2023.

⁷⁵ As one customer explained, the EU is implementing technology based on DSRC: ‘*Since 2018, Volkswagen has been using NXP’s V2X-chips based on DSRC, and has rolled them out in its new cars. Furthermore, road operator ASFINAG in Austria started the nationwide roll-out of coverage of infrastructural communications based on DSRC in 2020 and will complete the project by Q1 2025 with a full coverage of approx. 2300 km. This is part of a wider European-level deployment initiative driven by the C-Roads in 18 EU Member States and over 50 European cities*’.

⁷⁶ Qualcomm’s response of 18 July 2023 to the Commission’s request of information dated 14 July 2023, image 3 and paras 14-15.

⁷⁷ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, image 3: ‘*VW planning concurrent operation to start, with a transition to 5G V2X only*’.

largely complementary, and do not overlap in the EEA,⁷⁸ in particular because Qualcomm's V2X chipsets are [...] for which Autotalks' V2X chipsets can be used. Qualcomm explained that it [...]. In contrast, Autotalks offers [...].⁷⁹

- (64) The Commission notes that in previous cases it has not defined a potential segmentation of V2X chipsets based on the V2X applications or use. Furthermore, the market shares used in Qualcomm's internal documents available to the Commission do not make such distinction.⁸⁰ Therefore, on the basis of the information available and at this stage of the investigation, the Commission considers that the market for V2X chipsets does not necessarily have to be segmented between Day 1, 2 and 3 applications. In any event, a further segmentation by type of application can be left open as the Transaction threatens to significantly affect competition at the very least for V2X chipsets that support Day 1 applications.⁸¹
- (65) Against this background, for assessing whether the substantive conditions for the application of Article 22 EUMR are met, the Commission considers it appropriate to assess the impact of the Transaction both on a plausible overall market for V2X chipsets as well as on the basis of a possible further segmentation by type of application (i.e. between Day 1, Day 2 and/or Day 3 applications). This is without prejudice to the outcome of the subsequent full investigation that the Commission will carry out once the request for referral is accepted.
- (iii) Potential product market segmentation according to V2X architecture: integrated v standalone solutions
- (66) Qualcomm submitted that a distinction should be made between integrated and standalone C-V2X solutions.⁸² In an integrated C-V2X solution, C-V2X chipsets are integrated in the TCU which contains in addition to the V2X all other communication links. Since this solution cannot work without the support of other components of a vehicle's telematics, it is an integral part of a vehicle's telematics control unit. In contrast, a fully standalone C-V2X solution is entirely independent of a vehicle's cellular modem and requires no further support from any part of the vehicle's TCU.⁸³ A standalone C-V2X solution is located in a dedicated electronic control unit, which contains only the V2X functionality.⁸⁴

⁷⁸ Qualcomm's response of 18 July 2023 to the Commission's request for information dated 14 July 2023, para. 23.

⁷⁹ Qualcomm's response of 18 July 2023 to the Commission's request for information dated 14 July 2023, para. 12.

⁸⁰ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annexes 1.a to 1.e, page 33.

⁸¹ As further explained below, this is because the Parties already compete and would continue to compete for the supply of V2X chipsets for Day 1 applications (see Section 3.2.5.1(a) below).

⁸² Since DSRC V2X is based on the Wi-Fi standard and not on the cellular standard, DSRC V2X components are never integrated into the telematics components. Therefore, DSRC V2X always has a 'standalone' architecture, but may depend on other components of the TCU such as a process (Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 2, footnote 36). It follows that the distinction between integrated and standalone architectures is only relevant for C-V2X chipsets and not for DSRC chipsets.

⁸³ Qualcomm's response of 21 June 2023 to the Commission's request for information dated 14 June 2023, para. 5.

⁸⁴ See Figure 3 above.

- (67) According to Qualcomm, the application for which a C-V2X solution is used determines its technical requirements and architecture (i.e. integrated or standalone). While standalone V2X architecture can be used for both Day 1 and Day 2 (and ultimately Day 3) applications, Qualcomm argues that integrated solutions cannot support Day 2 and/or Day 3 applications.
- (68) Qualcomm [...] offers [...] C-V2X solutions and alleges that it has [...].⁸⁵ Qualcomm offers a [...] C-V2X solution (MDM9150) that ‘[...]’.⁸⁶ In contrast, Autotalks [...].
- (69) The Commission notes that in previous cases it has not considered a potential segmentation of V2X chipsets based on the V2X architecture (i.e., integrated or standalone). Furthermore, the market shares used in Qualcomm’s internal documents that were submitted to the Commission do not make such distinction by type of architecture.⁸⁷ Therefore, on the basis of the information available and at this stage of the investigation, the Commission considers that the market for V2X chipsets does not necessarily have to be segmented between integrated and standalone V2X chipsets. In any event, a further segmentation by type of architecture can be left open as the Transaction threatens to significantly affect competition at the very least for C-V2X chipsets that support only Day 1 applications.⁸⁸
- (70) Against this background, for assessing whether the substantive conditions for the application of Article 22 EUMR are met, the Commission will consider the plausible definition of an overall market for V2X chipsets and on this market, for completeness, the Commission will also take into account a possible further segmentation by type of architecture (i.e. between integrated and standalone chipsets). This is without prejudice to the outcome of the subsequent full investigation that the Commission will carry out once the request for referral is accepted.

(b) *Geographic market*

- (71) From a geographic point of view, the Commission considered in past cases⁸⁹ that the market for semiconductor-based products is at least EEA-wide, if not worldwide. In *NXP/Freescale*, the Commission noted that these markets are likely worldwide in scope as competition between suppliers is worldwide, transport costs

⁸⁵ Qualcomm’s response of 2 August 2023 to the Commission’s request for information dated 20 July 2023, question 12, para. 24.

⁸⁶ Qualcomm’s response of 2 August 2023 to the Commission’s request for information dated 20 July 2023, Annex 1.

⁸⁷ Qualcomm’s response of 18 July 2023 to the Commission’s request of information dated 14 July 2023, Annexes 1.a to 1.e, page 33.

⁸⁸ As further explained below, this is because the Parties already compete and would continue to compete for the supply of V2X chipsets for Day 1 applications, which include both integrated and standalone V2X chipsets (see section 3.2.5.1.(a) below).

⁸⁹ See for instance Commission decision of 24 June 2002 in case M. 2820 – STMicroelectronics / Alcatel Microelectronics; Commission decision of 3 July 2001 in case M.2439 – Hitachi / STMicroelectronics / SuperH JV; Commission decision of 10 August 2007 in case M. 4751- STM / INTEL / JV; Commission decision of 27 June 2008 in case M. 5173 – STM / NXP / JV; Commission decision of 23 November 2015 in case M.7686 – Avago/Broadcom; Commission decision of 17 September 2015 in case M.7585 – NXP Semiconductors/ Freescale Semiconductor.

are very low, and price differences among regions are small.⁹⁰ The exact geographic market definition was ultimately left open. Likewise, in *Qualcomm / NXP Semiconductors*, the Commission ultimately concluded that the markets for semiconductor products, including semiconductors for automotive applications were likely worldwide in scope.⁹¹

- (72) In line with these precedents and in order to assess whether the substantive conditions for the application of Article 22 EUMR are met, the Commission will consider the impact of the Transaction on the markets for V2X chipsets, with possible further segmentations by type of technology (i.e. DSRC or C-V2X), application (i.e. between Day 1, 2 or 3 applications) and architecture (i.e. integrated or standalone), both at global level and EEA level.

3.2.3.2. Telematics chips

(a) *Product market*

- (73) A Telematics chip forms part of the vehicle's TCU and provide 4G/5G cellular modem capability.⁹² Although the Parties do not expressly use the term telematics chip, they explain that a TCU includes a network access device ('NAD') which in turn includes a mobile data modem ('MDM', sometimes also called 'cellular modem' or '4G/5G cellular chipset')⁹³, which connects the vehicle to the internet via a mobile radio connection relying on LTE or New Radio (5G) technology. Accordingly, the Commission understands at this stage that telematics chips form part of what the Parties call the MDM which is embedded into the TCU.
- (74) The Commission has never defined a separate market for telematics chips, chipsets or MDM used in the automotive industry. However, the definition of a separate market for telematics chips appears to be plausible. From a demand perspective, the Parties allege that '*telematics and V2X products provide distinct and unrelated functionality*'.⁹⁴ From a supply perspective, some suppliers appear to be specialized in the development and supply of telematics chipsets only (e.g. MediaTek).⁹⁵
- (75) Against this background, for assessing whether the substantive conditions for the application of Article 22 EUMR are met, the Commission will consider the plausible definition of a market for telematics chips. This is without prejudice to the outcome of the subsequent full investigation that the Commission will carry out once the request for referral is accepted.

⁹⁰ Commission decision of 17 September 2015 in case M.7585 – NXP Semiconductors / Freescale Semiconductor, paragraphs 17 and following.

⁹¹ Commission decision of 18 January 2018 in case M.8306 – Qualcomm / NXP Semiconductors, paragraphs 241-242.

⁹² Memorandum for the European Commission dated 6 June 2023, page 3.

⁹³ Parties' observations of 8 August 2023 on the additional documents disclosed by the Commission on 31 July 2023, 1 August 2023, 2 August 2023 and 3 August 2023, para. 33.

⁹⁴ Parties' observations of 8 August 2023 on the additional documents disclosed by the Commission on 31 July 2023, 1 August 2023, 2 August 2023 and 3 August 2023, para 34.

⁹⁵ Parties' observations of 8 August 2023 on the additional documents disclosed by the Commission on 31 July 2023, 1 August 2023, 2 August 2023 and 3 August 2023, para. 33.

(b) *Geographic market*

- (76) As explained above, the Commission considered in past cases⁹⁶ that the market for semiconductor-based products is at least EEA-wide, if not worldwide. In line with these precedents and in order to assess whether the substantive conditions for the application of Article 22 EUMR are met, the Commission will consider the impact of the Transaction on a plausible market for telematics chips, both at global level and EEA level.

3.2.3.3. Radio frequency front-ends ('RFFEs')

(a) *Product market*

- (77) As explained above,⁹⁷ the RFFE forms an integral part of any V2X communications system.⁹⁸ The RFFE combines a low noise amplifier ('LNA'), a power amplifier ('PA') and an antenna switch.⁹⁹ All V2X communications systems have a RFFE, regardless of their architecture (i.e. integrated into a NAD or standalone) and the RFFE is dedicated to V2X communications, which means that it cannot be used for cellular communication (e.g. for emergency call in case of an accident).¹⁰⁰
- (78) The Commission has never defined a separate market for RFFEs used for automotive applications. In *STM / NXP / JV*, however, the Commission defined a separate market for radio frequency subsystems for mobile communications including (i) a power amplifier, (ii) the RFFE and (iii) the transceiver.¹⁰¹ In the case at hand, however, the definition of a separate market for RFFE used in V2X communications appears plausible.
- (79) From a demand perspective, the Commission understands that a V2X communication system cannot work without a dedicated RFFE.¹⁰² From a supply perspective, the Commission notes that Autotalks supplies V2X chipsets but no RFFE,¹⁰³ which means that a distinction between V2X chipsets and RFFE appears plausible.
- (80) Against this background, for assessing whether the substantive conditions for the application of Article 22 EUMR are met, the Commission will consider the plausible definition of a market for RFFE used for V2X communications. This is

⁹⁶ See for instance Commission decision of 24 June 2002 in case M. 2820 – STMicroelectronics / Alcatel Microelectronics; Commission decision of 3 July 2001 in case M.2439 – Hitachi / STMicroelectronics / SuperH JV; Commission decision of 10 August 2007 in case M. 4751- STM / INTEL / JV; Commission decision of 27 June 2008 in case M. 5173 – STM / NXP / JV; Commission decision of 23 November 2015 in case M.7686 – Avago/Broadcom; Commission decision of 17 September 2015 in case M.7585 – NXP Semiconductors/ Freescale Semiconductor.

⁹⁷ See section 3.2.2.4 above and Figures 1 and 3 in particular.

⁹⁸ See also the minutes of a call with a third-party dated 15 June 2023, para. 9.

⁹⁹ Autotalks' response of 2 August 2023 to the Commission's request for information dated 20 July 2023, para. 22.

¹⁰⁰ Autotalks' response of 2 August 2023 to the Commission's request for information dated 20 July 2023, para. 22.

¹⁰¹ Commission decision of 27 June 2008 in case M.5173 – STM / NXP / JV, para. 20.

¹⁰² See also the minutes of a call with a third-party dated 15 June 2023, para. 9.

¹⁰³ Autotalks' response of 2 August 2023 to the Commission's request for information dated 20 July 2023, para. 22.

without prejudice to the outcome of the subsequent full investigation that the Commission will carry out once the request for referral is accepted.

(b) *Geographic market*

- (81) As explained above, the Commission considered in past cases¹⁰⁴ that the market for semiconductor-based products is at least EEA-wide, if not worldwide. In line with these precedents and in order to assess whether the substantive conditions for the application of Article 22 EUMR are met, the Commission will consider the impact of the Transaction on a plausible market for RFFEs used for V2X communications, both at global level and EEA level.

3.2.4. *The Transaction affects trade between Member States*

- (82) According to paragraph 43 of the Referral Notice, the first substantive condition is fulfilled when the concentration subject of the request for referral is liable to have some discernible influence on the pattern of trade between Member States. The concept of ‘trade’ covers all cross-border economic activity and encompasses cases where the transaction affects the competitive structure of the market.¹⁰⁵
- (83) A concentration is likely to affect trade between Member States where some of the potentially affected markets are wider than national, and where the main economic impact of the concentration is connected to such markets.¹⁰⁶ Additional factors may also be relevant in assessing whether the Transaction affects the pattern of trade between Member States,¹⁰⁷ such as the location of (potential) customers, the availability and offering of the products or services at stake, the collection of data in several Member States, or the development and implementation of R&D projects whose results, including intellectual property rights, if successful, may be commercialised in more than one Member State.¹⁰⁸
- (84) The DCCA, considers in its Request to Join that the Transaction affects trade between Member States because (i) the relevant geographic markets for the supply of V2X in which both Parties are active are likely EEA-wide if not worldwide, as is apparent from EU decisional practice; (ii) both Parties supply V2X chipsets to customers across the EEA, (iii) they both have a dedicated presence in several EEA Member States; and (iv) some suppliers and customers of V2X chipsets, including car manufacturers and OEMs, are active across several EEA Member States and worldwide.¹⁰⁹
- (85) The Parties submit that the Transaction does not affect trade between Member States for two main reasons. First, the Parties claim that to-date there has been no meaningful

¹⁰⁴ See for instance Commission decision of 24 June 2002 in case M. 2820 – STMicroelectronics / Alcatel Microelectronics; Commission decision of 3 July 2001 in case M.2439 – Hitachi / STMicroelectronics / SuperH JV; Commission decision of 10 August 2007 in case M. 4751- STM / INTEL / JV; Commission decision of 27 June 2008 in case M. 5173 – STM / NXP / JV; Commission decision of 23 November 2015 in case M.7686 – Avago/Broadcom; Commission decision of 17 September 2015 in case M.7585 – NXP Semiconductors/ Freescale Semiconductor.

¹⁰⁵ Article 22 Guidance, paragraph 14.

¹⁰⁶ Referral Notice, paragraph 45.

¹⁰⁷ Article 22 Guidance, paragraph 14.

¹⁰⁸ Article 22 Guidance, paragraph 14.

¹⁰⁹ Request for referral under Article 22 of Council Regulation (EC) No 139/2004 made by the Competent Competition Authority of Denmark concerning the acquisition by Qualcomm of Autotalks dated 25 July 2023.

commercial deployment of V2X (either DSRC or C-V2X) for vehicles in the EEA or any individual Member States. In particular, the Parties estimate that out of more than 250 million vehicles currently in circulation in Europe, only 1-1.2 million in total (i.e., just 0.4 – 0.5%) are equipped with V2X components. In addition, the Parties estimate that by 2025 there will be less than 3 million cars in the EEA that will have incorporated V2X technology. Second, the Parties note that currently neither of the Parties supplies V2X to customers across the EEA or has a dedicated presence in several EEA Member States.¹¹⁰

- (86) For the reasons detailed below, the Commission agrees with the view of the DCCA that the Transaction affects trade between Member States, and thus fulfils the first substantive criterion of Article 22 EUMR.
- (87) *First*, the relevant geographic markets at issue would likely be wider than national. V2X are traded worldwide and are incorporated in products that are sold across the EEA. As explained above, the Commission looked into relevant geographic markets for various semiconductor categories in *NXP/Freescale* and while leaving the exact market definition open, the Commission noted that these markets are likely to be global.¹¹¹ Likewise, in *Qualcomm/NXP Semiconductors*, the Commission concluded that the markets for semiconductor products, including semiconductors for automotive applications were likely worldwide in scope.¹¹²
- (88) Likewise, with respect to telematics chipsets and RFFEs, as explained above and in light of the information available at this preliminary stage, the Commission takes the view that the geographic markets are likely to be EEA-wide if not global.¹¹³
- (89) *Second*, both Qualcomm and Autotalks currently offer V2X solutions (and in particular C-V2X solutions) across the EEA.
- (90) Autotalks recently reported that it has doubled the number of its automotive OEM clients to six, after winning contracts to provide its V2X chipsets, including for one top automotive manufacturer in Europe.¹¹⁴ In addition to this, Autotalks also confirmed winning Volkswagen’s next generation Telematics platform requiring the installation of V2X devices.¹¹⁵ Autotalks’ presence in Europe is expected to further grow in the near future as the company recently announced a new mass-production award with a top Chinese automaker which has a large European presence. This Chinese automaker will roll out the V2X-powered car in both China and Europe starting early 2024.¹¹⁶

¹¹⁰ Parties’ observations of 28 July 2023 in response to the Commission’s information letter of 13 July 2023, section II (i).

¹¹¹ Commission decision of 17 September 2015 in case M.7585 – NXP Semiconductors / Freescale Semiconductor, paragraphs 17 and following.

¹¹² See above, section 3.2.3.1(b).

¹¹³ See above, sections 3.2.3.2(b) and 3.2.3.3(b).

¹¹⁴ See <https://auto-talks.com/autotalks-doubles-backlog-orders-to-200-million-and-wins-contracts-with-top-oems-in-europe-japan-and-china/> (last accessed on 19 June 2023).

¹¹⁵ See <https://auto-talks.com/autotalks-doubles-backlog-orders-to-200-million-and-wins-contracts-with-top-oems-in-europe-japan-and-china/> (last accessed on 19 June 2023).

¹¹⁶ See <https://auto-talks.com/two-new-mass-production-awards-with-chinese-automakers-will-bring-cars-powered-by-autotalks-lifesaving-v2x-solution-to-chinas-roads-in-2023-2/> (last accessed on 19 June 2023).

- (91) As to Qualcomm, the company has already announced back in 2020 ‘*significant progress toward commercial introduction of C-V2X in Europe*’¹¹⁷ further to completing certification in accordance with the European Radio Equipment Directive (‘RED’) Certification in Europe.¹¹⁸ More recently, Qualcomm announced collaboration with EEA-based OEM Mercedes-Benz to power upcoming Mercedes vehicles with Snapdragon Digital Chassis solutions, in particular the Qualcomm’s Snapdragon auto connectivity platform which relies on C-V2X as one of the connectivity solutions.¹¹⁹
- (92) Contrary to what the Parties claim:
- (a) It is not decisive that there has not yet been meaningful commercial deployment of V2X for vehicles in the EEA¹²⁰ or that the Parties have not yet supplied V2X to customers across the EEA.¹²¹ Indeed the demand in the EEA for V2X communications systems is expected to grow significantly,¹²² which is likely to translate into a significant increase of the Parties’ sales in the EEA. Such foreseeable market developments must be taken into account to assess the impact of the Transaction on trade between Member States.
- (b) The circumstance that Qualcomm’s sales in the EEA concerned [...] is also indifferent.¹²³ The Guidance on Article 22 referrals expressly refer to the location of customers (including potential customers) as a relevant criterion to assess whether a concentration affects trade between Member States.¹²⁴ As a matter of fact, [...] is a customer located in the EEA which may be harmed by the Transaction, which in turn can affect trade between Member States. In addition, other potential customers of Qualcomm’s V2X communications systems are located in the EEA since the demand for these products and Qualcomm’s sales are likely to grow significantly, both at global level and in the EEA.¹²⁵
- (c) The fact that Autotalks’ sales in the EEA only [...] is indifferent.¹²⁶ The Guidance on Article 22 referrals expressly refer to the development and implementation of R&D projects whose results may be commercialised in one or more Member State as a relevant criterion to assess whether a concentration affects trade between Member States.¹²⁷

¹¹⁷ See <https://www.qualcomm.com/news/releases/2020/03/qualcomm-announces-significant-progress-toward-commercial-introduction-c> (last accessed on 19 June 2023).

¹¹⁸ See <https://www.qualcomm.com/news/releases/2020/03/qualcomm-announces-significant-progress-toward-commercial-introduction-c> (last accessed on 19 June 2023).

¹¹⁹ See <https://www.qualcomm.com/news/releases/2022/09/mercedes-benz-and-qualcomm-collaborate-to-power--upcoming-merced> (last accessed on 19 June 2023).

¹²⁰ Parties’ observations of 28 July 2023 in response to the Commission’s information letter of 13 July 2023, para. 9.

¹²¹ Parties’ observations of 28 July 2023 in response to the Commission’s information letter of 13 July 2023, para. 10.

¹²² See section 3.2.2 above.

¹²³ Parties’ observations of 28 July 2023 in response to the Commission’s information letter of 13 July 2023, para. 10.

¹²⁴ Article 22 Guidance, paragraph 14.

¹²⁵ See section 3.2.2 above.

¹²⁶ Parties’ observations of 28 July 2023 in response to the Commission’s information letter of 13 July 2023, para. 10.

¹²⁷ Guidance on Article 22 Referrals, paragraph 14.

- (93) *Third*, the Parties also produce V2X communications systems across the EEA since their geographic footprint spans across several major EEA countries where both Qualcomm and Autotalks have a V2X dedicated presence. As highlighted in paragraph (19) above, Autotalks has offices in France and Germany dedicated to V2X products. Qualcomm, operates an engineering software office in Berlin, focused on supporting its European automotive customers with the latest Snapdragon Digital Chassis advancements including C-V2X solutions.¹²⁸ This adds to Qualcomm's office sites in France and Italy which support custom engineering, R&D and product marketing in France, and Italy.¹²⁹
- (94) *Fourth*, various large automotive manufacturers as well as Tier 1¹³⁰ and Tier 2¹³¹ providers supply their automotive products in the whole EEA (e.g. in France, Belgium, Germany, Italy, Spain, Sweden) and worldwide. Moreover, the automotive supply chains are supranational since parts, components and finished products are traded across national borders of the EEA Member States. Many of these players, such as Valeo, Volkswagen or Bosch, cooperate on V2X projects with either Qualcomm or Autotalks.¹³² These players typically supply their products on an EEA-wide basis, and could be affected by the Transaction which reduces the number of possible V2X partners to them. Hence, practices affecting a component may have an impact on the trading of the intermediary components and final product across several EEA Member States. Further, some of the competing V2X technologies are developed by companies headquartered in the EEA, such as NXP (which is located in the Netherlands).
- (95) *Fifth*, as discussed in paragraphs (45) and (46) above, the development and adoption of V2X technology is expected to grow substantially in the coming years.¹³³ While the Parties consider that V2X deployment in the EEA in 2020-2022 remains negligible and that the forecasts are pessimistic, the Commission notes that the shipment of new vehicles with V2X technology is anticipated to grow four times by 2028 compared to the 2022 shipments across the EEA.¹³⁴ Therefore, it is reasonable to expect that the demand for V2X in the automotive industry will substantially increase and that the trade of vehicles equipped with the V2X technology will intensify across the EEA. In consequence, it is unlikely that the impact on V2X will remain limited to a single Member State. This is also confirmed by the Commission's initiatives to harmonize the technological and regulatory framework for automated and connected vehicles that would work for the EU internal market.¹³⁵ Similarly, several initiatives gather different Member

¹²⁸ See <https://www.qualcomm.com/news/releases/2022/01/qualcomm-expands-automotive-footprint-europe> (last accessed on 19 June 2023).

¹²⁹ See <https://www.qualcomm.com/news/releases/2022/01/qualcomm-expands-automotive-footprint-europe> (last accessed on 19 June 2023).

¹³⁰ Tier 1 suppliers are companies that supply parts or systems directly to OEMs.

¹³¹ Tier 2 suppliers are companies that supply products to Tier 1 suppliers (who then supply the OEMs).

¹³² See <https://auto-talks.com/company/partners/> (last accessed on 19 June 2023).

¹³³ The European New Car Assessment Programme (Euro NCAP), which provides safety scores for new cars, has announced that it will introduce new incentives in the rating scheme for V2X technology that support the incorporation of V2X technologies in cars. See <https://cdn.euroncap.com/media/30700/euroncap-roadmap-2025-v4.pdf> (last accessed on 20 June 2023).

¹³⁴ Parties' observations of 28 July 2023 in response to the Commission's information letter of 13 July 2023, Table 1.

¹³⁵ See section 3.2.2 above.

States and stakeholders across the EEA to build a harmonized approach to V2X technology in the EU.¹³⁶

- (96) *Finally*, as will be developed in Section 3.2.5, Qualcomm and Autotalks hold important market positions that are not fully reflected in their current sales of V2X solutions and the Transaction notably involves horizontal overlaps that may impact the structure of competition on the relevant plausible markets.

3.2.5. *The Transaction threatens to significantly affect competition within the territory of Denmark*

- (97) The DCCA considers in its Request to Join that the effects on competition following the proposed acquisition of Autotalks by Qualcomm would not be limited to the Member States which made initial referral requests, but could also affect competition in Denmark, directly and indirectly, because: (i) the Transaction results in a horizontal overlap in the plausible market for the supply of V2X chipsets, (ii) it may have chilling effects on innovation, (iii) it results in non-horizontal overlaps in the supply of RFFEs as well as telematic chips, (iv) the automotive sector on which the Parties' activities overlap is of particular economic relevance.¹³⁷

- (98) As explained below, the Commission agrees with the DCCA and considers that the Transaction threatens to significantly affect competition within the territory of Denmark as a result of horizontal and non-horizontal effects.

3.2.5.1. Horizontal effects

- (99) The DCCA considers that the proposed acquisition of Autotalks by Qualcomm threatens to significantly affect competition in the EEA, including in Denmark, for the supply of V2X chipsets overall, and C-V2X chipsets in particular. On these markets, the DCCA considers that the Transaction would remove a major player at a time when the sector is experiencing substantial growth, which may ultimately have an adverse impact on Danish consumers.

(a) *V2X chipsets*

- (100) On the overall market for V2X chipsets, the Parties allege that their combined share in the EEA is negligible.¹³⁸ To calculate their market shares, the Parties refer to their installed base and since only DSRC chipsets have been rolled-out in the EEA, the Parties submit that NXP (who only supplies DSRC chipsets) represents [90-100]% of the installed base for V2X chipsets in the EEA while Autotalks represents [0-5]% and Qualcomm has [...] in the EEA.¹³⁹

¹³⁶ See section 3.2.2 above.

¹³⁷ Request for referral under Article 22 of Council Regulation (EC) No 139/2004 made by the Competent Competition Authority of Denmark concerning the acquisition by Qualcomm of Autotalks dated 25 July 2023.

¹³⁸ Parties' observations of 28 July 2023 in response to the Commission's information letter of 13 July 2023, section II, 2(c).

¹³⁹ Parties' observations of 28 July 2023 in response to the Commission's information letter of 13 July 2023, section II, 2(c). See also: Qualcomm's response of 18 July 2023 to the Commission's request for information dated 14 July 2023, para. 32.

- (101) The Parties also submit that post-transaction they will continue to be subject to significant countervailing buyer power,¹⁴⁰ that several other V2X suppliers will remain active on the market and that new competitors would enter if demand for V2X chipsets increases.¹⁴¹ The Parties also allege that the Transaction is the only way to ensure Autotalks' [...] as well as Qualcomm's [...].¹⁴²
- (102) However, based on the information available and for the reasons explained below, the Commission considers that the Transaction threatens to significantly affect competition on a plausible market for V2X chipsets in the EEA, in general, and Denmark in particular.
- (103) *First*, both Parties are active on the plausible market for V2X chipsets which is highly concentrated:
- (a) At global level, the information collected indicates that the number of production-ready suppliers of V2X chipsets is limited and include Qualcomm, Autotalks, NXP, Morningcore and Huawei.¹⁴³
 - (b) In the EEA, Morningcore¹⁴⁴ and Huawei have never won any contract¹⁴⁵ and the Transaction would thus amount to a 3-to-2 combination.
- (104) In this respect, Qualcomm submits that other suppliers are active on the market for V2X chipsets at global level, including Renesas, u-blox, Ranix and Ettifos.¹⁴⁶ However, based on the information available, the Commission understands that:
- (a) Renesas offers system-on-chips (SoCs) for vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications and not for vehicle-to-everything (V2X) applications. In particular, the Commission understands that Renesas's SoCs cannot be used for vehicle-to-pedestrian (V2P- and vehicle-to-network (V2N) communications.¹⁴⁷ The Commission also notes that Renesas is not mentioned in any of the Parties' internal documents that were submitted;

¹⁴⁰ Parties' observations of 28 July 2023 in response to the Commission's information letter of 13 July 2023, section II, 2(d).

¹⁴¹ Parties' observations of 28 July 2023 in response to the Commission's information letter of 13 July 2023, section II, 2(e).

¹⁴² Parties' observations of 28 July 2023 in response to the Commission's information letter of 13 July 2023, section II, 2(b).

¹⁴³ See https://5gaa.org/content/uploads/2021/11/5GAA_List_of_C_V2X_devices.pdf (last accessed on 20 June 2023). See also Memorandum for the European Commission dated 6 June 2023, page 5 and Memorandum for the European Commission dated 26 May 2023, para. 4.5.

¹⁴⁴ The Commission understands that Morningcore's activities are limited to China and that it is therefore not a global supplier of V2X chipsets but rather limited to supplying the markets in China. In this respect, one market participant explained that: '*Morningcore (a Chinese semiconductor company) also develops C-V2X chipset but, to [...] best knowledge, has not secured any customer contracts outside China and does not compete with Autotalks or Qualcomm. Even Chinese OEMs regard Morningcore technology as inferior to Autotalks and Qualcomm*' (Memorandum for the European Commission dated 6 June 2023, page 5).

¹⁴⁵ Huawei offers of C-V2X chipset solution capable of Day 1 applications only (HiSilicon) but this solution has never been deployed or demanded in the EEA (Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, question 16, para. 27).

¹⁴⁶ Qualcomm's response of 18 July 2023 to the Commission's request for information dated 14 July 2023.

¹⁴⁷ See: <https://www.renesas.com/us/en/about/press-room/renesas-electronics-delivers-vehicle-vehicle-and-vehicle-infrastructure-communication-system> (last accessed on 6 August 2023).

- (b) U-blox was not mentioned by any market participant as a potential or credible V2X chipset supplier. Furthermore, U-blox is not listed as a V2X chipset supplier in the publicly available market reports reviewed by the Commission at this stage. The Commission also notes that the internal documents provided by the Parties do not list U-blox as a V2X chipset supplier. In this context, the Commission will have to further investigate whether U-blox has ever won a contract for the supply of V2X chipsets and whether U-blox is a production-ready supplier.
- (c) Ranix is still at an early development stage.¹⁴⁸ The Commission also notes that Ranix is not mentioned in any of the Parties' internal documents available at this stage;
- (d) The Parties themselves are not certain that Ettifos supplies V2X chipsets.¹⁴⁹ Again, the Commission notes that Ettifos is not mentioned in any of the Parties' internal documents available at this stage.

(105) *Second*, the Parties compete closely on this market since:

- (a) The Parties have competed against each other for the same projects in the past, [...] project which is the largest call for tenders for V2X chipsets ever launched to date. This call for tenders was launched by [...] with an expected date for roll-out in [...].¹⁵⁰ According to Qualcomm's own response, this tender was awarded in [...] following a competitive bidding process.¹⁵¹
- (b) One internal document from Autotalks also shows that one C-V2X tender launched by [...] was initially awarded to [...]. However, this internal document indicates that [...].¹⁵² While this example does not specifically refer to the EEA market, it shows that from a product perspective, in geographic areas where the deployment of the C-V2X technology is more advanced, the Parties also appear to compete head to head.
- (c) NXP only supplies DSRC chipsets, which means that only four manufacturers supply C-V2X chipsets globally and only the two Parties have won contracts to date for the supply of C-V2X chipsets in the EEA.

(106) *Third*, the Commission takes the view that the Parties would continue to compete for the supply of V2X chipsets in the future, despite the fact that Qualcomm says it can [...] offer an [...] C-V2X chipset [...]. This is because:

¹⁴⁸ See: <https://www.thelec.net/news/articleView.html?idxno=2562> (last accessed on 6 August 2023).

¹⁴⁹ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, footnote 17.

¹⁵⁰ As a result of the expected date for roll-out, the award of this recent call for tenders is not reflected in the Parties' current installed base.

¹⁵¹ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, paragraph 34.

¹⁵² Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.h, page 10.

- (a) The Commission considers the market for V2X chipsets does not necessarily have to be segmented between Day 1, 2 and 3 applications.¹⁵³
 - (b) Tenders limited to Day 1 applications are likely to be launched in the future since V2X chipsets supporting Day 2 applications are not likely to be deployed before V2X chipsets supporting Day 1 applications become a common feature.¹⁵⁴ For similar tenders, the examples above show that the Parties competed closely and head-to-head. This is likely to be the same for such future tenders.
 - (c) Qualcomm’s [...] C-V2X chipset can be used [...].¹⁵⁵ This is confirmed by [...]. Even if this past example relates to [...], it confirms that this is not only technically feasible but also commercially credible. In light of the information available at this stage, the Commission understands that when using Qualcomm’s C-V2X chipsets [...].
 - (d) Contrary to what Qualcomm claims, Qualcomm currently offers a [...] C-V2X chipset called MDM9150.¹⁵⁶ In this respect, Qualcomm explained that this V2X chipset was [...], but has [...].¹⁵⁷ However, this does not mean that this [...] C-V2X chipset [...].
 - (e) In any event, one internal document from Qualcomm that was prepared for [...] in connection with the Transaction indicates that Qualcomm [...].¹⁵⁸ More specifically, when describing the rationale of the Transaction, this internal document explains that ‘[...]’.
- (107) *Fourth*, even though the Parties’ current installed base is currently limited in the EEA and smaller than NXP’s installed base, the Commission notes that it is likely to grow significantly in the future and does not reflect the Parties’ actual market power for the supply of V2X chipsets. This is confirmed by Qualcomm’s internal documents which estimate that absent the Transaction, the overall installed base of

¹⁵³ See above, section 3.2.3.1.(a).(ii).

¹⁵⁴ See: <https://auto-talks.com/zh/next-gen-v2x-development/> (*‘Day 1 is making its first steps in the market. Mass-deployment in all vehicles is still a few years ahead. Day 2 is not likely to start before Day 1 will be a common feature’*, last accessed on 7 August 2023). As a matter of fact, the data and documents submitted by Qualcomm confirms that Qualcomm does not expect Day 2 applications to be introduced into vehicles on a commercial basis before [...] (Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2). Yet, Qualcomm estimates in its internal documents that the number of V2X opportunities will [...], including in Europe (see Qualcomm’s response of 18 July 2023 to the Commission’s request of information dated 14 July 2023, Annex 1.a, page 5).

¹⁵⁵ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2, footnote 38. In this case, the V2X box still carries [...], but is not using [...]. Instead, the V2X box uses [...].

¹⁵⁶ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2, footnote 37 (referring to Qualcomm’s website: <https://www.qualcomm.com/products/automotive/qualcomm-c-v2x-9150>, last accessed on 9 August 2023).

¹⁵⁷ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2, footnote 37.

¹⁵⁸ Qualcomm’s response of 18 July 2023 to the Commission’s request of information dated 14 July 2023, Annex 1.d, page 33.

the Parties for V2X chipsets would be around [40-50]% at global level in 2023¹⁵⁹ and around [70-80]% in 2027.¹⁶⁰ According to the same internal document, Qualcomm’s individual installed base would be around [20-30]%¹⁶¹ in 2027 and Autotalks’ installed base would thus be around [50-60]%.

Table 1 – Expected installed base of the Parties for V2X chipsets globally

2027	Expected installed base
Qualcomm	[20-30]%
Autotalks	[50-60]%
Combined	[70-80]%

Source: Commission’s calculations based on Qualcomm’s response of 18 July 2023 to the Commission’s request of information No 1 dated 14 July 2023, Annex 1.b

- (108) These forecasts are in line with the view expressed by one market participant according to whom: ‘NXP’s DSRC technology is no longer sought after by customers, who now seek C-V2X or dual-mode chipset solutions in accordance with relevant mandates, and NXP has not won any new procurements/designs in the last 12 months’.¹⁶² This is also consistent with the most recent tender data showing that Autotalks has been able to [...] in the EEA, namely the request for quotations (‘RFQs’) issued by [...].¹⁶³ In this context, the Commission considers that the above forecasts are credible.
- (109) *Fifth*, the market for V2X chipsets is characterized by strong interoperability constraints between DSRC and C-V2X chipsets.¹⁶⁴ This means that once customers (e.g. OEMs, infrastructure managers, etc.) roll out one technology (e.g. C-V2X), they face significant switching costs preventing them from switching to suppliers of V2X chipsets using another technology (e.g. DSRC).¹⁶⁵ As a result, on the overall market for V2X chipsets, the competitive pressure exerted by competitors supplying DSRC V2X chipsets is likely to be limited.

¹⁵⁹ Qualcomm’s response of 18 July 2023 to the Commission’s request of information dated 14 July 2023, Annex 1.b. According to slide 6, over the year 2023, [60-70] million ‘connected cars’ will be in operation worldwide, of which [0-5]% will be equipped with V2X. Accordingly, the 2023 V2X installed base would represent approx. [0-10] million vehicles. According to the same annex (slide 11), Qualcomm expects to sell together with Autotalks, in the acquisition scenario, [0-10] million V2X units in 2023 resulting in a combined market share of [40-50]%. No equivalent data is available for the EEA.

¹⁶⁰ Qualcomm’s response of 18 July 2023 to the Commission’s request of information dated 14 July 2023, Annex 1.b. According to slide 6, over the year 2027, [80-90] million ‘connected cars’ will be in operation worldwide, of which [20-30]% will be equipped with V2X. Accordingly, the 2027 V2X installed base will be of [10-20] million units. According to the same annex (slide 11), Qualcomm expects to sell together with Autotalks [10-20] million V2X units in 2026 resulting in a combined market share of [70-80]%. No equivalent data is available for the EEA.

¹⁶¹ Qualcomm’s response of 18 July 2023 to the Commission’s request of information dated 14 July 2023, Annex 1.b, page 11 (in this document Qualcomm considers as a reasonable assumption that its market share on the global market for V2X chipsets in 2027 absent the Transaction would be around [20-30]%).

¹⁶² Memorandum for the European Commission dated 26 May 2023, para. 4.6.

¹⁶³ Qualcomm’s response of 18 July 2023 to the Commission’s request of information dated 14 July 2023, paragraph 34.

¹⁶⁴ Qualcomm’s response of 2 August 2023 to the Commission’s request for information dated 20 July 2023, question 15, paras. 34 - 38.

¹⁶⁵ Commission’s guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings, OJ 5.2.2004, C 31 (the ‘Horizontal Guidelines’), para. 31.

- (110) *Sixth*, the Transaction may give Qualcomm the ability and incentive to hinder the expansion of DSRC chipset suppliers such as NXP.¹⁶⁶ As explained above, Autotalks' installed base is expected to grow significantly because it is the only manufacturer¹⁶⁷ to offer dual use V2X chipsets.¹⁶⁸ After the Transaction, Qualcomm could take advantage of Autotalks' future installed base to limit or degrade the interoperability of DSRC chipsets.¹⁶⁹
- (111) For instance, Qualcomm could discontinue Autotalks' plan to [...].¹⁷⁰ In such situation, Autotalks' dual chipsets would remain the only V2X chipsets compatible with both DSRC and C-V2X for Day 1 applications. This may be enough to guarantee a significant installed base to Autotalks. Autotalks' chipsets would also support Day 2 and Day 3 applications, but only via C-V2X. As Autotalks' installed base increases, this may give a first-mover advantage to the C-V2X technology over DSRC for Day 2 and Day 3 applications and thus foreclose NXP from these segments when a large number of customers will start purchasing V2X chipsets supporting Day 2 or Day 3 applications.¹⁷¹
- (112) *Seventh*, on an overall market for V2X chipsets, the Transaction may remove Autotalks as an important competitive constraint, and likely important competitive force.¹⁷² This is because Autotalks is the only supplier offering a dual solution supporting concurrently DSRC and C-V2X.¹⁷³ As a result, it is expected to win most of the future RFQs on this overall market, including in the EEA.¹⁷⁴

¹⁶⁶ Horizontal Guidelines, para. 36.

¹⁶⁷ The Parties argue that Ettifos and Ranix also offer dual use V2X chipsets capable to communicate and interoperate with DSRC chipsets and C-V2X chipsets concurrently (Autotalks' presentation of July 26, 2023). However, as explained above (see para. (104)), the Commission understands that Ranix is still at an early development stage and the Parties themselves admit that it is uncertain whether Ettifos supplies C-V2X chipsets.

¹⁶⁸ As one market participant explains: *'even though C-V2X has not been commercially rolled out, customers source, on a precautionary basis, dual use chips from Autotalks (i.e. DSRC and C-V2X compatible)'* (Minutes of a call with a competitor dated 7 July 2023, para. 3).

¹⁶⁹ As one complainant explains: *'It is already difficult for NXP to acquire new business given that customers favour Autotalks' dual use chips. Post transaction, Qualcomm could make it even more difficult for NXP. Qualcomm has an incentive to remove DSRC and thereby NXP from the market'* (Minutes of a call with a competitor dated 7 July 2023, para. 3). Likewise, according to another complainant: *'Qualcomm's announcements that the company might take a technology decision for continuing only Cellular V2X in its Automotive Platform. A one-platform-approach with only cellular technologies would heavily influence the market by limiting alternative technologies, especially WLAN-based V2X [i.e. DSRC]'*.

¹⁷⁰ Qualcomm's internal documents confirm that Autotalks' chipsets [...] (Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.a, pages 4 and 6). See also in this regard: <https://auto-talks.com/autotalks-unveils-the-worlds-first-v2x-chipsets-which-support-5g-v2x-for-day-2-scenarios/> (last access on 6 August 2023): *'the new chipsets, developed over the past several years, are designed to support all upcoming V2X requirements in both DSRC and C-V2X communication technologies, including the latest 5G-V2X (C-V2X Rel. 16/17/18) and IEEE802.11bd (next generation DSRC)'*.

¹⁷¹ Autotalks' chipsets would thus be interoperable with C-V2X and DSRC but only for Day 1 applications. For Day 2 applications, Autotalks' chipsets would only be interoperable with other C-V2X chipsets.

¹⁷² Horizontal Guidelines, paras. 37-38.

¹⁷³ The Parties argue that Ettifos and Ranix also offer dual use V2X chipsets capable to communicate and interoperate with DSRC chipsets and C-V2X chipsets concurrently (Autotalks' presentation of July 26, 2023). However, as explained above (see para. (104)), the Commission understands that Ranix is still at an early development stage and the Parties themselves admit that it is uncertain whether Ettifos supplies C-V2X chipsets.

¹⁷⁴ See above, e.g. paras. 107-108.

- (113) *Eighth*, besides effects on current competition at product market level, the Transaction may also have an impact on innovation. Several national competition authorities expressed concerns in this respect. This risk is particularly acute in the case at hand given that the plausible market for V2X chipsets is highly concentrated, characterised by high R&D investments and may evolve as further applications are explored. In these circumstances, an important parameter of competition may be given by novel solutions that can be offered by market players, competing through different or similar technologies.
- (114) Given the importance of R&D on this market, especially for the emerging and more advanced Day 2 (vehicle control and automatic braking) and Day 3 (coordinated driving) V2X applications,¹⁷⁵ the combination of two close competitors on such concentrated market may have a chilling effect on these competitors' incentive to innovate.
- (115) *Nineth*, contrary to the Parties' claim, V2X customers are unlikely to have sufficient countervailing buyer power. As explained above,¹⁷⁶ the market for V2X chipsets is very concentrated and very few alternative suppliers will remain active on the market globally and in the EEA in particular. The merged entity is likely to have a significant installed base in the future and customers are unlikely to be able to sponsor new entry due to the existence of high barriers to entry.¹⁷⁷
- (116) *Tenth*, the plausible market for V2X chipsets is likely to be characterized by high barriers to entry as a result of prohibitive investment costs, the long time required for the development of such products, the existence and importance of intellectual property rights to enter this market and a stringent automotive qualification process.¹⁷⁸
- (117) *Finally*, the Parties submitted very limited evidence to demonstrate that Autotalks would be forced out of the market absent the Transaction. Importantly, the Parties did not submit any evidence to show that there would be no less anti-competitive alternative purchaser or that Autotalks' assets would inevitably exit the market absent the Transaction.¹⁷⁹ In this respect, the Parties' claim remains unsubstantiated.
- (118) In view of the above, the Commission concludes that the Transaction threatens to significantly affect competition for the supply of V2X chipsets globally, including in the EEA in general and Denmark in particular. This conclusion results from a preliminary analysis, at this stage of the procedure, based on prima facie evidence showing a real risk that the Transaction would have a significant adverse impact on competition. This is without prejudice to the outcome of the full investigation that the Commission will carry out following this decision accepting the referral request.

¹⁷⁵ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.h, pages 3 and 20.

¹⁷⁶ See above, paras. 103-104.

¹⁷⁷ See para. 116 below.

¹⁷⁸ Memorandum for the European Commission dated 26 May 2023, para. 4.9. Annex to the letter of a third-party to the European Commission dated 28 June 2023 – Qualcomm/Autotalks Acquisition Concerns.

¹⁷⁹ Horizontal Guidelines, para. 90.

(b) C-V2X chipsets

- (119) In light of the information available, the Commission considers that the impact of the Transaction is likely be even stronger on a narrow market limited to C-V2X chipsets compared to a broader market that would also include DSRC chipsets.
- (120) *First*, the share of the future installed base of the Parties is larger when looking at C-V2X chipsets in isolation (i.e. excluding DSRC chipsets):
- (a) At global level, the market for C-V2X chipsets is highly concentrated with few production-ready suppliers, namely: Qualcomm, Autotalks, Huawei and Morningcore.¹⁸⁰ This is consistent with the view expressed by one market participant who explained that Qualcomm ‘holds a dominant position in the supply of C-V2X chipsets globally with an estimated share of 80% (which reflects incumbency on installed base). Autotalks’ share is estimated to be around 20% globally. Post-transaction, the combined entity would have a monopoly in the global supply of C-V2X’.¹⁸¹
- (b) In the EEA, the C-V2X technology has not yet been rolled out so there is no installed base. However, the market is even more concentrated in the EEA since Morningcore is only active in China. It is unclear at this stage whether Huawei participated in recent tenders for the supply of C-V2X chipsets in the EEA. However, the Parties’ recent C-V2X tender activity confirms that the Parties stand out as two viable alternatives able to win C-V2X projects. As Qualcomm explains: ‘In the EEA, for the [...], the [...] (representing approximately [70-80]% of the volume of the [...]) chose [...]. The other [...] (representing collectively about [30-40]% of the volume of the [...]) – decided to go with a [...]’.¹⁸²
- (121) *Second*, the Transaction may remove Qualcomm as a potential competitor on the segments for C-V2X chipsets that support Day 2 or Day 3 applications. Contrary to what the Parties claim, the information collected at this stage suggests that Qualcomm may have [...] absent the Transaction by [...].
- (122) *In the first, place*, the information available suggests that Qualcomm may have [...] and/or that Qualcomm was [...].¹⁸³ This is because:
- (a) Qualcomm already offers a [...] V2X chipset, i.e. [...] (MDM9150).¹⁸⁴ In this respect, Qualcomm explains that this product [...] and was [...], but [...].¹⁸⁵

¹⁸⁰ 5GAA Automotive Association, List of C-V2X Devices, Technical Report (available https://5gaa.org/content/uploads/2021/11/5GAA_List_of_C_V2X_devices.pdf, last accessed on 17 July 2023). In its response of 18 July 2023 to the Commission’s request of information dated 14 July 2023, Qualcomm lists additional suppliers (i.e. Ranix and Ettifos). However, as explained above (see para. (104)), the Commission understands that Ranix is still at an early development stage and the Parties themselves admit that it is uncertain whether Ettifos supplies C-V2X chipsets.

¹⁸¹ Memorandum for the European Commission dated 26 May 2023, para. 4.5.

¹⁸² Qualcomm’s response of 18 July 2023 to the Commission’s request of information dated 14 July 2023, paragraph 34.

¹⁸³ Horizontal Guidelines, para. 59.

¹⁸⁴ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, Annex 2, footnote 37 (referring to Qualcomm’s website: <https://www.qualcomm.com/products/automotive/qualcomm-c-v2x-9150>, last accessed on 9 August 2023).

It remains that Qualcomm [...]. Likewise, according to Qualcomm's own explanations, given that this C-V2X chipset has a [...] architecture, it is likely to be able to [...].

- (b) Qualcomm's [...] C-V2X chipset [...].¹⁸⁶ This is confirmed by [...].
- (123) As explained above, this is also consistent with Qualcomm's internal documents which suggest that absent the Transaction Qualcomm could have [...].¹⁸⁷
- (124) *In the second place*, the information collected suggests that Qualcomm already exerts a significant constraining influence, at least for Day 1 applications.¹⁸⁸ This is because Qualcomm is one of the very few production-ready suppliers of C-V2X chipsets globally, and in the EEA, which already closely competes head-to-head with Autotalks for Day 1 applications.¹⁸⁹
- (125) *In the third place*, few other potential competitors are likely to be able to enter the segments for Day 2 and Day 3 applications¹⁹⁰ since only very few players are currently active in the development and supply of C-V2X chipsets supporting Day 1 applications.¹⁹¹
- (126) *Third*, the plausible market for C-V2X chipsets appears to be characterized by high barriers to entry. This is in line with the results of the Commission's market investigation in *Qualcomm / NXP* in which the majority of respondents explained that in order to start providing chips based on a different communication standard a new entrant would incur significant time and investment.¹⁹² This is consistent with the feedback received from several market participants in the case at hand pointing to the existence of various barriers to entry, including prohibitive investment costs, the long time required for the development of C-V2X chipsets, the importance of intellectual property rights and a stringent automotive qualification process.¹⁹³
- (127) By way of illustration, one market participant explains that: '*[it] does not foresee any viable competitive entry in the supply C-V2X chipsets to constraint the combined entity in the near future. Barriers to entry are high, requiring investment and development of at least five years, with an additional three years to qualify for automotive manufacturers. To constrain Qualcomm, a potential rival would*

¹⁸⁵ Qualcomm's response of 18 July 2023 to the Commission's request for information dated 14 July 2023, Annex 2, footnote 37.

¹⁸⁶ Qualcomm's response of 18 July 2023 to the Commission's request for information dated 14 July 2023, Annex 2, footnote 38. In this case, the V2X box still carries [...], but is not using [...]. Instead, the V2X box uses [...].

¹⁸⁷ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.d, page 33.

¹⁸⁸ Horizontal Guidelines, para. 60.

¹⁸⁹ See above, section 3.2.5.1(a).

¹⁹⁰ Horizontal Guidelines, para. 60.

¹⁹¹ See paragraph (126) below.

¹⁹² Commission decision of 18 January 2018 in case M.8306 – Qualcomm / NXP Semiconductors, para. 43.

¹⁹³ Memorandum for the European Commission dated 26 May 2023, para. 4.9. Annex to the letter of a third-party to the European Commission dated 28 June 2023 – Qualcomm/Autotalks Acquisition Concerns. Minutes of a call with a competitor dated 7 July 2023.

*require a production ready product enabling it to compete for the demand of global OEMs. No such product exists’.*¹⁹⁴

- (128) Likewise, another market participant highlights the importance of intellectual property rights as a barrier to entry. According to this company: ‘[a DSRC chipset supplier] *cannot easily enter the traditional cellular (4G/5G) market. There are too many patents on that technology, and it would take many years to develop and significant investments’.*¹⁹⁵
- (129) In view of the foregoing, the Commission concludes that the Transaction threatens to significantly affect competition for the supply of C-V2X chipsets globally, including in the EEA in general and Denmark in particular. This conclusion results from a preliminary analysis, at this stage of the procedure, based on prima facie evidence showing a real risk that the Transaction would have a significant adverse impact on competition. This is without prejudice to the outcome of the full investigation that the Commission will carry out following this decision accepting the referral request.

3.2.5.2. Non-horizontal effects

- (130) Based on the information available to the Commission, the Transaction also results in non-horizontal links between the activities of the Parties’ for the supply of V2X chipsets, on the one hand, and Qualcomm’s activities for the supply of RFFEs and telematics chips, on the other hand.
- (131) The Request to Join considers that the Transaction risks to significantly affect competition in the supply of products related to V2X such as RFFEs and telematics chipsets, and thereby the automotive sector on the Danish territory.
- (132) In Qualcomm’s view, Qualcomm is not active on a product market which is upstream or downstream of a market in which Autotalks is active.¹⁹⁶ Similarly, Qualcomm explained that it does not believe it provides a product or a portfolio of products that is complementary with Autotalks’ products or that conglomerate links exist.
- (133) However, based on the evidence gathered at this stage, the Commission considers that the Transaction threatens to significantly affect competition in the territory of Denmark (and in the EEA) as a result of non-horizontal links existing between the Parties’ activities, for the reasons explained in the remainder of this Section.

(a) V2X chipsets and telematics chipsets

- (134) As explained above, telematics chipsets form part of the TCU and provide 4G/5G cellular modem capability. The Parties have not provided market share estimates for telematics chipsets. According to one market participant, however, ‘[t]he market for telematics chips for connected cars is similarly dominated by Qualcomm with an estimated global market share of [85-98]’.¹⁹⁷

¹⁹⁴ Memorandum for the European Commission dated 26 May 2023, para. 4.6.

¹⁹⁵ Minutes of a call with a competitor dated 7 July 2023, para. 5.

¹⁹⁶ Qualcomm’s response of 18 July 2023 to the Commission’s request for information dated 14 July 2023, para. 36.

¹⁹⁷ Memorandum for the European Commission dated 6 June 2023, page 5.

- (135) In this respect, the evidence collected by the Commission suggests that post-Transaction, Qualcomm could bundle or contractually tie the Parties' V2X chipsets with Qualcomm's telematics chipsets. Given the very few alternative suppliers of V2X chipsets and particularly C-V2X ones, the Transaction could lead to foreclosure of competing suppliers of telematics chips and chip vendors with solutions integrating V2X.
- (136) As one market participant explained, *'the Transaction not only would create a near-monopoly in V2X chipsets, but would also reinforce and entrench Qualcomm's dominant position in the related market for telematics chips'*¹⁹⁸ because *'[t]he ability to offer a full-range solution to car OEMs and Tier 1 and Tier 2 module providers is an important competitive factor for vendors of telematics chips to win business from customers. And this competitive factor is rapidly growing in significance as V2X technology gains wider adoption'*.¹⁹⁹
- (137) Likewise, another market participant explained that *'only two companies provide model chipsets (Qualcomm and [MediaTek]) and that entry is difficult given high development costs. However, unlike Qualcomm, [Mediatek] does not have V2X offering, and it is highly unlikely they will develop one soon [...] As such, post-Transaction, Qualcomm could leverage the V2X market and, for example, commercially tie its modem, V2X chipset and [...] modules. This could be used to make a monopoly out of the current duopoly in modem chipsets'*.²⁰⁰
- (138) By way of illustration, the Commission notes that the partnership entered into between MediaTek (who is active in telematics chipset) and Autotalks for the design and supply of a TCU that integrates a V2X chipset supports the view that the ability to offer a full-range solution plays an important role for telematics chipset suppliers.²⁰¹
- (139) These concerns expressed by market participants are also supported by an internal document from Autotalks suggesting that [...]. According to this internal document (see Figure 4 below), one C-V2X tender launched by [...]. However, this internal document indicates that [...].²⁰²

Figure 4 – Autotalks' internal document

[...]

Source: Qualcomm's response of 18 July 2023 to the Commission's request of information No 1 dated 14 July 2023, Annex 1.h, page 10

- (140) This is also consistent with the view expressed by one market participant according to whom *'Qualcomm has a history of, anti-competitively, leveraging market power and [...] this has already been seen through public reporting in the mobile and automotive space'*.²⁰³

¹⁹⁸ Memorandum for the European Commission dated 6 June 2023, page 6.

¹⁹⁹ Memorandum for the European Commission dated 6 June 2023, page 6.

²⁰⁰ Minutes of a call with a third-party dated 15 June 2023, para. 17.

²⁰¹ See : <https://auto-talks.com/autotalks-and-mediatek-cooperate-to-help-car-makers-and-tier-1s-integrate-c-v2x-and-telematics-securely-and-efficiently/> (last accessed on 10 August 2023).

²⁰² Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.h, page 10.

²⁰³ Minutes of a call with a third-party dated 15 June 2023, para. 19.

- (141) In this respect, the Parties argue that: (i) telematics chipsets are independent from V2X chipsets and the latter are not used as an input for telematics chipsets, (ii) the Parties will continue to face significant countervailing buyer power from automotive OEMs who have control over their choice of V2X supplier, including with respect to prices, (iii) telematics chipsets and V2X chipsets serve different functionalities, and (iv) the OEM's choice of telematics chipset is increasingly made by a different team than that which decides the V2X supplier.²⁰⁴
- (142) However, the Commission considers that the Transaction may enable Qualcomm to leverage its position on the market for V2X chipsets with a view to foreclose its competitors on the market for telematics chipsets because:
- (a) even if V2X chipsets are not used as an input for telematics chipsets and are used for different purposes, they are likely to be complementary for their large common pool of customers;
 - (b) even if standalone C-V2X chipsets like Autotalks' chipsets can operate and be isolated from the TCU, V2X chipsets (including standalone C-V2X chipsets) and telematics chipsets are nevertheless sold to a large pool of common customers for complementary functionalities which may enable Qualcomm to engage in contractual tying or bundling practices;
 - (c) the countervailing buyer power of automotive OEMs and Tiers suppliers is likely to be limited because of the large installed base that the Parties are likely to have in the future, and due to the significant barriers to entry on the plausible market for V2X chipsets;²⁰⁵
 - (d) the Parties' internal documents and Qualcomm's past strategies on the market suggest that [...].
- (143) In view of the foregoing, the Commission concludes that the requirement that the Transaction threatens, as a result of non-horizontal links, to significantly affect competition for the supply of telematics chipsets within the territory of Denmark (as part of the EEA) is met. This conclusion is based on a preliminary analysis, at this stage of the procedure, based on prima facie evidence showing a real risk that the Transaction would have a significant adverse impact on competition and remains without prejudice to the outcome of the full investigation that the Commission will carry out following this decision accepting the referral request.

(b) *V2X chipsets and RFFEs*

- (144) As explained above, RFFEs form an integral part of a V2X communications system, together with the V2X chipset. All V2X communications systems have a RFFE, regardless of their architecture (i.e. integrated into a NAD or standalone) and the RFFE is dedicated to V2X communications, which means that it cannot be used for cellular communication (e.g. for emergency call in case of an accident).²⁰⁶ As a result, V2X chipsets and RFFs are likely to be largely complementary and sold to a large pool of common customers.

²⁰⁴ Parties' observations of 28 July 2023 in response to the Commission's information letter of 8 August 2023, paras. 28 - 34.

²⁰⁵ See above, paragraphs (115)-(116).

²⁰⁶ Autotalks' response of 2 August 2023 to the Commission's request for information dated 20 July 2023, para. 22.

- (145) Accordingly, Qualcomm may have the possibility post-Transaction to technically or contractually tie the Parties' V2X chipsets with Qualcomm's RFFE modules. Alternatively, Qualcomm could engage in pure or mixed bundling strategies. As explained above, Autotalk's internal documents suggest that [...],²⁰⁷ which is further supported by the concerns expressed by several market participants.²⁰⁸
- (146) Like for telematics chipsets, the Parties argue that the Transaction does not raise vertical or conglomerate concerns in connection with RFFEs because: (i) V2X chipsets are not used as input for RFFEs, (ii) the Parties will continue to face significant countervailing buyer power from automotive OEMs who have control over their choice of V2X supplier, (iii) Autotalks' chipsets do not provide any input to RFFE components, and (iv) the interface of Autotalks' products is a simple direct radio frequency interface that can easily be adapted by other RFFE suppliers in the future.²⁰⁹
- (147) The Commission nevertheless considers that the Transaction may enable Qualcomm to leverage its position on the market for V2X chipsets with a view to foreclose its competitors on the market for RFFEs because:
- (a) even if V2X chipsets are not used as an input for RFFEs and are used for different purposes, they are likely to be complementary for their large common pool of customers;
 - (b) even though the Parties argue that Autotalks' chipsets do not provide input to RFFE components, the information submitted by Autotalks confirm that an RFFE and a V2X modem are both '*required for V2X operation*', which confirms their complementarity;²¹⁰
 - (c) the countervailing buyer power of automotive OEMs and Tiers suppliers is likely to be limited because of the large installed base that the Parties are likely to have in the future, and due to the significant barriers to entry on the plausible market for V2X chipsets;²¹¹
 - (d) the Parties' internal documents and Qualcomm's past strategies on the market suggest that [...];
 - (e) the fact that the interface of Autotalks' products is simple and can be adapted by other RFFE suppliers in the future does not rule out the possibility that Qualcomm may degrade the interface in the future or otherwise engage in contractual tying or bundling practices instead of technical tying.
- (148) In view of the foregoing, the Commission concludes that the requirement that the Transaction threatens, as a result of non-horizontal links, to significantly affect

²⁰⁷ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.h, page 10.

²⁰⁸ Minutes of a call with a third-party dated 15 June 2023. See also, the memorandum for the European Commission dated 6 June 2023.

²⁰⁹ Parties' observations of 8 August 2023 on the additional documents disclosed by the Commission on 31 July 2023, 1 August 2023, 2 August 2023 and 3 August 2023, paras. 28 - 34.

²¹⁰ Autotalks' response of 2 August 2023 to the Commission's request for information dated 20 July 2023, question 8, para. 31.

²¹¹ See above, paragraphs (115)-(116).

competition for the supply of RFFE's within the territory of Denmark (as part of the EEA) is met. This conclusion is based on a preliminary analysis, at this stage of the procedure, based on prima facie evidence showing a real risk that the Transaction would have a significant adverse impact on competition and remains without prejudice to the outcome of the full investigation that the Commission will carry out following this decision accepting the referral request.

3.3. Appropriateness of the referral

- (149) In exercising its discretion to make or accede to a referral request the Commission also takes into account the factors enumerated in the Article 22 Guidance. In the present case, the Transaction corresponds to the category of cases described in the Article 22 Guidance as suitable candidates for Article 22 referrals.
- (150) In accordance with paragraph 19 of the Article 22 Guidance, the Transaction involves the acquisition of a company, whose actual or future competitive potential is not reflected in its turnover. In the present case, the Commission considers that Autotalks' actual or future competitive potential does not match its annual turnover, in line with paragraph 19 of the Article 22 Guidance, for the reasons set out below.
- (151) *First*, Autotalks is a start-up²¹² with significant competitive potential that is expected to develop and generate significant revenues. This is because the Transaction is taking place in a nascent, but highly dynamic sector that is set to grow significantly over the coming years. The Parties' internal documents support this finding. Qualcomm internally describes V2X as a '[...]'.²¹³ Qualcomm estimates internally that the adoption of V2X will [...], from [0-5]% in 2023, to [20-30]% in 2027 and [30-40]% in 2031.²¹⁴ A large part of this [...] is expected to be [...]. Indeed, Qualcomm's sales forecast show that the company expects, absent the Transaction, to sell [0-10] million units in 2027 while its sales would be [...] (approx. [10-20] million units) in case of an acquisition of Autotalks.²¹⁵ Further, Qualcomm estimates that absent the Transaction, it would capture [20-30]% of the global V2X opportunities by 2027, while the acquisition of Autotalks would allow it to capture [80-90]% of global V2X opportunities by 2027.²¹⁶ The [...] is further confirmed by the fact that it has, according to Qualcomm, an established pipeline of more than USD [300-400] million.²¹⁷ The likely further [...] in V2X – also absent the Transaction – is also evidenced by the internal Autotalks reporting on [...] on RFIs/RFQs.²¹⁸ Specifically, Autotalks reports as having won V2X tenders with for example [10-20] million projected units over the project lifetime ([...]) or

²¹² Autotalks is frequently described as a start-up in the press, as also reported on the Autotalks website <https://auto-talks.com/?s=startup> (last accessed 10 August 2023).

²¹³ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.b, page 6.

²¹⁴ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.c, pages 2 and 5.

²¹⁵ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.b, page 11.

²¹⁶ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.b, page 10.

²¹⁷ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.a, page 1.

²¹⁸ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.h, pages 6-12.

[0-10] million projected units over the project lifetime ([...]). Further, Autotalks also expected to be still in contention for the [...].

- (152) *Second*, Autotalks is an important innovator, as it was the first and remained the only supplier to offer dual use V2X chipsets that can support both cellular and non-cellular technologies,²¹⁹ and it also carries potentially important research activities.²²⁰ In particular, Autotalks is carrying significant R&D activity with respect to its [...], which includes a [...] addressing existing Day 1 and future Day 2 use-cases and thus achieve ISO26262 ASIL B functional safety certification, making it the first V2X that can support automatic braking.²²¹ Similarly, Autotalks is working on the development of [...] specifically designed for connected autonomous vehicles.²²² Autotalks' R&D spent and large R&D team further confirm its significant innovation activity with respect to V2X. In 2022, Autotalks had a total operating expense of [...].²²³ [...].²²⁴
- (153) *Third*, and in line with the above, Autotalks is already depicted by market players as an important competitive constraint, and likely important competitive force in V2X and particularly C-V2X, in an industry where innovation is an important parameter of competition. Autotalks is regularly publicly depicted as the global '*pioneer and leader*' in V2X.²²⁵ For instance, industry participants note that '*Autotalks' V2X chipsets are ushering in the new era of road safety and shaping the future of mobility.*' They comment that '*the company's chipsets offer the most advanced, truly secure and highest performing global V2X communication solution*'.²²⁶ Autotalks has already secured [0-10] production award programs.²²⁷
- (154) *Fourthly*, the Transaction is valued at approx. EUR [350-450] million²²⁸ which is more than [...] times the current turnover of Autotalks and is thus particularly high.

²¹⁹ '*Autotalks, global leader in V2X, announced the launch of the first ever global V2X solution. Autotalks' deployment-ready, 2nd generation V2X (Vehicle to Everything) chipset is the only available solution capable of supporting both DSRC and C-V2X direct communications (PC5 protocol) at the highest security level.*' See <https://auto-talks.com/autotalks-launches-the-worlds-first-global-v2x-solution-unifying-dsrc-and-c-v2x-on-its-deployment-ready-chipset/> (last accessed on 21 June 2023).

²²⁰ In this respect, Autotalks is collaborating with CEVA to create the world's first 5G-V2X solution. Similarly, Autotalks is cooperating with Infineon to provide next-generation V2X solutions.

²²¹ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.h, page 20.

²²² Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.h, pages 3 and 20.

²²³ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.h, page 24.

²²⁴ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.h, page 28.

²²⁵ See e.g., <https://www.design-reuse-embedded.com/news/201905103/autotalks-accelerates-c-v2x-readiness-following-interoperability-testing-and-successful-bench-tests/>; <https://auto-talks.com/autotalks-launches-the-worlds-first-global-v2x-solution-unifying-dsrc-and-c-v2x-on-its-deployment-ready-chipset/>; <https://www.micron.com/insight/cv2x-a-sixth-sense-for-ad-as-and-autonomous-vehicles>; https://www.eejournal.com/industry_news/autotalks-unveils-the-worlds-first-v2x-chipsets-which-support-5g-v2x-for-day-2-scenarios/ (all last accessed on 20 June 2023).

²²⁶ <https://www.prnewswire.com/news-releases/autotalks-enhances-5g-c-v2x-chipsets-with-proteantecs-deep-data-analytics-301606589.html> (last accessed on 20 June 2023).

²²⁷ Qualcomm's response of 18 July 2023 to the Commission's request of information dated 14 July 2023, Annex 1.h, page 3.

²²⁸ Qualcomm's response of 21 June 2023 to the Commission's request for information dated 14 June 2023, question 7.

This also evidences the anticipated value of Autotalks, and therefore its competitive importance.

- (155) *Finally*, and as discussed in paragraph (117) above, the Parties' claim that Autotalks would be forced out of the market absent the Transaction remains unsubstantiated. It therefore, also in light of the project pipeline of Autotalks discussed above in paragraph (151), cannot be concluded that Autotalks would not continue to be active in the supply of V2X and capture a large part of the overall V2X growth.
- (156) In view of all the above, the Commission considers in line with its Article 22 Guidance that the present Transaction is an appropriate case for referral under Article 22 of the EUMR.

3.4. Conclusion

- (157) For the reasons set out in Sections 3.1 and 3.2 above, the Commission considers that the Referral Requests and this Request to Join fulfil the legal criteria of Article 22 EUMR, and for the reasons detailed in Section 3.3 above, the Commission considers it appropriate to exercise its discretion and accept the requests.

4. CONCLUSION

- (158) In view of the foregoing, the Commission has concluded that the Transaction is a concentration within the meaning of Article 3 of the Merger Regulation. The Commission concludes that the request by the DCCA to join the initial referral requests made by Belgium, France, Italy, the Netherlands, Poland, Spain and Sweden in the application of Article 22(3) is admissible as it was made within the deadline provided for in Article 22(2) of the Merger Regulation and both the request by the DCCA and the initial requests fulfil the requirements of Article 22(3) of the Merger Regulation. In particular, the Commission considers that the concentration meets the requirements laid down in Article 22(2) and 22(3) of the Merger Regulation and paragraphs 42-45 of Referral Notice. The Commission therefore has decided to examine the proposed concentration under the Merger Regulation.

For the Commission

(Signed)
Margrethe VESTAGER
Executive Vice-President