Unified Patent Court
Einheitliches Patentgericht
Juridiction unifiée du brevet

Düsseldorf Local Chamber
UPC_CFI_135/2024
UPC_CFI_477/2024

Judgment
of the Court of First Instance of the Unified Patent Court delivered on 18 March 2026
concerning EP 3 605 534

HEADNOTES:

1. A dominant position within the meaning of Article 102 TFEU on the relevant market may arise from the fact that, without a licence to the patent in dispute, no products (in this case, smart TVs) can be offered that are compatible with a common standard. The decisive factor here is the consumer's expectation that smart TVs will incorporate all common audio and video codecs and thus be able to decode all content that has been encoded accordingly by service providers.

2. With regard to the fundamental classification of the FRAND negotiation framework following Huawei v. ZTE, the Düsseldorf Local Chamber concurs with the Local Chambers in Mannheim (UPC_CFI_210/2023, decision of 22 November 2024 – Panasonic v. OPPO) and Munich (UPC_CFI_9/2023, decision of 18 December 2024 – Huawei v. Netgear). Insofar as there are differences between the two Local Chambers in the application of the principles under Huawei v. ZTE, these are not relevant to the case decided by the Düsseldorf Local Chamber.

3. If, under the negotiation framework established in Huawei v. ZTE, the infringer fails to make an initial expression of willingness to licence ("Step 2") after the patent holder has notified the infringer of the patent infringement ("Step 1"), the assessment is concluded. The question of whether the patent holder's offer is FRAND then no longer requires examination.

KEYWORDS:

FRAND; dominant position; expression of willingness to license

HEADNOTES:

1. A dominant position within the meaning of Article 102 TFEU on the relevant market may arise if products (here: smart TVs) that are compatible with a common standard cannot be offered without a licence for the patent in suit. The decisive factor is that consumers expect smart TVs to include all common audio and video codecs and can therefore decode all content that is encoded accordingly by service providers used for encoding.

2. Regarding the fundamental classification of the FRAND negotiation programme following Huawei v. ZTE, the Düsseldorf Local Division concurs with the Mannheim Local Division (UPC_CFI_210/2023, Decision of 22 November 2024 – Panasonic v. OPPO) and the Munich Local Division (UPC_CFI_9/2023, Decision of 18 December 2024 – Huawei v. Netgear). Any differences between the two Local Divisions in the application of the principles under Huawei v. ZTE are irrelevant in the case decided by the Düsseldorf Local Division.

3. In accordance with the negotiation programme established in Huawei v. ZTE, if the infringer fails to initially express its willingness to conclude a licensing agreement ("step 2"), in response to a compliant notification of infringement/invitation thereto ("step 1"), the examination is terminated. In this case, the question of whether the patent holder's offer is FRAND does not need to be investigated.

KEYWORDS:

FRAND; dominant position; expression of willingness to conclude a licensing agreement

PLAINTIFF:

Dolby International AB, represented by its Board of Directors, 77 Sir John Rogerson's Quay, Block C Grand Canal Docklands, Dublin, D02 VK60, Ireland

represented by: Dr Volkmar Henke, Solicitor, Dr Tilman Müller, Solicitor, Bardehle Pagenberg Partnerschaft mbB, Bohnenstraße 4, 20457 Hamburg, Germany

also represented by: Patent Attorney Dipl.-Ing. Tobias Kaufmann, Patent Engineer Dr.-Ing. Julian Renner, Bardehle Pagenberg Partnerschaft mbB, Prinzregentenplatz 7, 81675 Munich, Germany

Electronic service address: henke@bardehle.de

DEFENDANT:

1. **Beko Germany GmbH**, represented by its managing directors, Rahmannstraße 3, 65760 Eschborn, Germany

2. **Arçelik A.Ş**, represented by its directors, Elektronik Plant, Cerkezköy Organised Industrial Zone, Karaagac Mah. 8 Sokak No: 1A, 59510, Kapakli, Tekirdag, Turkey

Defendants 1) and 2) represented by: Patent Attorney Joachim Gerstein, LL.M., Solicitor Andreas Kabisch, LL.M., Patent Attorney Tilman Pfrang, LL.M., Solicitor Niels Christof Julius Schuh, Patent Attorney Dr Jasper Werhahn, Meissner Bolte Patent Attorneys Solicitors Partnership mbB, Kaiserswerther Str. 183, 40474 Düsseldorf, Germany

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PATENT IN DISPUTE:

European Patent No. EP 3 605 534 DECISION-MAKING

BODY/CHAMBER:

Panel of the Düsseldorf Regional Chamber JUDGES:

The decision was delivered with the participation of Presiding Judge Thomas, legally qualified Judge Dr Schumacher as Rapporteur, legally qualified Judge Kokke, LLM MSc, and technically qualified Judge Matter.

LANGUAGE OF THE PROCEEDINGS: German

SUBJECT: Action for infringement and counterclaim for annulment

ORAL HEARING: 4 February 2026

Contents

BRIEF SUMMARY OF THE FACTS:

1. The claimant is bringing an action against the defendants for infringement of European patent EP 3 605 534 (hereinafter: the contested patent). The parties are disputing, by way of counterclaim, the validity of the contested patent, which the claimant is defending in a limited manner in the alternative.

2. The (parent) application underlying the contested patent was filed on 23 June 2011 in English as the language of the proceedings and published on 5 January 2012 as WO 2012/000882 A1 (Annex NK2a). The contested patent claims the priority of US 36123710 P dated 2 July 2010 in Claim and is based on a divisional application 4. Generation dated 23 June 2011, which was published on 5 February 2020 as EP 3 605 534 A1 (Annex NK2e). The notice of grant of the contested patent was published on 20 October 2021 (contested patent specification EP 3 605 534 B1 (Annex NK1)). The contested patent is in force in Germany, France, the Netherlands and Italy. No opposition was filed with the European Patent Office (EPO) against the grant of the contested patent.

3. The opt-out application under Article 83 of the EPGÜ, filed on 12 May 2023 in respect of the patent in dispute, was withdrawn on 23 January 2024.

4. The claimant is registered as the proprietor of the German, French, Dutch and Italian parts of the patent in dispute in the respective patent registers.

5. The patent in dispute is entitled “AUDIO DECODING WITH SELECTIVE POST-FILTERING”. In its action, the claimant asserts patent claims 1 (apparatus claim) and 6 (method claim).

6. Claim 1 is worded as follows in the English language of the proceedings:

> “A decoder system (400; 500; 700; 1000) for decoding a bit stream signal as an audio time signal, including:
>
> > a decoding section (410; 511, 512, 513; 711, 712, 713; 1011, 1013) for decoding a bit stream signal as a preliminary audio time signal, the decoding section being operable in at least one first decoding mode including post-filtering; and at least one second decoding mode not including post-filtering; and
> >
> > a pitch enhancement filter (440; 540; 740; 1040) for post-filtering the preliminary audio time signal to obtain an audio time signal, wherein the pitch enhancement is controlled by a post-filter gain,
> >
> > **characterised by** a control section adapted to, in said at least one first decoding mode, responsive only to post-filtering information encoded in the bit stream signal, selectively disable the pitch enhancement filter by setting the post-filter gain to zero, the post-filtering information being indicative of an encoder-side decision as to whether to disable post-filtering, whereby the preliminary audio time signal is output as the audio time signal.”

7. In the registered German translation, Patent Claim 1 reads:

> “A decoding system (400; 500; 700; 1000) for decoding a bitstream signal as an audio time signal, comprising:
>
> > a decoding section (410; 511, 512, 513; 711, 712, 713; 1011, 1013) for decoding

a bitstream signal as a preliminary audio time signal, wherein the decoding section is operable in at least a first decoding mode including post-filtering and at least a second decoding mode that does not include post-filtering; and

a pitch enhancement filter (440; 540; 740; 1040) for post-filtering the preliminary audio time signal to obtain an audio time signal, wherein the pitch enhancement is controlled by a post-filter gain,

characterised by a control section configured to selectively deactivate the pitch enhancement filter in the at least one first decoding mode in response solely to the post-filter information encoded in the bitstream signal, by setting the post-filter gain to zero, wherein the post-filter information indicates an encoder-side decision as to whether post-filtering is to be deactivated, whereby the preliminary audio timing signal is output as the audio timing signal."

8. Claim 6 reads as follows in the English procedural language:

"A method of decoding a bit stream signal as an audio time signal, comprising the steps of:

decoding a bitstream signal as a preliminary audio time signal in one of a plurality of decoding modes, said plurality of decoding modes including at least one first decoding mode comprising a post-filtering step, and at least one second decoding mode not comprising a post-filtering step;

wherein the post-filtering step applies a pitch-enhancement filter to the preliminary audio time signal, thereby obtaining an audio time signal, wherein the pitch-enhancement filter is controlled by a post-filter gain,

characterised in that, in said at least one first decoding mode, the post-filtering step is selectively disabled in response only to post-filtering information encoded in the bit stream signal by setting the post-filter gain to zero, the post-filtering information being indicative of an encoder-side decision as to whether to disable post-filtering."

9. In the registered German translation, patent claim 6 reads:

"A method for decoding a bitstream signal as an audio time signal, comprising the following steps:

Decoding a bitstream signal as a preliminary audio time signal in one of a plurality of decoding modes, wherein the plurality of decoding modes includes at least one first decoding mode that includes a post-filtering step, and at least one second decoding mode that does not include the post-filtering step;

wherein the post-filtering step applies a pitch enhancement filter to the preliminary audio time signal, thereby obtaining an audio time signal, wherein the pitch enhancement filter is controlled by a post-filter gain,

characterised in that, in the at least one first decoding mode, the post-filtering step is selectively deactivated in response solely to the post-filter information encoded in the bitstream signal by setting the post-filter gain to zero, wherein the post-filter information indicates an encoder-side decision as to whether post-filtering is to be deactivated."

10. The claimant considers the contested patent to be essential to the 'Opus Audio Codec' technical standard (hereinafter: Opus standard or Opus).

11. The Opus standard was defined by the Internet Engineering Task Force (IETF) in RFC 6716. The document is available at the link https://datatracker.ietf.org/doc/html/rfc6716.

12. The claimant has contributed its patent portfolio relating to the Opus standard (including the patent in dispute) to a patent pool established in January 2023. The Opus Pool currently comprises more than 300 patents. It is managed by Vectis IP Ltd (hereinafter: Vectis). Alongside the claimant, the Fraunhofer Society is one of the key licensors in the Opus Pool. Neither the claimant nor the Fraunhofer Society were involved in the development of the Opus standard.

13. Vectis offers licensees the right to use the patents in the pool that are (allegedly) essential to the Opus standard through a single licence agreement. This provides for licence fees of EUR 0.15 per product and a maximum licence payment of EUR 15 million per year. Royalties for products sold prior to 1 January 2023 are not required from the licensees.

14. In its action, the claimant targets television models from the 'Full HD/HD' series (such as the models '43 GUB 7340', '75 GUB 7340', '32 GHB 6340' and '43 VCE 223'), 'Ultra HD' (such as e.g. the models '65 GUB 8251', '40 GFB 6340', '50 GUB 7340' and '55 GUB 8251'), 'OLED' (such as the '55 GOB 9380' and '65 GOB 9380' models) and all other televisions manufactured by the defendant, regardless of their name, brand, model number and screen size, which use the 'Android TV' operating system in version 5.0 or a subsequent version (hereinafter: the infringed embodiments).

15. The 'Android TV' functionality ensures that files complying with the Opus standard are decoded by the relevant devices.

16. The defendants belong to the globally active Arçelik Group, which is engaged in the manufacture and distribution of electrical appliances, in particular televisions, audio equipment and household appliances.

17. Defendant 1), which operated under the name "Beko Grundig Deutschland GmbH" until 21 December 2023, is a subsidiary of Defendant 2). It is the German distribution company for Grundig-branded products. It operates the German websitewww.grundig.com/de-de (excerpts submitted as Annex BP-P 11). Via this website, the first defendant offers televisions in addition to numerous household appliances. In addition to Germany, the first defendant also offers the contested designs in France (see Grundig France website, Annex BP-P 15). The defendants have distribution structures in the Netherlands and Italy.

18. Defendant 2) is the parent company of Defendant 1) and the manufacturer and supplier of the contested designs. On its website, Defendant 2) for Grundig-branded sets (see Annex BP-P 16) and refers to the website of the first defendant. Furthermore, the second defendant has issued the required CE declaration of conformity, at least for some of the sets in question. The CE marking is a mandatory requirement for the sale of television sets in the European Union and

therefore also in the member states of the EPGÜ.

19. Vectis first contacted the second defendant by letter dated 21 April 2023 (Exhibit BP-V 1). Attached to the letter was a list of patents (Exhibit BP-P 21) in which the patent in dispute is mentioned. The letter outlined, amongst other things, the Opus Pool's licensing programme, listed several of the defendant's products which, in Vectis's view, were subject to licensing, and explained the Pool's licence fees, including an 'early bird' rate. It also referred to the Pool's website and offered to provide a draft licence agreement.

20. The second defendant responded to this by email dated 9 May 2023, stating that the technical teams had been informed to carry out a further examination of the use of Opus technology in their own products. Once the products and patents had been examined, a meeting could be arranged to discuss the matter.

21. Vectis replied by email on the same day, suggesting various dates for an initial telephone call (emails of 9 May 2023, collectively attached as Annex BP-V 2).

22. As no reply was received from the second defendant, Vectis contacted them again by email on 28 June 2023 (Exhibit BP-V 3) and proposed an initial telephone call.

23. In an email dated 11 July 2023, the second defendant stated that the internal review and discussions had not yet been completed, but that this was expected to be the case by 1 October 2023.

24. Vectis replied to this by email dated 18 July 2023 (emails of 11 and 18 July 2023 together as Annex BP-V 4). Vectis attached a standard NDA to the email for review, in order to facilitate a more open discussion in the coming weeks.

25. However, no reply was received from the second defendant, which is why Vectis contacted them again by email dated 26 September 2023 (Exhibit BP-V 5).

26. As the second defendant still failed to reply, Vectis followed up again by email dated 24 November 2023 (Exhibit BP-V 6). No reply was received to this either.

27. On 31 January 2024, Vectis sent a letter (Exhibit BP-V 7) to the second defendant, to which included, amongst other things, claim charts – including one relating to the patent in dispute – and a draft licence agreement.

28. Defendant 2) did not respond. On 5 April 2024, the claimant filed the present infringement action.

29. […]

KEY PROCEDURAL STEPS:

Further amendments

30. By written submission dated 28 October 2024, the claimant filed a request for amendment of the patent and formulated seven alternative claims.

31. In its response to the amendment request of 27 January 2025, the claimant formulated a further four subsidiary claims. It stated that it was requesting permission, purely as a precautionary measure, to amend the application for amendment of the patent to the extent that the newly submitted subsidiary claims be admitted. In fact, the four 'new' alternative claims were merely an amendment which, in accordance with standard practice, was being combined with the other alternative claims.

32. The defendants opposed this in their rejoinder to the application for amendment of 27 February 2025. There were no grounds whatsoever that would justify the admission of these claims pursuant to
Rule 30.2 of the Rules of Procedure.

Plaintiff's application under Rule 36 of the Rules of Procedure

33. By a written submission dated 27 January 2025, the claimant requested, pursuant to Rule 36 of the Rules of Procedure, leave to file a written submission regarding the defendants' FRAND objection. In support of this, she argued that it was appropriate for each party to the infringement proceedings to be given the opportunity to submit two written pleadings concerning the defendant's FRAND objection, which was raised for the first time in the statement of defence. She further pointed out that the
the defendants' "FRAND reply" – meaning the rejoinder (legal section) in the infringement proceedings dated 27 December 2024 – contained new arguments. For example, in support of their claim that the claimant holds a dominant market position, the defendants referred to "service providers" for the first time. The plaintiff has already submitted the requested further written submission in accordance with Rule 36 of the Rules of Procedure.

34. By order of 14 August 2025, the Chair, acting on behalf of the Rapporteur, granted the Plaintiff permission to submit a further written submission pursuant to Rule 36 of the Rules of Procedure.

The claimant's application pursuant to Rule 9.2 of the Rules of Procedure

35. In their aforementioned rejoinder to the amendment application of 27 February 2025, the defendants, under the heading 'A. On the interpretation of the claims' (pp. 6–12) on the interpretation of the contested patent in the granted version and, under the heading "B. Validity of the patent in suit" (pp. 13–30), on the inadmissible extension, lack of novelty and lack of inventive step asserted by them in the counterclaim.

36. In a written submission dated 24 April 2025, the claimant pointed out that this did not constitute a permissible subject matter for a rejoinder to the amendment request. It requested that the defendant's submissions in the written statement of 27 February 2025 be disregarded insofar as they relate to the interpretation and legal validity of the patent in dispute in its granted version; in the alternative, that the Court, pursuant to Rule 36 VerfO, to be permitted to file a further written submission in response to this submission, and, in the further alternative, that she, the claimant, be granted a separate opportunity at the oral hearing to address only the aforementioned arguments.

37. In the aforementioned written submission of 24 April 2025, the claimant has already set out those arguments regarding the interpretation and legal status of the patent in dispute to which its alternative request relates.

38. By order of 30 July 2025, the rapporteur stated that a decision on the claimant's application to disregard the defendant's submissions pursuant to Rule 9.2 of the Rules of Procedure would be made at a later date and that, in light of this, there was no reason to allow a further written submission pursuant to Rule 9.2 of the Rules of Procedure.

APPLICATIONS BY THE PARTIES:

Action for infringement:

39. Following a direction in the interim proceedings, the claimant amended its claims in the infringement action of 5 April 2024 by a written submission dated 10 October 2025 in so far as they relate to the claims for recall, permanent removal from the distribution channels and destruction.

40. The claimant requests:

A. The defendants are ordered

I. to refrain from

> decoding systems for decoding a bitstream signal as an audio time signal, including:
>
> a decoding section for decoding a bitstream signal into a preliminary audio time signal, wherein the decoding section is operable in at least a first decoding mode including post-filtering and at least a second decoding mode that does not include post-filtering; and
>
> a pitch enhancement filter for post-filtering the preliminary audio time signal to obtain an audio time signal, wherein the pitch enhancement is controlled by a post-filter gain,
>
> in the Federal Republic of Germany and/or in France and/or the Netherlands and/or Italy, to offer, place on the market, use or, for the aforementioned purposes, either import or possess,
>
> wherein the decoding section comprises
>
> > a control section configured, in the at least one first decoding mode, to selectively deactivate the pitch enhancement filter in response solely to the post-filter information encoded in the bitstream signal by setting the post-filter gain to zero, wherein the post-filter information indicates an encoder-side decision as to whether the post-filtering is to be deactivated, whereby the preliminary audio time signal is output as the audio time signal;
> >
> > (direct infringement of claim 1 of EP 3 605 543)

II. to refrain from

third parties, in and for use in the Federal Republic of Germany and/or France and/or the Netherlands and/or Italy, means, namely television sets, which are suitable and intended for

> decoding a bitstream signal as an audio time signal, comprising the following steps:
>
> decoding a bitstream signal as a preliminary audio time signal in one of a plurality of decoding modes, wherein the plurality of decoding modes includes at least a first decoding mode comprising a post-filtering step, and at least a second decoding mode not comprising the post-filtering step;
>
> wherein the post-filtering step applies a pitch enhancement filter to the preliminary audio time signal, thereby obtaining an audio time signal, wherein the pitch enhancement filter is controlled by a post-filter gain,

to offer and/or provide when

> in which, in at least a first decoding mode, the post-filtering step is selectively deactivated in response solely to the post-filtering information encoded in the bitstream signal, by setting the post-filtering gain to zero, wherein the post-filtering information indicates a decision made at the encoder side as to whether post-filtering is to be deactivated;
>
> (indirect infringement of claim 6 of EP 3 605 534)

III. only the first defendant: at its own expense

1. to recall, in writing, the products referred to in Section A.I. and placed on the market since 20 November 2021 from commercial customers, citing the patent-infringing status of the products as established by the Unified Patent Court, and to give a binding undertaking to reimburse any fees and to bear the necessary packaging and transport costs as well as the customs and storage costs associated with the return, and to take the products back, whereby the claimant is to be provided with a sample of the recall letters and a list of addressees with names and postal addresses or – at the defendant's discretion – an electronic copy of all recall letters;

2. to permanently remove from the distribution channels the products referred to in section A.I., which have been placed on the market since 20 November 2021, whereby the following measures in particular must be taken:

   a) The defendants must take all possible and reasonable steps to identify the locations and owners of the products referred to in paragraph A.I.;

b) insofar as the defendants themselves have legal or actual control over the goods specified in paragraph A.I., legally permissible and reasonable measures must be taken to ensure that these goods come into the defendants' direct possession and remain there;

c) Insofar as the defendants have neither legal nor factual control over the goods referred to in paragraph A.I., they must take all legally permissible and reasonable measures to ensure that the persons who have claims for the return or destruction of the goods against those who have control over them, to assert such claims and/or to assist those persons in asserting such claims;

3. to destroy, at their own expense, the goods referred to in Section A.I. which are in their direct or indirect possession and/or ownership, or, at their discretion, to surrender them to a bailiff to be appointed by the claimant for the purpose of destruction;

IV. to provide the claimant with information as to the extent to which they have committed the acts described in sections
A.I. and A.II. since 20 November 2021, specifying

1. the origin and distribution channels of the products referred to in sections A.I. and A.II., specifying

a) the names and addresses of the suppliers and other previous owners, and

b) the names and addresses of commercial customers and the points of sale for which the products were intended;

2. the quantity of products delivered, received or ordered, as well as the prices paid for the products in question; and

3. the identity of all third parties involved in the distribution of the products referred to in sections A.I and A.II,

whereby copies of the relevant purchase documents (namely invoices, or alternatively delivery notes) must be submitted as evidence of the information, with details requiring confidentiality being redacted from the data subject to disclosure.

B. The defendants are obliged to compensate the claimant for all damage incurred by her as a result of the acts listed under sections A.I. and A.II. committed since 20 November 2021 and which she will yet incur.

C. The claimant is permitted, at the defendants' expense, to publicise and publish the decision in whole or in part in the media, in particular on the internet.

D. In the event of any breach of the orders under sections A.I. and A.II., a penalty payment of

- up to EUR 100,000 for each day of non-compliance with Order A.I.
- up to EUR 100,000 for each day of non-compliance with Order A.II.
- up to EUR 50,000 for each day of non-compliance with Order A.III.
- up to EUR 10,000 for each day of non-compliance with Order A.IV

to be paid to the court.

E. The defendants shall bear the costs of the proceedings.

F. The judgment is immediately enforceable. In the event that security is ordered, the claimant is permitted to provide this in the form of a bank or savings bank guarantee, and the amount of the security shall be determined separately for the individual enforceable parts of the judgment, with the following individual amounts being proposed:

Injunction: EUR 1,000,000,-Recall &

destruction: EUR 400,000,-Disclosure:

EUR 100,000,-

41. The defendants request:

I. The action for infringement be dismissed.

II. The claimant shall bear the costs of the

proceedings. Counterclaim for annulment:

42. The defendants request:

European Patent EP 3 605 534 be declared invalid in so far as it relates to claims 1 and 6.

43. The claimant requests:

The counterclaim for revocation of EP 3 605 534 is dismissed, with costs.

Request for amendment of the patent:

44. The claimant requests:

I. In the alternative: The counterclaim for the declaration of invalidity of EP 3 605 534 is dismissed, with costs

, in so far as it relates to the version of the contested patent pursuant to

1. Alternative claim 1 (Annex HA 1, with a German translation as Annex HA 1a);

2. Alternative claim 2 (Annex HA 2, in German translation as Annex HA 2a);

3. Alternative claim 3 (Annex HA 3, in German translation as Annex HA 3a);

4. Alternative claim 4 (Annex HA 4, in German translation as Annex HA 4a);

5. Alternative claim 5 (Annex HA 5, in German translation as Annex HA 5a);

6. Alternative claim 6 (Annex HA 6, in German translation as Annex HA 6a);

7. Auxiliary claim 7 (Annex HA 7, with a German translation as Annex HA 7a);

beyond which, the requests for amendment of the contested patent are made in the order of their numbering (ascending) and as complete sets of claims;

II. the claims announced in the statement of claim regarding infringement of the patent in dispute are upheld, subject to the proviso that the wording of claims 1 and 6 set out therein is drafted in accordance with the auxiliary claim deemed valid by the Board.

45. In the reply to the application for amendment of the patent dated 27 January 2025, the claimant, in addition to the application under I., requests in accordance with auxiliary claim 7:

"I. …

8. Auxiliary claim 8 (Annex HA 8, in German translation as Annex HA 8a);

9. Sub-claim 9 (Annex HA 9, in German translation as Annex HA 9a);

10. Alternative claim 10 (Annex HA 10, with a German translation as Annex HA 10a);

11. Alternative claim 11 (Annex HA 11, in German translation as Annex HA 11a);

…"

46. The defendants have opposed the requests for amendment of the contested patent.

FACTUAL AND LEGAL ISSUES:

Jurisdiction of the EPG and standing to sue

47. The defendants are of the view that the German, French and Dutch patent registers show that the relevant national parts of the contested patent were transferred on multiple occasions in 2022 and 2023. Although the Italian part of the contested patent does not reveal any prior owners, transfers would appear likely here too. The validity of the transfers is disputed. Furthermore, contrary to the formal requirements of the Rules of Procedure, the claimant has failed to provide a statement on this matter in the statement of claim. Moreover, the jurisdiction of the EPG is contested because the claimant, in the absence of

The defendant was unable to lawfully demonstrate its entitlement to the opt-in. In any event, the one-month period under Rule 19 of the Rules of Procedure had not yet expired for the second defendant at the time the statement of defence was filed.

48. The claimant submits that it is not only the undisputed owner but also the applicant of all the asserted national components of the contested patent. There were no transfers, only changes of address.

Scope of protection

49. The parties agree that, with regard to the interpretation of claim 1 and claim 6, in so far as the features correspond in substance.

50. With regard to claim 1, the defendants object to the plaintiff's failure to provide an interpretation. They contend that the plaintiff overlooks the fact that claim 1 sets out spatial and physical requirements beyond the functional features also contained in claim 6, which are not included in process claim 6.

51. Furthermore, as regards the interpretation of the requirements set out in claims 1 and 6, the parties essentially submit the following, in so far as it is relevant to the decision. With regard to the numbering of the features, reference is made to the breakdown of features set out under D.I. of the grounds.

Features 1.1.2/6.1.2

52. The claimant submits that the contested patent understands the term 'post-filtering' to mean filtering for pitch improvement. A post-filter is a filter applied to a preliminary audio time signal for the purpose of pitch improvement. Accordingly, the contested patent does not regard an *LPC synthesis filter* as a post-filter within the meaning of the claims, as it is used to restore the preliminary audio time signal. For this reason, no signal in the path preceding the LPC synthesis filter can be a preliminary audio time signal, and consequently the LTP synthesis filter upstream of the LPC synthesis filter cannot be applied to a preliminary audio time signal either. Furthermore, the contested patent refers in paragraph [0010] to the TCX operating mode, which uses an LPC synthesis filter, as an example of an operating mode without a post-filter.

53. The defendants are of the view that the claimant reduces the feature to the fact that the second decoding mode does not include a pitch enhancement filter. In fact, however, the claim requires that the second decoding mode does not include any post-filtering or any post-filtering step at all. The term 'post-filter' cannot be reduced to a pitch enhancement filter. The wording of the claim clearly distinguishes between post-filter(s) in general and pitch enhancement filter(s) as part of the signal processing in the first mode. An LPC synthesis filter and an LTP synthesis filter are also post-filters. In so far as the claimant understands a post-filter to be a filter applied to a preliminary audio time signal, this interpretation is not supported by the description or the figures. The claimant's argument is also based on its overly narrow understanding of the term '(provisional) audio time signal'. The claimant seeks to interpret this – except in claim 6 – as part of the bitstream signal and therefore argues that

an LPC synthesis filter cannot be a post-filter because it is used to reconstruct such a signal and is not 'applied' to it. If the concept of a (provisional) audio time signal is interpreted correctly, the LPC filter is also applied to an audio signal, i.e. a signal carrying audio information. Furthermore, according to the claimant's interpretation, the amplitude modulation of the SILK layer of the Opus codec – in the form of limiting the prediction gain of the LPC filter to achieve a stable LPC filter – constitutes a post-filter as claimed. Thus, not only the CELT decoding mode but also the SILK decoding mode of the Opus codec comprises a post-filtering step.

Features 1.2.2a, 1.2.3/6.2.2a, 6.2.3

54. The defendants argue that, since the claim specifically requires that the pitch enhancement filter be deactivated by setting the post-filter gain to zero, neither deactivation via an on/off switch nor bypassing the post-filter is covered by the claim.

55. It should be noted that, in its original version, the contested patent provided for two alternative ways of 'deactivating' the post-filter: firstly, the bypass (the post-filter is not passed through or activated); and secondly, a pass-through with a gain of zero (the post-filter is passed through, but the signal is not altered). In paragraph [0032] of the original version, these variants were explicitly distinguished from one another. In the course of the grant procedure, the first alternative, the bypass solution, was abandoned in favour of the second alternative, the pass-through/zero-gain solution. This selection decision is explicitly reflected in the claim, which identifies the second alternative as the sole means of deactivating the post-filter. Against this background, the embodiments shown in Figures 4, 5 and 10 do not fall within the scope of the claim. All these embodiments used a switch solution for the selective deactivation of the post-filter, which had been described in the originally filed version of the contested patent as an alternative embodiment to the claimed post-filter amplification. This alternative had not been reflected in the patent claims and had been removed from the description. Even if one were not to take the deletion directly into account in the interpretation, the claimant had implicitly expressed itself accordingly through its declaration of consent, which must in any event be taken into account. The direct causal link required by the claim ('…by setting the post-filter amplification to zero') could logically not exist in the case of a bypass. This is because, in a bypass, the data stream is routed past the filter, so that the post-filter gain has no influence on the final signal. The claimant's alternative interpretation would, moreover, inevitably lead to an impermissible extension.

56. Nor does the claim cover embodiments in which a post-filter is deactivated by default and activated selectively. The claim unambiguously stipulates that deactivation occurs selectively (i.e. only in selected situations), which excludes solutions in which a deactivated filter is the default state. The person skilled in the art does not understand selective deactivation to mean a blanket deactivation from which there is only occasional deviation. This is also consistent with the spirit and purpose of the contested patent, according to which switching artefacts arising when switching back and forth between post-filters and non-post-filters should be avoided, as also described in paragraph [0010]. The contested patent seeks to reduce this effect by selectively deactivating the post-filter at selected points, for example when singing begins.

57. The claimant, on the other hand, takes the view that the contested patent makes no provision to the effect that the post-filter is 'activated by default' and is 'selectively deactivated' from such a state. Given the stipulation that the selective deactivation
takes place *'responsive only* to' the post-filter information encoded in the bitstream, the claim establishes a causal relationship between (only) the encoded post-filter information and the non-use of the post-filter step. By contrast, the claim does not limit the deactivation in terms of timing such that a setting on the decoding device is only made after the post-filter information encoded in the bitstream has been read out. This is also consistent with the meaning and purpose of the features in question. The possibility of selectively using a post-filter allows the quality of the audio signal to be improved, e.g. by preventing *switching* artef*acts* from occurring when the post-filter step is activated. Whether, on the decoder side, the non-use of the post-filter step is implemented by setting an initial default and checking this against the encoded post-filter information, or whether, without an initial default, a setting of the device is only made after the encoded post-filter information has been read out, is an implementation detail irrelevant to the inventive concept of the contested patent.

58. Setting the post-filter gain to zero could be implemented by assigning the value zero to a variable characteristic of the post-filter gain. This is therefore a means of deactivating the post-filter stage. The wording of the claim leaves open the question of whether further means are involved (e.g. the use of a bypass). The embodiments of the contested patent showed, in Figures 4, 5 and 10, deactivation by means of a bypass and, in Figure 7, deactivation by means of a pass-through. The extended claim contained no limitation to either of the two solutions. The deletion of paragraph [0032] during the grant procedure did not preclude this. Apart from the fact that proceedings within the grant procedure are irrelevant to the interpretation, there is no indication that the Examining Division intended to impose a restriction to certain embodiments by deleting that paragraph. On the contrary, the contested patent continues to include all embodiments in which deactivation is achieved by means of a bypass, and describes these as falling within the scope of the invention.

Features 1.3/6.3

59. The claimant submits that 'post-filter information' as defined in the claims is to be understood as information relating to post-filtering which is encoded in the bitstream in addition to the encoded information required for the restoration of the preliminary audio signal and which indicates to the decoder whether the post-filter is to be deactivated.

60. By contrast, the defendants are of the view that it cannot be inferred from the contested patent that the information should be provided 'in addition' to the information that is actually necessary. In fact, post-filter information within the meaning of the contested patent comprises all information relating to the post-filter and forming part of the bitstream, regardless of whether or not this is 'in addition' to a class of information necessary for reconstruction.

Feature 1.2.2a

61. In the defendant's view, the control section mentioned only in claim 1 is a separate, physical system component of the claimed decoding system. However, it is not clear from the claim whether it is a component of the decoding system as a whole or a component of the pitch enhancement filter.

Legal position

62. By way of the counterclaim for revocation, the defendants seek a declaration of invalidity of the contested patent to the extent of independent claims 1 and 6. They essentially argue:

63. Claims 1 and 6 of the contested patent are inadmissibly extended in relation to the parent application WO 2012/000882 A1 (Annex NK2a, hereinafter: parent application or NK2a).

64. It also follows from the reasons set out in connection with the inadmissible extension that the priority could not have been validly claimed.

65. The defendants further contend that, in light of the following prior art, the claims 1 and 6 of the contested patent lack novelty:

- WO 2005/078706 A1 (hereinafter: D1);
- 3GPP TS 26.920 version 6.3.0 Release 6 (hereinafter: D3);
- G. Fuchs, R. Lefebvre: A Speech Coder Post-Processor Controlled by Side-Information, Proceedings (ICASSP'05) IEEE International Conference on Acoustics, Speech, and Signal Processing, Vol. 4, pp. IV-433 – IV-436, March 2005 (hereinafter: D4);
- US 2005/0165603 A1 (hereinafter: D5);
- Documents 'D3' and 'D4' from the examination proceedings, which constitute prior art due to the invalid assertion of priority.

66. Furthermore, the defendants are of the opinion that there is a lack of inventive step, namely:

- based on D1 in combination with general technical knowledge, D3, D5 and the citation Juin-Hwey Chen, Allen Gersho, 'Adaptive Postfiltering for Quality Enhancement of Coded Speech', IEEE Transactions on Speech and Audio Processing, Vol. 3, No. 1, January 1995 (hereinafter: D6);
- based on the citation B. Bessette et al., The Adaptive Multirate Wideband Speech Codec (AMR-WB), IEEE Transactions on Speech and Audio Processing, Vol. 10, No. 8, November 2002, pp. 620–636 (hereinafter: D2) in combination with D1, D3/D4, D5 or D6;
- based on D3 in combination with D1, D4, D5 or D6.

67. The claimant, however, considers the contested patent to be valid.

Infringement

68. The claimant considers the offering of the contested embodiments to constitute a direct infringement of patent claim 1 (apparatus claim) and an indirect infringement of patent claim 6 (method claim). A decoder implemented in accordance with the Opus standard embodies the features of claim 6 of the contested patent.

69. The defendants, on the other hand, are of the view that the contested patent is not standard-essential for the Opus standard. Whilst the contested patent may constitute a possible implementation of the standard, However, upon examination of the standard, a person skilled in the art would identify a different implementation option as a significantly more obvious solution for implementing the standard, which is also applied in the contested embodiments. The contested embodiments do not literally embody all the features of either independent claim 1 or independent claim 6.

70. The parties largely address the issue of infringement by referring to the features of claim 6. Specifically:

Feature 6.1.2

71. The claimant submits that, with the SILK mode, the contested embodiments provide for a second decoding mode which does not include the post-filtering step. As explained, neither the LTP synthesis filter nor the LPC synthesis filter in the SILK mode constitutes a post-filter.

72. The defendants are of the view that there is no decoding mode that does not include post-filtering. The software in accordance with the Opus standard allows the use of the LTP filter to be optional when implementing the SILK decoder. As regards the LPC filter, there is no indication in the standard that its use is optional, so it must be assumed that the filter is used in the SILK decoding mode.

73. Both LTP and LPC synthesis are post-filters. For instance, the LPC filter limits the amplification of noise, particularly in speech, in order to ensure the stability of the filter and the quality of the filtering. This function is also highlighted in the presentation 'Opus: The Swiss Army Knife of Audio Codecs' in connection with the CELT post-filter. The Opus authors thus attributed technical functions to the post-filter in the CELT decoding layer that are also present in the SILK LPC and LTP filters. Conversely, this means that the SILK LPC and LTP filters exhibit post-filter characteristics and functions.

Feature 6.2.2a

74. The claimant argues that the Opus standard implements selective deactivation as claimed by providing for the *'post-filter'* symbol in the bitstream. In this way, the encoder signals to the decoder when the decoder must activate the post-filter and when it must deactivate it. Each time a decision is made as to whether post-filtering should be activated or deactivated, the Opus decoder evaluates the *'post-filter'* symbol and, depending on its value, decides whether or not to perform post-filtering. The Opus decoder

Activate the post-filter whenever the *'post-filter'* variable has the value 1, and deactivate it whenever the *'post-filter'* variable has the value 0.

75. In the defendant's view, the code presented by the claimant does not, in any event, show a selective deactivation of the post-filter, but rather a selective activation of the post-filter. According to the claimant's own account, the decoder generally sets the post-filter gain to zero. The post-filter is therefore deactivated by default. Selective activation of the post-filter takes place (if at all) only when the decoder can read a *logp* value of 1 from the bitstream.

76. Furthermore, the deactivation of the post-filter during the processing of each frame is not selective, but represents the default setting defined on the decoder side.

77. In the contested embodiments, the post-filter is deactivated by bypassing it, effectively acting as a bypass, based on post-filter information *g1*, which is not the post-filter gain *postfilter_gain*. This is not in accordance with the claims. In so far as the claimant asserts that the value *g1* = 0 leads to deactivation of the post-filter, this is simply incorrect. Moreover, even if this were true, it would not be sufficient, as the relevant documentation is limited solely to the use of a comb filter in accordance with the function *comb_filter*. The fact that no comb filter is applied does not prove that no filtering takes place at all.

Feature 6.2.3

78. According to the claimant's submission, the Android implementation of Opus fulfils the feature whereby the post-filter gain is set to zero, as the variable *g1* representing the post-filter gain is set to zero, thereby deactivating the post-filter stage. The variable *g1* is causal for the selective deactivation of the post-filter, as the decoder decides on the basis of the value of this variable whether post-filtering is carried out or not. The value of the variable *g1*, which is causal for the invocation of the post-filter step, is also equal to the value of the post-filter gain. This is because, when the function *comb_filter*—which implements the post-filtering step—is called, the variable *g1* is assigned the value of the variable *postfilter_gain*. Since the latter indisputably represents the post-filtering gain to be applied, the variable *g1* thus realises the post-filtering gain as claimed.

79. The defendants argue that the Opus standard does not provide for the post-filter gain to be set to zero if the post-filter gain switch is enabled. Rather, according to the Opus standard, the post-filter gain can only take on values greater than zero. In the contested embodiments, the variable *logp* plays a decisive role in the activation or deactivation of the post-filter. If this variable has the value zero, no control variables for the post-filter are read out. In this respect, the post-filter is not deactivated 'by setting the post-filter gain to zero'.

80. Furthermore, the deactivation of the post-filter via the bypass solution is also in accordance with the Opus standard. However, as explained, this does not implement the teaching of the contested patent.

81. The claimant has not demonstrated whether, in the contested embodiments, deactivation of the post-filter occurs by initialising the post-filter gain to zero, or whether the post-filter is bypassed upon deactivation by means of the corresponding control bit. The variable *g1* identified by the claimant does not control the entire filter function, but merely a part of it.

Feature 6.3

82. The defendants argue that, under the Opus standard, the bitstream does not contain any decision made by the encoder as to whether the post-filter should be enabled or disabled. Instead, the bitstream contains, within the variable *`ec_dec_bit_logp()`*, an encoded probability indicating whether the post-filter should be enabled or disabled. A definitive decision by the encoder is therefore not encoded in the bitstream.

83. Contrary to the claimant's assertion, the file *celt_decoder.c* provides no indication as to whether a post-filter is applied or not. It merely involves reading out and initialising individual parameters. If the claimant's argument were correct, namely that the value of the variable *ec_dec_bit_logp ()* is decisive in determining whether the post-filter section is deactivated, this would not occur – as the claim requires – through the post-filter gain.

84. The claimant counters that the variable *ec_dec_bit_logp ()* is not a variable in the bitstream, but a function for decoding a binary symbol (i.e. 0 or 1) from the bitstream. In line 974 of the file *celt_decoder.c*, the function *ec_dec_bit_logp ()* is specifically used to decode the information regarding the encoder's decision as to whether the post-filter should be activated or deactivated from the bitstream. If the function call returns a 0, this means that the decoder receives the information from the bitstream to deactivate the post-filter. If, on the other hand, the function call returns a 1, the post-filter is to be activated. Contrary to the defendant's representation, the function therefore does not indicate a 'probability' as to whether a post-filter should be switched on or off.

Spatial and physical features of claim 1

85. Finally, the defendants are of the opinion that the claimant has not set out in the statement of claim in which spatial-physical components of the contested embodiments it locates the post-filter, the decoding section, the pitch enhancement filter and the control section. The claim therefore already fails to meet the requirements of Rule 13.1(n) of the Rules of Procedure and is inconclusive.

FRAND objection

86. The defendants raise the FRAND defence. They argue that the claimant is abusing its dominant market position and is therefore in breach of Article 102(1) TFEU. Furthermore, they contend that its two-tier licensing model ("Two-Tier Licensing Model") constitutes a breach of Article 101 TFEU.

The claimant's dominant market position

87. In the defendants' view, the claimant holds a dominant market position. This arises from the

standard-essentiality of the contested patent. The Opus standard is mandatory for WebRTC applications ("Web Real-Time Communication"). Furthermore, a consumer expects a marketable smart TV to be able to play back content encoded using all common standards, with service providers deciding how the content is encoded. Furthermore, even taking the AAC standard into account, the claimant holds a dominant position in the entire licensing market for audio codecs. Together with its group of companies, it also has a dominant influence in the manufacturers' market for multimedia end devices.

88. The claimant, on the other hand, takes the view that there is no dominant position to begin with. Compatibility with the Opus standard is not a prerequisite for competitiveness in the downstream product market. An average consumer does not base the purchase of a smart TV on whether it contains Opus or another audio codec. Even if one were to accept the defendants' argument that Opus is mandatory for WebRTC, this would be irrelevant. Other patents and other standards are in any case not relevant to the present proceedings.

FRAND declaration

89. The claimant submits that, in view of the FRAND declaration which it – undisputedly – did not submit in the course of the standardisation of the Opus standard, the negotiation programme developed by the ECJ in Huawei v ZTE (judgment of 16 July 2015, corrected by order of 15 December 2015, C-170/13) cannot be applied in its unmodified form, and that it was therefore incumbent on the defendant to make the first offer.

90. The defendants, on the other hand, take the view that the absence of a FRAND declaration does not relieve the claimant of the obligation to act in accordance with Article 102 TFEU. Furthermore, through Vectis's "Vectis FRAND licence offer" in the letter dated
31 January 2024 (Exhibit BP-V 7) and through various formulations in the licence offer, the plaintiff had raised the expectation that it felt bound by the obligation to make a FRAND offer.

Notice of infringement

91. The claimant submits that a sufficient notice of infringement within the meaning of the case-law of the Court of Justice – should such a notice be deemed necessary – was already provided by letter of 21 April 2023 (Exhibit BP-V1), but at the latest by the letter of 24 January 2024 (Exhibit BP-V7).

92. The defendants do not maintain their original submission that the claim charts relating to the contested patent were never sent. However, they consider the letter of 21 April 2023 (Exhibit BP-V1) to be insufficient in any event.

[…]

93–94. […]

Licensing of the chip manufacturer MediaTek

95. The defendants submit that their chip supplier, the company MediaTek, which develops specialised signal processors equipped with decoding technology for use in smart TVs,

manufactures and supplies, inter alia, for use in the defendant's smart TVs that are the subject of the proceedings, is a licensee of the claimant or the Dolby Group. By granting the licence, the claimant releases the licensed chips and at least tolerates their intended use in smart TVs. The licensing of the signal processors under the implementer's licence, which has already taken place, leads in the present case to the exhaustion of the claimant's or the Dolby Group's rights, inter alia, in the patent in dispute. A FRAND offer fundamentally requires that actual exhaustion be taken into account, which is not the case with the plaintiff's offer. The attempt to demand, in addition to the implementer licence, a licence from the end-device manufacturers who, in accordance with their intended purpose, incorporate the licensed signal processors (decoding systems) into their end devices in accordance with their intended purpose and equip them with additional valuable components and hardware and software functions, is also contrary to competition law from the perspective of double licensing under Article 102 TFEU.

96. The claimant argues that MediaTek merely holds a so-called Dolby brand licence, which does not cover the use of the patent in dispute for Opus. As a precautionary measure, it disputes, on the grounds of lack of knowledge, that only MediaTek chips are installed in the defendant's devices and that no further Opus decoders are included.

Level of licence fees

97. The defendants object to the licence rate offered by the claimant on the grounds that it is not FRAND. A comparison of the Opus pool, comprising only 360 patents, with the AAC pool, comprising 6,962 patents, shows that the licence rate per patent for Opus is three times higher than for AAC. This is an appropriate comparison which demonstrates that the Opus licence offer is not FRAND. Furthermore, the Opus licence agreement, like the AAC licence agreement, contains no adjustment clauses in the event of significant changes to the portfolio of intellectual property rights, which is also not FRAND.

98. The claimant considers the calculation provided by the defendants to be unsound. She also points out that well-known licensees such as Bosch, Mercedes-Benz, Streamview, DirectTV and Optoma have already entered into licence agreements and accepted the licence fees. The defendants dispute the latter, claiming they were unaware of this, and are of the opinion that the claimant should have produced the agreements to allow for verification.

Patent ambush

99. The defendants view this as a so-called patent ambush, arguing that the claimant concealed the alleged standard-essentiality of its patent portfolio for the Opus standard for over two decades and left users of the patent-licence-free open-source Opus standard under the mistaken belief that they had nothing to fear from infringements of standard-essential patents. It was only after the Opus standard had become established, particularly for internet applications, through widespread adoption by technology leaders such as Microsoft and Google, and the claimant had perceived its licensing business for competing standards, such as AAC and Dolby in particular, to be at risk, that it established an Opus patent pool for strategic reasons. It had attempted to gather patents essential to the Opus standard, even though neither it nor the other licensor, Fraunhofer, had contributed to the development of the Opus standard and, consequently, no innovations from the licensors had been incorporated into the Opus standard.

100. The claimant argues that a patent ambush presupposes that the patent holder was involved in the standardisation process in the first place. The technology covered by the contested patent was incorporated into the Opus standard without its knowledge or involvement. Nor did it ever create a legitimate expectation that the use of its technology would be free of charge, nor did it itself promote the Opus standard as being licence-free. It was only after the publication of the Opus standard in September 2012 that it was able to check at all whether its patents were being used, although it had initially had no reason to do so. Once this had been established, it considered a licensing model and ultimately decided to license its patents through the Vectis pool. Vectis had approached the defendants shortly after the pool was opened. Furthermore, the pool does not charge licence fees for acts of use prior to 1 January 2023. With regard to the contested patent granted on 20 October 2021, the defendants' objection is in any case unfounded.

Discrimination in the smart TV and monitor market

101. The defendants allege that manufacturers of smart TVs are being discriminated against in comparison with competing manufacturers of monitor PCs and consoles that can be connected to monitors. They argue that PCs running the open-source Android operating system – which anyone can download for free from the internet and install easily – are routinely supplied without Android installed and therefore without the Opus codec it contains. Buyers of PCs that are now sufficiently powerful for TV and streaming services could thus, amongst other things, use the Opus standard following the proper installation of the Android operating system, without being burdened by additional licensing requirements. The plaintiff's decision not to take action against this distribution channel constitutes discrimination against manufacturers of smart TVs who pre-install the Opus codec at the factory.

102. The claimant argues that Vectis does indeed approach manufacturers of PCs and monitors to conclude a licence for the Opus standard, so that discrimination is ruled out for this reason alone. Furthermore, the products are not comparable. Monitors for PCs, consoles and smart TVs are entirely different devices which, from the consumers' perspective, are not interchangeable and must therefore be assigned to different product markets. Furthermore, the defendant's entire argument is based on the assumption that PC buyers regularly install the open-source Android operating system on their devices. This claim is untenable. The statistics submitted as Annex BP-P 24 show that Windows (10 and 7), Mac OS X and Linux together account for more than 95% of the market share. Even more far-fetched is the defendant's claim that PC buyers would replace the pre-installed operating system with Android after purchase. There is no evidence whatsoever to support this, and based on common sense, such user behaviour would be, at best, extremely unusual.

Discrimination in the supply chain

103. The defendants argue that the two-tier licensing model constitutes a breach of Article 101(1)(b) TFEU. The claimant counters that there is no two-tier licensing model for the patent in dispute. This is evident from the distinction between "two-tier model" and "patent licensing model" in the annual report, as set out in Annex MB, Card 4, p. 5, penultimate paragraph.

Declaration of willingness to grant a licence by the defendants

104. In their statement of defence, the defendants stated that they were, in principle, willing to grant a licence. Defendant 2 had already demonstrated this to the claimant by obtaining a licence from the claimant's affiliated company, Via Licensing Corporation (now Via-LA), in relation to the AAC pool, also for the benefit of Defendant 1. They could not be expected to obtain a duplicate licence for the disputed patent, which had already been licensed. Nor could they be expected to facilitate the plaintiff's attempt, which contravenes competition law, to make an open-source codec – developed from the outset by a competitor of the plaintiff on the basis of old and therefore patent-free SILK and CELT codecs – subject to licensing. In view of the legitimate doubts regarding the substance of the proposed Opus pool and the demonstrably excessive licence fee, it is initially incumbent upon the claimant to submit a FRAND offer that is negotiable and verifiable, supported by comprehensible claim charts and reasonable prices.

105. The claimant takes the view that, following the notice of infringement, the defendants did not declare their willingness to enter into a licence agreement on FRAND terms in accordance with the case law of the Court of Justice of the European Union. At no point did they indicate any interest in concluding a licence agreement. Prior to the proceedings, there had not even been the usual lip service indicating a willingness to accept a FRAND licence. It was only during the present proceedings that the defendants raised the objection that they were already licensed under the contested patent, and furthermore complained that the licence fee was allegedly excessive. This was a prime example of precisely how an implementer seriously interested in a FRAND licence would not behave. Such an implementer would, in fact, have raised these objections prior to the proceedings. Consequently, the defendants were not willing to grant a licence, either in principle or with regard to the specific licence offer made to them.

No counter-offer, no information or security

106. The claimant argues that the defendants' FRAND objection is also unfounded simply because the defendants – undisputedly – have not submitted a counter-offer, have not provided information on the licence-subject products sold to date, and have not provided security.

Legal consequences

107. The claimant is of the view that the direct and indirect infringement of the patent in dispute justifies the legal consequences sought. In particular, an act of infringement in one EPG Member State gives rise to a risk of repetition, or at the very least a risk of first-time infringement, also for the other EPG Member States. Article 25(a) of the EPGÜ, which applies to the patent in dispute pursuant to Article 3(c) of the EPGÜ, does not distinguish between national borders in this respect. Furthermore, the defendants have distribution networks in other Member States, meaning that they are readily able to distribute the contested embodiments in Italy and the Netherlands as well.

108. The defendants point out that, according to the claimant's account, the Opus patent pool does not claim licence fees for products sold prior to 1 January 2023. It is inconsistent with this for the claimant to be seeking damages in the present infringement action for a period dating back to 20 November 2021.

Both the claim for damages and the preparatory claims for information and accounting must be limited accordingly.

109. The claimant disputes this. The offer in question is directed only at willing licensees. It is, of course, free to enforce its claims for the past as well within the framework of an infringement action.

Value of the claim

110. The defendants object to the value in dispute stated by the claimant (EUR 1,500,000) as being significantly too high. Even if one were to take the licence fee per unit of EUR 0.15 proposed by the claimant as a basis, one would have to assume completely unrealistic quantities (in the region of nearly 20 million units) for the remaining term of the patent in order to come anywhere near the claimant's proposal. With realistic unit numbers, the value in dispute for the claim for an injunction would instead be less than EUR 150,000, so that a total value in dispute of EUR 200,000 is proposed. The claimant, on the other hand, appears to be basing its argument on presumed global sales figures. In any event, sales figures in the relevant EPG territory are significantly lower.

111. The claimant disputes, on the grounds of lack of knowledge, that the defendants sold only one million units of the contested models between 2021 and 2024. It is entirely reasonable to assume that sales figures for the contested models run into the tens of millions, particularly as the defendants are one of the leading TV manufacturers.

REASONS:

112. Both the claim and the counterclaim are admissible. The counterclaim is unfounded, whilst the infringement claim is essentially well-founded.

A. Admissibility of the claim and the counterclaim

I. Claim

113. The infringement claim is admissible; in particular, the EPG has international jurisdiction.

114. The EPG is a common court within the meaning of Article 71a(1) of the Brussels Ia Regulation (Article 71a(2)(a) of the Brussels Ia Regulation). The EPG therefore has jurisdiction if the courts of a Contracting State would have jurisdiction under the Brussels Ia Regulation for an action within the meaning of Article 32(1) of the EPGÜ (Article 71b(1) of the Brussels Ia Regulation). That is the case here.

115. With regard to Defendant 1), who is domiciled in Germany and thus within the Contracting Member States, the EPG's international jurisdiction follows from Article 4(1) of the Brussels Ia Regulation.

116. International jurisdiction with regard to Defendant 2) follows from Article 7(2) of the Brussels Ia Regulation, as this provision, in conjunction with Article 71b(2) of the Brussels Ia Regulation, establishes international jurisdiction for all (alleged) patent infringements committed in a Contracting Member State, irrespective of the defendant's place of business. However, the jurisdiction conferred by Article 7(2) of the Brussels Ia Regulation is not limited to that Member State (see also UPC_CoA_317/2025, Order of 28 November 2025 – Barco v. Yealink).

117. Furthermore, the jurisdiction of the EPG and that of the Düsseldorf Local Chamber are deemed to be accepted, R. 19.7 VerfO, since the defendants did not file a provisional opposition within the opposition period. The objections raised in the statement of defence are insufficient for this purpose, irrespective of whether the second defendant could still have lodged an opposition within the time limit at that point in time.

118. Apart from that, the defendants' objection concerning the validity of the opt-out revocation does not hold water. The objection is based solely on the fact that the validity of interim transfers of the patent in dispute is disputed. The defendants argue that, for this reason, the plaintiff's ownership of the patent in dispute cannot be established. Consequently, there may be no entitlement to declare withdrawal from the opt-out (see Art. 83(4) EPC).

119. However, there have been no intermediate assignments of the patent in dispute, meaning that their validity cannot be successfully challenged. The transactions cited by the defendants are merely changes of address for the same company, the claimant, as is clearly evident from the registers. As regards the Italian part of the patent in dispute, the defendants merely assert, by reference to the other national parts, that there must also have been intermediate transfers here. However, since there were no such transfers in the case of the German, French and Dutch parts either, the argument is without foundation.

120. Since the claimant referred in the statement of claim to its ownership of the national parts of the patent in dispute, as evident from the respective registers, the formal defects in the statement of claim objected to by the defendants do not exist either.

II. Counterclaim

121. There are likewise no concerns regarding the admissibility of the counterclaim.

122. In particular, the EPG also has international jurisdiction. In so far as the Contracting Member States concerned by the counterclaim for revocation are involved, the EPG has exclusive jurisdiction over counterclaims for revocation; see Article 32(1)(e) of the EPGÜ. Since, following the plaintiff's withdrawal of the application, no opt-out (Article 83(3) EPGÜ) from the exclusive jurisdiction of the court in relation to the contested patent, the EPG – as the common court of the Member States of the EPGÜ – has international jurisdiction over the counterclaim pursuant to Art. 24(4), 71a(2)(a) and 71b(1) of Regulation (EU) No 1215/2012.

B. Right of the claimant to bring proceedings

123. As the proprietor of the patent in dispute, the claimant is entitled to bring proceedings before the Court, Article 47(1) of the EPGÜ.

124. She is registered as the proprietor in the relevant patent register in respect of all the national parts of the contested patent claimed by her. The defendants have contested the plaintiff's presumptively rebuttable right to registration and the resulting ownership within the meaning of the Rules of Procedure of the EPG (R. 8.5(a) and (c) VerfO) solely on the grounds that there had been intermediate transfers, the validity of which they dispute. However, as just explained, no such interim transfers have taken place.

C. Qualified person

125. The relevant person skilled in the art is an engineer with a university degree (diploma or master's) in communications or information technology who has several years' professional experience in the field of audio codecs. He or she follows the meetings of the relevant standardisation bodies and is familiar with the development proposals discussed there.

D. Scope of protection of the contested patent

126. With regard to the scope of protection of the contested patent, the following applies:

I. Subject-matter of the contested patent

127. According to the introductory remarks of the contested patent, a widely used class of coding methods for audio signals containing speech or singing includes *code-excited linear prediction* (CELP). This is applied in alternation with various coding methods, including frequency-domain coding methods specifically adapted for music or methods of a general nature, in order to take account of variations in character between successive time intervals of the audio signal. A simplified decoder from the *Moving Pictures Expert Group* (MPEG), the *Unified Speech and Audio Coding* (USAC, see standard ISO/IEC 23003-3) decoder, can, for example, be operated in at least three decoding modes, namely (1.) *Advanced Audio Coding* (AAC, see standard ISO/IEC 13818-7), (2.) *algebraic CELP* (ACELP) and (3.) *transform-coded excitation* (TCX), as shown in the upper part of Figure 2 (para. [0002]).

128. The aforementioned Figure 2 of the contested patent is shown below for illustrative purposes:

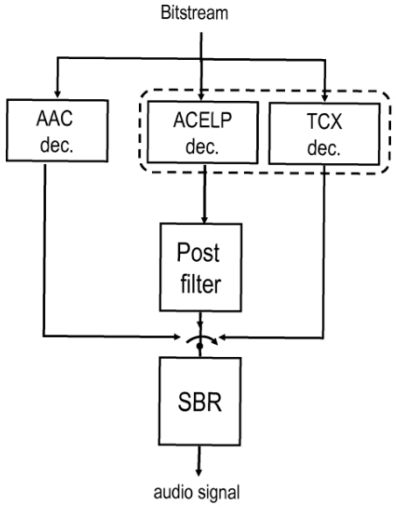


Fig. 2
(prior art)

129. The various embodiments of CELP, the patent in suit continues, are adapted to the characteristics of the human vocal organs and possibly to the human sense of hearing (para. [0003]).

130. The contested patent cites two publications dealing with CELP: the principles of CELP are described by R. Schroeder and S. Atal in 'Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)', Volume 10, pages 937–940, 1985. Some of the applications of CELP are described in references 25–29, which are cited in Chen and Gersho, 'IEEE Transactions on Speech and Audio Processing', Vol. 3, No. 1, 1995 (hereinafter: D6) (para. [0003]).

131. A CELP decoder (or, by analogy, a CELP speech synthesiser) could, as explained in more detail in the publication by R. Schroeder and S. Atal, a *pitch* predictor that restores the periodic component of a coded speech signal, as well as a pulse codebook from which an innovation sequence is added. The *pitch predictor*, in turn, may comprise a *long-delay* predictor for restoring the pitch and a *short-delay* predict*or* for restoring formants by means of *spectral envelope* shaping (para. [0003]).

132. The contested patent further states that, in this context, pitch is generally understood as the fundamental frequency of the tonal sound component generated by the vocal cords and further coloured by resonant parts of the vocal tract. This frequency, together with its harmonics, dominates speech or singing (para. [0003]).

133. According to the contested patent, CELP methods are generally best suited for processing solo or unison singing, where the pitch is clearly defined and relatively easy to determine (para. [0003]).

134. To improve the perceived quality of CELP-coded speech, it is common practice to combine it with post-filtering, also known as *pitch* enhancement. US Patent 4,969,192 and Section II of the article by Chen and Gersho (D6) described the desirable characteristics of such post-filters, namely their ability to suppress noise components between the harmonics of the recognised fundamental frequency of the voice or *voice* pitch (*long-term portion*, see Section IV of D6). According to the contested patent, it is assumed that a significant portion of this noise originates from spectral *envelope* shaping. The long-term portion of a simple post-filter can thus be designed to have the following transfer function:

$$H_E(z) = 1 + \alpha\left(\frac{z^T + z^{-T}}{2} - 1\right),$$

135. Here, let T be the *estimated pitch* period, expressed as the *number of samples*, and let α be the *gain of the post-filter*, as shown in Figures 1 and 2 (of the D6). Similar to a comb filter, such a filter attenuates the frequencies 1/(2T), 3/(2T), 5/(2T), …, which lie midway between the harmonics of *the* fundamental frequency and the adjacent frequencies. The attenuation depends on the value of the gain α (para. [0004]).

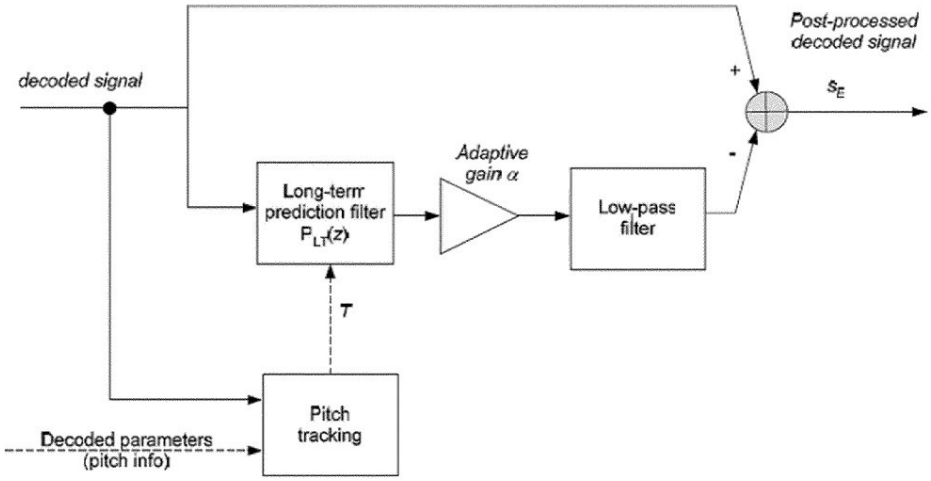
136. The patent in dispute further states that somewhat more sophisticated post-filters apply this attenuation only to low frequencies – hence the frequently used term *'bass* post-filter' – where noise is most clearly perceptible. This can be expressed by the cascade connection of the transfer function $_{HE}$ described above and a *low-pass* filter $_{HLP}$. Thus, the post-processed decoded signal $_{SE}$ provided by the post-filter is given in the transform domain by the following equation:

$$S_E(z) = S(z) - \alpha S(z) P_{LT}(z) H_{LP}(z),$$

137. Where $_{PLT}$ (z) is:

$$P_{LT}(z) = 1 - \frac{z^{T} + z^{-T}}{2}$$

138. Let S be the decoded signal provided as the input signal to the post-filter. Figure 3 shows an embodiment of a post-filter with these characteristics, which are described in more detail in section 6.1.3 of Technical Specification ETSI TS 126 290, Version 6.3.0, Release 6 (D3). The aforementioned Figure 3 of the contested patent is shown below for illustrative purposes:



139. As this figure shows, the *pitch* information is encoded as a parameter in the bitstream signal and is extracted by a *pitch tracking* module connected to the *long-term prediction filter*, which performs the operations expressed by $_{PLT}$ (para. [0004]).

140. The contested patent further states that the long-term component described in the previous paragraph may be used alone or, alternatively, arranged in series with a noise-shaping filter. The noise-shaping filter retains components in the frequency intervals corresponding to the formants and attenuates noise in other spectral regions (short-term component, Section III of D6), i.e. in the *spectral valleys* of the *formant* envelope. As a further possible variant, this filter combination is supplemented by a gradual *high-pass* filter

) to reduce a perceived deterioration due to the spectral slope of the short-term component (para. [0005]).

141. The contested patent cites two publications disclosing audio processing systems with selective application of post-filtering: Document XP00002658193 [M. Neuendorf (ed.): 'WD7 of USAC, 92nd MPEG Meeting, Dresden, N11299' and the international application published as WO 99/38144 A1 (para. [0006]).

142. In concluding the introductory section of the description, the contested patent states that audio signals containing a mixture of components of different origins (e.g. tonal, non-tonal, vocal, instrumental, non-musical) are not always reproduced satisfactorily by the available digital encoding technologies. Specifically, it has been found that the available technologies exhibit shortcomings when processing such inhomogeneous audio material and generally favour one of the components to the detriment of the others. In particular, music containing vocals accompanied by one or more instruments or choral parts, and which had been encoded using the methods described above, was frequently decoded with perceptible artefacts that impaired part of the listening experience (para. [0007]).

143. On this basis, according to the description of the contested patent, the task (the technical problem) underlying the contested patent is to mitigate at least some of the described disadvantages by providing methods and devices suitable for the audio encoding and decoding of such signals, which contain a mixture of components of different origins. In particular, methods and devices are to be provided which are suitable from the point of view of coding efficiency or (perceived) fidelity of reproduction, or both (para. [0008]).

144. To solve this problem, claim 1 of the contested patent protects a decoding system and claim 6 protects a method for decoding a bitstream signal. These can be set out in the English procedural language applicable under Article 70(1) EPC, as well as in German translation, in a structured form as follows:

145. Claim 1:

1	A decoder system (400; 500; 700; 1000) for decoding a bit stream signal as an audio time signal, comprising:	Decoder system (400; 500; 700; 1000) for decoding a bit stream signal as an audio time signal, comprising:
1.1	a decoding section (410; 511, 512, 513; 711, 712, 713; 1011, 1013) for decoding a bit stream signal as a preliminary audio time signal,	a decoding section (410; 511, 512, 513; 711, 712, 713; 1011, 1013) for decoding a bit stream signal as a preliminary audio time signal,
1.1.1	the decoding section being operable in at least one first decoding mode including post-filtering, and	wherein the decoding section operates in at least one first decoding mode including post-filtering and

1.1.2	at least one second decoding mode not including post-filtering; and	at least a second decoding mode that does not include **post-filtering**; and
1.2	a pitch enhancement filter (440; 540; 740; 1040) for post-filtering the preliminary audio time signal to obtain an audio time signal,	pitch enhancement filter (440; 540; 740; 1040) for post-filtering the preliminary audio time signal to obtain an audio time signal,
1.2.1	wherein the pitch enhancement is controlled by a post-filter gain, **characterised by**	wherein the pitch enhancement is controlled by a post-filter gain, **characterised by**
1.2.2a	a control section adapted to, in said at least one first decoding mode,	a control section adapted to, in said at least one first decoding mode,
1.2.2b	responsive only to post-filtering information encoded in the bit stream signal,	in response only to the post-filtering information encoded in the bit stream signal encoded in the bit stream signal
1.2.2a	selectively disable the pitch enhancement filter	to selectively disable the pitch enhancement filter,
1.2.3	by setting the post-filter gain to zero,	by setting the post-filter gain to zero,
1.3	the post-filtering information indicating an encoder-side decision as to whether to disable post-filtering, whereby the preliminary audio time signal is output as the audio time signal.	whereby the post-filtering information indicates an encoder-side decision as to whether to disable post-filtering, whereby the preliminary audio time signal is output as the audio time signal.

146. The Board has made a change to feature 1.1.2 in the translation based on the specification of the contested patent ('which does not include post-filters' instead of 'which does not include post-filters'). In the Board's view, this translation is equivalent to the defendant's proposal ('which does not include post-filters').

147. Claim 6:

6	A method of decoding a bit stream signal as an audio time signal, comprising the steps of:	A method of decoding a bit stream signal as an audio time signal, comprising the following steps:
6.1	decoding a bit stream signal as a preliminary audio time signal in one of a plurality of decoding modes,	Decoding a bit stream signal as a preliminary audio time signal in one of a plurality of decoding modes,
6.1.1	said plurality of decoding modes including at least one first decoding mode comprising a post-filtering step, and	whereby the plurality of decoding modes includes at least one first decoding mode comprising a post-filtering step, and
6.1.2	at least one second decoding mode not including a post-filtering step;	at least a second decoding mode, which does not include the post-filtering step;
6.2	wherein the post-filtering step applies a pitch-enhancement filter to the preliminary audio time signal, thereby obtaining an audio time signal,	wherein the post-filtering step applies a pitch-enhancement filter **to** the preliminary audio time signal, thereby obtaining an audio time signal,
6.2.1	wherein the pitch enhancement filter is controlled by a post-filter gain, **characterised in that**,	wherein the pitch enhancement filter is controlled by a post-filter gain, **characterised in that**
6.2.2a	in said at least one first decoding mode, the post-filtering step is selectively disabled	in the at least one first decoding mode, the post-filtering step
6.2.2b	responsive only to post-filtering information encoded in the bit stream signal,	in response only to the post-filter information encoded in the bit stream signal encoded in the bit stream signal
6.2.2a		is selectively deactivated,

6.2.3	by setting the post-filter gain to zero,	by setting the post-filter gain to zero,
6.3	the post-filtering information indicating an encoder-side decision as to whether to disable post-filtering.	whereby the post-filtering information indicates an encoder-side decision as to whether to disable post-filtering.

148. The Board has amended the German version in relation to the translation in the specification of the contested patent in claim 6.2 (‘auf’ instead of ‘an’) and has made a rearrangement in claims 6.2.2a and 6.2.2b (moving ‘is selectively deactivated’ from the end of feature 6.2.2b to the end of feature 6.2.2a).

149. The defendants also object to the translation “which does not include the post-filtering step” in relation to feature 6.1.2 and propose the translation “which does not include a post-filtering step” instead. In the Board’s view, this does not entail any substantive difference relevant to the decision.

II. Interpretation

150. Some features require explanation:

1. Principles

151. Under Article 69 EPC, read in conjunction with the Protocol on its interpretation, the patent claim is not merely the starting point but the decisive basis for determining the scope of protection of a European patent. The interpretation of a patent claim does not depend solely on its exact wording in the linguistic sense. Rather, the description and the drawings must always be taken into account as aids to the interpretation of the patent claim and should not be used merely to resolve any ambiguities in the patent claim. However, this does not mean that the patent claim serves merely as a guideline and that its subject-matter also extends to what, after examination of the description and the drawings, appears to be the patent proprietor’s claim for protection. In applying these principles, appropriate protection for the patent proprietor should be combined with sufficient legal certainty for third parties. The patent claim must be interpreted from the perspective of a person skilled in the art. These principles for the interpretation of a patent claim apply equally to the assessment of infringement and the validity of a European patent (UPC_CoA_335/2023, Order of 26 February 2024, Headnote 2 and p. 26 et seq. – 10x Genomics v. NanoString; UPC_CoA_1/2024, Order of 13 May 2024, para. 26 – VusionGroup v. Hanshow; UPC_CoA_182/2024, Order of 25 September 2024, para. 82 – Mammut v. Ortovox).

2. Application to the present case

152. In application of these principles, the following considerations apply. The features are explained with reference to claim 1, although – unless otherwise indicated – the comments also apply to the corresponding features of claim 6.

Decoding system, decoding section

153. The ‘decoding system’ referred to in feature 1 receives a bitstream signal, i.e. a sequence of bits, typically generated by an encoder from an original audio time signal and transmitted to the decoder. In the context of audio codecs, the bitstream signal is typically a sequence of ‘ones’ and ‘zeros’, which is converted by the ‘decoding section’ of the decoding system, as mentioned in feature 1.1, into a ‘provisional audio time signal’.

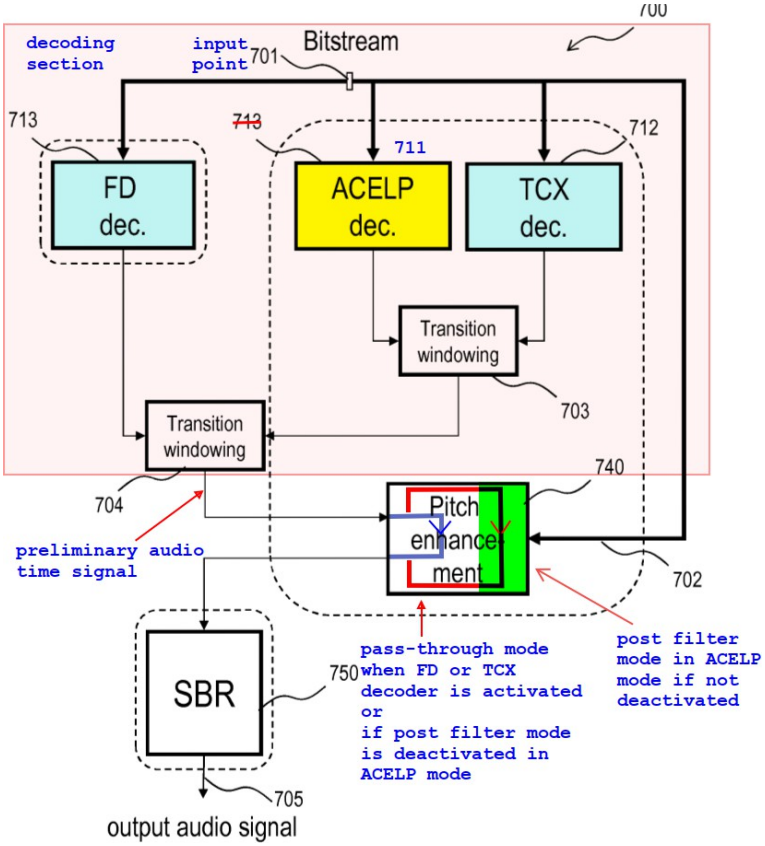
154. The decoding section thus comprises all functions necessary to generate the ‘provisional audio time signal’ from the received bitstream signal, which, following digital-to-analogue conversion, amplification and, where applicable, further processing steps, could already constitute an audio time signal perceptible to the user, although the quality will not yet be satisfactory for all audio signal types of the original audio time signal.

provisional audio time signal, audio time signal

155. The ‘provisional audio time signal’ differs from the ‘audio time signal’ (features 1, 1.2 and 1.3) in any case in that the former has not (yet) been processed by the pitch enhancement filter mentioned in feature 1.2.

156. In this field, a ‘time-domain audio signal’ refers to a sequence of (in this context: discrete-valued) sample values (= amplitudes) at successive points in time. For example, at a sampling rate of 12.8 kHz typical for audio codecs, a sample value of the audio time signal is available every 78.1 µs (see D3, p. 8: *“frame: A time interval equal to 256 samples (20 ms at 12.8 kHz sampling* rate”).

157. Figure 7 illustrates the relationship between a preliminary audio time signal and the audio time signal. Accordingly, the decoding section comprises the frequency-domain decoder 713, the ACELP decoder 711, the TCX decoder 712, and the *transition* windowing blocks 703 and 704, which ensure a ‘smooth’ transition when switching between the three decoding modes. The preliminary *audio time signal* is present at the output of 704 and thus at the input of the pitch enhancement filter 740. For illustrative purposes, Figure 7 is shown below in a colour-coded and annotated version:



Pitch enhancement filter

158. In addition to the decoding section, the claimed decoding system comprises the 'pitch enhancement filter'
1.2, which is controlled by a control section (feature 1.2.2a).

159. The term '*pitch*' is understood by those skilled in the art to mean the fundamental frequency (fundamental tone) of the component dominating an audio signal. If, for example, a voiced speech signal (the user is speaking a vowel, for instance) dominates a 20 ms section of an audio signal, the associated frequency spectrum has a "comb-like" structure, i.e. the fundamental frequency (*pitch*) and corresponding harmonics dominate.

160. The reciprocal of the pitch is the pitch period *(pitch lag; pitch period; pitch delay)*, conventionally denoted by the symbol 'T'.

161. A pitch enhancement filter improves pitch by amplifying the 'peaks' in the frequency spectrum – that is, the fundamental frequency and its harmonics – and attenuating the intervening regions, the 'valleys'.

162. According to the understanding of the contested patent, a 'pitch enhancement filter' does not perform arbitrary post-filtering of the preliminary audio time signal. Rather, it involves post-filtering whereby adjacent peaks and troughs are 'amplified' or 'attenuated' relative to one another, thereby making the differences greater and thus more pronounced.

163. The specialist derives the described understanding of a pitch enhancement filter in particular from paragraphs [0004] and [0005] of the contested patent. Thus, paragraph [0004], whilst referring to D6, describes the post-filter addressed in the contested patent in precisely this sense:

> *"To improve the perceived quality of CELP-coded speech, it is common practice to combine it* ***with post-filtering (or pitch enhancement, to use another term).*** *U.S. Patent No. 4 969 192 and section II of the paper by Chen and Gersho disclose desirable properties of such post-filters,* ***namely their ability to suppress noise components located between the harmonics of the detected voice pitch*** *(long-term portion; see section IV)."*
>
> *(Emphasis added)*

164. Paragraph [0005] refers to the aforementioned long-term portion (*long-term portion*) according to D6 and describes the possible combination with a *noise*-shaping *filter* for the spectral formants as follows:

> *"The long-term portion described in the previous paragraph may be used alone. Alternatively, it is arranged in series* ***with a noise-shaping filter that preserves components in frequency intervals corresponding to the formants and attenuates noise in other spectral regions*** *(short-term portion; see section III), that is, in the 'spectral valleys' of the formant envelope. As another possible variation, this filter aggregate is further supplemented by a gradual high-pass-type filter to reduce perceived deterioration due to spectral tilt of the short-term portion."*
>
> *(Emphasis added)*

165. Paragraph [0015] of the contested patent also describes, with reference to the embodiment shown in Figure 5, the post-filter in the sense described, although it should be noted that the contested patent uses the terms *'pitch* enhancement' and 'post-filtering' synonymously (paragraph [0004], [0010], more on this shortly):

> ***"A post-filter 540*** *is arranged in series with the ACELP decoding module 511* ***to attenuate noise, particularly noise situated between harmonics of a pitch frequency that can be derived directly or indirectly from the bit stream signal for which the decoder system 500 is designed****."*
>
> *(Emphasis added)*

166. According to the understanding of the contested patent, attenuating the 'valleys' lying between the harmonics of the fundamental frequency can dampen not only unwanted (quantisation) noise but also desired useful signals, which may lead to a deterioration in the quality of the audio time signal generated by the decoder. This is expressed, for example, in paragraph [0010] of the contested patent, which states:

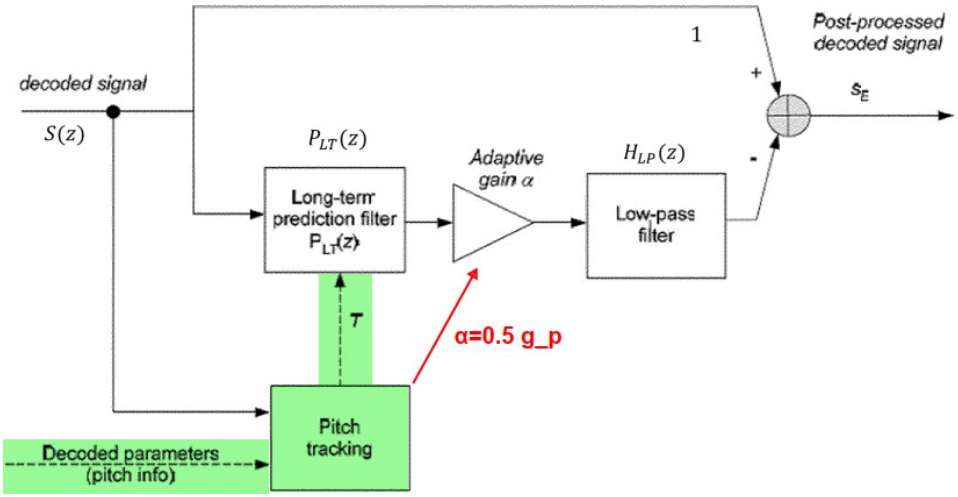
> "*… available post-filters* ***remove not only interharmonic noise*** *(and, where applicable, noise in spectral valleys)* ***but also signal components representing instrumental or vocal accompaniment and other material of a 'desirable' nature*** *…"*
>
> *(emphasis added)*

167. According to the teaching of the contested patent, this relationship may be a reason to deactivate the pitch enhancement filter. Paragraph [0024] states the following with regard to the embodiment shown in Figure 11:

*"... If this energy content is significant, it probably **represents a relevant signal component rather than noise, which justifies the decision to disable the post-filtering module 1140**."*

(Emphasis added)

168. It is well known to those skilled in the art that information regarding the current pitch must be fed to the pitch-enhancement filter so that the filter's transfer function can be adjusted accordingly, as illustrated, for example, by the version of Figure 3 of the contested patent shown below, which has been highlighted and annotated. This corresponds to Figure 15 of D3, to which the contested patent expressly refers for further explanation of Figure 3 (para. [0004]: *"Figure 3 shows an embodiment of a post-filter with these characteristics, which is further discussed in section 6.1.3 of the Technical Specification ETSI TS 126 290, version 6.3.0, release 6."*). The block *pitch tracking* of the decoder receives *pitch information* from the encoder and supplies the pitch (or the reciprocal *of pitch T*) to the block *long-term prediction filter* of the pitch enhancement filter (cf. para. [0004]):



Patent specification, Figure 3 with the path of the control information to the pitch enhancement filter marked in green and the addition of the gain parameter $\alpha = 0.5 * g_p$

First and second decoding modes

169. According to the information in features 1.1.1 and 1.1.2, the decoding section can be operated in "at least a first decoding mode including post-filtering" and in "at least a second decoding mode which does not include post-filtering".

170. The examples cited by the contested patent in this regard as prior art (see para. [0002], Figures 2, 6 and 9) each show only a first decoding mode (ACELP; CELP) with post-filtering and one or two decoding modes without post-filtering (AAC and TCX; FD and TCX; FD).

171. A review of features 1.1.1 (including post-filtering), 1.1.2 (without post-filtering) together with feature 1.2 (pitch enhancement filter for post-filtering) reveals that the claimed decoding system comprises a post-filter configured as a pitch enhancement filter, whereby the post-filtering of the preliminary audio time signal results in an audio time signal with improved pitch, i.e. the amplitude differences

between the harmonic 'peaks'—i.e. the 'tones' in the spectrum—and the intervening 'valleys' are more pronounced after filtering.

172. As already mentioned, in paragraphs [0004] and [0011] the contested patent states that the terms *'pitch* enhancement' and 'post-filtering' are used as synonyms:

> *[0004] "… post filtering (or pitch enhancement by another term) …"*
>
> *[0011] "… Throughout the present application, pitch enhancement and post filtering are used as synonyms. …"*

173. Contrary to the defendant's view, the pitch enhancement filter claimed for post-filtering the preliminary audio time signal cannot also be an LPC synthesis filter (*Linear Predictive Coding*) and/or an LTP synthesis filter (*Long Term Prediction*) (also common in the art). Rather, LPC and LTP synthesis filters are regularly used in the 'core decoder', i.e. in the 'decoding section' according to feature 1.1, to generate a 'preliminary audio time signal'.

174. The hybrid decoder known from D3, as described in paragraph [0004] of the contested patent, comprises the ACELP and TCX decoding modes. With regard to ACELP, D3 refers to the 3GPP standard TS 26.190 (AMR-WB Codec), from which the diagram of the ACELP decoder reproduced below with colouring and annotations is taken:

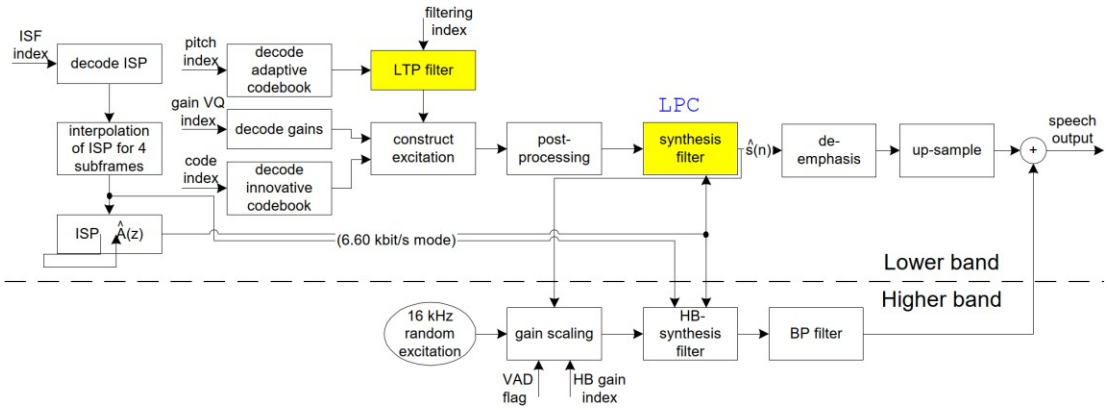


Figure 3 Detailed block diagram of the ACELP decoder

3GPP TS 26.190 V9.0.0 (2009-12), p. 50, Figure 3

175. As is known to those skilled in the art and is confirmed here, the LTP and LPC synthesis filters form part of the decoding section, since only after passing through the LPC synthesis filter does a signal ($\hat{s}(n)$) exist which those skilled in the art regard as a 'provisional audio time signal'.

176. With regard to the TCX decoding mode, D3, which is cited in the contested patent, states that the LPC analysis is identical to that used in ACELP (D3, p. 23, Chapter 5.3.2, last sentence), i.e. in the TCX decoding mode too, the LPC synthesis filter belongs to the decoding section according to feature 1.1, which generates the 'provisional audio time signal', and cannot therefore simultaneously be a downstream 'pitch enhancement filter'.

177. The fact that the contested patent is based on the understanding described above is also evident from the fact that, in paragraph [0010], it describes the TCX mode as an example of a mode without a post-filter:

> *"… For example, a USAC decoder may operate either in ACELP mode combined with post-filtering or in **TCX mode without post-filtering**."*
>
> *(Emphasis added)*

178. It is known to those skilled in the art that TCX codecs involve the use of LPC synthesis filters. Apart from that, the prior art is derived from D3, as just explained, which the contested patent acknowledges in its description.

179. The terms 'first' and 'second' decoding modes are used by the contested patent to distinguish the decoding modes from one another. As described, these differ in that one decoding mode (the 'first') includes post-filtering, whilst the other decoding mode (the 'second') does not include post-filtering. The person skilled in the art does not attribute any further significance to the designation as first and second decoding modes.

Control of pitch enhancement by means of post-filter amplification

180. The *pitch enhancement* of the post-filter, which is configured as a pitch enhancement filter, can be controlled (in the at least one first decoding mode) (feature 1.2.1).

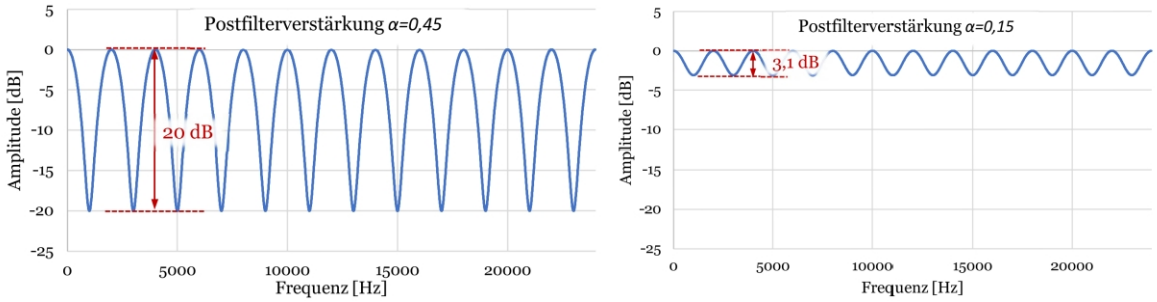
181. A pitch enhancement filter requires, in order to adjust its filter function, not only information about the pitch (T), but also about the desired relative amplification of the dominant signal components ('tones') and the attenuation of the intermediate signal components. According to the embodiment shown in Figure 3 of the contested patent (= Figure 15 of D3) and the supplementary explanation in D3 to be taken into account pursuant to paragraph [0004] of the contested patent, a variable gain α (*adaptive gain α*) is responsible for this; see D3, p. 57, last paragraph:

> *"Parameters T and α vary with time and are determined by the pitch tracking module."*

182. In the pitch enhancement filter known from D3 and referred to in the contested patent (Fig. 3), the variable gain α depends on the pitch gain $_{gp}$ as follows, i.e. on a parameter which is also transmitted from the encoder to the decoder:

> The factor α is by
>
> $$\alpha = 0.5 g_p, \quad \text{constrained to } 0 \le \alpha \le 0.5$$
>
> where g_p is the decoded pitch gain. Note that in TCX mode the value of α is set to zero.

183. The control of the pitch enhancement by the post-filter gain can be illustrated by the following figures, taken from the statement of claim (para. 121, 122), which apply to the transfer function specified in para. [0004] of the contested patent:



184. In the relevant technical field, the skilled person specifies gains and attenuations in the logarithmic range, particularly due to the typically very wide dynamic range of the signals to be processed, as indicated by the designation 'dB' (decibels).

185. If, for example, an amplifier has an adjustable gain of 1, 10, 100 or 1000 in the linear range, this corresponds in the logarithmic range to power gain values of 0 dB, 20 dB, 40 dB or 60 dB, or amplitude gain values of 0 dB, 10 dB, 20 dB or 30 dB, because the logarithmic gain is given by $v_{log,P} = 20 \log_{10} v_{lin}$ or $v_{log,A} = 10 \log_{10} v_{lin}$.

186. In this respect, the expert interprets the gain of zero referred to in feature 1.2.3 (*by setting the post-filter gain to zero*) as meaning the gain in the logarithmic domain, i.e. $v_{log} = 0db$, which corresponds to a linear gain value of one, $v_{lin} = 1$, i.e. the output signal corresponds to the input signal (neither amplified nor attenuated).

187. With reference to the specific topology of the post-filter according to Figure 3 of the contested patent (corresponding to Figure 15 of D3), setting the *adaptive gain* parameter *α* shown there to zero results in the output signal (*post-processed decoded signal*) corresponds to the unmodified input signal (*decoded signal*), because for α = 0 the input signal reaches the output only via the upper path of the filter, in which no modification of the input signal takes place.

188. Thus, even with this specific post-filter topology, setting the post-filter gain to zero results in the deactivation of the post-filter function, i.e. a linear gain of 'one' or a logarithmic gain of 'zero' dB.

Setting the post-filter gain to zero

189. The setting of the post-filter gain 'to zero' referred to in feature 1.2.3 is understood by the skilled person to mean – as explained above – a gain of 'one' in the linear gain range is meant, so that the function of the post-filter, implemented as a pitch enhancement filter, is 'deactivated' in the sense that neither the 'peaks' in the spectrum are amplified nor the 'valleys' in the spectrum lying between the peaks are attenuated. As explained above, this sets the gain in the logarithmic range to zero ($v_{log} = 0\ db$), which corresponds to a linear gain value of one ($v_{lin} = 1$).

190. Consequently, in this case, the output signal of the pitch enhancement filter corresponds to its input signal, which is neither amplified nor attenuated. This is also reflected in

claim 1.3, according to which the preliminary audio time signal (= output signal of the decoding section = input signal of the pitch enhancement filter) is output as the audio time signal, and thus remains unchanged or is identical.

191. The claim does not contain any further restriction to a specific type of implementation – such as the specific post-filter topology shown in Figure 3 of the contested patent. In particular, contrary to the defendant's view, the claim is not limited to a pass-through solution (where the post-filter is passed through but not altered) as opposed to a bypass solution (where the post-filter is not passed through). The contested patent illustrates both implementation options in its embodiments. Thus, Figures 4, 5 and 10 illustrate a bypass (see paragraphs [0014], [0023]), whereas Figures 7 and 11 illustrate a *pass-through* (see paragraph [0016]). The contested patent, which in paragraph [0013] clearly distinguishes between conventional and inventive solutions, describes Figures 4, 5 and 10 as being in accordance with the invention:

> *"… Figures 4 and 5 are block diagrams of two decoders according to the invention …*
>
> *Figures 9 and 10 are block diagrams (sic) illustrating differences between a conventional decoder (Figure 9) and a decoder (Figure 10) according to the invention …"*

192. In the bypass solution shown in Figures 4, 5 and 10, the post-filter is deactivated insofar as it is – in a sense 'externally' – 'bypassed' by the decoded signal, namely by being routed through a delay element connected in parallel with the post-filter. This solution is also claimed. In this configuration, a post-filter gain of "zero" (dB) is achieved, as the delay element connected in parallel with the post-filter leaves the amplitude of the signal unchanged.

193. This is not altered by the fact that, in the grant procedure for the contested patent, paragraph [0032] of the description (EP 3 605 534 A1, Annex NK2e) was deleted, which had distinguished the two variants from one another as follows.

194. Paragraph [0032] read:

> *"In one embodiment of the invention as a decoder, the decision to disable the post-filter is implemented by a switch controllable by the control section and capable of bypassing the post-filter in the circuit. In another embodiment, the post-filter has variable gain controllable by the control section, or a gain controller incorporated therein, wherein the decision to disable is implemented by setting the post-filter gain (see previous section) to zero or by setting its absolute value below a predetermined threshold."*

195. It may be left open whether, and to what extent, the grant file or any statements made by the patent proprietor during the grant proceedings may be relied upon for the interpretation of the contested patent.

196. Even if one were to take the deletion of paragraph [0032] of the original version into account in the interpretation, this does not result in any restriction to a pass-through solution. As already mentioned, the embodiments according to Figures 4, 5 and 10 have remained in the patent specification and are expressly described as being in accordance with the invention in paragraph [0013]. Reference should also be made to paragraph [0014], which describes the embodiment according to Figure 4 as being in accordance with the invention and at the same time expressly addresses the bypass configuration:

"Figure 4 is a schematic diagram of a decoder system ***400 according to an embodiment of the invention****. … It would be disabled if the switch were set to the opposite position, in which case the signal from the decoding module 410 would instead be* ***routed via the bypass line 444****.*
…"

(Emphasis added)

197. Similarly, paragraph [0015] with reference to the embodiment shown in Figure 5 and paragraph [0023] with reference to the embodiment shown in Figure 10 also explicitly describe the solution via a bypass as being in accordance with the invention. Paragraph [0016], on the other hand, refers to a *pass-through* in relation to Figure 7 as being in accordance with the invention (*"… By the invention, however, the pitch enhancement module 740 performs an analogous self-actuation, which, in response to post-filtering information in the bit stream, may act as a post-filter or simply as a pass-through"*).

198. That said, the skilled person is aware that, as explicitly stated in paragraphs [0015] and [0027] of the contested patent, the figures are merely simplified representations which, in a realistic implementation, are embodied by computer-readable instructions. Against this background, the configurations as a bypass or *a pass-through* are illustrative aids, but they are not mutually exclusive. In an actual implementation, should the filter be deactivated, the software of the claimed decoding system simply ensures that the 'provisional audio time signal' is not subjected to any further computational operations, but is output as an 'audio time signal' – unchanged except for a time delay (*compensation delay*) corresponding to the delay caused by the activated post-filter – is output.

199. As already explained, the skilled person understands the technical teaching of the contested patent to mean that the post-filter can be 'selectively deactivated' insofar as the input signal is not altered by the deactivated post-filter – at least in terms of amplitude – i.e. the linear gain of the deactivated post-filter is 'one' or, in logarithmic terms, 'zero'. The person skilled in the art is aware that an activated digital filter typically also causes a delay and that it is therefore necessary, when the filter is deactivated, to provide for a delay of equal magnitude in order to avoid perceptible interference. This is explicitly demonstrated in the contested patent, for example by the delay elements in Figures 4, 5 and 10. However, even in the embodiment shown in Figure 7, the person skilled in the art is aware that, when the pitch enhancement filter 740 is deactivated, a corresponding delay must be provided in its 'through-path', which can also be regarded as an internal
'bypass' path, a corresponding delay must be provided.

200. A post-filter gain of 'zero' thus distinguishes the solution according to the contested patent from alternative solutions in which the post-filter gain is set not to 'zero' but to a different (low) value, so that a certain, albeit slight, pitch enhancement is still performed by the post-filter.

In response solely to the information encoded in the bitstream

201. According to feature 1.2.2b, the deactivation of the pitch enhancement filter described in detail takes place 'in response solely to the post-filter information encoded in the bitstream signal'.

202. The expert concludes from this that it is not the decoder that makes the decision to deactivate post-filtering, but rather that the encoder is solely

, who transmits its decision as information to the decoder (see Figure 8). The decoder evaluates this information in order to deactivate post-filtering where appropriate.

203. According to the interpretation of the contested patent, post-filtering information refers to information relating to post-filtering which can be transmitted in the bitstream and by means of which post-filtering is controlled within the meaning of feature group 1.2. It indicates the encoder's decision as to whether post-filtering is to be deactivated (see feature 1.3).

204. In this sense, paragraph [0014] describes, for example:

> *"… As an inventive contribution, the switch 442 is controllable by post-filtering information contained in the bit stream signal, so that post-filtering may be applied and removed irrespective of the current status of the decoding module 410. …"*

205. The contested patent does not attribute any further significance to the post-filtering information. In particular, the information relating to post-filtering need not be contained in existing information (e.g. information required for the reconstruction of the (preliminary) audio signal) or transmitted within this in the bitstream. Rather, the contested patent assumes that the post-filter information is encoded in the bitstream in addition to the other information transmitted therein and is transmitted with it.

206. For example, paragraph [0019] describes the transmission of information generated by a *decision module* 820, which includes post-filter information (see paragraph [0018] at the end: *"…the decision module 820 will be able to take a decision whether to disable post filtering."*). This information is transmitted together with other information – and thus additionally – via the bitstream. Paragraph [0019] states:

> *"…. A signal indicative of the decision taken by the decision module 820 is provided, together with the encoded audio signal from the encoding module 810, to a multiplexer 830, which concatenates the signal into a bit stream constituting the output of the encoder system."*

Selective deactivation of the pitch enhancement filter

207. Feature 1.2.2a describes that the control section is configured to "selectively deactivate the pitch enhancement filter".

208. The patent in dispute thus addresses the problem described in paragraph [0010], which can arise in the prior art due to the switching between encoding modes, at least one of which involves post-filtering at the decoder and at least one of which does not. When switching between decoding modes—that is, both when transitioning from a decoding mode without post-filtering to one with post-filtering and vice versa—so-called switching artefacts may occur, which the patent in dispute describes in paragraph [0010] as follows:

> *"… **When the post-filter is switched on**, the background of a singing voice sounds suddenly muffled, and **when the filter is deactivated**, the background instantly becomes more sonorous. If the switching takes place frequently, due to the nature of the audio signal or to the configuration of the coding device, there will be a switching artefact. …"*
>
> *(emphasis added)*

209. The possibility provided for in feature 1.2.2a of selectively deactivating the post-filter within a decoding mode, namely the first decoding mode including post-filters, is aimed at avoiding this disadvantage. The post-filter may be switched on or off within the first decoding mode. This is described, for example, in paragraph [0014] as follows:

> *"… As in the conventional decoders shown in Figure 1, a post-filter 440 is arranged downstream of a decoding module 410* ***but can be switched into or out of the decoding path*** *by operating a switch 442. The post-filter is enabled in the switch position shown in the figure. It would be disabled if the switch were set to the opposite position, whereby the signal from the decoding module 410 would instead be routed via the bypass line 444. As an inventive contribution, the switch 442 can be controlled by post-filtering information contained in the bit stream signal, so that* ***post-filtering may be applied and removed*** *regardless of the current status of the decoding module 410. …"*
>
> *(Emphasis added)*

210. The claim itself specifies how the selective deactivation of the pitch enhancement filter is to be carried out: "by setting the post-filter gain to zero" (feature 1.2.3),
i.e. by ensuring – as explained – that a 'complete deactivation' (as opposed to a 'partial deactivation') takes place and that, in this case, the output signal of the post-filter corresponds to its input signal, apart from a certain delay. The skilled person recognises that the described 'selective deactivation' is not limited to
"switching off" of the post-filter, but that the advantages of the invention can only be achieved if the post-filter can also be "switched on" (activated) again. This is also provided for in the cited passages (cf. para. [0014] *"switched into or out of the decoding path"; enabled/disabled; "post filtering may be applied and removed"*).

211. Whether the wording "to be selectively deactivated" implies that the claim does not encompass embodiments in which the post-filter is deactivated by default ("baseline state") and selectively activated is a matter of dispute between the parties. Given that the contested patent is based on a prior art in which post-filtering is constantly activated in the first decoding mode, the person skilled in the art understands that the possibility of selectively deactivating post-filtering in the first decoding mode, as provided by the contested patent, has been incorporated into claims 1 and 6 as an essential element of the invention, whereas the person skilled in the art takes the (re-
activation of post-filtering in the first decoding mode as self-evident, because otherwise the post-filtering—which is in itself desirable in the first decoding mode and has a positive effect—would remain permanently deactivated. However, in view of the configuration of the contested embodiments, this question does not require further examination in any case.

212. The person skilled in the art understands that the deactivation of the pitch enhancement filter is to be 'selective' in the sense that certain conditions must be met for the filter to be deactivated: the encoder's bitstream must contain corresponding information.

Control section

213. Only features 1.2.2a, 1.2.2b and 1.2.3 contained in claim 1 state that the claimed decoding system comprises a *'control section*'.

214. The control section is designed to selectively deactivate the pitch enhancement filter in the at least one first decoding mode by setting the post-filter gain to zero (features 1.2.2a and 1.2.3).

215. The control section is a component of the decoding system claimed in claim 1. However, the claim does not specify a particular spatial or physical arrangement within the decoding system. It is both necessary and sufficient that a decoding system contains a component, to be regarded as a control section, which performs the functions just mentioned.

216. In this interpretation, the person skilled in the art takes into account that the decoding system claimed cannot be divided into 'circuit blocks'. In a realistic implementation, there is rather a common 'hardware' (e.g. a digital signal processor) and the individual parts of the decoding system correspond to different software routines. The fact that the representations in the embodiments are merely simplified representations, which in a realistic implementation are embodied by computer-readable instructions, is expressly clarified by the contested patent in paragraph [0015] with reference to Figure 5:

> *"… The skilled person will realise that the drawing is of a conceptual nature, as is clear notably from the switches which are shown schematically as separate physical entities with movable contacting means. In a possible realistic implementation of the decoder system, the switches as well as the other modules will be embodied by computer-readable instructions."*

217. Paragraph [0027] also lists possible implementations of the invention, which make it clear that the 'analogue' representations of the deactivation of the post-filter as *an* external *'bypass'* or as *a 'pass-through'* (internal 'bypass') in the embodiments are to be regarded as illustrative aids, but not as limiting:

> *"The systems and methods disclosed hereinabove may be implemented as software, firmware, hardware or a combination thereof. Certain components or all components may be implemented as software executed by a digital signal processor or microprocessor, or be implemented as hardware or as an application-specific integrated circuit. …"*

218. The foregoing considerations apply mutatis mutandis to the other components of a decoding system contained in claim 1, such as the decoding section and the pitch enhancement filter.

III. The defendant's submissions in the rejoinder to the amendment and the claimant's submissions in the written statement of 24 April 2025, as well as in the rejoinder to the action for annulment

219. In so far as the defendants, in their rejoinder to the amendment of 27 February 2025, have submitted arguments under the heading 'A. On the interpretation of the claims' (pp. 6–12) regarding the interpretation of the contested patent in its granted version, the relevant submissions must be rejected as out of time pursuant to Rule 9.2 of the Rules of Procedure. Pursuant to Rule 32.3(2) of the Rules of Procedure, the rejoinder must be limited to the arguments contained in the reply. Where the reply to the amendment request is combined with further pleadings – in this case, the rejoinder to the counterclaim – this applies subject to the proviso that a response must be given only to the arguments relating to the amendment request. The defendants' pleading does not comply with this requirement. It is clearly structured and only addresses the amendment under the heading 'C. Regarding the requests to amend the patent'. The defendant's blanket assertion

defendant, according to which the interpretation of the patent is also highly relevant to the alternative claims, does not alter this.

220. However, even if one were to take into account the defendant's aforementioned arguments regarding the interpretation of the patent in dispute, this does not alter the interpretation set out above.

221. The Plaintiff's submission in the written statement of 24 April 2025, in which it responded to the Defendant's arguments as a precautionary measure, was therefore also inadmissible and must be dismissed.

222. In their written submission of 16 June 2025, in which they respond to the claimant's application to strike out certain submissions, the defendants further object to the claimant's arguments set out in their rejoinder to the counterclaim of 27 January 2025. They argue that, in this pleading, the claimant makes extensive comments on the interpretation of the post-filter claimed in the patent in relation to the issue of infringement (para. 8 et seq.). This view cannot be accepted. The contested submission concerns the understanding of the post-filter. Whilst it is true that the question of whether LPC synthesis filters are to be regarded as post-filters within the meaning of the contested patent is primarily relevant to the issue of infringement, other questions arising in connection with the post-filter, which are discussed by the claimant, are certainly of significance in the context of the counterclaim. A strict separation is not possible here, particularly as considerations of interpretation with regard to the granted version are, in principle, admissible in the rejoinder to the counterclaim.

E. Counterclaim

223. The counterclaim is unfounded.

I. Ground for nullity of inadmissible extension (Art. 138(1)(c) EPC)

224. The subject-matter of claims 1 and 6 of the contested patent does not go beyond the content of the earlier application as originally filed.

1. Legal basis

225. Article 138(1)(c) EPC provides that a European patent may be declared invalid with effect in a Contracting State if the subject-matter of the European patent goes beyond the content of the application as originally filed or, where the patent was granted on the basis of a divisional application, beyond the content of the earlier application as originally filed (Article 123(2) EPC).

226. When assessing whether there is an inadmissible extension, the court must first determine what a person skilled in the art, using their general knowledge and taking an objective view, would immediately and unambiguously derive from the entire application as originally filed, with reference to the filing date, whereby implicitly disclosed facts, i.e. facts which are a clear and unambiguous consequence of what is expressly mentioned, are also considered part of its content (UPC_CoA_382/2024, Order of 14 February 2025, para. 52 – Abbott v. Sibio; UPC_CoA_764/2024, decision of 2 October 2025, para. 64 – expert e-Commerce v. Seoul Viosys; UPC_CoA_762/2025, decision of 5 November 2025, para. 44 – Seoul Viosys v. expert e-Commerce; UPC_CoA_528/2024, decision of 25 November 2025, para. 54 – Amgen v. Sanofi).

227. The subject-matter of granted claim 1 must not go beyond (1.) the disclosure of the application as filed for the patent in dispute, (2) the disclosure of the original PCT application which has entered the regional phase and constitutes the parent application for the divisional application, and, where the patent arises from a divisional application, (3) any further earlier divisional application (see UPC_CoA_382/2024, Order of 14 February 2025, para. 52 – Abbott v. Sibio; UPC_CoA_764/2024, decision of 2 October 2025, para. 65 – expert e-Commerce v. Seoul Viosys; UPC_CoA_762/2025, decision of 5 November 2025, para. 45 – Seoul Viosys v. expert e-Commerce).

228. The assessment of whether an impermissible extension exists is a question of law to be decided on the basis of the facts presented by the parties. The facts are the relevant claims and the application filed. Since the court is examining whether the relevant claims in the application as a whole have a basis, it may examine the entire document (UPC_CoA_528/2024, decision of 25 November 2025, Headnote 4, paras. 105–108 – Amgen v. Sanofi).

2. Application in the present case

229. In application of these principles, no impermissible extension of the subject-matter of independent claims 1 and 6 can be identified.

a) Compared to the parent application (NK2a)

aa) Claim 1

First and second decoding modes (cf. features 1.1.1, 1.1.2, 1.2.2a)

230. The defendants argue that the parent application NK2a does not disclose a 'first decoding mode' or a 'second decoding mode'. Nor, they contend, does NK2a disclose that any number of such 'first decoding modes' and 'second decoding modes' could exist. In this context, there are several inadmissible intermediate generalisations.

231. However, the skilled person has already directly and unambiguously inferred from NK2a, as belonging to the claimed invention, that a decoder can be operated in several different decoding modes, whereby post-filtering takes place in some modes, whilst in others no post-filtering is carried out. This is evident in particular from the following passages in NK2a:

> p. 4, lines 10–13:
>
> *"The inventors have realised that some artefacts perceived in decoded audio signals of non-homogeneous origin derive from an inappropriate switching between **several coding modes,** of which **at least one includes post-filtering** at the decoder and **at least one does not**."*
>
> *(Emphasis added)*

232. Although this passage is located in the *'Summary of the* invention' section, it concerns problems in the prior art relating to switching between decoding modes with

and without post-filtering. The expert, however, recognises that the problems addressed there are intended to be solved by the contested patent.

p. 8, lines 14–17:

"Thus, the encoder can be understood as being operable in two super-modes, AAC or TCX/CELP, in the latter of which the encoder will select between TCX, post-filtered CELP or non-filtered CELP. This embodiment enables processing of an even wider range of audio signal types."

233. Although the encoder is referred to here, the person skilled in the art understands that the decoder must be capable of handling the corresponding encoding modes; in this respect, the person skilled in the art identifies two second decoding modes without post-filtering (AAC and TCX) and a first decoding mode with post-filtering, which can, however, be deactivated (*post-filtered CELP or non-filtered CELP*).

p. 11, lines 1–6:

*"Indeed, applying the invention to a decoder or encoder capable of operating in a frequency-domain coding mode **other than AAC** will require only minor modifications, if any, which are well within the capabilities of a person skilled in the art. Similarly, TCX is cited as **an example** of weighted linear prediction transform coding and of transform coding in general."*

(Emphasis added)

234. From the quoted passage, the person skilled in the art understands that the individual decoding modes are – naturally – merely illustrative.

p. 23, lines 24–32:

"26. *The method of embodiment 23, wherein the steps of decoding and post-filtering selectively perform one of the following:*

a) TCX decoding;

b) CELP decoding with post-filtering; and

c) CELP decoding without post-filtering.

27. The method of claim 26, wherein the steps of decoding and post-filtering selectively perform one of modes a), b), c) and

d) Advanced Audio Coding (AAC) decoding."

235. The skilled person derives from the cited passage a decoder comprising two second decoding modes without post-filtering (TCX and AAC) and a first decoding mode with switchable post-filtering (CELP).

Claim 7 (p. 34, l. 20–25):

"… the control section being adapted to operate [sic!] the decoder system in at least the following modes:

a) the TCX module is enabled and the post-filter is disabled;

b) the CELP module and the post-filter are enabled; and

c) "the CELP module is enabled and the post-filter is disabled, wherein

the preliminary audio time signal and the audio time signal coincide." Claim 8

(p. 34, l. 31–33):

"… the control section being adapted to operate the decoder also in the following mode:

d) the AAC module is enabled and the post-filter is disabled."

236. From claims 7 and 8, the person skilled in the art also derives a decoder comprising two second decoding modes without post-filtering (TCX and AAC) and a first decoding mode with switchable post-filtering (CELP).

237. The fact that NK2a does not explicitly refer to at least one 'first' and at least one "second" decoding mode does not lead to an impermissible extension. As explained in the interpretation, these are merely designations used to distinguish the decoding modes with post-filters from those without post-filters. The person skilled in the art does not attribute any further significance to the terms "first" and "second" decoding modes.

238. Even though the examples of the NK2a show only a 'first' decoding mode with deactivatable post-filtering, namely CELP or ACELP, the person skilled in the art will also regard as part of the claimed invention those embodiments in which there are several 'first' decoding modes with deactivatable post-filtering (NK2a, p. 4, lines 10–13).

239. An impermissible generalisation cannot be justified by the argument that the NK2a specifically provides for a CELP module and not just any (or even several) first decoding modes, as well as a specific TCX module, and not just any (or even several) second decoding modes. It is irrelevant whether the first decoding modes are CELP or ACELP or another decoding mode, and whether the second decoding modes are AAC, TCX, FD or another decoding mode. It is already clear to the skilled person from NK2a that the only relevant factor is that in the first modes, post-filtering that can be activated and deactivated may take place, whilst in the second modes no post-filtering is performed (NK2a, p. 4, Lines 10–13: *inappropriate switching between several coding modes of which at least one includes post-filtering at the decoder and at least one does not*; p. 6, lines 6–10: *When applied to coding technologies wherein post-filtering activity is conventionally associated with particular coding modes, the post-filtering disabling capability enables a new operative mode, namely the unfiltered application of a conventionally filtered decoding mode*; p. 7, l. 2–4: *In particular, such a decoder may include a code-excited linear prediction encoding module*; p. 7, l. 32–34: *In an advantageous embodiment, the encoder comprises a CELP module and a TCX module*).

240. Furthermore, an impermissible generalisation cannot be justified by the argument that, in comparison with the passages on p. 5, lines 5–11 (*post filtering including attenuation of interharmonic noise*) and pp. 5, line 29 to p. 6, line 2 (*post-filtering step, which includes interharmonic noise attenuation*) of NK2a were not incorporated into claims 1 and 6 of

granted version of the contested patent, that post-filtering comprises interharmonic noise attenuation. This is because the NK2a and the contested patent use the terms '*post*-filtering' and *'pitch* enhancement' synonymously. This has already been demonstrated for the contested patent in the context of its interpretation. The NK2a also makes this clear. On p. 10, lines 32–33, it states:

> *"Throughout the present application, pitch enhancement and post filtering are used as synonyms."*

241. It is well known to those skilled in the art that post-filters for pitch enhancement regularly suppress interharmonic noise, if only because they attenuate all interharmonic signal components.

242. The fact that the phrase *"wherein the preliminary audio time signal and the audio time signal* coincide" from the original claim 7 is not included verbatim in claims 1 and 6 does not, either, lead to an impermissible intermediate generalisation. The phrase expresses that, when post-filtering is deactivated, the audio time signal and the preliminary audio time signal coincide. The meaning of this phrase thus corresponds to feature 1.3, which states: *"whereby the preliminary audio time signal is output as the audio time signal*".

Pitch enhancement filter (feature 1.2)

243. The defendants consider it an impermissible intermediate generalisation that a *'pitch enhancement filter*' within the meaning of NK2a is merely a (non-specified) post-filter, whereas the original claim 1 refers to an *'interharmonic noise attenuation post*-filter'.

244. According to the interpretation set out above, it is already incorrect to say that claim 1 of the contested patent claims 'any' post-filter. Rather, as described, it concerns a pitch-improvement post-filter. Furthermore, it is known to those skilled in the art that such a pitch-improvement filter regularly attenuates interharmonic noise (and all other signal components lying between the harmonics – which are not to be attenuated).

Control of pitch enhancement by means of post-filter amplification (feature 1.2.1)

245. In the defendant's view, an impermissible extension also lies in the fact that feature 1.2.1 ('wherein the pitch enhancement is controlled by post-filter gain') is not disclosed in NK2a. Although gain is mentioned in several places, there is no mention that the pitch enhancement is controlled by such gain. It is only in a very specific embodiment (p. 16, lines 18–22 of NK2a), in which the post-filter is gradually switched on or off, that the gain is said to play a role; however, this is also not for the purpose of controlling the pitch improvement per se.

246. NK2a assumes a post-filter designed as a pitch improvement filter, as is known from D3 (Figure 15). The transfer function of such a filter depends on two parameters, namely the *pitch period* T and the filter gain α (NK2a, p. 2, lines 14 to p. 3, line 20):

$$H_E(z) = 1 + \alpha \left(\frac{z^T + z^{-T}}{2} - 1 \right)$$

247. The skilled person recognises that for the filter gain, $0 \leq \alpha \leq 1$ must apply, whereby in the limiting cases $\alpha = 0$ there is no filter effect and for $\alpha = 1$ the gain at the interharmonics T/2, 3/2T, …, is zero, i.e. the interharmonics are then attenuated to the maximum extent.

248. In this respect, it is originally disclosed that the pitch gain—i.e. the increase in the distance between the 'peaks' (tones, harmonics) and the intervening 'valleys' caused by the post-filter—is controlled by the gain of the post-filter (cf. also NK2a, p. 2, line 28: *"The attenuation depends on the value of the gain α "*).

249. Insofar as the defendants further argue that the original disclosure (NK2a, Figure 3) merely disclosed a combination of a *"long-term prediction* filter", an adjustable gain α and a low-pass filter as a post-filter, this is not correct. Rather, this is merely described as a beneficial further development (*"slightly more* sophisticated") (NK2a, p. 2, line 29 to p. 3, line 12).

"responsive only to the post-filter information coded in the bit stream signal" (feature 1.2.2b)

250. The defendants argue that feature 1.1.2b *"responsive only to post-filtering information and coded in the bit stream signal*", at least according to the relevant English wording, clearly implies that the *response* should be only to (in the sense of: 'to nothing other than') the post-filter information encoded in the bit stream signal. However, such exclusivity (*only*) cannot be inferred from the original documents, certainly not in the general manner now claimed.

251. However, NK2a itself already discloses directly and unambiguously that the control section is designed to selectively deactivate the pitch enhancement filter in the first decoding mode in response only to the post-filter information encoded in the bitstream, cf. NK2a, p. 6, lines 3–6:

> *"A decoding method with these characteristics is well suited for the coding of mixed-origin audio signals by virtue of its ability* ***to deactivate the post-filter based solely on the post-filtering information****, and thus independently of factors such as the current coding mode."*
>
> *(Emphasis added)*

252. The fact that the post-filtering information is encoded in the bitstream is also disclosed in the original, namely on p. 5, lines 5–12 of NK2a:

> *"… whether the device which will decode* ***the bit stream*** *… should apply post-filtering including attenuation of interharmonic noise. The outcome of the decision is* ***encoded in the bit stream*** *and is accessible to the decoding device."*
>
> *(emphasis added)*

"by setting the post-filter gain to zero" (feature 1.2.3)

253. The defendants also consider feature 1.2.3 to constitute an impermissible extension. They argue that, in this respect, the disclosure on p. 10, lines 10–20 of NK2a might at most be relevant. However, it is made clear in the introduction there that setting the post-filter gain to zero is an alternative (*"in another embodiment…"*) to what is described in the first sentence of the relevant paragraph (p. 10, lines 14–16). In this respect, it is not disclosed that a bypass solution (p. 10, lines 14–16, cf. also Figures 4 or 5) could exist if feature 1.2.3 were implemented. The claimant, however, is of the opinion that Figure 4 is within the scope of the claims. The claimant may be basing its interpretation on the fact that the relevant passage was deleted in its entirety prior to the grant of the patent. However, this amendment to the description would then have the consequence that the original alternative or concept of setting the post-filter gain to zero in the contested patent would have a different meaning, which would be at odds with the original wording of the claim. In any event, the subject-matter of the claim, as understood by the claimant, was not originally disclosed.

254. NK2a discloses feature 1.2.3 in the passage cited by the defendants on p. 10, lines 16–20. The fact that a different embodiment is described beforehand does not preclude direct and unambiguous disclosure. This becomes clear when considering the entire passage from p. 10, line 14, which reads as follows:

> *"In one embodiment of the invention as a decoder, the decision to disable the post-filter is implemented by a switch controllable by the control section and capable of bypassing the post-filter in the circuit. In another embodiment, the post-filter has variable gain controllable by the control section, or a gain controller incorporated therein, wherein the decision to disable is carried out by* ***setting the post-filter gain*** *(see previous section)* ***to zero*** *or by setting its absolute value below a predetermined threshold."*

255. The fact that the sentence preceding the disclosure of setting the post-filter gain to zero, as just shown, describes a bypass solution does not conflict with the disclosure. In particular, it is not necessary to name the bypass solution as a possible embodiment for an immediate and unambiguous disclosure of feature 1.2.3. According to the interpretation set out above, claim 1 of the contested patent is limited neither to the bypass solution nor to the pass-through solution. The disclosure of the broader feature 1.2.3 on p. 10, lines 16–20 is therefore sufficient in any event.

"wherein the post-filter information indicates a decision made by the encoder as to whether the post-filtering is to be deactivated, whereby the preliminary audio time signal is output as the audio time signal" (feature 1.3)

256. In the defendant's view, in particular, a 'decision' by the encoder within the meaning of feature 1.3 of NK2a cannot be inferred, at least not in such general terms. A similar formulation can be found, at best, on p. 15, lines 12–16, where, however, the focus is again on a specific embodiment (including, inter alia, a CELP mode and a TCX mode, as well as further features such as a *decision module 820* and a *multiplexer 830*).

257. However, NK2a discloses directly and unambiguously that the post-filter information indicates a decision on the encoder side as to whether post-filtering is to be deactivated. This is evident from p. 5, lines 5–11 of NK2a, which reads:

*"Accordingly, in a first and second aspect, the invention provides an audio encoding method (and an audio encoding system with the corresponding features) characterised by **a decision** being made as to **whether the device that will decode** the bit stream, which is output by the encoding method, **should apply post-filtering** including attenuation of interharmonic noise. The outcome of the decision is encoded in the bit stream and is accessible to the decoding device."*

(Emphasis added)

258. Furthermore, the feature is directly and unambiguously disclosed in
From line 29 on page 5 to line 2 on page 6 of NK2a, which states:

*"In a third and a fourth aspect of the invention, an audio decoding method (and an audio decoding system with corresponding features) is provided, comprising a decoding step followed by a post-filtering step, which includes interharmonic noise attenuation, and characterised by a step of **disabling the post-filter in accordance with post-filtering information encoded in the bit stream signal**."*

Emphasis added

bb) Claim 6

259. The comments made regarding claim 1 apply mutatis mutandis to the co-dependent claim 6. In this respect, the defendants themselves refer to their submissions regarding the corresponding features of claim 1.

b) With regard to the divisional applications

260. As regards the divisional applications following NK2a, the defendants first refer to the grounds stated in relation to NK2a. Since no inadmissible extension can be identified in this respect, this also applies to the divisional applications.

261. Furthermore, the defendants state that, although the original claims of the parent application (NK2a) , and each have a certain "correspondence" in the "Embodiments" 65–85 (each at the end of the description). However, this correspondence is limited to similar wording. It does, however, make a difference to the person skilled in the art whether an object is disclosed in the claims or only within various "embodiments" which cannot be combined or generalised at will (see Annex NK4, para. 2.8). In particular, where the comparatively "general" teaching claimed is concerned, it makes a difference whether this is addressed to the person skilled in the art where they would also expect the definition of the general inventive concept to be found, or is hidden somewhere in the description of "embodiments" and, in that respect, is likewise not immediate and unambiguous.

262. On the basis of the defendants' aforementioned arguments, no impermissible extension can be identified with regard to the divisional applications. The arguments remain general in nature and do not address the specific disclosure of the divisional applications. In so far as the defendants, also in general terms, object that the disclosure passages are not found in the claims but in examples of implementation, this does not preclude an immediate and unambiguous disclosure. As set out above, when examining an inadmissible extension, the disclosure content of the entire document must be considered.

II. Ground for invalidity of lack of workability (Art. 138(1)(b) EPC)

263. In their counterclaim, the defendants also raise the ground of lack of workability only in the most general terms. They object that there is no specific example of implementation for feature 1.2.3 ("by setting the post-filter gain to zero"). All the figures and detailed descriptions relating to the deactivation of post-filtering concern unclaimed solutions. In their reply, the defendants did not return to this argument.

264. The blanket assertion that an embodiment is lacking does not justify a finding of lack of workability. Apart from the defendant's merely general account, the provision of an embodiment for every aspect of the claim is not a mandatory requirement for a workable disclosure.

265. Furthermore, in the context of the interpretation of the contested patent, it has already been explained how feature 1.2.3 is understood by a person skilled in the art, namely as the complete deactivation of the post-filter to the extent that the output signal corresponds to the input signal unaltered – apart from any delay that may be present. To this end, the contested patent discloses solutions with an 'external' bypass (Figs. 4 and 5) as well as with an 'internal' bypass, i.e. a 'pass-through' (Fig. 7).

III. Ground for invalidity: lack of patentability (granted version) (Art. 138(1)(a) EPC)

266. On the basis of the defendant's submissions, it cannot be established that claims 1 and 6 lack patentability.

1. Novelty

267. The defendant's challenge to novelty is unsuccessful.

a) Standard

268. An invention is considered novel if it does not form part of the state of the art. Assessing novelty within the meaning of Article 54(1) EPC requires an examination of the entire content of the prior publication. The decisive factor is whether the subject-matter of the contested patent, with all its features, is directly and unambiguously disclosed in the prior art (UPC_CoA_182/2024, Order of 25 September 2024, para. 123 – Mammut v. Ortovox).

b) Examination on a case-by-case basis

aa) In relation to D1 (WO 2005/078706 A1)

269. Claims 1 and 6 do not lack novelty in relation to D1.

Subject matter of D1

270. D1 deals with hybrid codecs (p. 1, lines 8–10 of D1) which are capable of encoding an audio signal both in the time domain (e.g. CELP codec) and in the frequency domain (e.g. TCX codec), whereby time-domain encoding is preferably used for speech signals and frequency-domain encoding for music signals (p. 2, lines 5–14 of D1).

271. For the coding of wideband speech signals, e.g. in accordance with the AMR-WB standard, CELP coding in the time domain is used for the lower frequency range and parametric coding, e.g. by means of bandwidth expansion (*BWE*),
= Bandwidth Extension) is used (p. 3, lines 5–25 of D1).

272. Even when encoding the audio signal in the frequency domain, a division of the frequency bandwidth takes place, whereby perception-based transform coding is used for the lower frequency range and spectral *band replication* (*SBR*) for the upper frequency range (p. 4, lines 14–20 of D1).

273. So-called *transform predictive* coding combines linear *prediction* and transform coding. This also includes TCX (*Transform Coded eXcitation*) coding, which D1 subsequently discusses as a form of coding in the frequency domain (p. 5, lines 4–12 of D1).

274. Since CELP encodes speech signals well and TCX encodes music signals well, there are encoders that switch their encoding mode depending on the audio signal: *"switched ACELP/TCX* coding" (p. 8, lines 19–31 of D1).

275. D1 identifies a problem in that, in the case of TCX codecs or switched ACELP/TCX codecs, the difficulties in recovering the lost frame caused by frame loss have not yet been addressed (p. 10, lines 5–20 of D1).

276. Figure 1 of D1 shows an encoder that can switch between the two encoding modes, ACELP and TCX, for the lower frequency range (*LF signal*):

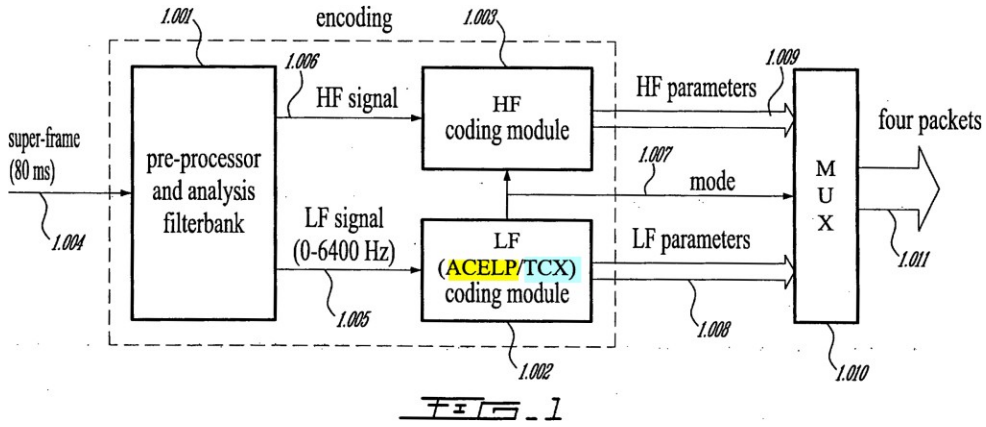
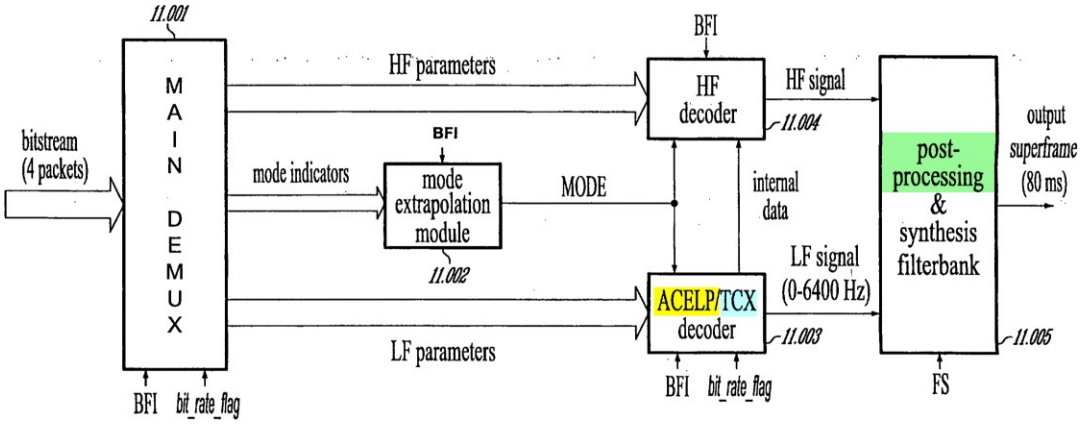


Fig. 1

277. D1 sets out which encoding modes can be selected in the four frames, each 20 ms long, of an 80 ms 'superframe', and arrives at 26 different combinations (Figure 2; p. 24, Table 2 of D1).

278. The corresponding decoder is shown in Figure 11 of D1:



279. The internal structure of the *post-processing & synthesis filter bank* shown in Figure 11 as block 11.005 is illustrated in Figure 17 of D1:

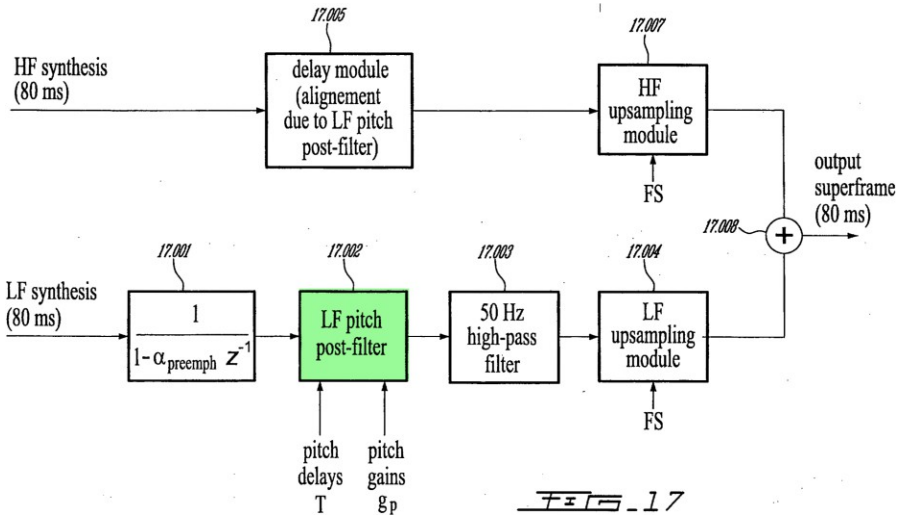


Fig. 17

280. Regarding the function of the post-filter 17.002 (*LF pitch post-filter*) located in the LF branch (*LF synthesis*), D1 states (p. 80, lines 10–23 of D1; colouring added):

> The LF synthesis (which is the output of the ACELP/TCX decoder) is first pre-emphasized by the filter 17.001 of transform function $1/(1-\alpha_{preemph}\, z^{-1})$ where $\alpha_{preemph} = 0.75$. The result is passed through a LF pitch post-filter 17.002 to reduce the level of coding noise between pitch harmonics only in ACELP decoded segments. This post-filter takes as parameters the pitch gains $\mathbf{g_p} = (g_{p0}, g_{p1}, \ldots, g_{p15})$ and pitch lags $\mathbf{T} = (T_0, T_1, \ldots, T_{15})$ for each 5-ms subframe of the 80-ms super-frame. These vectors, $\mathbf{g_p}$ and $\mathbf{T}$ are taken from the ACELP/TCX decoder. Filter 17.003 is the 2nd-order 50 Hz high-pass filter used in AMR-WB speech coding.
>
> The post-processing of the HF synthesis is made through a delay module 17.005, which realizes a simple time alignment of the HF synthesis to make it synchronous with the post-processed LF synthesis. The HF synthesis is thus delayed by 76 samples so as to compensate for the delay generated by LF pitch post-filter 17.002.

281. Post-filtering in the pitch gain filter 17.002 therefore takes place – as is standard practice – only within the frames in which the audio signal has been encoded by the ACELP encoder, and thus only in the first decoding mode as defined by the contested patent. In the TCX

decoding mode, i.e. in the second decoding mode within the meaning of the contested patent, the post-filter is always deactivated.

282. The defendants' view that the first decoding mode is the decoding of the low-frequency signal (Figure 11: *LF parameters*) by the ACELP/TCX decoder 11.003, and that the second decoding mode is the decoding of the high-frequency signal (*HF parameters*) by the HF decoder 11.004, and that post-filtering by the post-filter 17.002 takes place only in the
'first decoding mode' ACELP/TCX does post-filtering take place via the post-filter 17.002, is incorrect. This is because the decoding modes of the codec shown in D1 are ACELP on the one hand and TCX on the other, whereby in both decoding modes both the LF and HF parameters are always decoded. Post-filtering always takes place only in the ACELP decoding mode (see D1, p. 80, lines 12–14 of D1).

Claim 1

283. D1 does not disclose the selective deactivation of the post-filter in the first decoding mode (ACELP) and thus also does not disclose the further configuration according to features 1.2.2a, 1.2.2b, 1.2.3 and 1.3.

284. In the embodiment shown in Figure 13 of D1, in step 13.001 the pitch gains – still independently of the decoding modes used in the four frames of the current superframe – are all set to zero. Only if the ACELP decoding mode is used in frame k is the pitch gain $_{gp}$, amongst other things, obtained from the decoder in step 13.013, i.e. it is assigned a value other than zero. However, the person skilled in the art of D1 cannot deduce a targeted deactivation of the post-filter in the ACELP decoding mode by setting $_{gp}$ to zero.

Claim 6

285. The foregoing considerations apply mutatis mutandis to Claim 6. The defendants do not assert any specific features with regard to a novelty-destroying anticipation of Claim 6 by D1.

bb) In relation to D3 (ETSI TS 126 290 V6.3.0 (2005-06) – AMR-WB+)

286. Claims 1 and 6 of the contested patent also do not lack novelty in relation to D3.

287. D3 is cited as prior art in paragraph [0004] of the contested patent. It describes the structure and function of the so-called 'AMR-WB+' codec (*Extended Adaptive Multi-Rate – Wideband*), as used in the UMTS (3G) mobile communications standard.

288. The AMR-WB+ standard (D3, TS 126 290) is an extension of the AMR-WB standard (D3, p. 7, Ch. 1, para. 1: *"… The coding scheme is an extension of the AMR-WB coding scheme [2] and is referred to as the extended AMR-WB or AMR-WB+ codec."*), which is described, inter alia, in technical specification TS 126 190 (D3, p. 7, Ch. 2: *[3] 3GPP TS 26.190 "AMR Wideband speech codec; Transcoding function"*).

289. The publication D1 discussed above also refers to the AMR-WB codec (see D1, p. 3, lines 17, 18).

290. D3, like D1, shows separate encoding and decoding of the 'low' and 'high' frequency bands, whereby a 20 ms frame of the low frequency band is encoded or decoded using either the time-domain codec ACELP or the frequency-domain codec TCX, see D3, Figures 1 and 2 (p. 12), with added colour coding:

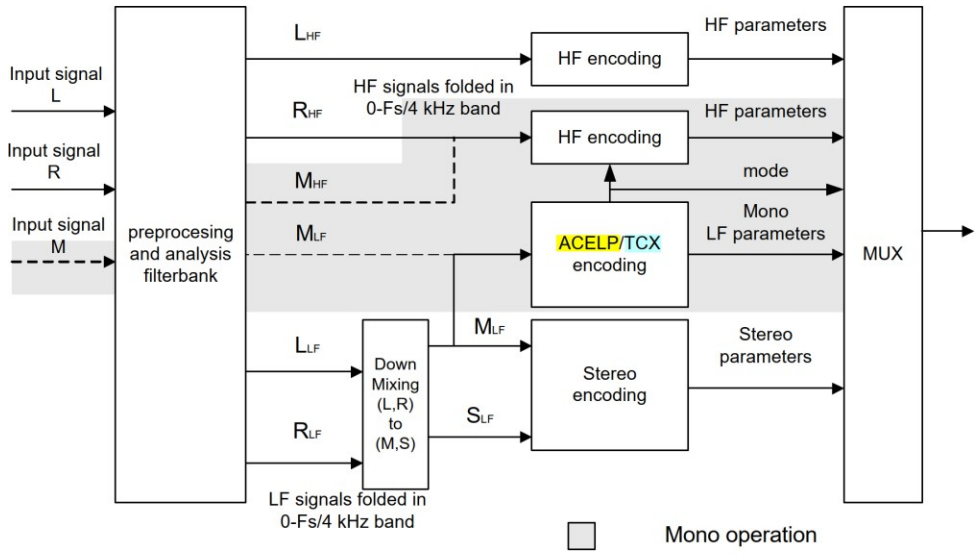


Figure 1: High-level structure of AMR-WB+ encoder

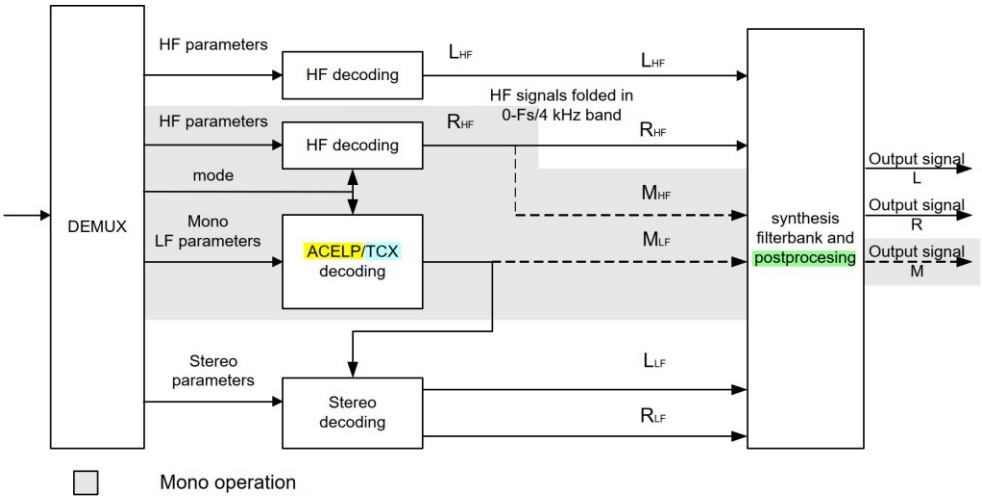


Figure 2: High-level structure of AMR-WB+ decoder

291. In the decoder, if a frame has been encoded using the ACELP decoding mode, a pitch enhancement filter is applied to the preliminary low-frequency audio time signal in order to reduce interharmonic noise in the decoded signal (D3, pp. 57–59, Section 6.1.3 *Post-processing of Mono Low-Band signal*), see D3, Figure 15 (p. 58):

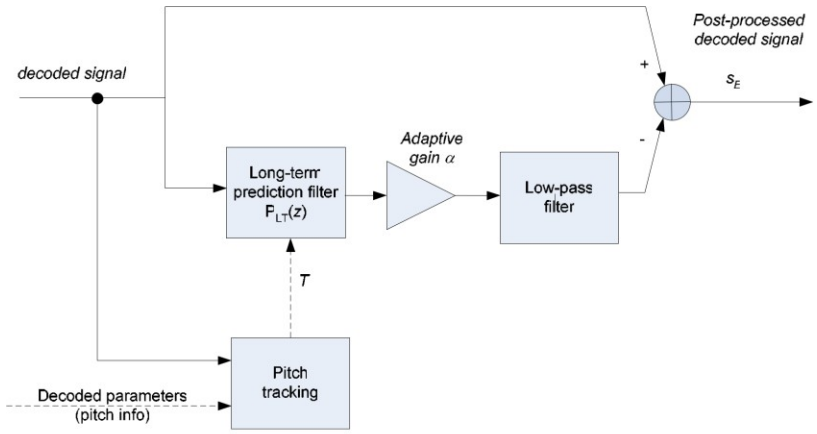


Figure 15: Implemented post-processing configuration

292. *The* following applies to the adaptive *gain* α of the pitch enhancement filter (D3, p. 58 bottom to p. 59 top, with added colouring):

> The factor α is by
>
> $\alpha = 0.5 g_p$, constrained to $0 \le \alpha \le 0.5$
>
> where g_p is the decoded pitch gain. Note that in TCX mode the value of α is set to zero.

293. In the first decoding mode, ACELP, interharmonic noise is therefore reduced by setting the post-filter gain α to a value greater than zero (and less than or equal to 0.5), whereas in the TCX decoding mode, the pitch enhancement filter is deactivated by setting the post-filter gain α to zero.

294. As can be seen immediately from Figure 15 of D3 reproduced above, for α = 0 the preliminary audio time signal (labelled *'decoded* signal' on the left in Figure 15) is output as the audio time signal (labelled *'Post-processed decoded signal* sE' in Figure 15), since the 'lower branch' in Figure 15 makes no contribution in this case.

295. Thus, D3 also does not disclose the selective deactivation of the post-filter in the first decoding mode, ACELP, with the further configuration according to claim 1 (features 1.2.2a, 1.2.2.b, 1.2.3 and 1.3).

296. The foregoing considerations apply mutatis mutandis to claim 6. Nor do the defendants assert any specific features in relation to claim 1 with regard to a novelty-destroying anticipation of claim 6 by D3.

cc) In relation to D4 (Fuchs/Lefebvre)

297. The subject-matter of claims 1 and 6 is novel in relation to D4.

Subject-matter of D4

298. D4 is based on the aforementioned AMR-WB codec and, in this regard, refers to the review article D2 describing this audio codec (D4, p. IV-433, right-hand column, Chapter 2,

para. 1: *"The AMR-WB speech coding standard [5] …"* and p. IV-436, right-hand column, Chapter 7: *"References … [5] B. Bessette et al. … 'The Adaptive Multirate Wideband Speech Codec' …"*).

299. D4 criticises the AMR-WB codec for failing to deliver good quality for non-speech signals, e.g. music signals. In particular, the frequency spectrum of the decoded signal shows more noise in the spectral valleys than in the original signal (D4, p. IV-434, left-hand column, comparison of Figures 1(a) and 1(b) with description).

300. As a solution, D4 proposes that the encoder, by comparing the frequency spectra of the original signal (x) and an error signal (E) (generated from the difference between the original signal and the synthesis signal generated locally in the encoder) to determine which frequency components of the ACELP encoder in the AMR-WB codec are 'bad'. This information about the 'bad' frequency components is transmitted in the form of a 'spectral mask' as side information (*bitstream 2*) from the encoder to the decoder:

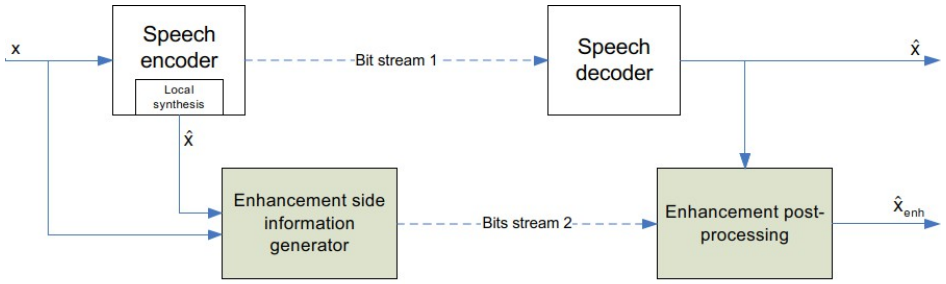


Fig. 2. High level block diagram of the proposed system

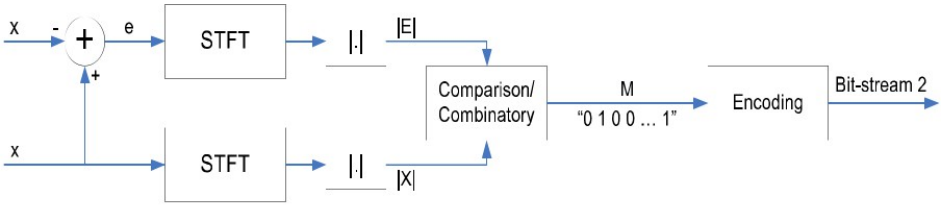


Fig. 4. The frequency zero forcing decision is taken at the encoder

301. The decoder receives this side information (*bitstream 2*) and decodes it into a bitstream (M), transforms the decoded (preliminary) time-domain signal (x) into the frequency domain (*Short Time Fourier* Transform, STFT), derives the phase and magnitude (A) from the spectral components, multiplies the magnitude components (A) by the decoded side information (M), thereby obtaining modified magnitude components (A'), and forms the modified time-domain signal (x_{enh}) from the unchanged phase components and the modified magnitude components (A') by means of an inverse transformation ($STFT^{-1}$):

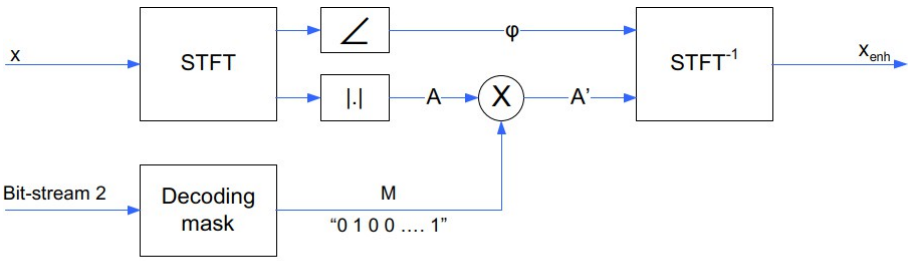


Fig. 3. Post-processing is applied to the speech decoder output $\hat{x}$

Claim 1

302. Thus, D4 does not disclose a second decoding mode that does not include post-filtering (feature 1.1.2) and which alternates in time with a first decoding mode in which post-filtering can be selectively deactivated (and activated). For, as explained, D4 discloses only a single decoding mode that includes post-filtering. The skilled person cannot immediately and unambiguously deduce from D4 that post-filtering can be selectively deactivated in this single decoding mode – for example, by setting all entries of the 'mask' M are always set to 'one', i.e. no frequency components are set to zero (= filtered) – cannot be immediately and unambiguously deduced by a person skilled in the art from D4, even if it cannot be ruled out that situations may arise during operation of the audio codec in which no post-filtering takes place. There is therefore also no disclosure of features 1.2.2a, 1.2.2b, 1.2.3 and 1.3.

303. The existence of two decoding modes, as also claimed by the defendant in relation to D4, due to the separate encoding of low and high frequencies customary in AMR-WB codecs, has, as already mentioned, nothing to do with the two decoding modes according to the patent in dispute, between which the decoder, controlled by the encoder, switches back and forth over time.

Claim 6

304. As regards claim 6, the defendants merely argue that the arguments concerning claim 1 apply mutatis mutandis to claim 6 as well. In any event, this argument does not demonstrate the lack of disclosure of features of claim 6 insofar as they differ from claim 1. Reference may therefore be made to the arguments concerning claim 1.

dd) In relation to D5 (US 2005/0165603 A1)

305. Claims 1 and 6 of the contested patent also do not lack novelty in relation to D5.

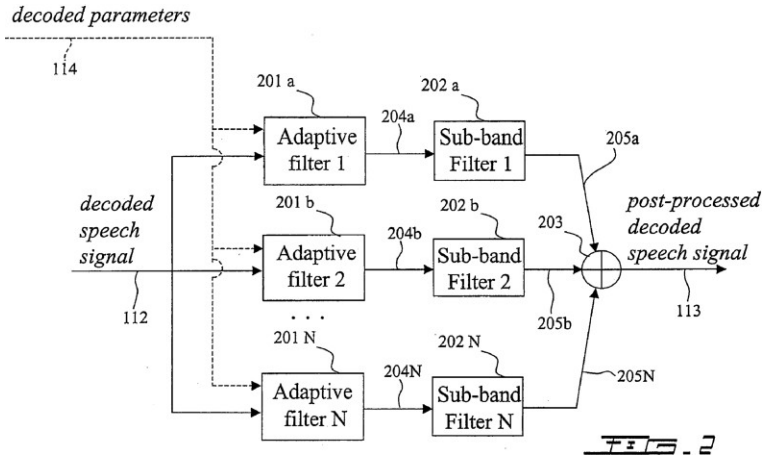
306. D5 is based on a decoding system with post-filters. It criticises the fact that the pitch enhancement filter used therein imposes a harmonic structure on the entire frequency range, i.e. that, as a result, even those regions of the speech signal synthesised by the decoder which did not originally have such a structure subsequently exhibit a harmonic structure; see paragraph [0025] of D5:

"*… A pitch post-filter then accentuates the harmonics at the expense of inter-harmonic energy, which becomes relatively smaller. Note that the* ***frequency response of a pitch post-filter typically covers the entire frequency range****. The result is that* ***a harmonic structure is imposed on the post-processed speech even in frequency bands that did not exhibit a harmonic structure in the decoded speech****. This is* ***not a perceptually optimal approach for wideband speech*** *(speech sampled at 16 kHz), which rarely exhibits a periodic structure across the entire frequency range."*

(Emphasis added)

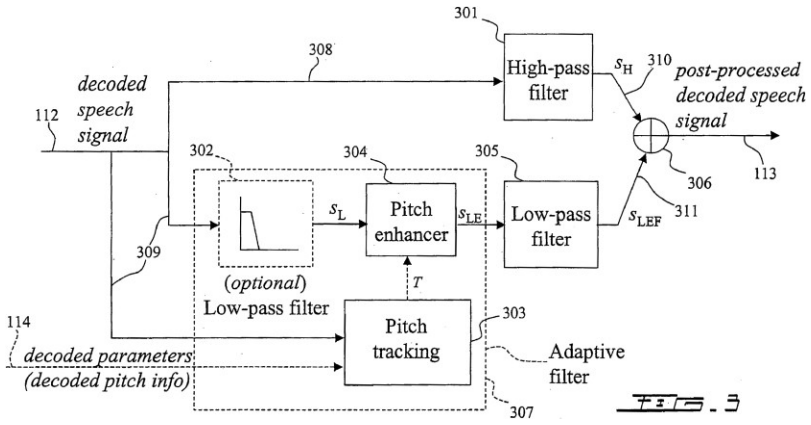
307. To solve this problem, D5 proposes dividing the decoded signal into several frequency bands and applying post-filtering with a pitch enhancement filter only in those frequency bands that exhibit a harmonic structure (see paragraphs [0026], [0029] of D5: *"to localise the post-processing in the desired sub-band(s) and to leave other sub-bands virtually unaltered."*).

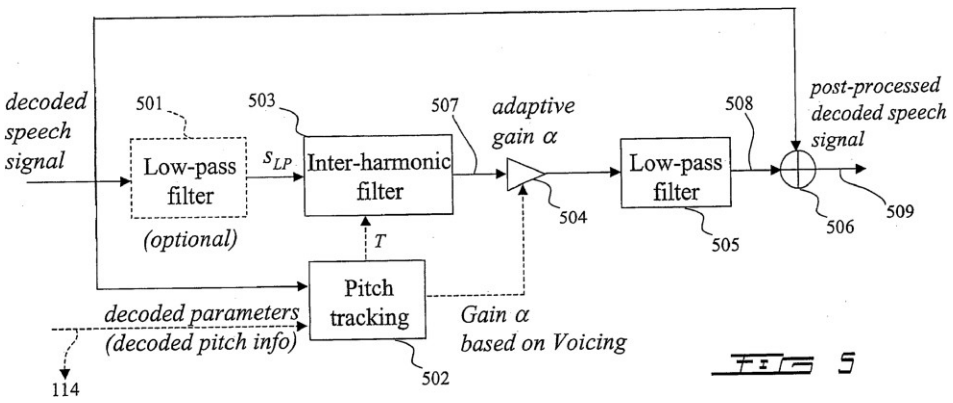
308. Figure 2 of D5 is shown below for illustrative purposes:



309. As a specific implementation of this general approach with N frequency bands, D5 focuses on the case of two frequency bands, whereby a pitch enhancement filter is applied only to the lower frequency band (para. [0057]: *"cut-off frequency … 2000 Hz"*) (as is the case in the AMR-WB standard, cf. D3, Figures 14, 15).

310. Figures 3 and 4 of D5 are shown below for illustrative purposes:





311. The gain parameter α is calculated in D5 by the decoder (paras. [0053], [0082]).

312. D5 therefore discloses neither a second decoding mode that does not include post-filtering (feature 1.1.2), nor selective deactivation of post-filtering in accordance with features 1.2.2a, 1.2.2b, 1.2.3 and 1.3 of claim 1.

313. As regards claim 6, the defendants confine themselves to stating that the same applies here as for claim 1. Against this background, no anticipation of claim 6 by D5 that would be detrimental to novelty can be established.

ee) With regard to documents 'D3' and 'D4' from the examination proceedings

314. In their counterclaim, the defendants argue that, due to an invalid claim to priority, the documents 'D3' and 'D4' from the examination proceedings also destroy the novelty of the subject-matter according to claims 1 and 6 (see Annex NK4, para. 4.2).

Arguments regarding the invalidity of the priority of the contested patent

315. It cannot be established that the contested patent does not validly claim priority. The documents 'D3' and 'D4' from the examination proceedings are therefore not prior art, according to the defendants' own submissions.

316. In this regard, the defendants merely refer in the counterclaim to the 'above grounds', i.e. to the argument concerning inadmissible extension (see counterclaim for revocation, para. 32). It remains unclear what specifically they are relying on. Furthermore, the defendants object that the priority document lacks a disclosure comparable to the claims filed in the parent application (NK2a). In this respect, it is all the more true that the subject-matter of claim 1 cannot be directly and unambiguously derived from the priority document.

317. This argument put forward by the defendant is too general to serve as a basis for finding that the priority is invalid. Furthermore, since, as set out above, there is no inadmissible extension, the reference to the 'above grounds' is unsuccessful.

Arguments regarding documents 'D3' and 'D4' from the examination proceedings

318. Apart from that, the argument regarding documents 'D3' and 'D4' from the examination proceedings amounts to nothing more than a mere assertion that, due to the invalid assertion

, these too are detrimental to the novelty of the subject-matter of claims 1 and 6 of the contested patent. There is no further explanation, including regarding the documents referred to. Consequently, this does not constitute a valid challenge to novelty.

2. Inventive step

319. Based on the defendant's submissions, there is also no lack of inventive step.

a) Standard

320. Pursuant to Article 56 EPC, an invention is deemed to involve an inventive step if it does not follow in an obvious manner from the prior art for a person skilled in the art.

321. According to the case law of the Court of Appeal, the following procedure should be followed when assessing inventive step (see UPC_CoA_464/2024, decision of 25 November 2025, Headnotes 7 et seq., para. 131 et seq. – Meril v. Edwards; UPC_CoA_528/2024, decision of 25 November 2025, Headnotes 10 et seq., para. 126 et seq. – Amgen v. Sanofi; see also UPC_CoA_335/2024, Order of 26 February 2024, pp. 34 et seq. – Nanostring v. 10x Genomics):

322. First, it must be established what the subject-matter of the invention is; in other words, the objective problem (the objective technical problem) must be identified. This must be assessed from the perspective of a person skilled in the art, drawing on their general technical knowledge at the time of filing or the priority date of the patent (the relevant date). To this end, it must be determined what contribution the invention makes to the state of the art, not by considering the individual features of the claim, but by comparing the claim as a whole in conjunction with the description and the drawings, whilst also taking into account the inventive concept underlying the invention (the technical teaching), which must be based on the technical effect or effects that the person skilled in the art understands to have been achieved by the claimed invention on the basis of the application.

323. To avoid a retrospective assessment, the objective problem should contain no references to the claimed solution.

324. The claimed solution is obvious if, at the relevant time, the person skilled in the art, starting from a realistic point in the prior art in the relevant technical field and with the aim of solving the objective problem, would have arrived at the claimed solution and not merely could have arrived at it.

325. The relevant field of technology is the specific field relevant to the objective problem to be solved, as well as any field in which the same or a similar problem arises and which the person skilled in the art in the specific technical field can reasonably be expected to be familiar with.

326. A starting point is realistic if its teaching would have been of interest to a person skilled in the art seeking to solve the objective problem at the relevant time. This may be the case, for example, where the relevant prior art already discloses several features similar to those of the claimed invention and/or addresses the same or a similar underlying problem as that of the claimed invention. There

may be more than one realistic starting point, and the claimed invention must be inventive in relation to each of these starting points.

327. The person skilled in the art lacks inventive ability and imagination and requires a starting point or motivation which, based on a realistic starting point, prompts them to take the next step towards the claimed invention. As a rule, a claimed solution is to be regarded as non-inventive/obvious if the person skilled in the art would take the next step on the basis of the starting point or as a matter of routine and arrive at the claimed invention.

328. It is not necessary to demonstrate an improvement of the claimed technical teaching over the prior art in order to establish inventive step. Inventive step may also be present if the patent claims disclose a non-obvious alternative to the solutions known in the prior art.

b) Examination on a case-by-case basis

329. Measured against these principles, claims 1 and 6 of the contested patent are based on an inventive step.

aa) Objective problem

330. The Board considers the objective purpose of the contested patent to be the improvement of the quality of the audio signal reconstructed by the decoder when the audio signal comprises (over time, or in some cases simultaneously) different types of audio signal or components (speech, music, etc.), whereby – as is always the case with audio codecs – sufficient coding efficiency must be ensured.

bb) Based on D1 in combination with general technical knowledge or D3, D5 or D6

331. The respective subject-matter of claims 1 and 6 involves an inventive step based on D1. This applies to the combinations asserted by the defendants with general technical knowledge as well as with the prior art documents D3, D5 and D6.

332. The defendants base their challenge to inventive step on the ground that D1 does not disclose merely setting the post-filter gain to zero, because the relevant gain is already initialised as zero (feature 1.2.3). Implementation by setting the post-filter gain to zero would merely be obvious to a person skilled in the art or would follow naturally from D3, because the latter discloses a relationship between the pitch gain $_{gp}$ and the parameter α and shows that no post-filtering takes place when α is zero. D5 also discloses a transfer function of the pitch enhancement filter with a parameter α corresponding to a filter gain, whereby setting the parameter α to zero results in the filter being deactivated. The skilled person derives a further suggestion to deactivate the post-filter by setting the filter gain to zero from D6.

333. Since D1, as described above, does not disclose that the post-filter in the ACELP decoding mode is selectively

, the defendant's argument, which relies solely on the lack of disclosure of feature 1.2.3, cannot succeed.

334. Apart from that, neither D1 nor the other prior art cited by the defendants recognised that disruptive effects may occur when switching between decoding modes with and without post-filtering, nor how these might be prevented. It is therefore irrelevant that it is known from D1 and D3 that deactivation of the post-filter in the second decoding mode (D1 and D3: TCX) by setting the pitch gain $_{gp}$ for the relevant frame to zero on the encoder side, thereby informing the decoder that the post-filter is to be deactivated (D1, Figure 13, step 13.001: $_{gp}$ (0,0,…,0); D3, p. 59, lines 1, 2: $\alpha = 0.5g_p$ *… where* $_{gp}$ *is the decoded pitch gain. Note that in TCX mode the value of α is set to zero.*). This applies only to the
The manner in which the post-filter is deactivated in the second decoding mode (TCX), in which the parameter $_{gp}$ is not used by the decoder and can therefore be utilised for other purposes or interpreted by the decoder. In the first decoding mode (D1: ACELP; D3: CELP), however, the pitch gain $_{gp}$ is a central parameter of the encoder and decoder and cannot therefore be used to signal other information – such as the deactivation of the post-filter.

335. Furthermore, based on the defendant's arguments, there is no apparent motivation for a person skilled in the art to provide for deactivation of the post-filter in the first decoding mode (D1: ACELP) starting from D1.

cc) Based on D2 in combination with D1/D3 or D4/D5/D6

336. The subject-matter of claims 1 and 6 also involves an inventive step based on D2 (Bessette) in combination with D1, D3/D4, D5 or D6.

337. D2 is an overview article on the adaptive multi-rate speech codec AMR-WB, which was jointly developed by VoiceAge and Nokia from around 1999 to 2001 and which found its way into the mobile communications standards of the time (GSM, UMTS) as well as into later mobile communications systems (LTE, 5G).

338. Of particular interest is the combination of an ACELP codec for the lower frequency range (50 Hz to 6.4 kHz) and a particularly data-efficient coding scheme for the upper frequency range (6.4–7 kHz); see D2, p. 623, Figure 1 (encoder) and Figure 2 (decoder).

339. D2 discloses only a decoding mode that does not include post-filtering (not feature 1.1.1). The separate encoding and decoding of the lower and upper frequency bands described in D2, as already mentioned in another context, has nothing to do with the encoding or decoding modes of the patent in dispute.

340. D2 does not disclose post-filtering of a decoded preliminary audio time signal in accordance with the patent in dispute (feature group 1.2, feature 1.3). The defendants refer to equations (20) to (23) of D2 in the section *"Pitch* Enhancement" (D2, p. 629, right-hand column, penultimate paragraph – p. 630, left-hand column, second paragraph). However, this concerns filtering the *'fixed'* (*innovative*) component *c(n)* of the total excitation component *u(n)* in such a way that high frequencies are emphasised and low frequencies are attenuated (D2, p. 629, right-hand column, penultimate paragraph). This is a processing step carried out within the 'core (ACELP) decoder' itself and

takes place even before the generation of the preliminary audio time signal, in particular before filtering by the synthesis filter, as can be seen from Figure 2, which is shown below, coloured and annotated:

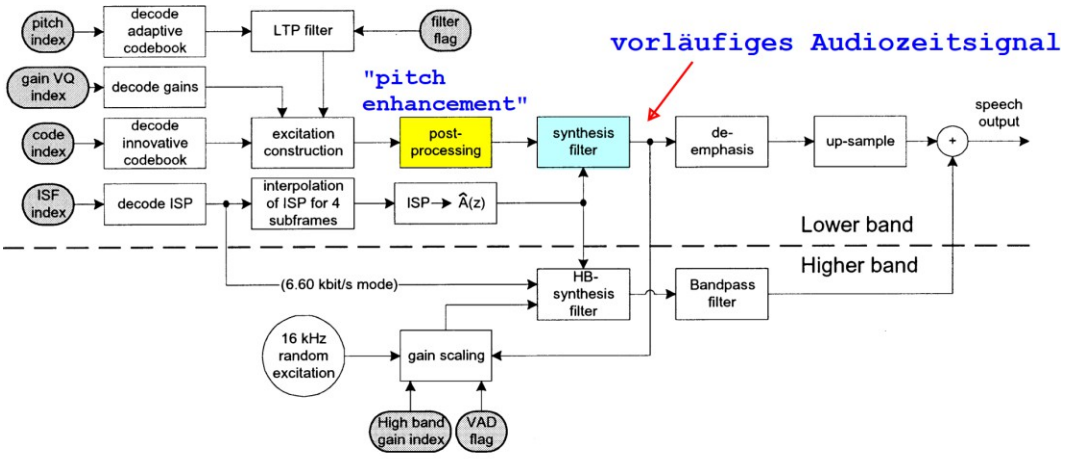


Fig. 2. Block diagram of the AMR-WB ACELP decoder.

341. With regard to the alleged post-filtering, the defendants refer to equation (4) of D2 (p. 626, left-hand column). This concerns the filtering of the adaptive component *v(n)* of the total excitation signal *u(n)*, which – like the filtering of the fixed component *c(n)* of the total excitation signal *u(n)* – likewise has nothing to do with the post-filtering of a decoded preliminary audio time signal as claimed in the patent in dispute.

342. Against this background, D2 discloses no more than a decoding system within the meaning of feature 1, further comprising features 1.1 and 1.1.2 of the contested patent.

343. D2 is thus so far removed from the subject-matter of the contested patent that it does not even constitute a realistic starting point within the meaning of the principles set out above.

344. In any event, there is no apparent motivation for a person skilled in the art to modify the AMR-WB codec of D2 in any way to incorporate the features lacking in the subject-matter of the contested patent.

dd) Based on D3 in combination with D1, D4, D5 or D6

345. Even based on D3 in combination with the prior art documents D1, D4, D5 or D6, the subject-matter of claims 1 and 6 does not lack inventive step.

346. The defendants base their challenge to inventive step on the lack of disclosure of feature 1.3, according to which the post-filter information indicates a decision on the encoder side as to whether post-filtering is to be deactivated.

347. However, as set out in the novelty examination, D3 also does not disclose the selective deactivation of the post-filter in the first decoding mode, ACELP, with the configuration specified in detail in the claim (features 1.2.2a, 1.2.2.b, 1.2.3 and feature 1.3 in general). Against this background, the defendant's challenge, which is based solely on the lack of disclosure of feature 1.3, cannot succeed.

348. Furthermore, reference may be made to the arguments regarding inventive step based on D1, insofar as these also apply to D3.

349. Nor can any motivation for the person skilled in the art to provide for deactivation of the post-filter in the first decoding mode (D3: CELP) based on D3 be inferred from the defendant's submissions.

IV. The defendants' submissions in their rejoinder to the amendment and the claimant's submissions in the written statement of 24 April 2025, as well as in the rejoinder to the action for nullity of 27 January 2025

350. In so far as the defendants, in their rejoinder to the amendment request of 27 February 2025, made submissions under the heading 'B. Legal status of the patent in suit' (pp. 13–30) regarding the legal status of the patent in dispute in its granted version, the relevant submissions are to be rejected as out of time pursuant to Rule 9.2 of the Rules of Procedure. Reference may be made to the above remarks regarding the rejection of the arguments concerning the interpretation of the patent in dispute in its granted form. Those remarks deal with inadmissible extension, novelty and inventive step of the patent in dispute in its granted form. No connection with the amendment request is apparent.

351. However, even if one were to take into account the defendant's aforementioned submission regarding the legal status of the contested patent, this would not alter the above remarks.

352. For these reasons, the plaintiff's submission in the written statement of 24 April 2025 was not admissible and must likewise be rejected.

V. Alternative claims

353. Since the patent in dispute is valid on the basis of the main claim, there is no need to discuss the auxiliary claims.

354. A decision on the claimant's application for the admission of further alternative claims pursuant to R. 30.2 of the Rules of Procedure is therefore also unnecessary.

F. Action for infringement

355. The infringement action is well founded.

I. Implementation of all features of the contested patent

356. The contested embodiments operate in accordance with the Opus standard. They thus make direct, literal use of all the features of claim 1 of the contested patent. Furthermore, during operation of the contested embodiments, all the features of the method according to claim 6 of the contested patent are realised.

1. The Opus standard

357. The Opus standard was defined by the Internet Engineering Task Force (IETF) in the document RFC 6716 (*Request for Comments*) published in September 2012, entitled *'Definition of the Opus Audio Codec*'. The document is available at https://datatra-cker.ietf.org/doc/html/rfc6716.

358. The claimant has submitted extracts from the standard as Annex BP-T4 (hereinafter: BP-T4). The defendants have also submitted programme code (function CELT_C) as Annex MB 2.

359. Opus is an audio codec designed to support various types of audio signals (speech, music, …) and bit rates (6–510 kbit/s), using one codec operating in the time domain with linear prediction (*LP*) and another operating in the frequency domain (MDCT, *Modified Discrete Cosine Transform*) (BP-T 4, p. 1, *Abstract*; p. 5, Chapter 1 *Introduction*, para. 1). Seamless switching between the different operating modes is intended to be possible (BP-T4, p. 8, Chapter 2, para. 1).

360. The time-domain codec used by Opus is based on the SILK codec (SILK is not an acronym, but was chosen to symbolise the smooth sound and natural speech reproduction) from Skype (BP-T4, p. 9, para. 1; MB 1, p. 9), whilst the frequency-based codec mode is based on the so-called CELT codec (*Constrained Energy Lapped Transform*) from Xiph (MB 1, p. 9); the Opus codec can also be operated in a third mode, the hybrid mode. In this mode, the SILK codec is used for the lower frequency range (up to 8 kHz) and the CELT codec for the upper frequency range (BP-T4, p. 9, paras. 1–3).

361. The Opus codec uses a number of *control* parameters which the encoder can modify during normal operation of the codec without interrupting the transmitted bitstream, and which the decoder can evaluate. In addition to the bit rate, the number of channels, the audio bandwidth and the frame duration, these control parameters also include the use or non-use of a post-filter implemented as a *pitch post-filter*, as described in Chapter 2.1 of the Opus standard document (BP-T4, pp. 10–13, in particular Section 2.1.5, last bullet point).

362. For the majority of the information to be transmitted from the encoder to the decoder, the Opus codec uses so-called range encoding, i.e. a special form of entropy coding, in order to utilise the bitstream as efficiently as possible (BP-T4, pp. 3, 4, table of contents with reference to Section 4.1 (*Range Decoder*) and Section 5.1 (*Range Encoder*), as well as p. 23, Section 4.1 (*Range Decoder*)).

363. The Opus encoder groups the data to be transmitted into *packets*, which may comprise one or more audio frames (BP-T4, p. 13, Chapter 3). An essential component of every Opus packet is a so-called TOC byte (*table of contents*), which the encoder uses to signal to the decoder which mode (SILK-only, Hybrid (SILK+CELT), CELT-only) and which configuration (bandwidth, frame size) currently applies. Below is an excerpt from the Opus standard with added colouring (see BP-T4, pp. 14, 15):

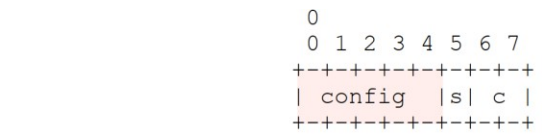


Figure 1: The TOC Byte

The top five bits of the TOC byte, labeled "config", encode one of 32 possible configurations of operating mode, audio bandwidth, and frame size. As described, the LP (SILK) layer and MDCT (CELT) layer can be combined in three possible operating modes:

1. A SILK-only mode for use in low bitrate connections with an audio bandwidth of WB or less,

2. A Hybrid (SILK+CELT) mode for SWB or FB speech at medium bitrates, and

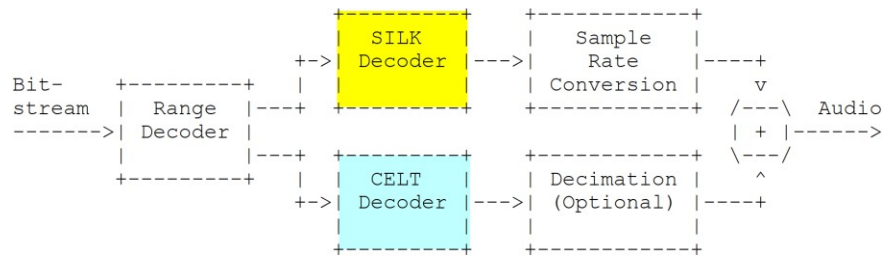
3. A CELT-only mode for very low delay speech transmission as well as music transmission (NB to FB).

The 32 possible configurations each identify which one of these operating modes the packet uses, as well as the audio bandwidth and the frame size. Table 2 lists the parameters for each configuration.

Configuration Number(s)	Mode	Bandwidth	Frame Sizes
0...3	SILK-only	NB	10, 20, 40, 60 ms
4...7	SILK-only	MB	10, 20, 40, 60 ms
8...11	SILK-only	WB	10, 20, 40, 60 ms
12...13	Hybrid	SWB	10, 20 ms
14...15	Hybrid	FB	10, 20 ms
16...19	CELT-only	NB	2.5, 5, 10, 20 ms
20...23	CELT-only	WB	2.5, 5, 10, 20 ms
24...27	CELT-only	SWB	2.5, 5, 10, 20 ms
28...31	CELT-only	FB	2.5, 5, 10, 20 ms

Table 2: TOC Byte Configuration Parameters

364. The Opus decoder accordingly comprises a SILK decoder and a CELT decoder (BP-T4, p. 23):



365. As already mentioned, the time-domain SILK decoder is based on linear *predictive coding* (LPC) and is structured as follows (BP-T4, p. 32, Figure 14):

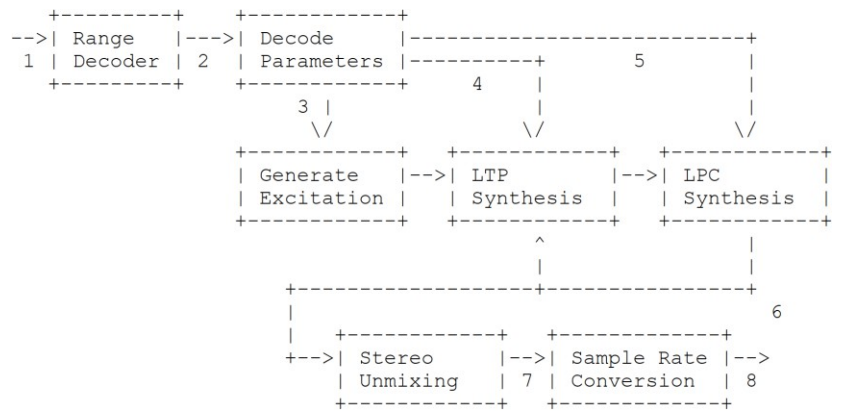


Figure 14: SILK Decoder

366. The CELT decoder, which operates in the frequency domain, is structured as follows (BP-T4, p. 106, Figure 17, with added colouring):

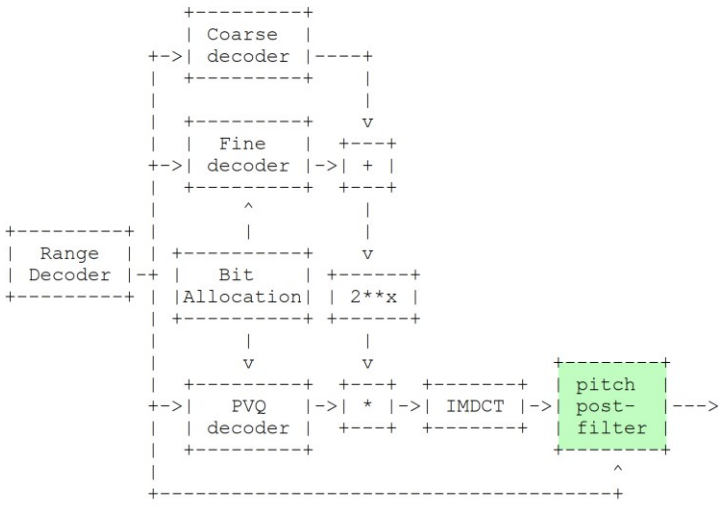


Figure 17: Structure of the CELT decoder

367. In a decoder operating according to the Opus standard, only the frequency-based CELT decoder has a post-filter designed as a pitch post-filter connected downstream, which – as already explained in the introduction – may or may not be used (BP-T4, p. 12, Ch. 2.1.5: *trade-offs can be made between CPU complexity and quality/bitrate … such trade-offs … are: … The use of certain bitstream features such as … the pitch post-filter*).

368. The post-filter can be switched on or off; the encoder makes this decision and signals it to the decoder (BP-T4, p. 121, Section 4.3.7.1, sentences 2 and 3: *'the post-filter parameters are encoded … The post-filter can be switched on or off using one* bit').

369. As is standard practice, the post-filter of the Opus decoder, designed as a pitch enhancement filter, also requires information about the pitch and the gain, i.e. information about which frequency ranges are to be amplified or attenuated and by how much.

370. When the post-filter is activated, pitch parameters (*octave, period*) and gain parameters (*gain, tapset*) are therefore transmitted from the encoder to the decoder and evaluated by the latter to determine the transfer function of the post-filter, which is shown below (BP-T4, p. 107, Table 56; pp. 121, 122, Section 4.3.7.1. *Post-Filter*):

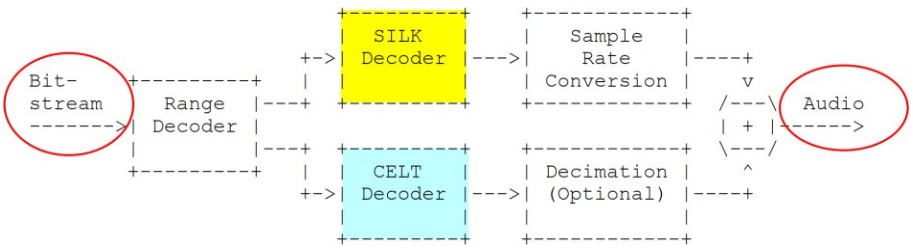
```
y(n) = x(n) + G*(g0*y(n-T) + g1*(y(n-T+1)+y(n-T+1))
                           + g2*(y(n-T+2)+y(n-T+2)))
```

2. Implementation of the features of claim 6 in the operation of a device operating in accordance with the Opus standard

371. During decoding, a device operating in accordance with the Opus standard, such as the contested embodiments, realises all the features of method claim 6.

'Method for decoding a bitstream signal as an audio time signal' (cf. feature 6)

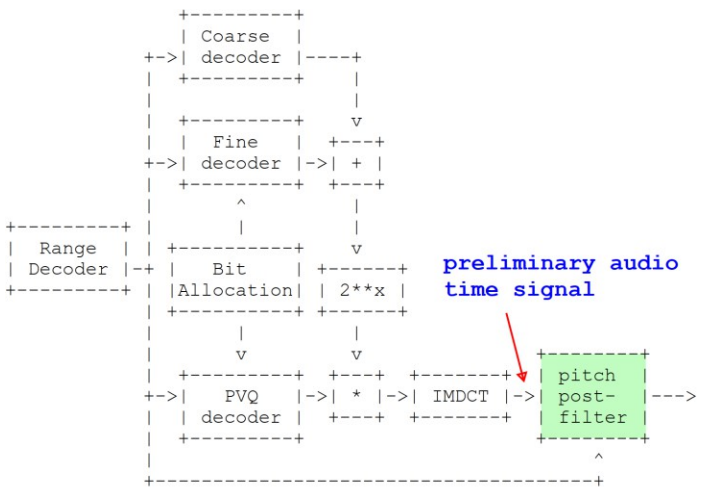
372. In this regard, reference may be made to the diagram in Annex BP-T4, p. 23, Chapter 4, which is shown below with added colouring and which schematically illustrates how the Opus decoder generates an audio time signal from the received bitstream signal:



"Decoding a bitstream signal as a preliminary audio time signal in one of a plurality of decoding modes" (feature 6.1)

373. The received bitstream, which, as explained in the introduction, is predominantly range-coded, is first converted by the range decoder into a range-decoded bitstream. As explained further, the Opus decoder supports the SILK, CELT and HYBRID modes and thus a variety of decoding modes.

374. In the CELT decoding mode, a preliminary audio time signal is present at the output of the IMDCT (*Inverse Modified Discrete Cosine Transform*) block (BP-T4, p. 106, Figure 17 with colour coding and annotations):



Legend: IMDCT = Inverse MDCT

Figure 17: Structure of the CELT decoder

"wherein the plurality of decoding modes includes at least a first decoding mode that includes a post-filtering step" (Feature 6.1.1)

375. The plurality of decoding modes according to the Opus standard (SILK, CELT, HYBRID) includes, with CELT, a first decoding mode that includes a post-filtering step. Figure 17, reproduced above, shows the CELT decoding mode, in which the preliminary audio time signal is subjected to post-filtering by the post-filter implemented as *a pitch post-filter*.

"at least a second decoding mode that does not include the post-filtering step" (Feature 6.1.2)

376. With the SILK decoding mode, the Opus standard provides for a second decoding mode that does not include a post-filtering step.

377. As explained in the introduction with reference to Figure 14 (BP-T4), the SILK decoder does not feature a post-filter.

378. The LTP (*Long Term Prediction*) and LPC (*Linear Predictive Coding*) synthesis filters shown in Figure 14 are standard filters within a decoder operating with linear prediction and are not pitch enhancement filters as claimed in the patent in dispute. Reference is made to the above considerations regarding interpretation.

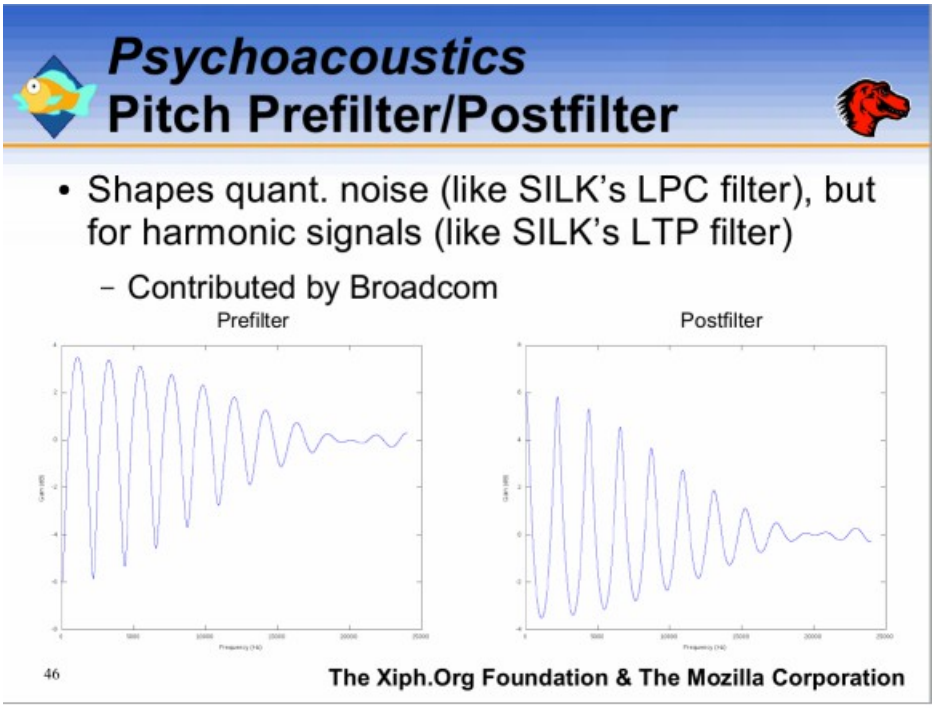
379. Nor does the illustration cited by the defendants from the presentation "Opus: The Swiss-Army Knife of Audio Codecs" by the Xiph.Org Foundation and the Mozilla Foundation (Exhibit MB 1; authors: Jean-Martin Valin, Koen Vos, Gregory Maxwell and Timothy B. Terriberry) alter this.

380. Exhibit MB 1 is a document that clearly describes the Opus audio codec, in particular its characteristics, structure and advantages.

381. Appendix MB 1 also confirms the expert's knowledge regarding the function of LTP and LPC filters in time-domain codecs with linear prediction, in this case the SILK codec from Opus. Pages 12–19 describe how the filter coefficients of the SILK codec's LPC filter are obtained, transformed into the LSF domain, quantised and

transmitted. Since the LPC residual signal is not 'white', i.e. not spectrally uniform, but still contains periodic components (MB 1, p. 20), a *long-term prediction* (*LTP*) is performed using a corresponding filter in the standard manner to determine the pitches (MB 1, p. 21).

382. From page 23 onwards, the CELT codec of the Opus codec is then described. One of the measures employed by the CELT codec to exploit psychoacoustic aspects involves the use of a pre-filter (*pitch pre-filter*) in the encoder in combination with a matched post-filter (*pitch post-filter*) in the decoder to shape the quantisation noise for harmonic signals, as illustrated on page 46 of the presentation (MB 1) shown below:



383. The defendants infer from this that the post-filter in the CELT decoding layer is attributed with technical functions similar to those found in the SILK LPC and LTP filters. Conversely, this means that the SILK LPC and LTP filters exhibit post-filter characteristics and functions. As Messrs Valin, Vos and Terriberry are the inventors of Opus, this is of particular significance.

384. This is incorrect. On page 46 of Appendix MB 1, the right-hand side shows the transfer function of a standard post-filter designed as a pitch enhancement filter, in which frequencies of approximately 2.2 kHz, 4.4 kHz, 6.6 kHz, … are amplified to the maximum, whilst intermediate frequencies of 1.1 kHz, 3.3 kHz, 5.5 kHz, … are attenuated to the maximum, with the amplification or attenuation decreasing as the frequency increases. Such a pitch enhancement filter serves – as stated on page 46 of MB 1 – in a conventional manner to shape the quantisation noise in harmonic signals, as is known, for example, from D6 (D6, Abstract). D6 also points out that a pitch enhancement filter can have two components: one for attenuating interharmonic noise (*long-term postfilter*) and the other for attenuating the noise between the formants in the

spectrum (*short-term postfilter*), whereby the latter component of the postfilter bears similarities to the LPC filter (D6, p. 62, left-hand column, Chapter III, para. 1) and the former component – as it depends on the fundamental frequency (pitch) of the harmonic signal – is to be determined in a manner similar to an LTP filter in a linear predictive codec (D6, Chapter IV, p. 63, left-hand column, last para. – p. 63, right-hand column, para. 1).

385. In this respect, the statements on p. 46 of Annex MB 1 (*Shapes quant. Noise …, but for harmonic signals*) do not constitute a (new) finding by the authors, but rather a clear description of the known filter transfer function of a post-filter designed as a pitch enhancement filter.

386. The information in brackets (*like SILK's LPC filter; like SILK's LTP filter*) clearly serves only to convey an idea of the post-filter to the listener or viewer (of the presentation) or the reader by means of an association with (very) well-known filter transfer functions or properties. However, this in no way permits the defendant's reverse inference that the LPC and LTP filters used in LPC codecs (such as SILK) constitute post-filters. As is known to those skilled in the art – and as explained in the interpretation – these are rather filters required in the decoding section of an LPC codec to generate the preliminary audio time signal.

"wherein the post-filtering step applies a pitch enhancement filter to the preliminary audio time signal, thereby obtaining an audio time signal" (claim 6.2)

387. Feature 6.2 of the contested patent is also realised during the operation of a device operating in accordance with the Opus standard. Figure 17, reproduced above, shows the CELT decoding mode, in which the preliminary audio time signal is subjected to post-filtering (*pitch post-filter*). The post-filter provides the audio timing signal and is designed as a *pitch post-filter*, cf. BP-T4, p. 106, para. 1:

> *"To improve the quality of highly tonal and periodic signals, CELT incorporates a* ***pre-filter/post-filter*** *combination. The pre-filter on the encoder side attenuates the signal's harmonics. The* ***post-filter on the decoder side*** *restores the original gain of the harmonics, whilst* ***shaping the coding noise to roughly follow the harmonics. This noise shaping reduces the perception of the noise****."*
>
> *(Emphasis added)*

"whereby the pitch enhancement filter is controlled by a post-filter gain" (cf. feature 6.2.1)

388. According to the Opus standard, the *pitch* post-filter is controlled by post-filter *gain* (*gain, tapset*).

389. As explained in the introduction, the filter gain parameters *gain* and *tapset* (where there are three *tapsets* with different values for *g0*, *g1* and *g2*) determine the filter transfer function:

```
inclusively.  Next, the gain is decoded as three raw bits and is
equal to G=3*(int_gain+1)/32.  The set of post-filter taps is decoded
last, using a pdf equal to {2, 1, 1}/4.  Tapset zero corresponds to
the filter coefficients g0 = 0.3066406250, g1 = 0.2170410156, g2 =
0.1296386719.  Tapset one corresponds to the filter coefficients g0 =
0.4638671875, g1 = 0.2680664062, g2 = 0, and tapset two uses filter
coefficients g0 = 0.7998046875, g1 = 0.1000976562, g2 = 0.

     y(n) = x(n) + G*(g0*y(n-T) + g1*(y(n-T+1)+y(n-T+1))
                                + g2*(y(n-T+2)+y(n-T+2)))
```

390. The skilled person will recognise here that Opus uses a post-filter with 5 taps and that the individual tapsets differ in how rapidly the filter function attenuates at higher frequencies.

"in the at least one first decoding mode, the post-filter step is selectively deactivated" (feature 6.2.2a)

391. In the at least one first decoding mode (CELT), the post-filter step is selectively deactivated in accordance with the Opus standard.

392. The *range decoder* of the CELT decoder (BP-T4, p. 106, Fig. 17) reads the *'post-filter'* symbol from the bitstream and generates a bit from the value of the decoded symbol, which can take one of two values, for example 0 or 1. Depending on which value is stored in the bitstream for the *'post-filter'* symbol, the post-filter is either activated or deactivated. The corresponding range decoding is explained in detail in the Opus standard document RFC 6716 in Chapter 4.1.3.2 ("ec_dec_bit_logp()"), as set out by the claimant in its reply of 28 October 2024 in paragraphs 106 and 107.

393. Table 56 of Annex MB-T4 shows the symbols range-coded in the bitstream. The symbol *'post-filter'*, highlighted in red in the figure below, can take on two values. From the entry {1, 1}/2 in the PDF (*Probability Density Function*) column, the skilled person can deduce that the same probability is assigned to each of the two possible values of the symbol, since the Opus standard, as already explained, uses so-called range coding (*range coding*; cf. BP-T4, p. 23, Chapter 4.1 *Range Decoder*).

394. It is therefore not the case that the deactivation or activation of the post-filter occurs only with a certain probability based on the post-filter information (symbol 'post-filter'). Rather, the decoder follows the information encoded by the encoder and transmitted to the decoder regarding the switching on or off of the post-filter exactly or deterministically, as is well known to those skilled in the art who are familiar with the function of range coding. Table 56 of Annex MB-T4 is shown below with the aforementioned highlighting:

Symbol(s)	PDF	Condition
silence	{32767, 1}/32768	
post-filter	{1, 1}/2	
octave	uniform (6)	post-filter
period	raw bits (4+octave)	post-filter
gain	raw bits (3)	post-filter
tapset	{2, 1, 1}/4	post-filter
transient	{7, 1}/8	
intra	{7, 1}/8	
coarse energy	Section 4.3.2	
tf_change	Section 4.3.1	
tf_select	{1, 1}/2	Section 4.3.1
spread	{7, 2, 21, 2}/32	
dyn. alloc.	Section 4.3.3	
alloc. trim	Table 58	
skip	{1, 1}/2	Section 4.3.3
intensity	uniform	Section 4.3.3
dual	{1, 1}/2	
fine energy	Section 4.3.2	
residual	Section 4.3.4	
anti-collapse	{1, 1}/2	Section 4.3.5
finalize	Section 4.3.2	

Table 56: Order of the Symbols in the CELT Section of the Bitstream

395. As explained, the *range decoder* decodes a bit from the range-coded “post-filter” symbol, which indicates to the CELT decoder whether or not a post-filter step is to be performed.

396. This is explained as follows under the heading ‘4.3.7.1. Post-Filter’ on p. 121 et seq. of Annex MB-T4:

> *“The output of the inverse MDCT (after weighted overlap-add) is sent to the post-filter. Although the post-filter is applied at the end, the post-filter parameters are encoded at the beginning, immediately after the silence flag.* ***The post-filter can be enabled or disabled using a single bit (logp=1).*** *If the post-filter is enabled, then the octave is decoded as an integer value between 0 and 6 with uniform probability. Once the octave is known, the fine pitch within the octave is decoded using 4+octave raw bits. The final pitch period is equal to (16<<octave)+fine_pitch-1, so it is bounded between 15 and 1022, inclusive. Next, the gain is decoded as three raw bits and is equal to G = 3 * (int_gain + 1) / 32. The set of post-filter taps is decoded last, using a probability density function (pdf) equal to {2, 1, 1}/4. Tapset zero corresponds to the filter coefficients g0 = 0.3066406250, g1 = 0.2170410156, g2 = 0.1296386719. Tapset one corresponds to the filter coefficients g0 = 0.4638671875, g1 = 0.2680664062, g2 = 0, and tapset two uses filter coefficients g0 = 0.7998046875, g1 = 0.1000976562, g2 = 0.*
>
> *The post-filter response is thus computed as:*

y(n) = x(n) + G(g0*y(n-T) + g1*(y(n-T+1)+y(n-T+1))*

+ g2(y(n-T+2)+y(n-T+2)))*

During a transition between different gains, a smooth transition is calculated using the square of the MDCT window. It is important that values of y(n) are interpolated one at a time, such that the previous value of y(n) used is interpolated."

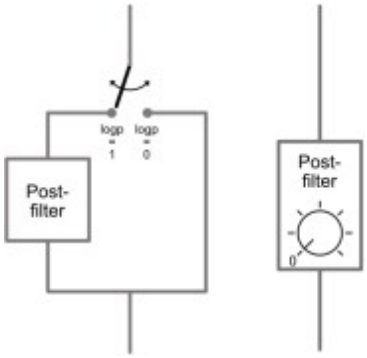
397. The post-filter can therefore be enabled and disabled using the 'post-filter' symbol.

398. The post-filter stage is selectively deactivated whenever the value of the bit decoded from the 'post-filter' symbol is '0'. As explained in the introduction, the Opus standard uses the 'post-filter' symbol to signal again for each frame whether the post-filter should be deactivated or activated.

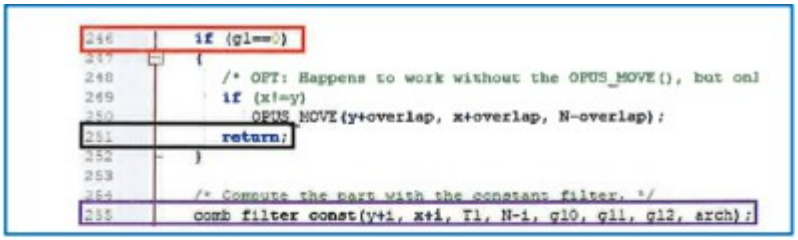
399. Against this background, the question raised in the context of the interpretation – namely, whether the claim precludes a configuration in which the post-filter is switched off in the 'default state' – is irrelevant. Since, as mentioned, a signal is sent for each frame indicating whether or not the post-filter is to be applied, no such 'deactivated default state' exists.

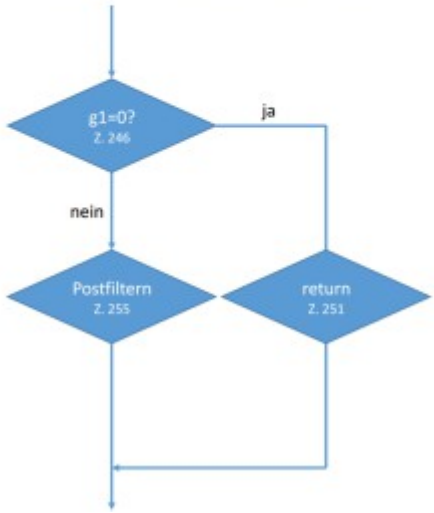
400. Contrary to the defendant's view, it is also irrelevant whether control variables are read out or not when the value of the 'post-filter' symbol signals deactivation. Even if, in this case, the 'post-filter' symbol contained in the bitstream signals to the decoder not to read out certain control variables (BP-T4, p. 107, Table 56, the symbols 'octave' to 'tapset' are, according to the entry 'post-filter' in the 'Condition' column, dependent on the value of the 'post-filter' symbol), this constitutes selective deactivation within the meaning of the contested patent. For in this case, the value of the 'post-filter' symbol leads to the deactivation of the post-filter.

401. The defendants further argue that the post-filter is bypassed entirely when the parameter *logp* (the person skilled in the art is aware that the relevant bit is not actually called 'logp' (see RFC 6716, pp. 27, 28, Section 4.1.3.2), however, for the sake of clarity, the term *'logp'* used by the defendant for the relevant bit will be retained hereinafter, as the specific term is irrelevant) assumes the value '0' out of the two possible switch values, because when *logp = 0* the switch is set to bypass and the signal does not pass through the post-filter at all. They illustrate this argument with the following diagram (see Statement of Defence, para. 186):



402. The following figures (Statement of Defence, para. 195) also illustrate the defendant's view, referring to an extract from the programme file celt.c submitted by the claimant:





403. It can be left open whether the defendants' view is correct and whether the operation of the Opus standard is comparable to a bypass solution. As discussed in the context of the interpretation, the contested patent considers both a pass-through solution (where the signal passes through the post-filter but is not altered by it; 'internal bypass') and an
'external' bypass solution (the post-filter is not passed through, but bypassed externally) as a setting of the post-filter gain to zero within the scope of the claims. Consequently, the bypass solution recognised by the defendants does not preclude the assumption of a selective deactivation of the pitch enhancement filter.

"in response solely to the post-filter information encoded in the bitstream signal, by setting the post-filter gain to zero, wherein the post-filter information indicates a decision made at the encoder stage as to whether the post-filtering is to be deactivated" (claims 6.2.2b to 6.3)

404. This is done in response solely to the post-filter information encoded in the bitstream (symbol *post-filter*).

405. As explained in the introduction, the encoder can deactivate post-filtering via the symbol *'post-filter',* from which a single bit is decoded (BP-T4, p. 107, Table 56, *symbol 'post-filter'*; p. 121, Section 4.3.7.1: *'The post-filter can be switched on or off using one bit (lopg=1)*'). Upon receiving the 'post-filter' symbol, the decoder independently sets the gain of the post-filter to the values corresponding to deactivation
"Zero". Reference is made to the above considerations regarding the interpretation that setting to "One" corresponds to a gain of "Zero dB" in the logarithmic range. With the post-filter deactivated, the post-filter's input signal is thus output unchanged at its output (BP-T4, Fig. 17). Whether, in the process, a "pass-through" path is activated within the "pitch post-filter" block schematically shown in Fig.

17 is irrelevant.

406. In this regard, reference is made to the preceding explanations, according to which the post-filter gain is also set to zero when implemented as an 'external bypass'.

3. Implementation of the features of claim 1 by a device operating in accordance with the Opus standard

407. The contested embodiments operating in accordance with the Opus standard make direct, literal use of all the features of claim 1 of the contested patent.

"whereby the preliminary audio time signal is output as the audio time signal" (cf. feature 1.3)

408. The additional feature contained in claim 1, "whereby the preliminary audio time signal is output as the audio time signal", is realised in a device operating in accordance with the Opus standard.

409. If no post-filtering is performed and the post-filter is deactivated, the preliminary audio time signal and the audio time signal are identical. This follows directly from the diagram of the CELT decoder shown in Figure 17 of the Opus standard, from which the reader can see that, when the post-filter is switched off, the gain of the post-filter in the linear range is equal to 'one' or, in the logarithmic range, 'zero' (dB), so that the post-filter's input signal is output unchanged at its output.

Control section, decoding section, pitch enhancement filter

410. As regards the existence of a 'control section' in the contested embodiments, the claimant has, contrary to the defendant's view, made a sufficient submission. As discussed in the context of interpretation, the control section is not a specific circuit block that can be physically identified. The claimant therefore did not need to specify, for the purposes of a coherent submission, in which physical component of the contested embodiments it locates the control section. The defendants have not disputed that a control section is present.

411. The above considerations apply mutatis mutandis to the other 'components' in respect of which the defendants object to the claimant's submission as insufficient (post-filter, decoding section, pitch enhancement filter).

II. Acts of use by the defendants

412. Defendants 1) and 2) have committed acts of use under Article 25(a) and Article 26(1) of the EPGÜ by offering the contested embodiments in Germany and France. The defendants have not denied the existence of acts of use.

III. Conditions for indirect infringement

413. Under Article 26(1) of the EPGÜ, the defendants may not, without the plaintiff's consent, within the territory of the contracting member states in which the contested patent is in force, offer or supply to persons other than those entitled to use the protected invention any means relating to an essential element of the invention for the purpose of using the invention in that territory, if they know or ought to have known that such means are suitable and intended for use in implementing the invention.

414. These conditions are also met, a fact which the defendants have not disputed. In particular, the contested embodiments operating in accordance with the Opus standard, by means of which the method according to claim 6 can be carried out, constitute an essential means within the meaning of claim 6 of the contested patent. The defendants' acts of offering take place within the territory and serve the purpose of using the invention within the territory (double territorial connection). The subjective elements of indirect patent infringement are also satisfied. The defendants know that the means are suitable and intended for use in the invention. They were aware of both the objective suitability for use within the meaning of claim 6 of the contested patent and the corresponding intention of their customers, or in any event should have been aware of them.

IV. Exhaustion

415. The rights conferred on the defendants by the contested patent are not, not even in part, exhausted.

416. Although the defendants raise the defence of exhaustion as part of their FRAND defence, the Chamber considers a preliminary examination to be justified because, should the defence of exhaustion succeed, the claimant would have no claims in the first place. This does not preclude the consideration of partial exhaustion when assessing the FRAND compliance of the claimant's offer.

1. Principles

417. Under Article 29 of the European Patent Convention, the rights conferred by a European patent do not extend to acts relating to a product protected by the patent after that product has been placed on the market in the European Union by the patent proprietor or with his consent, unless the patent proprietor has legitimate grounds for opposing the further distribution of the product. The right conferred on the patent proprietor by the patent is therefore limited to the Community where these conditions are met. The lawful acquirer of a product placed on the market by the patent proprietor or with his consent is entitled to use it for its intended purpose, to sell it to third parties or to offer it to third parties for one of these purposes (UPC_CFI_248/2024 (Munich Regional Court), decision of 22 August 2025, para. 232 – Brita v. AQUASHIELD).

418. Since the concept of exhaustion is expressly regulated in Article 29 of the UPC Agreement, there is no need to resort to the national law of the Contracting Member States (UPC_CFI_248/2024 (Munich), decision of 22 August 2025, para. 233 – Brita v. AQUASHIELD).

419. This covers placing on the market within the European Union. Consequently, placing on the market in other states, even if done with the patent proprietor's consent, does not give rise to exhaustion within the European Union. Exhaustion is a specific factual event relating to individualised products (for the full text: UPC_CFI_9/2023 (Munich Regional Court), decision of 18 December 2024, p. 120 – Huawei v. Netgear).

420. The burden of proof regarding the placing on the market in the European Union with the consent of the patent user lies with the patent user. In relation to specific products, the patent user must set out the specific acts of placing on the market in the European Union and, in the event of a dispute, prove them. Where the patent proprietor's consent relates only to products placed on the market within a specific period, the submission must also relate to this (UPC_CFI_9/2023 (Munich), decision of 18 December 2024, p. 122 – Huawei v. Netgear).

421. The patent proprietor, on the other hand, bears the burden of proof and must demonstrate the existence of legitimate grounds for opposing the further distribution of the products (Art. 29, 2nd sentence, UPC) (UPC_CFI_9/2023 (Munich Regional Court), decision of 18 December 2024, p. 122 – Huawei v. Netgear).

2. Application in the present case

422. The defendants argue that their chip supplier, MediaTek, which develops and manufactures special signal processors equipped with decoding technology for use in smart TVs and supplies them, inter alia, for use in the defendants' smart TVs at issue, is a licensee of the claimant or the Dolby Group.

423. It is undisputed between the parties that, within the framework of the so-called "two-tier model", an implementer's licence was granted to MediaTek, namely the "Dolby brand licence". Whether this licence also covers the use of the patent in dispute for the implementation of Opus is unclear. However, since the occurrence of the exhaustion effect cannot be established on the basis of the defendant's submissions in any event, there is no need to examine in detail the scope of any consent by the plaintiff to the placing on the market of technology covered by the patent in dispute.

No submission regarding placing on the market in the European Union

424. There is no submission whatsoever from the defendant to the effect that such a licence from the Taiwanese chip manufacturer MediaTek also relates to placing on the market in the European Union. Against this background, the assumption of exhaustion is ruled out.

No submission regarding specific events

425. Furthermore, it cannot in any event be established that all the contested embodiments are equipped with MediaTek chips. In its reply, the claimant, claiming lack of knowledge, disputed that only MediaTek chips are installed in the defendant's devices. The defendants, who bear the burden of proof and presentation, did not address this in their rejoinder

. For this reason alone, full exhaustion cannot be considered.

426. Insofar as the defendants argue in the oral hearing, in a different context, that a denial or a declaration of lack of knowledge is not provided for in the Rules of Procedure, this does not require further examination. This is because the burden of proof in the context of the defence of exhaustion lies with the defendants. It would have been for them to argue that all the contested embodiments are equipped with MediaTek chips.

427. In so far as the defendants stated for the first time at the hearing that there were no other chips, this submission is out of time and must be rejected pursuant to Rule 9.2 of the Rules of Procedure. Even if one were to take this submission into account, however, it remains a general assertion without any supporting evidence.

428. It is true that, in accordance with the principles established by the Munich Local Chamber in a FRAND case, the defence of exhaustion may be examined in the proceedings even where only partial exhaustion is at issue (see UPC_CFI_9/2023 (Munich Local Chamber), decision of 18 December 2024, p. 122 et seq. – Huawei v. Netgear). However, as exhaustion concerns a specific factual process relating to individualised products, a specific submission by the defendant would also have been required in this respect. The defendant has not submitted any arguments regarding individual instances of placing on the market within the European Union.

Possibility of further Opus decoders

429. Furthermore, in the rejoinder to the FRAND objection, admitted pursuant to Rule 36 of the Rules of Procedure, the claimant pointed out that the defendants had not provided any information to the effect that products with MediaTek chipsets did not have any other Opus decoders. This is relevant because it is common for decoders to be implemented via different hardware components, such as the CPU, specific separate processors such as graphics cards, or in the software. The defendants did not contest this submission during the oral hearing.

The effect of exhaustion does not extend to smart TVs

430. However, even if one were to assume that exhaustion were applicable, this would in any event relate only to the product placed on the market with the claimant's consent, namely the chip. The assumption of consent also with regard to the smart TVs equipped with the chipsets is ruled out. In this regard, the question discussed between the parties—namely, under what conditions it can be assumed that consent to place a product on the market also extends to a complete product—is irrelevant. This is because, in the present case, there is a clear agreement between the claimant and the chip manufacturer MediaTek which precludes the assumption that consent also extends to the smart TVs.

431. In the context of the defence of exhaustion, the defendants themselves refer to the 2023 Annual Report of Dolby Laboratories Inc. (Exhibit MB, Card 4), which states on page 5, last paragraph (= page 9 of the PDF document):

> *"Two-tier licensing model. Most of our consumer entertainment licensing business operates on a two-tier licensing model, whereby our decoding technologies, included in reference software*

and firmware code, are first provided under licence to semiconductor manufacturers whom we refer to as 'implementation licensees'. Implementation licensees incorporate our technologies into ICs which they sell to OEMs of consumer entertainment products, whom we refer to as 'system licensees'. System licensees separately obtain licences from us that allow them to manufacture and sell end-user products using ICs that incorporate our technologies."

432. The "two-tier model" is therefore a two-stage licensing model. The so-called implementation licensees (such as MediaTek) incorporate the technologies into ICs (chips). It is expressly provided that the OEMs of consumer electronics products who purchase the ICs receive a further licence. In addition, the claimant has argued, without contradiction, that the implementer licence granted to the chip manufacturers and the associated ongoing support provided to them ensure that the proprietary know-how is used correctly, with the chip manufacturers paying only a small initial fee upon conclusion of the contract in return.

433. Against the background of this arrangement, the claimant's consent is clearly limited and does not extend to installation in devices such as the smart TVs at issue.

No referral

434. There is no basis for ordering the production of the agreements with MediaTek.

435. Since the defendants have already failed to meet their burden of proof regarding specific acts of placing the product on the market in the European Union, the content of the implementer licence is irrelevant. Furthermore, exhaustion is ruled out – irrespective of the further content of the licence agreement – on the basis of the known content of the licence agreement cited by the defendants themselves.

V. […]

436–451. […]

VI. FRAND defence

452. Nor is the plaintiff's claim precluded by the defendants' FRAND objection based on Article 102 TFEU.

453. The Unified Patent Court applies EU law in its entirety and respects its primacy, Article 20 of the UPC Agreement. EU law is the primary source of law to be applied by the Unified Patent Court, Article 24(1)(a) of the UPC Agreement. This includes the Treaty on the Functioning of the European Union (TFEU). The decisions of the Court of Justice of the European Union are binding on the Unified Patent Court, Article 21(2) of the UPC Agreement.

454. In the context of the antitrust defence, it is assumed in favour of the defendants that the contested patent is standard-essential for the Opus standard. The defendants are not prevented from raising the FRAND defence by the fact that they contest the standard-essentiality of the contested patent elsewhere.

455. In so far as the Munich Local Chamber has already rejected the submission regarding a dominant market position as inconclusive on the grounds that, in the context of the infringement discussion , the defendants have compelled the use of the standard specifications through

Since the parties have disputed the facts (see UPC_CFI_9/2023 (Munich Regional Court), judgment of 18 December 2024, p. 139 et seq. – Huawei v. Netgear), the procedural starting point is not comparable. The relevant passages here concerning the Opus standard are not (in fact) disputed between the parties. Rather, the issue concerns a difference in legal assessment.

1. Dominant position of the claimant

456. Article 102(1) TFEU prohibits the abuse of a dominant position in the internal market or in a substantial part thereof by one or more undertakings, in so far as this may affect trade between Member States.

457. The provision applies because the claimant can be found to hold a dominant position in the relevant market.

a) Principles

458. A dominant position within the meaning of Article 102 TFEU refers to the economic power of an undertaking which enables it to prevent the maintenance of effective competition on the relevant market by affording it the possibility of behaving to a significant extent independently of its competitors and customers (ECJ, judgment of 19 April 2012, C-549/10 P, para. 38 – Tomra; see also UPC_CFI_2/2023 (Munich Regional Court), decision of 19 September 2023, p. 93 – 10x Genomics v. NanoString).

459. In order to determine whether a dominant position exists, the relevant market must first be defined in terms of product scope and geographical scope before it can be established whether a dominant position exists on that market (UPC_CFI_2/2023 (Munich Regional Court), decision of 19 September 2023, p. 93 et seq. – 10x Genomics v. NanoString).

460. The determination of a relevant supply market generally follows the demand-side market concept. Accordingly, the relevant product or service market comprises all products or services which, by virtue of their characteristics, are particularly suited to satisfying a consistent demand and are only to a limited extent interchangeable with other products or services (see ECJ, judgment of 26 November 1998, C-7/97, para. 33 – Oscar Bronner).

461. Where an industry standard or another set of rules regarded by consumers as a standard (de facto standard) prescribes a standardised design—protected by intellectual property rights—for a product that, from the perspective of the market counterpart, cannot be substituted by any other product – is prescribed by an industry standard or by another set of rules regarded as a standard by consumers, the granting of rights which enable potential suppliers of that product to bring it to market generally constitutes a separate market upstream of the product market (see ECJ, judgment of 29 April 2004, C-418/01, para. 44 – IMS Health), the so-called licensing market.

462. A dominant position held by the holder of such a property right on the licensing market thus defined presupposes that it is generally not technically possible to circumvent the technology protected by the patent without losing functions that are important for the product market (see ECJ, Huawei v ZTE, para. 49; European Commission, Commission

Decision of 29 April 2014, C(2014) 2892, para. 52 – Motorola). Furthermore, the teaching of the patent and the standard must not be substitutable by a different technical design of the product (see ECJ, judgment of 29 April 2004, C-418/01, para. 28 – IMS Health).

463. The burden of proof regarding the patent holder's dominant market position lies with the licence seeker (see UPC_CFI_9/2023 (Munich Local Court), judgment of 18 December 2024, p. 139 – Huawei v. Netgear).

b) Application to the present case

464. In light of these principles, it can be established that the claimant holds a dominant position in the relevant licensing market. This arises from the fact that, without a licence to the patent in dispute, no products compatible with the Opus standard can be offered.

465. A consumer expects – a fact which the claimant does not dispute – that a smart TV will be able to decode all common audio and video codecs used by service providers for encoding.

466. The defendants have demonstrated that Opus is a common standard in this sense. They have argued that the Opus standard is superior to the other audio standards known on the market—G.729, Speex, AAC-LD, G.722.1C, G.729.1, AMR-WB+, Vorbis, AAC and MP3—due to its lowest latency and greatest bitrate bandwidth for narrowband to high-bandwidth transmission. Furthermore, as shown in Annex MB, Card 6, Opus is mandatory for WebRTC (Web Real-Time Communication) applications. In addition, the defendants have argued, albeit in a different context (patent ambush), that the Opus standard has become established, particularly for internet applications, through widespread adoption by technology leaders such as Microsoft and Google.

467. Whether an average consumer expects to be able to use smart TVs for video conferencing as well, and thus to be reliant on WebRTC, is therefore not decisive. The claimant has not specifically disputed that service providers use Opus to encode other content as well. In view of the consumer's expectations, as described, regarding the use of all common services, mandatory use is not necessary for the assumption of a dominant market position.

2. Lack of FRAND declaration

468. It is undisputed that the claimant was not involved in the development and standardisation of the Opus standard and, in this context, did not undertake, as the holder of a standard-essential patent (SEP), to grant licences for this SEP to third parties on FRAND terms (FRAND declaration) vis-à-vis a standardisation organisation.

469. It must first be made clear that the applicant's liability under competition law, and thus the application of Article 102(1) TFEU, remains unaffected by this. In view of the applicant's dominant position in the relevant market, Article 102(1) TFEU applies regardless of whether a FRAND declaration has been made.

470. However, this must be distinguished from the question of whether, and if so under what conditions, the principles established in the ECJ's decision in Huawei v ZTE (judgment of 16 July 2015, corrected by order of 15 December 2015, C-170/13) apply without restriction in such a case, going beyond those principles.

471. However, this question does not require a definitive answer in the present case. Even if the principles from Huawei v. ZTE are applied without modification, notwithstanding the absence of a FRAND declaration, the FRAND objection raised by the defendants does not hold water.

3. FRAND programme

472. With regard to the fundamental classification of the negotiation programme under Huawei v. ZTE, the Chamber concurs with the local chambers in Mannheim (UPC_CFI_210/2023, decision of 22 November 2024 – Panasonic v. OPPO) and Munich (UPC_CFI_9/2023, decision of 18 December 2024 – Huawei v. Netgear). Insofar as there are differences between the two local chambers in the application of the principles under Huawei v. ZTE, these are not relevant to the present case.

a) Preliminary remark

473. In the Huawei v. ZTE judgment, the Court of Justice of the European Union established a procedural framework that has since been binding on the courts of the Member States. The courts of the Member States have since applied this framework and further elaborated on its details in the light of the respective cases before them (see Dutch Court of Appeal, The Hague, Case No. 200.233.166.01, of 2 July 2019 – Philips v. Wiko; Case No. 200.233.166/01, judgment of 24 December 2019 – Philips v. ASUS; German Federal Court of Justice, judgment of 5 May 2020, KZR 36/17, GRUR 2020, 961 – FRAND defence; Judgment of 24 November 2020, KZR 35/17, GRUR 2021, 585 – FRAND defence II). In this regard, the panel, together with the local chambers in Mannheim and Munich, takes the view that the Court of Justice's negotiation framework is not focused solely on determining the respective licence conditions, which would, as it were, be stripped of any assessment of the respective conduct of the parties during the negotiations. Rather, the central concern of the decision is to establish a negotiation framework with reciprocal obligations, which simultaneously serves to assess the question under primary EU law as to whether the enforcement of the rights to prohibit and recall under the patent is subject to restrictions under competition law. The determination of a FRAND licence rate, if required, is merely one component of this framework of obligations (UPC_CFI_210/2023 (Mannheim Division), judgment of 22 November 2024, para. 191 – Panasonic v. OPPO; UPC_CFI_9/2023 (Munich Regional Court), judgment of 18 December 2024, p. 126 et seq. – Huawei v. Netgear).

474. In its landmark judgment in Huawei v. ZTE, the Court of Justice of the European Union has established a framework for negotiations which sets out the respective obligations of the parties in negotiations concerning a licence for a standard-essential patent conferring a dominant market position on the patent holder, and enables the courts to assess the parties' conduct in the course of reaching a licence agreement. According to the settled case-law of the Court of Justice of the European Union (see ECJ, Huawei v ZTE, para. 46 with references), the exercise of an exclusive right associated with an intellectual property right – in this case, the right to bring an infringement action

to assert claims for an injunction, recall or destruction, is one of the prerogatives of the holder of an intellectual property right, so that it cannot, as such, constitute an abuse of a dominant position, even if it is exercised by an undertaking in a dominant position. However, the exercise by the holder of an exclusive right associated with an intellectual property right may, in exceptional circumstances, constitute abusive conduct within the meaning of Article 102 TFEU (ECJ, Huawei v ZTE, para. 47). The Court of Justice emphasises that account must be taken of the necessary protection of intellectual property rights, which is one of the objectives of Directive 2004/48. In accordance with Article 17(2) of the Charter, the Directive provides for a range of legal remedies designed to ensure a high level of protection for intellectual property within the internal market and for the right to effective judicial protection guaranteed by Article 47 of the Charter, which encompasses several elements, including the right of access to the courts (ECJ, Huawei v ZTE, para. 57). This requirement of a high level of protection for intellectual property rights implies that their holder cannot, in principle, be deprived of the possibility of taking legal action to ensure that his exclusive rights are respected, and that the user of those rights, if he is not their holder, must, in principle, obtain a licence prior to any use (ECJ, Huawei v ZTE, para. 58).

475. The negotiation framework developed by the Court of Justice of the European Union serves these principles. An assessment of the terms of a FRAND licence which disregards the steps established by the Court of Justice of the European Union, in the sense of a purely economic determination of the licence fee without taking into account the relevant conduct of the parties involved in the negotiations, cannot therefore stand under European law and would infringe law that must be observed in the Member States (UPC_CFI_210/2023 (Mannheim Division), judgment of 22 November 2024, para. 193 – Panasonic v. OPPO; UPC_CFI_9/2023 (Munich Division), judgment of 18 December 2024, p. 128 – Huawei v. Netgear).

b) Steps in detail

aa) Notice of infringement prior to bringing

an action – Principles

476. Following Huawei v. ZTE, the SEP holder must, as a first step prior to bringing an action for an injunction, notify the patent user of the alleged patent infringement. In doing so, the holder must identify the SEP in question and specify the manner in which it is alleged to have been infringed (ECJ, Huawei v. ZTE, para. 61). It had already been established in the case law of national courts that, for these purposes, the provision of claim charts is sufficient in all cases. Insofar as the European Commission, in its submission filed on 15 April 2024 before the Munich Higher Regional Court (hereinafter: amicus curiae letter), takes the view in this context that this notification must be made in the cover letter itself (amicus curiae letter, para. 65), such a formalistic interpretation cannot be endorsed. Admittedly, a reference to a general website of the SEP holder which does not contain easily accessible information on the specific patent in dispute may be insufficient to be regarded as an adequate reference. However, the judgment of the ECJ does not, for good reason, lay down strict formal requirements in this regard, but leaves the assessment to the national courts on a case-by-case basis. Particularly in the case of an allegation of infringement of a

A large number of standard-essential patents may, when disclosed in the formalised manner deemed necessary by the Commission, lead to confusion rather than the desired transparency (UPC_CFI_210/2023 (Mannheim Regional Court), judgment of 22 November 2024, para. 194 – Panasonic v. OPPO; UPC_CFI_9/2023 (Munich Regional Court), judgment of 18 December 2024, p. 128 et seq. – Huawei v. Netgear).

477. A notice of infringement served on one group company is also sufficient in relation to another group company if it can be expected that the information will be passed on within the group.

Application to the present case

478. It can be left open whether Vectis's first letter of 21 April 2023 (Exhibit BP-V1) already constitutes a sufficient notice of infringement within the meaning of the principles set out above.

479. In any event, the letter of 24 January 2024 addressed to the second defendant (Exhibit BP-V7) meets the requirements set out above. The letter contains a claim chart relating to the patent in dispute (see Annex BP-V7, Exhibit B) and specifies the manner in which the patent in dispute is alleged to have been infringed. On page 2 of the letter, under the heading "Arçelik's use of Licensors' Opus SEPs", it states:

> *"Based on our investigation, at least the products mentioned in our letter dated 21 April 2023, together with all other products using Android 5 or higher, benefit from Arçelik's and Arçelik's affiliates' implementation of features of the Opus specifications that are covered by the Licensor's Opus SEPs: …"*

480. The defendants were right to drop their argument from the statement of defence that the claim charts relating to the patent in dispute had never been sent. Rather, in their rejoinder in the infringement proceedings, they no longer specifically contested the letter of 24 January 2024 (Exhibit BP-V7) as a valid notice of infringement.

481. The letter of 24 January 2024 addressed to the second defendant also constitutes a sufficient notice of infringement in relation to the first defendant. Since the first defendant is a subsidiary of the second defendant and the German distribution company for Grundig-branded products, it was reasonable to expect that the information would be passed on within the group. The defendants rightly do not dispute this either.

bb) Declaration of the defendant's willingness to grant a licence prior to

the bringing of an action: Principles

482. The patent user must then, in a further step – also prior to the filing of the action – express its willingness to conclude a licence agreement on FRAND terms (ECJ, Huawei v ZTE, para. 63). It is not sufficient for the infringer merely to indicate a willingness to consider concluding a licence agreement or to enter into negotiations as to whether and under what conditions the conclusion of a contract might be envisaged for them (see Opinion of Advocate General Wathelet of 20 November 2014 – C-170/13, para. 50). Rather, the infringer must, for its part, clearly and unambiguously be prepared

agree to enter into a licence agreement with the patent holder on reasonable and non-discriminatory terms, and must subsequently engage constructively in the licence negotiations. The High Court of England and Wales (J. Birss) expressed this by stating that *"a willing licensee must be one willing to take an FRAND licence on whatever terms are in fact FRAND"* (EWHC, judgment of 5 April 2017, [2017] EWHC 711 (Pat) para. 708 – Unwired Planet v. Huawei) (cf. German Federal Court of Justice, judgment of 5 May 2020, KZR 36/17 – FRAND defence).

483. In the European Commission's view, this criterion should be assessed solely "on the basis of the content and circumstances of the declaration, and not on the basis of subsequent conduct during any negotiations" (Amicus curiae letter, para. 7, 75, 80 et seq.). The first two steps of the framework preceded the start of negotiations, in particular the offer made by the SEP holder. Therefore, the assessment of their existence could not be linked to specific licence terms or licence fees (Amicus curiae letter, para. 82). The patent user's willingness to licence should not be determined on the basis of their subsequent conduct during the negotiations; the second step is merely a formal step marking the start of negotiations. In particular, this step should not be conflated with the subsequent steps, namely the SEP holder's offer and the patent user's counter-offer (Amicus curiae letter, para. 84 et seq.).

484. We agree with the European Commission, as do the local chambers in Mannheim and Munich, that the initial declaration of willingness to grant a licence forms the starting point for further negotiations. It must not amount to mere lip service, but must be genuine. However, considering the respective declaration on its own does not, as a rule, provide sufficient guidance when assessing whether a patent user is seriously interested in obtaining a licence. Such a declaration, even if it is modelled on the wording of the cited UK decision or, as it were, adopts it verbatim in a formulaic manner, is not in itself a suitable basis for assessing whether the user in question is serious about their declaration. In this regard, the user's conduct must always be assessed in its entirety (UPC_CFI_210/2023 (Mannheim Division), decision of 22 November 2024, para. 196 et seq. – Panasonic v. OPPO; UPC_CFI_9/2023 (Munich Division), decision of 18 December 2024, p. 130 et seq. – Huawei v. Netgear).

485. In the view of the European Commission (amicus curiae letter, para. 88 et seq.), failure to comply with the second step of the Huawei framework cannot be remedied after an application for an injunction has been filed. It is therefore irrelevant whether the patent user expresses a willingness to enter into a licence on FRAND terms after an application for an injunction has been filed. In the European Commission's view, this would run counter to the aim of the Huawei judgment, which is to enable negotiations between the SEP holder and a user of these patents without the pressure of a pending injunction application. The possibility of such a remedy after the filing of an injunction application would, render the entire Huawei framework obsolete, because SEP holders would have an incentive to file an injunction application immediately and because patent users would have an incentive to immediately allege an abuse of a dominant position under Article 102 TFEU without having first conducted negotiations on a licence (Amicus curiae letter, para. 88).

Application to the present case

486. In application of these principles, there is already a lack of the necessary declaration of willingness to grant a licence by the defendants.

487. The second defendant did not respond at all to the claimant's notice of infringement sent by letter dated 24 January 2024 (Exhibit BP-V7), and this continued until the claimant brought the action on 5 April 2024. In any event, the period of two months and just under two weeks is sufficient for the claimant to be entitled to assume that no response will be forthcoming. This is particularly true in view of the fact that the second defendant had not been in contact since its email of 11 July 2023 and that a further three emails from Vectis had subsequently remained unanswered. Even if the letter of 21 April 2023 (Annex BP-V1) did not constitute a sufficient notice of infringement with regard to the patent in dispute – which is assumed in favour of the defendants – the second defendant was in any event aware, on the basis of that letter, that the claimant was asserting rights on the grounds of use of the Opus standard. Furthermore, the second defendant had itself already announced an internal review and discussion.

488. The second defendant did not at any time prior to the bringing of the action state that it was, in principle, prepared to enter into a licence agreement on FRAND terms. It merely stated in an email dated 9 May 2023 (Exhibit BP-V 2) that it had informed its technical team to conduct a further review of the use of Opus technology in its own products, and in an email dated 11 July 2023 (Exhibit BP-V 4) that the internal review and discussions had not yet been concluded, but that this was expected to be the case by 1 October 2023. These statements do not indicate a willingness to conclude a licence agreement.

Statement in the defence

489. It can be left open whether, and under what conditions, an initial declaration of willingness to grant a licence can still be made after the action has been brought.

490. Even if one takes into account the defendant's statements made after the action was brought, no indication of a willingness to grant a licence – not even in principle – can be inferred from them. In particular, no such statement is to be found in the submission under para. 311 et seq. of the statement of defence, which, under the heading 'Defendant's willingness to grant a licence', reads as follows:

> *"The defendants are, in principle, willing to grant a licence. Defendant 2 has already demonstrated this to the claimant by obtaining a licence from the AAC Pool through the affiliated company Via Licensing Corporation, also on behalf of Defendant 1.*
>
> *The defendants cannot be expected to double-license the patent in suit, which has already been licensed, as explained above regarding double licensing (sic).*
>
> *Furthermore, the defendant cannot be expected to facilitate the plaintiff's attempt, which contravenes competition law, to make an open-source codec – developed from the outset by the plaintiff's competitors on the basis of old and therefore patent-free SILK and CELT codecs – subject to licensing. This is all the more true given that the plaintiff did not contribute to the*

development of the Opus standard and thus none of the plaintiff's inventions have been incorporated into the standard. …"

491. It is clear from these statements that the defendants are not prepared to make licence payments to the claimant. In other words, they consider only a licence payment of 'zero' to be FRAND. The statement that they are 'in principle willing to grant a licence' is justified solely on the grounds that they have already taken out a licence relating to the AAC standard. However, it cannot be inferred from this account that they would also be willing, in principle, to pay a FRAND-compliant licence fee in relation to the Opus standard.

cc) No need for further examination

492. As there was no sufficient indication of a willingness to grant a licence on the part of the defendants prior to the bringing of the action, the assessment process has concluded in accordance with the principles established in Huawei v ZTE. It is therefore no longer necessary to examine whether the claimant's offer meets the FRAND requirements, which would have been the next step in the assessment process had there been a sufficient indication of a willingness to grant a licence.

493. This is in line with the guidance in paragraph 63 of the ECJ's decision in Huawei v. ZTE, which states:

> *'Secondly, **once the** alleged infringer **has expressed a willingness to conclude a licence agreement on FRAND terms**, it is incumbent on the patent holder, in accordance with the commitment it has undertaken vis-à-vis the standard-setting organisation, to submit a concrete written licence offer on FRAND terms and, in particular, to specify the licence fee and the method of its calculation.'*
>
> *(emphasis added)*

494. It is also consistent with the view of the Munich Local Chamber (see UPC_CFI_9/2023, decision of 18 December 2024, p. 137 – Huawei v. Netgear), which emphasises that, prior to examining the FRAND-conformity of the patent proprietor's offer, it must routinely be assessed whether the patent user has fulfilled the conditions for the infringement court to undertake such an examination. This is already the case here, notwithstanding the absence of a counter-offer and the lack of security due to the absence of an initial declaration of willingness to grant a licence.

495. The Mannheim Local Chamber also takes the view that a sufficient expression of willingness to grant a licence is a prerequisite for the further examination of the CJEU's programme of proceedings (see UPC_CFI_210/2023, decision of 22 November 2024, para. 198 middle – Panasonic v. OPPO: *'Rather, where initial willingness to grant a licence has been sufficiently demonstrated, the SEP holder's offer must always be examined for compliance with FRAND.'*)

496. Whilst the Mannheim Regional Chamber emphasises that the patent user's willingness to grant a licence must not be considered in isolation and independently of the patent holder's conduct, these remarks also relate solely to the negotiation stages following the first two steps. Paragraph 201(m) of the decision of 22 November 2024 states:

'Nor is it consistent with the ECJ's approach to examine solely the implementer's willingness to grant a licence without sufficiently scrutinising the SEP holder's offer; just as it would be insufficient, ***after affirming the first two steps*** *of the assessment, to consider only the opposing offers and counter-offers whilst disregarding the parties' subsequent conduct.'*

(Emphasis added)

497. The European Commission takes the view, in any event, that all steps following Huawei v. ZTE must be examined strictly in sequence. This therefore also applies to the first two steps. Paragraph 8 of the amicus curiae letter states:

> *'Finally, the European Commission points out that, following the Huawei judgment, none of the steps of the Huawei framework, in particular the first two steps, can be carried out retrospectively after an action for an injunction has been brought. Furthermore, the individual steps of the Huawei framework must be examined in their prescribed order, so that the second step may only be examined if the first step has been properly completed, and the third step only if the second step has been properly completed. The same applies to the fourth step."*

4. No referral to the ECJ

498. There was no need to refer the matter to the ECJ.

499. In matters concerning the correct interpretation of European law, the Court of First Instance may refer questions relevant to the decision to the CJEU, Art. 21 EPGÜ, Art. 267 TFEU.

500. However, the present case does not give rise to a need for a reference. The issues at hand relate solely to the specific case and can be resolved by applying the principles developed by the ECJ, which allow the courts called upon to apply the law in individual cases to make a proper assessment of the respective case.

501. As regards the absence of a FRAND declaration and the resulting effects on the programme following Huawei v ZTE, this question could be left open and was therefore in any event not relevant to the decision.

G. Legal consequences

502. The following applies with regard to the legal consequences of patent infringement.

I. Legal consequences of direct infringement

1. Injunction

503. Taking into account the circumstances of the case, the claimant is entitled to an injunction prohibiting the continuation of the infringement pursuant to Article 25(a) in conjunction with Article 63(1) of the EPC.

504. If the patent proprietor brings an action for infringement and the court finds that an intellectual property right has been infringed or is at risk of being infringed, it shall issue an

An order prohibiting the continuation of the infringement, unless there are specific grounds against it. A specific reason for refusing an injunction may exist if, in the circumstances of the individual case, the granting of an injunction is not compatible with the general obligation under Article 3 of Directive 2004/48/EC of the European Parliament and of the Council of 29 April 2004 on the enforcement of intellectual property rights (Enforcement Directive), in particular with the obligation that remedies must be proportionate. When weighing up the proportionality of injunctions and remedial measures, not only the interests of the parties to the proceedings but also the interests of third parties may be taken into account (UPC_CoA_464/2024, decision of 25 November 2025, headnotes 14–16 – Meril v. Edwards).

505. In application of these principles, there is no apparent reason to refrain from issuing an injunction. Rather, proportionality considerations (Art. 42 EPGÜ and Art. 3(2) of the Enforcement Directive) have already been comprehensively taken into account in the context of considering the antitrust defence against compulsory licensing, through the application of the balanced negotiation framework established by the ECJ (see UPC_CFI_210/2023 (Mannheim), decision of 22 November 2024, para. 171 – Panasonic v. OPPO; UPC_CFI_9/2023 (Munich Division), judgment of 18 December 2024, p. 147 – Huawei v. Netgear).

2. Recall, withdrawal from the supply chain and destruction

506. The decision regarding the recall, the permanent removal from the distribution channels and the destruction is justified under Article 25(a) of the EPGÜ
in conjunction with Article 64(2)(b), (d) and (e), (4) of the EPGÜ.

507. The defendants have not argued that the order for recall, the permanent removal of the products from the distribution channels and their destruction within the meaning of Article 64(4) of the EPGÜ would be disproportionate.

3. Determination of liability for damages on the merits

508. The determination of liability for damages on the merits is based on Article 68(1) of the EPGÜ.

509. Under Section 68(1) of the German Patent Act (EPGÜ), the court shall, upon application by the injured party, order that the infringer, who knew or ought reasonably to have known that he was committing an act of patent infringement, must pay the injured party appropriate damages to compensate for the actual loss suffered by the latter as a result of the infringement. As active players in the industry, the defendants should in any event have examined the intellectual property situation before placing the contested embodiments on the market. Against this background, they should reasonably have been aware of the existence of the patent in dispute and of the patent infringement caused by the contested embodiment (see CoA_8/2025, decision of 9 December 2025, headnote (ii), para. 25 – Bhagat v. Oerlikon). Against this background, 20 November 2021, one month after the grant of the patent, as the date cited by the claimant as the commencement of liability for damages, is also not open to objection.

510. The defendant’s view that the claim for damages should be limited in time because, in the event of licensing through the Opus Pool, licence fees would only be payable from 1 January 2023

, cannot be accepted. The claimant is free to make such an offer in the event of a licence being granted. This does not limit the claimant's claim for damages enforced by way of an infringement action.

511. The wording in the operative part of the decision has been aligned with the wording of Article 68(1) of the EPGÜ.

4. Provision of information and accounting

512. Furthermore, the claimant has a right to information pursuant to Article 25(a) of the EPGÜ in conjunction with Article 67 of the EPGÜ. There are no objections regarding the manner in which the information is to be provided.

513. The claimant may also request supporting documents for the information pursuant to Article 67(1) EPC. This includes the provision of copies of invoices sought by the claimant. For, apart from the interest in the information itself which the patent proprietor receives pursuant to Article 67(1) EPGÜ, the patent proprietor's interest in being able to verify the accuracy of this information, at least on a random basis, is also worthy of recognition (UPC_CFI_7/2023 (Düsseldorf Regional Court), decision of 3 July 2024, p. 29 – Kaldewei v. Bette; UPC_CFI_16/2024 (Düsseldorf Chamber), judgment of 14 January 2025, p. 36 – Ortovox v. Mammut; UPC_CFI_210/2023 (Mannheim Chamber), judgment of 22 November 2024, para. 179 – Panasonic v. OPPO).

5. Threat of coercive measures

514. The imposition of a penalty payment for the injunction (Art. 63(2) EPGÜ) raises no concerns. This also applies when taking into account considerations of proportionality. The imposition of penalties for the measures of disclosure, recall, removal and destruction is based on Art. 82(1) and (4) EPGÜ, para. 354.3 VerfO.

515. The threatened penalty payment of up to EUR 100,000 for each day of non-compliance with the injunctions, EUR 50,000 for each day of non-compliance with the orders to recall, destruction and removal, and of EUR 10,000 for each day of non-compliance with the order to provide information, gives the Chamber the necessary flexibility to take into account, in the event of non-compliance, the specific circumstances of the individual case, including the conduct of the infringer, and, on that basis, to set an appropriate penalty payment in accordance with Article 82(4) sentence 2 EPGÜ in conjunction with Rule 354.4 VerfO. Therefore, the imposition of a fixed sum does not appear to be inappropriate and , and the chosen range – including the maximum amount – raises no concerns regarding its specificity.

II. Legal consequences of indirect infringement

516. With regard to the indirect infringement of the contested patent, the claimant's right to an injunction against the continuation of the infringement arises from Article 26(1) EPC in conjunction with Article 63(1) EPC. Reference is made to the above comments on direct infringement.

517. The claimant is also entitled to information and the disclosure of information pursuant to Article 26(1) EPC in conjunction with Article 67 EPC, as well as to a declaration of liability for damages on the merits (Article 26(1) EPC in conjunction with Article 68(1) EPC). The threat of coercive measures is governed by Articles 63(2), 82(1) and (4) of the EPGÜ, Rule 354.3 of the Rules of Procedure, and applies mutatis mutandis to decisions on indirect infringement. Reference is made to the above comments in all other respects.

III. Publication of the judgment

518. Under Art. 80 EPGÜ, the court may, at the applicant's request and at the infringer's expense, order appropriate measures for the dissemination of information regarding the court's decision in question, including the notification of the decision and its full or partial publication in the media.

519. When deciding whether to authorise the publication of a judgment, the court applies a two-stage test: first, it must be determined whether the claimant has demonstrated a legitimate interest in the publication of the judgment. If this is the case, it must be examined whether the defendant's interests outweigh this interest (UPC_CoA_464/2024, decision of 25 November 2025, paras. 199–200 – Meril v. Edwards). When assessing the claimant's legitimate interest, all the circumstances of the individual case must be taken into account, such as the scope and seriousness of the infringement, the public nature of the dispute, the public's interest in information, and whether the publication of the decision may contribute to dispelling misconceptions in the market caused by the infringement or to deterring future infringements (UPC_CoA_302/2025, decision of 17 February 2026, para. 126 – Rematec v. Europe Forestry).

520. In the present case, the claimant has failed, even at the initial stage, to demonstrate a legitimate interest in the publication of the decision. The claimant has referred exclusively to Article 80 of the EPGÜ, which is insufficient. Consequently, it has also failed to address the fact that the contested patent is in force in only four countries and what this might imply for its interest in the publication of the decision.

H. Decision on costs

521. Pursuant to Article 69(2) EPC in conjunction with Rule 118.5 of the Rules of Procedure, a decision on costs must be made.

522. Under Article 69(1) of the EPGÜ, the reasonable and proportionate costs of the proceedings and other expenses incurred by the successful party are, in principle, to be borne by the unsuccessful party, unless equity dictates otherwise. Under Article 69(2) of the EPGÜ, where a party is only partially successful or where exceptional circumstances exist, the court may order that costs be apportioned in accordance with equity or that the parties bear their own costs. Where a party is only partially unsuccessful, the costs need not necessarily be apportioned on a pro rata basis. In particular, where a party's unsuccessful claim was relatively minor and did not incur any further costs, the other party's full costs may be imposed on that party.

523. This is the case here with regard to the infringement claim. The dismissed part of the infringement claim relating to the publication is minor in comparison with the successful claims and would not have incurred any further costs.

524. The defendant's counterclaim has been unsuccessful. The defendants must therefore bear the costs thereof.

I. Security

525. Pursuant to Art. 82(2) EPGÜ, R. 118.8 para. 2, R. 352(1) VerfO, the court may make any order or measure subject to the provision of security, the amount of which it is to determine. However, the defendants have not put forward any circumstances that might give rise to this.

J. Value of the claim

526. The Chamber considers a value in dispute of EUR 1,500,000 for both the infringement claim and the counterclaim to be appropriate. In reaching this conclusion, the Chamber has taken particular account of the remaining term of the patent in dispute, which was over seven years at the time the action was brought, as well as the fact that the claimant is seeking an injunction and further remedies in respect of four Member States. The objections raised by the defendants, who consider the value in dispute to be excessive, remain vague. In particular, there is a lack of specific details regarding actual sales figures.

527. At the hearing, the defendant's representative stated that the market in question was very small for the defendants, that unit numbers had fallen rapidly and that cut-throat competition was in full swing. The market share in Germany was only around 1%, and in Italy virtually zero. The Grundig brand would have disappeared by January 2026. The claimant's representative objected to the relevant submission on the grounds that it was out of time.

528. Pursuant to Rule 9.2 of the Rules of Procedure, the defendants' submissions are disregarded insofar as they relate to circumstances at the time the action was brought. The defendants do not explain why they were unable to make the relevant submission in writing at an earlier stage. Apart from that, however, this does not yield any concrete figures which, in relation to the time the action was brought, would make the value in dispute appear excessive. Thus, stating a market share without providing figures for the total market is not sufficient to derive concrete values from it.

529. In so far as the defendants' submissions relate only to the year 2026, these subsequent circumstances do not call into question the amount of the value in dispute.

530. Against this background, the plaintiff's submission—made only during the oral hearing in response to the defendant's arguments—that it or the Dolby Group grants exclusively worldwide licences is no longer relevant.

K. Reimbursement ceiling

531. The setting of the ceiling for reimbursable agency costs is based on the decision of the Administrative Committee on the ceilings for reimbursable costs of
24 April 2023 (D - AC/10/24042023_D) in conjunction with the Administrative Committee's decision of 24 April 2023 on the guidelines for determining court fees and the ceiling for the winning party's recoverable costs (D-AC/09/24042023_D). Pursuant to Section II. 2. (4) of the latter decision, the value of the infringement action and the value of the counterclaim for annulment, both of which are pending before the same chamber, must be added together to determine the amount of recoverable costs. Consequently, the determination of the reimbursement ceiling in the present case must be based on a total value in dispute of EUR 3,000,000, resulting in a total reimbursement ceiling of EUR 400,000.

DECISION:

A. The defendants are prohibited from

I. decoding systems for decoding a bitstream signal as an audio time signal, comprising:

a decoding section for decoding a bitstream signal as a preliminary audio time signal, wherein the decoding section is operable in at least a first decoding mode including post-filtering and at least a second decoding mode which does not include post-filtering; and

a pitch enhancement filter for post-filtering the preliminary audio time signal to obtain an audio time signal, wherein the pitch enhancement is controlled by a post-filter gain,

in the Federal Republic of Germany and/or in France and/or the Netherlands and/or Italy, to offer, place on the market, use or, for the aforementioned purposes, either import or possess,

where the decoding systems comprise

a control section which is designed, in the at least one first decoding mode, to selectively deactivate the pitch enhancement filter in response solely to the post-filter information encoded in the bitstream signal, by setting the post-filter gain to zero, wherein the post-filter information indicates an encoder-side decision as to whether the post-filter is to be deactivated, whereby the preliminary audio time signal is output as the audio time signal;

(direct infringement of claim 1 of EP 3 605 543)

II. To third parties, in and for use in the Federal Republic of Germany and/or France and/or the Netherlands and/or Italy, means, namely television sets, which are suitable and intended for

decoding a bitstream signal as an audio time signal, comprising the following steps:

decoding a bitstream signal as a preliminary audio time signal in one of a plurality of decoding modes, wherein the plurality of decoding modes includes at least a first decoding mode comprising a post-filtering step, and at least a second decoding mode not comprising the post-filtering step;

wherein the post-filtering step applies a pitch enhancement filter to the preliminary audio time signal, thereby obtaining an audio time signal, wherein the pitch enhancement filter is controlled by a post-filter gain,

to be offered and/or delivered when

in the at least one first decoding mode, the post-filtering step is selectively deactivated in response solely to the post-filter information encoded in the bitstream signal by setting the post-filter gain to zero, wherein the post-filter information indicates an encoder-side decision as to whether post-filtering is to be deactivated.

(indirect infringement of claim 6 of EP 3 605 534)

B. The first defendant is ordered, at its own expense,

I. to recall in writing from commercial customers the products referred to in section A.I. and placed on the market since 20 November 2021, referring to the patent-infringing status of the products as established by the Unified Patent Court and including a binding undertaking to reimburse any fees and to bear the necessary packaging and transport costs as well as any customs and storage costs associated with the return, and to take the products back into its possession, whereby the claimant is to be provided with a sample of the recall letters and a list of addressees with names and postal addresses or – at the discretion of the first defendant – an electronic copy of all recall letters;

II. to permanently remove from the distribution channels the products referred to in Section A.I. that have been placed on the market since 20 November 2021, whereby the first defendant in particular:

1. take all possible and reasonable measures to identify the locations and owners of the products referred to in section A.I.;

2. insofar as the first defendant itself has legal or actual control over the goods referred to in paragraph A.I., it must take all legally permissible and reasonable measures to ensure that these goods come into the direct possession of the first defendant and remain there;

3. insofar as the first defendant has neither legal nor actual controlover the goods specified in Section A.I., it must take all legally permissible and reasonable measures to induce the persons holding claims for surrender or destruction against the holders of the power of disposal over the goods to assert such claims and/or to assist such persons in asserting such claims;

III. to destroy, at its own expense, the goods referred to in Section A.I. which are in its direct or indirect possession and/or ownership, or, at its discretion, to surrender them to a bailiff to be appointed by the claimant for the purpose of destruction.

C. The defendants are ordered to provide the claimant with information regarding the extent to which they have carried out the acts described in sections A.I. and A.II. since 20 November 2021, specifying

I. the origin and distribution channels of the products referred to in sections A.I. and A.II., including

1. the names and addresses of the suppliers and other previous owners, and

2. the names and addresses of the commercial customers and the points of sale for which the products were intended;

II. the quantity of products delivered, received or ordered, as well as the prices paid for the products in question; and

III. the identity of all third parties involved in the distribution of the products referred to in sections A.I and A.II,

whereby copies of the relevant purchase documents (namely invoices, or alternatively delivery notes) must be submitted as evidence of the information provided, with details requiring confidentiality being redacted from the data subject to disclosure.

D. The defendants are obliged to pay the claimant reasonable compensation to cover the actual loss she has suffered and will continue to suffer as a result of the acts listed under sections A.I. and A.II., which have been committed since 20 November 2021.

E. In the event of any breach, the defendants shall pay a penalty of

- up to EUR 100,000 for each day of non-compliance with the order under A.I.;
- up to EUR 100,000 for each day of non-compliance with the order under A.II;
- up to EUR 10,000 for each day of non-compliance with the order under C.;
- only the first defendant: up to EUR 50,000 for each day of non-compliance with the order under B.

to be paid to the court.

F. In all other respects, the action for infringement is dismissed.

G. The counterclaim for annulment is dismissed.

H. The defendants shall bear the costs of the infringement proceedings and the costs of the counterclaim for annulment.

I. The value in dispute for the action and for the counterclaim for nullity is set at EUR 1,500,000 in each case.

J. The upper limit of the recoverable legal costs is set at a total of EUR 400,000 for the action and the counterclaim for annulment.

K. The orders relating to A., B. and C. shall only be enforceable once the claimant has notified the court of which part of the orders it intends to enforce and, where necessary, has submitted a certified translation of the orders into the official language of the Member State in which enforcement is to take place, and once the notification and the (relevant) certified translation have been served on the respective defendant concerned.

Düsseldorf, 18 March 2026 NAMES AND SIGNATURES

Presiding Judge Thomas	Ronny Thomas Digitally signed by Ronny Thomas Date: 13 March 2026 13:47:04 +01:00
Legally qualified judge Dr Schumacher	JuleKathrin Schumacher Digitally signed by Jule Kathrin Schumacher Date: 13 March 2026 09:40:09 +01:00
Legally qualified judge Kokke, LLM MSc	Margot Elsa Kokke Digitally signed by Margot Elsa Kokke Date: 14 March 2026 08:59:30 +01:00
Technically qualified judge Matter	Udo Matter Digitally signed by Udo Matter Date: 13 March 2026 14:51:45 +01:00
For the Deputy Registrar	LAURA CHANTAL DANIEL Digitally signed by LAURA CHANTAL DANIEL Date: 16 March 2026 08:34:05 +01:00

INFORMATION ON APPEALS:

Any party whose claims have been rejected in whole or in part may lodge an appeal against this decision with the Court of Appeal within two months of the decision being served (Art. 73(1) EPGÜ, R. 220.1(a), 224.1(a) VerfO).

Information on enforcement (Art. 82 EPC, Art. 37(2) EPGS, R. 118.8, 158.2, 354, 355.4 of the Rules of Procedure):

A certified copy of the enforceable decision shall be issued by the Deputy Registrar at the request of the enforcing party, Rule 69 of the Rules of Procedure.

This judgment was delivered in open court on 18 March 2026. Presiding Judge Thomas