

**Internal distribution code:**

- (A) [ - ] Publication in OJ
- (B) [ - ] To Chairmen and Members
- (C) [ - ] To Chairmen
- (D) [ X ] No distribution

**Datasheet for the decision  
of 18 October 2016**

**Case Number:** T 0273/13 - 3.5.05

**Application Number:** 08171386.9

**Publication Number:** 2071791

**IPC:** H04L27/26, H04L5/00, H04B7/26,  
H04L5/26

**Language of the proceedings:** EN

**Title of invention:**

Apparatus for transmitting and receiving a signal and method  
of transmitting and receiving a signal

**Patent Proprietor:**

LG Electronics Inc.

**Opponent:**

Strawman Limited

**Headword:**

TFS frame for DVB-T2/LG

**Relevant legal provisions:**

EPC Art. 54, 56, 83, 84, 88, 123(2)

**Keyword:**

Priority - basis in priority document (yes)

Amendments - added subject-matter (no)

Sufficiency of disclosure - (yes)

Claims - clarity (yes)

Inventive step - after amendment

**Decisions cited:**

G 0003/14

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
**Chambres de recours**

European Patent Office  
D-80298 MUNICH  
GERMANY  
Tel. +49 (0) 89 2399-0  
Fax +49 (0) 89 2399-4465

Case Number: T 0273/13 - 3.5.05

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.05**  
**of 18 October 2016**

**Appellant:** LG Electronics Inc.  
(Patent Proprietor) 20, Yeouido-dong  
Yeongdeungpo-gu  
Seoul, 150-721 (KR)

**Representative:** Cabinet Plasseraud  
66, rue de la Chaussée d'Antin  
75440 Paris Cedex 09 (FR)

**Respondent:** Strawman Limited  
(Opponent) 34 Lovedon Lane  
Winchester,  
Hampshire, SO23 7NU (GB)

**Representative:** D Young & Co LLP  
120 Holborn  
London EC1N 2DY (GB)

**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 14 December  
2012 revoking European patent No. 2071791  
pursuant to Article 101(3) (b) EPC.**

**Composition of the Board:**

**Chair** A. Ritzka  
**Members:** P. Cretaine  
G. Weiss

## **Summary of Facts and Submissions**

I. This appeal is against the decision of the opposition division, dispatched on 14 December 2012, to revoke European patent No. 2 071 791. The opposition was based on the grounds of Article 100(a), (b) and c) EPC and the patent was revoked for lack of compliance with Article 123(2) EPC with respect to a main request and a first and a third auxiliary request, and lack of novelty (Article 54 EPC) of the subject-matter of claim 1 of a second auxiliary request, having regard to the disclosure of

E12: DVB Document TM3980 Rev.5, "Frame structure channel coding and modulation for a second generation digital terrestrial television broadcasting system (DVB-T2)", Document A122, June 2008.

E12 was considered by the opposition division to be prior art under Article 54(2) EPC, since the priority rights based on the US applications 61/013298 (denominated P1), 61/013643 (P2) and 61/015194 (P3) were found to be not valid for the claims of the second auxiliary request and the effective date was therefore the filing date of the application.

The following other relevant documents were also submitted by the opponent:

E1: "DVB-T2 Concept", BBC, Nokia, Terracom, 4 June 2007,

E3: WO 2008/110886, and

E10: "L1 signalling parameter definition and signalling transmission in T2", T. Jokela et al., Nokia, Panasonic, 2 November 2007.

- II. The patentee's notice of appeal was received on 4 February 2013 and the appeal fee was paid on the same day. The statement setting out the grounds of appeal was received on 23 April 2013. The appellant (patentee) requested that the decision of the opposition division be set aside and that the patent be maintained on the basis of the claims of a main request, a first auxiliary request or a second auxiliary request, filed with the statement setting out the grounds of appeal. Moreover the appellant filed as Appendix A the English translation of pages 11 and 12 of priority document P2. Oral proceedings were requested on an auxiliary basis.
- III. The respondent (opponent) requested by letter dated 29 August 2013 that the appeal be dismissed. Oral proceedings were also requested on an auxiliary basis.
- IV. A summons to oral proceedings scheduled to be held on 18 October 2016 was issued on 6 July 2016. In an annex to this summons, the board listed the points to be discussed during the oral proceedings.
- V. By letter of response dated 16 September 2016, the respondent announced that it would not be represented at the oral proceedings. It withdrew its request for oral proceedings and maintained its request that the appeal be dismissed.
- VI. With letter dated 16 September 2016, the appellant maintained its previous requests and filed additional third to sixth auxiliary requests. The appellant also

provided an English translation of priority document P3.

VII. Oral proceedings were held as scheduled on 18 October 2016 in the absence of the respondent. The appellant requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the main request, the first or second auxiliary requests filed with the statement setting out the grounds of appeal or one of the third to sixth auxiliary requests submitted with letter dated 16 September 2016. The respondent had requested in writing that the appeal be dismissed.

At the end of the oral proceedings, the decision of the board was announced.

VIII. Claim 1 of the main request reads as follows:

"A method of transmitting a signal, the method comprising:  
converting (S401) a service stream for delivering a service to a physical layer pipe (PLP);  
building (S405) at least one signal frame multiplexed in time and frequency, the signal frame comprising the PLP and a preamble comprising layer-1 information;  
modulating (S407) the multiplexed signal frame by an orthogonal frequency division multiplexing (OFDM) scheme and outputting a modulated signal; and  
transmitting (S409) the modulated signal via at least one RF band signal,  
wherein said layer-1 information in the preamble of the multiplexed signal frame, includes an index of a current radio frequency (RF) channel within the multiplexed signal frame,

characterized in that an identifier of an RF channel within a signal frame at which the PLP is first located in a super frame is included in the layer 1 information."

The main request comprises a further independent claim for a corresponding receiving method (claim 4) and further independent claims (claims 7 and 9) corresponding to method claims 1 and 4 in terms of claims for an apparatus.

Considering the outcome of the decision, the details of the first to sixth auxiliary requests do not need to be considered.

### **Reasons for the Decision**

1. The appeal is admissible.

2. Main request

The labelling of features of claim 1 used in the statement setting out the grounds of appeal (see page 5, section 6) will be used.

3. Priority right - Article 88 EPC

3.1 The opposition division found that the priority right for the claims of the then second auxiliary request was not valid and that the effective date of this request was therefore the filing date of the European application. It took that view on the grounds that none of the three US priority documents P1 to P3 disclosed that the layer-1 information in the preamble of the multiplexed signal frame included *an index of a current*

radio frequency (RF) channel within the multiplexed signal frame (feature g) and an identifier of an RF channel within a signal frame at which the PLP is first located in a super frame (feature h). In that respect, it appears from the decision that the opposition division did not consider that the parameters "GP\_PLP\_RF\_INDICATOR" and "GP\_PLP\_START\_RF\_ID", described in the priority document US 61/013643 (P2), constituted a clear disclosure of these features.

The respondent has also objected in its response to the statement setting out the grounds of appeal that there was no disclosure in the US priority documents P1 to P3 of the formation of a super-frame comprising a plurality of signal frames, and that these documents did not relate to the scheduling of Physical Layer Pipes (PLPs), as in claim 1, but rather to the scheduling of guard period-PLPs (GP-PLPs).

Since all these objected features are present in claim 1 of the main request, the board had to decide on the validity of the priority rights.

- 3.2 With respect to the disclosure of a super-frame in US priority documents P1 to P3, the board agrees with the appellant that the skilled person would recognise that the figures on pages 2, 4 and 5 of P2 represent super-frames in the sense of claim 1, each built of several TPS frames. In particular, the figure on page 4 of D2 corresponds to Figure 66 of the present application and illustrates such a super-frame, the horizontal axis indicating different frequencies (RF1, RF2, RF3) and the vertical axis representing the time with TFS frames following each other.

In respect of the disclosure of PLPs in US priority



documents P1 to P3, the appellant has plausibly argued that GP-PLP was the denomination used for designating a PLP at the time of filing the US priority documents, the term "guard period" aiming at making it clear that a PLP occurred once per TFS frame, as is obvious from the figures of P2. In this respect the appellant cited Appendix A, the English translation of pages 11 and 12 of P2, which discloses that the GP-PLPs are used for transporting services (see page 3 of A, last sentence). This is also corroborated by the fact that the terms GP-PLP, (GP)PLP or PLP are used indiscriminately throughout the description and drawings of the application to refer to Physical Layer Pipes providing services, i.e. DVB programs (see paragraphs [0465], [0466], [0480], [0484], [0489], [0504] to [0506], [510], [0528] to [0534], [0537], [0545] to [0547] and Figures 62 to 71).

The appellant has further argued, and the board agrees with it that P2 does disclose the presence of both the index (feature g) and the identifier (feature h) in layer-1 information of the preamble, as defined in claim 1.

The presence of the *index of a current radio frequency channel* within the layer-1 information is indicated in page 1, lines 13 to 17 of Appendix A by the wording "the scheduler... control.. an RF being used for each sub GP PLP" and "scheduling information includes an indicator of an RF (RF-ID) which is being used". This index is also disclosed in page 3 of P2 as "GP\_PLP\_RF\_INDICATOR" and is transmitted in layer-1 signalling for indicating the used RF channels for each GP-PLP. It is also to be noted that the present patent uses the same notation "GP\_PLP\_RF\_INDICATOR" as in P2

for designating in Figures 66 to 68 and 71 the index defined in claim 1.

The *identifier of an RF channel within a signal frame at which the PLP is first located in a super-frame, included in the layer-1 information* is disclosed as "GP\_PLP\_START\_RF\_ID" in P2, page 3. This identifier namely defines the "ID of RF channel including first sub GP-PLP, for each GP-PLP". The skilled person looking at the Figure on page 4 of P2 will immediately understand that the term "sub GP-PLP" relates to the part of a GP-PLP that exists in a frame of the super-frame. For instance the part of GP-PLP A in TFS frame 1, the first frame in which it is transmitted, is transmitted on RF1, so that the identifier "GP-PLP-START\_RF-ID" is equal to RF1. It is further to be noted that the present application uses the same notation "GP\_PLP\_START\_RF\_ID" as in P2 for designating in Figures 66 to 68 and 71 the identifier defined in claim 1.

3.3 The board therefore judges that the priority right based on P2 is valid, so that the effective date for the main request is 14 December 2007 (Article 88 EPC).

4. Article 123(2) EPC

4.1 In the decision under appeal, the opposition division decided that the then first auxiliary request, on which the main request is substantially based, did not meet the requirements of Article 123(2) EPC since the combination of the index and the identifier defined in features g and h, respectively, of claim 1 had no basis in the originally filed application documents.

Furthermore, the respondent has objected in writing

that the signal frame multiplexed in time and frequency defined in claim 1 also has no support.

4.2 The appellant has argued as follows:

Figure 66 in conjunction with the description in paragraphs [0511] and [0512] clearly illustrates the claimed "at least one signal frame multiplexed in time and frequency" as being one of the frames designated as "frame 1", "frame 2", "frame 3" or "frame 4". As clearly shown by Figure 66, the super-frame defined later in claim 1 is formed from a plurality of such frames, denominated TFS frames, and each PLP can start in different RF channels ("RF1", "RF2", "RF3") for different frames within the super-frame.

Further, paragraph [0616] provides a clear basis for the presence in the layer-1 information of the index and identifier. The same wording is used for the index in paragraph [0616] and claim 1. With respect to the identifier, claim 1 uses a slightly different formulation than in paragraph [0616] by employing the wording "identifier of an RF channel within a signal frame at which the PLP is first located in a super-frame" instead of "RF channel ID of the first signal frame including the PLP in the super-frame". It is however quite clear for the skilled person that both formulations have the same technical meaning, namely that the identifier indicates the RF channel on which the first part of the PLP is transmitted in the super-frame.

The board agrees with the arguments of the appellant and judges that claim 1 according to the main request meets the requirements of Article 123(2) EPC.

5. Article 83 EPC

The respondent has objected in writing that the claimed subject-matter lacked sufficiency, on the grounds that no indication was given in the patent as to how the PLP was multiplexed in time and frequency between RF channels and signal frames in a super-frame and as to how the receiver was able to recover the next part of the PLP in another signal frame on another channel once the first part of the PLP had been received in a super-frame.

The board is however not convinced by these arguments. As to the first part of the objection, the structure of the super-frame comprising signal frames including the PLPs is clearly described and illustrated (see Figure 66 for instance).

As to the second part of the objection, the board notes that the respondent is making a very broad and vague assertion, without relying on any technical features of the description and drawings. The board considers that the layer-1 signalling information is sufficient for the receiver to recover each PLP, based in particular on the indicators PLP\_START\_RF\_ID, PLP\_RF-INDICATOR, PLP\_START, PLP\_NUM\_BLOCKS, and RF\_SHIFT, and as described in paragraphs [0472] to [0660] for several examples.

Thus, in the board's judgement, the requirements of Article 83 EPC are fulfilled.

6. Article 84 EPC

The respondent has raised clarity objections against claim 1 of the main request.

According to G 3/14, the claims of a patent as amended may be examined for compliance with the requirements of Article 84 EPC only when, and then only to the extent that, the amendment introduces non-compliance with Article 84 EPC.

With respect to claim 1 as granted, only features g and h have been amended or added, respectively.

Feature g now recites "an index of a current radio frequency (RF) channel" instead of "information corresponding to a current radio frequency (RF) channel" in granted claim 1. Besides the fact that the respondent has not objected to this amendment, the board considers that the term "index", having a more limited and precise scope than the term "information", does not render feature g unclear.

With respect to feature h, the respondent has argued in writing that the relationships between the claimed "identifier of an RF channel" and the "at least one RF band signal" of feature f and the "index of the current radio frequency (RF) channel" of feature g were unclear. The board however agrees with the appellant that the identifier defined in feature h clearly represents the parameter "GP\_PLP\_START\_RF\_ID" described throughout the description and figures, whereas the index defined in feature g clearly represents the parameter "GP\_PLP\_RF\_INDICATOR".

Therefore, the board judges that the main request meets the requirements of Article 84 EPC.

7. Articles 54 and 56 EPC

As a result of the validity of the priority rights based on US document P2 (see section 3.3 above), the main request is entitled to the priority date of December 2007. Document E12, published in 2008, is thus not prior art under Article 54(2) EPC.

The respondent has not provided any substantiated argumentation in respect of documents other than E12, but has merely asserted that "the claims of the main request lacked novelty/inventive step having regard to what was disclosed in E1 or the other prior art documents submitted during the opposition proceedings" [sic].

The boards notes that, in addition to E12, E1, E3 or E10 could be of relevance for the assessment of novelty and inventive step. Given the priority date of the main request, E3 is however prior art under Article 54(3) EPC.

None of documents E1, E3 or E10 relates to an arrangement of signal frames multiplexed in time and frequency, i.e. TFS frames, in a super-frame as defined by claim 1 of the main request and as illustrated in Figures 62, 64, 66 and 68 to 70 of the patent. All these documents relate to DVB transmission based on a single TFS frame as illustrated in Figure 1 of the patent (see Figure 1 of E1, Figure 14 of E3, and Figure 3 of E10). The subject-matter of claim 1 according to the main request is thus new, having regard to the disclosures of E1, E3 and

E10.

Furthermore, since no signalling within a super-frame is required, neither of documents E1 or E10 discloses or suggests feature h of claim 1. The appellant has plausibly argued that the identifier defined in this feature makes it easier to search for the PLP in the first frame where it occurs.

For these reasons, the board judges that the subject-matter of claim 1 according to the main request and of corresponding independent claims 4, 7 and 9 involves an inventive step, having regard to the disclosures of E1 and E10.

8. Conclusion

It follows from the conclusions reached in points 4 to 7 above that the main request is allowable. There is therefore no need for the board to consider the appellant's auxiliary requests.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to maintain the patent on the basis of the following version:
  - claims 1 to 10 of the main request submitted with the statement setting out the grounds of appeal;
  - description, pages 1-37 of the patent specification;
  - figures 1 to 81 of the patent specification.

The Registrar:

The Chair:



K. Götz-Wein

A. Ritzka

Decision electronically authenticated