Internal distribution code:

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

Datasheet for the decision of 23 February 2017

Case Number: T 2024/14 - 3.5.05

Application Number: 01972652.0

Publication Number: 1434382

IPC: H04L7/00, H04L25/38, H04L29/08, H04L5/16, H04L12/28, H04L12/403

Language of the proceedings: EN

Title of invention:
Serial data transferring apparatus

Patent Proprietors:
Hitachi, Ltd.
Hitachi Car Engineering Co., Ltd.

Opponent:
Infineon Technologies AG

Headword:
Transfer clock synchronisation II/HITACHI

Relevant legal provisions:
EPC 1973 Art. 54, 56

Keyword:
Novelty - main and second auxiliary requests (no)
Inventive step - first and third auxiliary requests (no)

Europäisches Patentamt
European Patent Office
Office européen des brevets

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 2024/14 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 23 February 2017

Appellant: (Patent Proprietor 1)	Hitachi, Ltd. 6-6, Marunouchi 1-chome Chiyoda-ku Tokyo 100-8280 (JP)
Appellant: (Patent Proprietor 2)	Hitachi Car Engineering Co., Ltd. 2477, Takaba Hitachinaka-shi, Ibaraki 312-0062 (JP)
Representative:	Beetz & Partner mbB Patentanwälte Steinsdorfstraße 10 80538 München (DE)
Respondent: (Opponent)	Infineon Technologies AG Am Campeon 1-12 85579 Neubiberg (DE)
Representative:	Viering, Jentschura & Partner mbB Patent- und Rechtsanwälte Am Brauhaus 8 01099 Dresden (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 29 July 2014 concerning maintenance of the European Patent No. 1434382 in amended form.**

Composition of the Board:

Chair	A. Ritzka
Members:	K. Bengi-Akyuerek
	G. Weiss

Summary of Facts and Submissions

I. The appeal was lodged against the interlocutory decision of the opposition division to maintain the present European patent as amended according to the claims of an "Auxiliary Request 6".

II. The parties rely only on the following prior-art document:

D11: "Road vehicles - Diagnostic systems - Requirements for interchange of digital information", ISO 9141: 1989(E), first edition, 1 October 1989.

III. With the statement setting out the grounds of appeal, the appellant filed amended claims according to a main request and twelve auxiliary requests. It requested that the decision under appeal be set aside and that the patent be maintained as amended on the basis of the claims of one of those claim requests.

IV. With a letter of reply, the respondent requested that the appeal be dismissed.

V. In an annex to the summons to oral proceedings pursuant to Article 15(1) RPBA, the board gave its preliminary opinion on the appeal. In particular, it made observations with regard to the admissibility of the claim requests under Rule 80 EPC and Article 12(4) RPBA and their allowability in terms of added subject-matter (Article 123(2) EPC) and novelty and inventive step (Articles 54 and 56 EPC 1973), having regard to D11.

VI. With a letter of reply, the appellant advanced further arguments in response to the board's communication

under Article 15(1) RPBA.

VII. Oral proceedings were held on 23 February 2017, during which the appellant filed new sets of claims as a main request and three auxiliary requests replacing the former ones. All the other claim requests presented with the statement setting out the grounds of appeal and during the oral proceedings were withdrawn. In addition, it filed an illustration of Figures 1 and 5 of the patent in support of the interpretation of the term "immediate response" and a copy of a page of the Guidelines for Examination in the EPO (H-V, 6, in the version of November 2016) regarding amendments derived from drawings under Article 123(2) EPC. The admissibility and allowability of the claim requests on file were discussed.

- The appellant's final requests were that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the claims according to the main request or one of three auxiliary requests, all filed during the oral proceedings before the board. The appellant further declared that it maintained its request ("Auxiliary Request 6") on which the opposition division had based its decision.

- The respondent's final request was that the appeal be dismissed.

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

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

"A serial data transferring apparatus on a

receiving side (2, 31 - 35) connectable to a transferring apparatus on a transmitting side (1, 30) through a single signal line and comprising:

means (20, 21) for receiving, through said single signal line, a start signal indicative of start of data transfer from the transmitting side to the receiving side through said single signal line;

means (22, 24, 25) for determining that said receiving means (20, 21) has received the start signal, and generating a data train indicative of a receiving—side transfer clock of serial data to be received on said receiving side from said transmitting side; and

serial data output means (20,21,23) for outputting said data train to the transmitting side through said single signal line,

wherein in response to replying said first [sic] data train to the transmitting side through said single signal line and as the next signal on said single signal line after said data train, said receiving means (20, 21) receives through said single signal line a train of serial data transmitted from the transmitting side in accordance with the receiving-side transfer clock."

Claim 1 of the **first auxiliary request** comprises all the features of claim 1 of the main request and adds the following:

"further comprising a shift register (22) and an oscillator (25) for generating a clock signal in accordance with said receiving-side transfer clock to operate the shift register (22), the shift register being adapted to receiving said data train and outputting it to the transmitting side through said single signal line in accordance with said generated

clock signal and being adapted to receiving through said single signal line said train of serial data from the transmitting side in accordance with said generated clock signal."

Claim 1 of the **second auxiliary request** comprises all the features of claim 1 of the main request and adds the following:

"wherein the serial data transferring apparatus on the receiving side is a sensor or an actuator adapted to communicate with said transferring apparatus on the transmitting side being a controller."

Claim 1 of the **third auxiliary request** combines the features of claim 1 of the main request with those of the first and second auxiliary requests.

Reasons for the Decision

1. *Admission of the present claim requests into the appeal proceedings*

The claims of the present main request and first to third auxiliary requests were filed for the first time during the oral proceedings before the board (cf. point VII above), i.e. at a very late stage in the overall procedure. Nonetheless the board admitted them into the appeal proceedings under Article 13(1) and (3) RPBA on the grounds that claim 1 of all those requests included only minor amendments (i.e. deletion of the words "first" and "immediate") to claim 1 of the former first, third, seventh and tenth auxiliary requests respectively (submitted with the statement setting out the grounds of appeal), made in order to overcome the

objections under Rule 80 EPC and Article 123(2) EPC raised in the board's communication under Article 15(1) RPBA and during the oral proceedings before the board. Also, no procedural abuse is discernible.

2. *Allowability of the MAIN REQUEST*

2.1 Claim 1 of the main request comprises the following limiting features (as labelled by the board, with the amendments to claim 1 as granted being underlined):

A serial data transferring apparatus on a receiving side connectable to a transferring apparatus on a transmitting side through a single signal line, comprising:

A) means for receiving, through said single signal line, a start signal indicative of start of data transfer from the transmitting side to the receiving side through said single signal line;
B) means for determining that said receiving means has received the start signal, and generating a data train indicative of a receiving-side transfer clock of serial data to be received on said receiving side from said transmitting side;
C) serial data output means for outputting said data train to the transmitting side through said single signal line;
D) wherein in response to replying said data train to the transmitting side through said single signal line and as the next signal on said single signal line after said data train, said receiving means receives through said single signal line a train of serial data transmitted from the transmitting side in accordance with the receiving-side transfer clock.

As to the allowability of the amendments made to claim 1 (Article 123(2) EPC), the board - unlike the respondent - holds that at least the embodiment relating to Figure 1 in conjunction with Figure 2 of the present application as filed sufficiently demonstrates that the command data (i.e. "train of serial data" in the claim language) is indeed the very next signal which is received by a slave unit ("receiving side") after the latter has sent the synchronisation field (i.e. "data train indicative of a receiving-side transfer clock of serial data" in the claim language) to a master unit ("transmitting side") via the single signal line connecting both units. Therefore, feature D) is in fact directly and unambiguously derivable from the present application as originally filed.

2.2 *Novelty*

2.2.1 The board agrees with the respondent that document D11 discloses all the features of present claim 1:

A serial data transferring apparatus on a receiving side ("Electronic Control Unit ECU") connectable to a transferring apparatus on a transmitting side ("Diagnostic tester") through a single signal line ("Line K or L"; see e.g. Fig. 5 on page 5), comprising:

A) means for receiving, through said single signal line, a start signal ("initialization signal") indicative of start of data transfer from the transmitting side to the receiving side through said single signal line (see page 5, section 6 in conjunction with Fig. 8 on page 7);

B) means for determining that said receiving means has received the start signal, and generating a data train (data sequence consisting of baud rate

synchronisation pattern "Synchro word" and key words "Key word 1", "Key word 2") indicative of a receiving-side transfer clock of serial data to be received on said receiving side from said transmitting side (see e.g. page 6, section 7.1 in conjunction with page 10, sections 8.5.2, 8.5.3 and Fig. 8 on page 7);

C) serial data output means for outputting said data train to the transmitting side through said single signal line (see e.g. Fig. 8);

D) wherein in response to replying said data train to the transmitting side through said single signal line and as the next signal on said single signal line after said data train (i.e. after the sequence of "Synchro word", "Key word 1" and "Key word 2"), said receiving means receives through said single signal line a train of serial data ("Data") transmitted from the transmitting side in accordance with the receiving-side transfer clock (see Fig. 8 in conjunction with page 11, left-hand column, first paragraph).

2.2.2 As to feature D) of claim 1, the appellant contended repeatedly at the oral proceedings before the board that only the "Synchro word" of D11 corresponded to the "data train indicative of a receiving-side transfer clock" according to feature B) and that therefore keywords "Key word 1" and "Key word 2", both having start and stop bits, were in fact the *next* signals within the meaning of feature D) and not the train of serial data (i.e. "Data" in Fig. 8) sent from the transmitting to the receiving side in accordance with the desired baud rate. Thus, D11 failed to disclose amended feature D) of claim 1.

The board, however, holds that the term "data train" is

to be understood to mean a time-continuous sequence of data packets or frames. Hence, it subscribes to the respondent's view that the generation of such a data train is not limited to the transmission/reception of only one data packet or message frame. Accordingly, the transmission of a synchronisation pattern ("Synchro word") followed by two keywords ("Key word 1" and "Key word 2") according to the teaching of D11 falls well within the broad terms of "data train" as claimed. Furthermore, in the system of D11, not only the baud rate synchronisation pattern (see e.g. page 11, left-hand column, first paragraph: "The baud rate ... of the signal ... received by the ECU shall not deviate from ... the initially transmitted baud rate synchronization pattern ...") but also the keywords are evidently indicative of the desired baud rate, i.e. the receiving-side transfer clock as claimed (see page 10, section 8.5.3: "In case of baud rate modification through the key words, the diagnostic tester shall be capable of transmitting data to the ECU at the modified baud rate ...").

In addition, the board further notes, for the sake of argument, that the system of D11 could apparently even forgo the use of keywords (see e.g. page 7, section 7.4: "Manufacturers of vehicles, systems or ECUs who require to use key words shall submit each specific key word ..."), so that those keywords might even be dispensable regarding the proper functioning of the system of D11.

2.3 In view of the above, the board judges that present claim 1 lacks novelty and that consequently the main request is not allowable under Article 54 EPC 1973.

3. *Allowability of the FIRST AUXILIARY REQUEST*

3.1 Claim 1 of this auxiliary request differs from claim 1 of the main request in that it additionally specifies that

E) the apparatus further comprises a shift register and an oscillator for generating a clock signal in accordance with said receiving-side transfer clock to operate the shift register;
F) the shift register is adapted to receive said data train, to output it to the transmitting side through said single signal line in accordance with said generated clock signal, and to receive through said single signal line said train of serial data from the transmitting side in accordance with said generated clock signal.

Added features E) and F) find their basis in page 13, lines 15-26 in conjunction with Fig. 3 (Article 123(2) EPC).

3.2 *Novelty and inventive step*

3.2.1 It is common ground that the subject-matter of present claim 1 is novel over D11 (Article 54 EPC 1973), since the latter fails to mention the use of a shift register or an oscillator and, consequently, of features E) and F) of claim 1.

3.2.2 As to inventive step, the board agrees with the opposition division and the respondent, in particular in view of the need for an implementation of clock generation and transmission in D11 as e.g. set out in sections 7.1 and 7.2 in conjunction with Figure 5, that the express use of off-the-shelf components such as a

shift register (for transmitting and receiving the respective bits of a data train) and an oscillator (for generating a certain bit clock) are straightforward implementation measures for the person skilled in the field of data communications. Also, the skilled person would be aware from his common general knowledge that the same shift register for transmission and reception at the same time (i.e. a two-way shift register) would have to be used if he was tasked with the problem of saving components (or with providing a "robust, simple and cheap receiving means", as was put forward by the appellant) in that regard.

3.3 Consequently, the board holds that the subject-matter of present claim 1 is novel but does not involve an inventive step and that therefore the first auxiliary request is not allowable under Article 56 EPC 1973.

4. *Allowability of the SECOND AUXILIARY REQUEST*

4.1 Claim 1 of this auxiliary request differs from claim 1 of the main request in that it further specifies that

G) the apparatus is a sensor or an actuator adapted to communicate with said transferring apparatus on the transmitting side being a controller (emphasis added by the board).

Added feature G) is supported by page 10, lines 11-15 in conjunction with Figure 2 (Article 123(2) EPC).

4.2 *Novelty*

4.2.1 The board shares the respondent's view that the following passage of D11 (page 1, right-hand column, item 3.5) relating to the underlying system

sufficiently demonstrates that the ECU unit could involve a sensor or actuator:

> *"system: Assemblage of components performing a specific function, for example an assemblage of an ECU with its associated sensors, actuators and interconnections."*

Since in D11 the diagnostic tester (on the transmitting side) communicates with the ECU unit (on the receiving side) and given that, in view of the functions it performs (i.e. controlling the initialisation, inspection, testing and diagnosis of the ECU; see e.g. sections 6 and 7.1), the diagnostic tester may well be considered to be a controller, D11 also anticipates feature G) of present claim 1.

4.2.2 According to the appellant the above passage, through its use of the term "Electronic *Control* Unit", implied that the ECU and not the diagnostic tester corresponded to the controller on the transmitting side communicating with the respective sensors/actuators on the receiving side, so that the diagnostic tester was not directly connected with the sensors/actuators on the receiving side.

The board cannot follow this line of argument. Firstly, feature G) is silent as to whether or not the apparatus on the transmitting side is directly connected in any way whatsoever to the apparatus on the receiving side. It only specifies that the receiving side is *adapted to communicate* with the transmitting side. Secondly, the entire disclosure of D11 is concerned with the communication, for the purpose of clock synchronisation, between the diagnostic tester (controlling the ECU unit) and the ECU unit. Thus, this

argument must likewise fail.

4.3 Accordingly, the board finds that present claim 1 lacks novelty and that therefore the second auxiliary request is not allowable under Article 54 EPC 1973.

5. *Allowability of the THIRD AUXILIARY REQUEST*

5.1 Claim 1 of this auxiliary request differs from claim 1 of the main request in that it further adds features E), F) and G) as outlined in points 3.1 and 4.1 above.

5.2 *Novelty and inventive step*

5.2.1 As set out in points 3.2.1 and 4.2.1 above, D11 discloses feature G) but fails to anticipate features E) and F) of present claim 1. Hence, the subject-matter of claim 1 is novel over D11 (Article 54 EPC 1973).

5.2.2 As a matter of course, for the same reasons as set forth in point 3.2.2 above, features E) and F) do not add any synergistic and inventive effect to the subject-matter of present claim 1.

5.3 Consequently, the board holds that the subject-matter of present claim 1 is novel but does not involve an inventive step and that therefore the third auxiliary request is likewise not allowable under Article 56 EPC 1973.

6. In conclusion, the appeal must be dismissed and, in view of the principle of prohibition of *reformatio in peius*, the patent is to be maintained based on the claims of "Auxiliary Request 6" filed in the opposition proceedings.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

S. Fabiani A. Ritzka

Decision electronically authenticated