

Internal distribution code:

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

**Datasheet for the decision
of 10 October 2008**

Case Number: T 1600/06 - 3.5.03

Application Number: 97926327.4

Publication Number: 0894373

IPC: H04B 7/26

Language of the proceedings: EN

Title of invention:

Repeater with variable bandwidth

Patentee:

ALLGON AB

Opponent:

TEKO TELECOM S.P.A.

Headword:

Repeater with variable bandwidth/ALLGON

Relevant legal provisions:

EPC Art. 56, 111(1), 113(1), 114(1), 114(2)

EPC R. 116(1)

RPBA Art. 13(1), 13(3)

Relevant legal provisions (EPC 1973):

EPC R. 71a(1)

Keyword:

"Late-filed document D27 (admitted - prima facie highly relevant)"

"Remittal (yes)"

"Inventive step (yes, excluding D27)"

Decisions cited:

G 0006/95, T 0402/01, T 0097/94, T 1002/92

Catchword:

-



Case Number: T 1600/06 - 3.5.03

DECISION
of the Technical Board of Appeal 3.5.03
of 10 October 2008

Appellant: TEKO TELECOM S.P.A.
(Opponent) VIA DELL'INDUSTRIA, 5
I-40068 San Lazzaro di Savena (Bologna) (IT)

Representative: Wehnert, Werner
Patentanwälte
Hauck, Graalfs, Wehnert
Döring, Siemons, Schildberg
Schwanthalerstrasse 106
D-80339 München (DE)

Respondent: ALLGON AB
(Patent Proprietor) Box 500
S-184 25 Akersberga (SE)

Representative: Modin, Jan
Ehrner & Delmar Patentbyrå AB
Box 10316
SE-100 55 Stockholm (SE)

Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
28 July 2006 concerning maintenance of European
patent No. 0894373 in amended form.

Composition of the Board:

Chairman: A. S. Clelland
Members: T. Snell
M.-B. Tardo-Dino

Summary of Facts and Submissions

- I. This appeal is against the interlocutory decision of the opposition division finding European patent No. 0894373 in amended form to meet the requirements of the EPC.
- II. The opposition was filed against the patent as a whole on the grounds that the claimed subject-matter was not new and did not involve an inventive step (Article 100(a) EPC).
- III. During the opposition proceedings the proprietor of the patent filed amended claims which the opposition division found to meet the requirements of novelty and inventive step, having regard *inter alia* to the disclosures of the following documents:
- D1: Pages 3, 15, 23 and the front page of the Service Manual for the HF transceiver TS-950S/SD produced by Kenwood, Japan, November 1989.
- D6: WO-A-9531866
- D20: US-A-5303404

The impugned decision of the opposition division includes the following reasoning:

"... the opposition division is of the opinion that both documents D1 and D20 at least do not disclose the features of independent claim 1 that each of said band pass filter units comprising [*sic*] an input down-mixer, a band pass filter, an output up-mixer and an associated, controllable local oscillator, the output of which is connected

to the two mixers, so that the input down-mixer is adapted to subtract the output frequency of the local oscillator from the frequency of the input signal thereto, and the output up-mixer is adapted to add the output frequency of the local oscillator to the frequency of the output signal of said band pass [sic] filter.

The opposition division acknowledges that documents D1 and D20 disclose arrangements for variable bandwidth tuning in a receiver chain, but do not disclose the particular circuit arrangement as claimed in the present claim 1.

In order to arrive at the subject-matter of claim 1 the skilled person starting from the repeater of document D6 would have to apply at least the following steps:

- use the principle of variable bandwidth tuning known from document D1 or D20 employing different arrangements of band pass filter units coupled in series,
- re-arrange the different band pass filter units disclosed in document D1 or D20 in order to arrive at the same claimed input down-mixer, band pass filter and output up-mixer chain for each band pass filter unit, and
- adjust the controllable oscillator arrangements in order to properly feed the mixers in the re-arranged band pass filter units.

The opposition division is of the opinion that this approach is not obvious, because a number of

steps are necessary in order to arrive at the claimed subject-matter, each being only one of several possibilities, to obtain the desired functionality.

Therefore, the subject-matter of independent claim 1 of the amended main request is regarded as involving an inventive step according to Art. 56 EPC."

- IV. The opponent (appellant) lodged an appeal against the decision. The appellant requested that the decision of the opposition division be set aside and the patent revoked in its entirety.

The appellant also filed a conditional request for oral proceedings.

In the statement of grounds of appeal, the appellant submitted that the subject-matter of the opposed patent did not involve an inventive step having regard essentially to the combination of D6 and D20. The argumentation was supported by reference to the following two newly-cited documents:

D25: US-A-4754495

D26: US-A-4941200

- V. In a response to the notice of appeal, the patent proprietor (respondent) requested that the patent be maintained in accordance with the claims granted by the opposition division in its interlocutory decision. An auxiliary request was also submitted.

The respondent argued that the subject-matter of claim 1 involved an inventive step with respect to the combination of D6 and D20, and stated that it agreed with the analysis and conclusions contained in the impugned decision of the opposition division.

- VI. In a communication accompanying a summons to attend oral proceedings, the board drew attention *inter alia* to the following matters to be discussed: (i) whether late-filed documents D25 and D26 should be admitted, (ii) whether it would be plausible to combine D6 and D20, and (iii) whether the combination of D6 and D20 would render the subject-matter of claim 1 obvious.

The board drew attention to the provisions for amendment of a party's case (Article 13 RPBA), and requested that any written submissions and/or new requests be filed at the latest one month before the oral proceedings to be held on 10 October 2008.

- VII. In a response to the board's communication received on 8 September 2008, the appellant submitted that D25 and D26 were mentioned in the specification of the patent in suit and should be admitted to the appeal proceedings "to be more clearly informed about the skilled person's knowledge". Further arguments were presented concerning the combination of D6 and D20.

In a response to the board's communication received on 10 September 2008, the respondent filed four claim sets as first to fourth auxiliary requests, each comprising claims 1-3.

The respondent submitted further arguments with respect to D6 and D20.

VIII. In a further written submission received on 24 September 2008, the appellant submitted the following two documents for the first time:

D27: Ulrich L. Rohde: "Eight ways to better radio receiver design", Electronics, 20 February 1975.
D28: US-A-4262361

The appellant submitted that both documents were highly relevant for the assessment of inventive step; it was therefore requested that these documents be taken into consideration.

The appellant argued that the subject-matter of claim 1 did not involve an inventive step having regard to the combination of D6 and D27, or alternatively D6 and D28, detailed reasons being provided in respect of the combination of D6 and D27.

IX. In a written submission received on 29 September 2008, the respondent requested that D27 and D28 be disregarded under Article 114(2) EPC, noting that the documents had been received only ten working days before the proceedings. Moreover, the subject of the proceedings had not changed and therefore D27 and D28 "should have been revealed long ago". It was further submitted, referring to decision T 97/94, that when a communication under Rule 71a(1) EPC 1973 is sent by the board of appeal, the parties are obliged to comply with it, in particular as far as the procedural timetable is concerned.

X. In a further written submission received on 2 October 2008, the respondent requested that the final decision be deferred so as to enable it to thoroughly analyse the case in view of the additional prior art documents and to file, within a reasonable period of time, further arguments and possible further amended claims.

XI. Oral proceedings took place on 10 October 2008.

The appellant requested that the decision under appeal be set aside and the patent be revoked. The appellant further requested that D27 and D28 be admitted into the proceedings.

The respondent requested as its main request that the appeal be dismissed, ie that the patent be maintained as amended in the version found allowable by the opposition division.

Although not explicitly stated at the oral proceedings, the board understood that the respondent also requested maintenance of the patent in amended form in accordance with one of the four auxiliary claim sets on file in the event that the board were not to accede to the respondent's main request.

The respondent further requested that, should D27 and D28 be admitted into the proceedings, the case be remitted to the opposition division or that the proceedings be continued in writing, to give the opportunity to file new claims.

At the conclusion of the oral proceedings, after due deliberation, the board gave its decision.

XII. Claim 1 of the amended patent reads as follows:

"A mobile telephone repeater comprising an uplink (100) for amplifying signals from a mobile telephone to a base station and a downlink (200) for amplifying signals from said base station to said mobile telephone, said two links being provided with a number of parallel amplifier chains (6, 7), each amplifier chain being designed to pass through a specific frequency band, characterized in that

- at least one of said parallel amplifier chains (6) comprises a filter device having a number of band pass filter units (10, 11) coupled in series,
- at least two band pass filter units in said filter device have controllable pass bands which at least partially overlap each other, each of said band pass filter units (10;11) comprising an input down-mixer (20a;20b), a band pass filter (25;26), an output up-mixer (21a;21b) and an associated, controllable local oscillator (22;29), the output of which is connected to the two mixers, so that the input down-mixer (20a;20b) is adapted to subtract the output frequency of the local oscillator from the frequency of the input signal thereto and the output up-mixer (21a;21b) is adapted to add the output frequency of the local oscillator to the frequency of the output signal of said band pass filter (25;26), whereby the frequency band entering each band pass filter (25;26) will be shifted and cut off at one end when changing the output frequency of said local oscillator, and

- the two controllable local oscillators (22,29) are controllable by a common frequency control unit (28),
- whereby the centre frequency of each band pass filter unit is controllable so as to make the bandwidth of the resulting overlap pass band variable whereby the effective bandwidth of the amplifier chain is controllable."

In view of the board's decision, it is not necessary to reproduce any of the claims of the auxiliary requests.

Reasons for the Decision

1. *Inventive step (excluding late-filed documents D25-D28)*
- 1.1 The parties and the board are in agreement that D6 represents the closest prior art to the present invention as it concerns a mobile telephone [system] repeater having all the features of the preamble of claim 1. In particular, the claimed repeater comprises *inter alia* a number of parallel amplifier chains, each amplifier chain being designed to pass through a specific frequency band.
- 1.2 The board regards the objective technical problem to be solved, starting from D6, as to facilitate frequency bandwidth changes in one or more amplifier chains of the repeater of D6 without necessitating hardware replacements.
- 1.3 In order to solve this problem, the characterising part of claim 1 defines *inter alia* that two band pass filter units have controllable pass bands which at least

partially overlap each other, each of said band pass filter units comprising an input down-mixer, a band pass filter, an output up-mixer and an associated, controllable local oscillator.

The principle of operation defined in claim 1 is that each local oscillator is controlled to shift the frequency band entering each band pass filter to be cut off at one end, whereby the centre frequency of each band pass filter unit is controllable so as to make the bandwidth of the resulting overlap pass band variable.

1.4 The appellant argued that starting from D6, the skilled person would be led by the teaching of D20 to arrive at the subject-matter of claim 1 without an inventive step.

1.5 Document D20 concerns a radio telephone receiver with adjustable bandwidth. The receiver chain includes first and second intermediate frequency (IF) filters at respectively 45 MHz and 0.455 MHz. A first mixer converts the RF input signal to the first intermediate frequency (1.IF). A second mixer converts the first intermediate frequency to the second intermediate frequency (2.IF). By offsetting the local oscillator inputs 1.LO and 2.LO to the first and second mixers, the frequency band can be cut off at the top and bottom, resulting in a variable pass band according to the degree of offset of the local oscillator frequencies.

1.6 Although in the board's view D20 uses a similar concept to the present patent, the board doubts that the skilled person would seek from D20 a solution to a problem concerning a repeater. In this respect, D20 relates to a double-conversion super-heterodyne

receiver employing a second intermediate frequency far below the first intermediate frequency (in the disclosed embodiments of D20, the second intermediate frequency is 0.455 MHz, a factor 100 lower than the first intermediate frequency), making the use of this receiver circuit implausible in a repeater environment in which the signal is to be reconverted to a radio signal for retransmission. The board notes that in the claimed repeater, the intermediate frequencies of the first and second filter units must be close to each other in order that the pass bands of the two fixed filters at least partially overlap.

1.7 However, if for the sake of argument the skilled person were to attempt to modify the arrangement of D6 based on the teaching of D20, the board agrees with the reasoning of the opposition division that a different arrangement to that claimed would result and that a number of additional steps would be required by the skilled person to arrive at the arrangement claimed (cf. paragraph III, "Summary of Facts and Submissions" above). In particular, the arrangement of two variable filter units each comprising a mixer followed by a band pass filter and a second mixer would not be suggested, since the structure of D20 makes use of only a single mixer between the two band pass filters; ie there would be no up-conversion following the first band pass filter followed by a down-conversion before the second band pass filter.

1.8 In the statement of grounds, the appellant commented on this difference as follows:

"In contrast to D6 and the opposed patent, the filter unit does not included [sic] a second mixer. As obvious for the skilled person referring to D6, the function of the second mixer in the first filter unit and the function of the first mixer in the second filter unit can be realized in combination in said first mixer of the second filter unit. By this measure, the configuration of a filter unit slightly varies while the realized technical function remains the same as compared to D6 or the opposed patent".

In other words, the function of two mixers for up and down-conversion is alleged to be an equivalent arrangement to a single mixer with the appropriately modified local oscillator input frequency.

1.9 However, the respondent argued in its response to the statement of grounds that this difference does not concern a technically equivalent alternative, but produces a technical effect. In this respect, the respondent submitted the following:

"....it can be concluded that it is essential, for achieving a good repeater function, that a frequency originating from the VCO, in each filter unit (10, 11) is first subtracted and then added, such that the centre frequency of the signal passing through the filter unit (10, 11) is not altered. To be totally sure that the frequency from the VCO is really cancelled out, the same VCO can be used for both the down-mixer and the up-mixer within each filter unit (10, 11), as is stated in claim 1 of the main request. This also

necessitates the up-mixer (21a, 21b) at the output of each filter unit (10, 11) and the down-mixer at the input of each filter unit (10, 11) to be separately configured.

On the contrary if two different VCOs had been used for feeding the down-mixers (20a, 20b) and the up-mixers (21a, 21b) in each filter unit, there would always be a risk that the frequencies from these two VCOs (here denoted f_{Lo1} and f_{Lo2}) might differ (e.g. due to aging and temperature drift), which would lead to that [sic] the frequency contribution of the VCOs would not be cancelled out".

1.10 The board agrees with the respondent that the difference with respect to the putative D6-D20 combination does not concern a mere equivalent arrangement where the function of a single mixer is carried out by two mixers connected in series, since in the claimed arrangement the two filter units are self-compensating as regards frequency offset, whereas with an arrangement such as in D20 the two oscillators would have to be locked to avoid any risk of a frequency offset at the repeater output.

1.11 Moreover, the board considers that the claimed arrangement would not be obvious to the person skilled in the art who is aware of documents D6 and D20 without the benefit of hindsight, as nothing in these documents might lead a skilled person to make such a modification, nor is the resulting advantage a priori so self-evident that the skilled person would be led to do so on the basis of his common general knowledge.

1.12 The appellant argued at the oral proceedings that directly applying the arrangement of D20 as discussed above is only the first of two obvious solutions, the second obvious solution being to extract the general concept of bandwidth variation disclosed in D20, which is to couple two filters in series and to variably control the mixers, and to apply this concept to the arrangement of D6. Since the skilled person would find it advantageous to use a series of known and available filter units of the type disclosed in D6, the arrangement of claim 1 would be arrived at without inventive step.

However, the board considers that the appellant's second solution is based on an ex-post facto analysis and therefore finds this line of argumentation unconvincing.

1.13 The board therefore agrees with the opposition division that the subject-matter of claim 1 as maintained involves an inventive step with respect to the combination of D6 and D20 (Articles 52(1) and 56 EPC). These documents therefore do not prejudice the maintenance of the patent in amended form.

1.14 In the appeal procedure (leaving aside the submissions based on D25-D28), the appellant did not attempt to argue on the basis of any combination of documents other than D6 and D20.

2. *Admissibility of D25-D28*
- 2.1 As the board concludes that documents D6 and D20 filed during the opposition procedure do not prejudice the maintenance of the patent as amended, the board has to decide on the admissibility of documents D25-D28 filed during the appeal proceedings.
- 2.2 In accordance with Article 114(1) EPC, in proceedings before it, the European Patent Office shall examine the facts of its own motion. On the other hand, in accordance with Article 114(2) EPC the European Patent Office may disregard facts or evidence which are not submitted in due time. Article 13 RPBA (OJ 11/07, 536-546), which sets out the procedural provisions applicable to the boards of appeal rather than Rule 71a(1) EPC 1973 (now Rule 116(1) EPC) mentioned by the respondent (cf. G 6/95, OJ 1996, 649), stipulates that any amendment to a party's case after it has filed its grounds of appeal or reply made be considered at the board's discretion. This discretion shall be exercised in view of, *inter alia*, the complexity of the new subject-matter submitted, the current state of the proceedings and the need for procedural economy (Article 13(1) RPBA). Further, amendments sought to be made after oral proceedings have been arranged shall not be admitted if they raise issues which the board or the other parties cannot reasonably be expected to deal with without adjournment of the proceedings (Article 13(3) RPBA).
- 2.3 When exercising its discretion under Articles 114(2) EPC and 13(1) RPBA whether or not to admit a late-filed document the board will seek to balance on the one hand

the need to avoid unnecessary delay in reaching a final decision, which is implicit in the criteria set out in Article 13(1) RPBA, and on the other hand the public interest which requires that invalid patents should not be maintained. In balancing these principles, it is well-established case law of the boards of appeal that a late-filed document may, exceptionally, be admitted to the proceedings if it is prima facie highly relevant in the sense that it is highly likely to prejudice the maintenance of the patent (see eg T 1002/92, OJ 1995, 605).

2.4 D25 and D26 were filed with the statement of grounds of appeal, ie after the nine month period for opposition. In its communication, the board informed the appellant that the documents did not appear to add anything of significance to the documents on file. At the oral proceedings the appellant essentially agreed that the documents did not add anything of substance and offered no line of argumentation based on them. D25 and D26 are therefore not relevant to the decision and the board, making use of its discretionary power under Article 114(2) EPC, has not admitted these documents to the proceedings.

2.5 D27 and D28 were filed on 24.09.08, ie approximately two weeks before the date set for the oral proceedings.

In this respect, the board cannot see any justification for D27 and D28 being filed this late in the proceedings and nor has the appellant offered one. It is therefore not in doubt that D27 and D28 were "not submitted in due time" within the meaning of Article 114(2) EPC.

2.6 D27 is a magazine article from 1975 by Ulrich L. Rohde, an acknowledged expert in the field of radio receiver design. The relevant section of D27 on pages 90 and 91 describes a method for radio reception employing "a double conversion i-f with fixed low-pass filters to give a variable bandwidth and constant slope". In figure 6, the fixed filters are shown as "band-pass filters". From this figure, it appears that D27 discloses a circuit with a similar structure to that of the embodiments of the opposed patent. The text accompanying figure 6 indicates that the circuit is operated to adjust the bandwidth "not by changing the filter, but by changing the frequency offset between two local oscillators".

The board therefore regards D27 as prima facie highly relevant to the presently claimed invention, and, exercising its discretionary power under Article 114(2) EPC in accordance with the above principles, admits it to the proceedings.

2.7 Although the respondent argued that documents D27 and D28 should be disregarded in view of their late filing, given that they could have been filed at a much earlier stage of the procedure, the board for the above reasons comes to the conclusion that the prima facie high relevance of D27 must take precedence, even under the circumstances that D27 was filed after the final date for response set by the board in the communication accompanying the summons to oral proceedings.

2.8 The respondent argued further that the late filing of D27 and D28 had prevented a proper consultation between

the representative and the proprietor, and hence in the time available before the oral proceedings it had not been possible to make a proper study of D27 or D28, or to consider the filing of further auxiliary requests. D27 and D28 should therefore not be admitted. However, this argument in the board's view concerns more the respondent's right to be heard (cf. Article 113(1) EPC) which the board has taken account of by remitting the case to the first instance (see below).

2.9 The respondent argued finally that under the revised EPC, it was possible for a patent proprietor to limit the patent at a later date. The board should consider this aspect in deciding whether to admit D27 and D28. However, in the board's view the possibility of limitation allowed by Articles 105a - 105c EPC is a different procedure to the opposition and appeal procedures and governed by its own independent requirements.

2.10 The board is therefore not convinced by the respondent's arguments for not admitting D27.

2.11 The board leaves it to the discretion of the opposition division whether or not to admit D28.

3. *Remittal*

3.1 As noted above, the board finds D27 *prima facie* highly relevant. It is therefore not in a position to accede to the respondent's main request which is to dismiss the appeal.

3.2 The board has accordingly addressed the question of whether or not it should itself consider D27 with regard to inventive step or should remit the case to the department of first instance. In this respect, even if the patent proprietor has no automatic right of remittal after the citation of a new document (cf. for example T 402/01, first decision, paragraphs 8 and 9, not published), the patent proprietor's right to be heard in accordance with Article 113(1) EPC may require remittal when the new document alters the legal and factual framework of the case significantly and a "fresh case" results. In the present case, in the board's view, the request for revocation based on lack of inventive step with respect to the combination of D6 and D27 constitutes such a fresh case.

3.3 The appellant argued that the matters to be discussed involving D27 were not technically complex and could be discussed before the board at the oral proceedings.

The board however considers that for the aforementioned reasons remittal is the more appropriate step in the present circumstances, particularly as the respondent has declared its intention to submit new claims in the proceedings before the opposition division. The right to two instances is deemed to take precedence here over the need for procedural economy, and also rules out the possibility of continuing the appeal proceedings in writing.

3.4 In view of the above, the board exercises its discretion under Article 111(1) EPC and remits the case to the opposition division for further prosecution.

3.5 As the case is to be remitted, there is no need for the board to consider the claims of any of the auxiliary requests.

4. *Costs*

Under Article 104(1) EPC, each party to the opposition procedure shall bear the costs it has incurred, unless the opposition division, for reasons of equity, orders a different apportionment of costs. The board observes that the filing of D27 at a late stage and its subsequent admission to the proceedings has until now not resulted in an increase of costs to the respondent, since the oral proceedings would have been held in any case. However, it is probable that as a result of the case being remitted, the respondent will incur an increase in costs in defending its patent in comparison with the costs which would have arisen if D27 had been filed in due time. The question of a different apportionment of costs is however a matter for the opposition division.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

D27 is admitted into the proceedings.

The case is remitted to the opposition division for further prosecution.

The Registrar:

The Chairman:

D. Magliano

A. S. Clelland