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Datasheet for the decision of 29 September 2009

Case Number: T 1547/07 - 3.5.03

Application Number: 00912108.8

Publication Number: 1166477

IPC: H04B 17/00

Language of the proceedings: EN

Title of invention:
Apparatus, and associated method, for selectively modifying characteristics of the receive signal received at a receiving station

Applicant:
Nokia Corporation and Ketonen, Veli-Pekka

Opponent:
-

Headword:
Modifying characteristics of a signal received at a receiving station/NOKIA

Relevant legal provisions:
EPC Art. 84, 123(2)

Relevant legal provisions (EPC 1973):
EPC Art. 108
EPC R. 68(2)
RPBA Art. 10a(2)

Keyword:
"Admissibility (yes)"
"Decision by reference sufficiently reasoned (yes)"
"Added subject-matter (yes)"
"Clarity (no)"

Decisions cited:
-

Catchword:
-

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Case Number: T 1547/07 - 3.5.03

D E C I S I O N
of the Technical Board of Appeal 3.5.03
of 29 September 2009

Appellant: Nokia Corporation
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 12 April 2007 refusing European application No. 00912108.8 pursuant to Article 97(1) EPC 1973.**

Composition of the Board:

Chairman: F. van der Voort
Members: T. Snell
M.-B. Tardo-Dino

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division refusing European patent application No. 00912108.8, with international publication number WO 00/52856 A.

The decision was taken at oral proceedings subsequent to a request by the applicant for a "decision on the state of the file". The refusal was based on the ground that the subject-matter of claim 1 of a main request and the claims of a first and a second auxiliary request did not meet the requirement of inventive step pursuant to Article 52(1) in combination with Article 56 EPC. In the "reasons for the decision" the examining division made reference to passages of a communication accompanying a summons to oral proceedings, in which it was referred to the disclosure of the following document:

D3: US 5 457 811 A

II. The appellant filed a notice of appeal against the above decision and paid the prescribed fee. In the notice of appeal the appellant requested that the impugned decision be set aside in its entirety. Subsequently, the appellant filed a statement of grounds in which comments were provided in respect of the document D3, together with claims of a new second auxiliary request.

In the statement of grounds, the appellant requested, as a main request, the grant of a patent on the basis of claims 1 to 15 filed with the letter of 20 July

2006, or, alternatively, as a first auxiliary request, on the basis of claims 1 to 13 filed with the letter of 9 March 2007, or, alternatively, on the basis of claims 1 to 11 of the second auxiliary request filed with the statement of grounds.

The appellant conditionally requested oral proceedings.

III. The board issued a summons to attend oral proceedings. In a communication accompanying the summons the board gave a reasoned preliminary opinion that the independent claims of all the requests did not comply with Articles 84, 123(2) and 52(1) EPC in combination with Article 56 EPC.

IV. In a fax letter received 15 June 2009, the appellant withdrew its request for oral proceedings. The requests for grant on file were maintained. No further arguments or explanations were submitted.

V. Oral proceedings were held on 29 September 2009 in the absence of the appellant.

In accordance with the written submissions, the appellant requested that the decision be set aside and that a patent be granted on the basis of claims of a main request filed with the letter of 20 July 2006, or, alternatively, on the basis of claims of a first auxiliary request filed with the letter of 9 March 2007, or, alternatively, on the basis of claims of a second auxiliary request filed with the statement of grounds of appeal.

After deliberation, the chairman announced the decision.

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

"Apparatus for selectively modifying a low-magnitude signal from a mast head (22), said apparatus comprising:

a mast head amplifier (34) for being coupled in-line between the mast head (22) and an input of a cable (28), the mast head amplifier (34) for amplifying the low-magnitude signal at an amplification level that is at least twice the cable loss such that a signal at an output of the cable (28) is a high-magnitude signal;

an attenuator (38) for being coupled in-line between the output of the cable and receiver circuitry (44), the attenuator (38) for selectively attenuating the high-magnitude signal prior to an input of the receiver circuitry (44); and

the selective attenuation being such that an intermediate-magnitude signal is applied to the input of the receiver circuitry (44), the selective attenuation selected to provide the receiver circuitry (44) with a predetermined amount of gain, the intermediate-magnitude signal being of a lower magnitude than the high-magnitude signal and of a substantially greater magnitude than the low-magnitude signal."

Claim 11 of the main request reads as follows:

"A method (192) of selectively modifying a low-magnitude signal that is provided by a mast head of a radio base station, the radio base station including receiver circuitry coupled to the mast head by way of a cable that exhibits a cable loss, thereby providing an input signal to the receiver circuitry, the method (192) characterized by the steps of:

positioning (194) a mast head amplifier in-line between the mast head and an input of the cable, the mast head amplifier exhibiting amplification that is at least twice as large as the cable loss exhibited by the cable;

applying (196) the low-magnitude signal to the mast head amplifier to be amplified thereat, the mast head amplifier thereby providing a high-magnitude signal to the input of the cable;

positioning (198) an attenuator in-line between the output of the cable and the receiver circuitry, the attenuator for selectively attenuating the high-magnitude signal to apply an intermediate-magnitude signal to the input of the receiver circuitry; and

controlling (204) the attenuator such that the intermediate-magnitude signal is of a lower magnitude than the high-magnitude signal and is of a substantially greater magnitude that *[sic]* the low-magnitude signal, the attenuator controlled such that the receiver circuitry is provided with a predetermined amount of gain."

VII. Claim 1 of the first auxiliary request is the same as claim 1 of the main request except that the second clause reads as follows:

"a mast head amplifier (34) for being coupled in-line between the mast head (22) and an input of a cable (28) having a cable loss, the mast head amplifier (34) for amplifying the low-magnitude signal at an amplification level that is at least twice the cable loss such that a signal at an output of the cable (28) is a high-magnitude signal and wherein the amplification level is constant;".

Independent claim 10 of the first auxiliary request corresponds to claim 11 of the main request with amendments corresponding to those made to claim 1.

VIII. Claim 1 of the second auxiliary request reads as follows:

"Apparatus for dynamically modifying a low-magnitude signal being carried on a cable (28), the cable having an input connected to receive the low-magnitude signal from a mast head (22) and exhibiting a cable loss and sensitivity to noise when the low-magnitude signal is conducted therethrough, said apparatus comprising:

a mast head amplifier (34) for being coupled in-line between the mast head (22) and an input of the cable (28), the mast head amplifier (34) for amplifying the low-magnitude signal at an amplification level that is constant and at least twice the cable loss such that a

signal at the output of the cable (28) is a high-magnitude signal;

an attenuator having controllable attenuation (38) for being coupled in-line between the output of the cable and receiver circuitry (44), the attenuator (38) for dynamically attenuating the high-magnitude signal prior to an input of the receiver circuitry (44); and

the attenuation being such that an intermediate-magnitude signal is applied to the input of the receiver circuitry (44), the attenuation dynamically adjusted to provide the receiver circuitry (44) with an adjustable amount of gain, the intermediate-magnitude signal being of a lower magnitude than the high-magnitude signal and of a substantially greater magnitude than the low-magnitude signal and the intermediate-magnitude signal exhibiting an improved noise figure and linearity and maintaining low distortion of the low magnitude signal from the mast head."

Independent claim 8 of the second auxiliary request reads as follows:

"A method (192) of dynamically modifying a low-magnitude signal that is provided by a mast head of a radio base station, the radio base station including receiver circuitry coupled to the mast head by way of a cable that exhibits a cable loss and sensitivity to noise, thereby providing an input signal to the receiver circuitry, the method (192) characterized by the steps of:

positioning (194) a mast head amplifier in-line between the mast head and an input of the cable, the mast head amplifier exhibiting amplification that is constant and at least twice as large as the cable loss exhibited by the cable;

applying (196) the low-magnitude signal to the mast head amplifier to be amplified thereat, the mast head amplifier thereby providing a high-magnitude signal to the input of the cable;

positioning (198) an attenuator having controllable attenuation in-line between the output of the cable and the receiver circuitry, the attenuator for dynamically attenuating the high-magnitude signal to apply an intermediate-magnitude signal to the input of the receiver circuitry; and

controlling (204) the attenuator such that the intermediate-magnitude signal is of a lower magnitude than the high-magnitude signal and is of a substantially greater magnitude that *[sic]* the low-magnitude signal, the attenuator controlled such that the receiver circuitry is provided with an adjustable amount of gain, the intermediate-magnitude signal exhibiting an improved noise figure and linearity and maintaining low distortion of the low magnitude signal from the mast head."

Reasons for the decision

1. *Admissibility of the appeal*

In accordance with Article 10a(2) RPBA (version OJ 11/2004, page 541, hereinafter referred to as RPBA 2004, this being the version applicable at the time of filing the appeal) the statement of grounds referred to in Article 108 EPC 1973 "shall set out clearly and concisely the reasons why it is requested that the decision under appeal be reversed, amended or upheld, and should specify expressly all the facts, arguments and evidence relied on". In the present case, the appellant, with respect to the main and first auxiliary requests, relies partly on a general reference to "the comments made before the examining division". Such a reference however does not set out clearly and concisely the appellant's case in a manner enabling the board to properly identify the facts, arguments and evidence relied on, particularly where, as in the present case, there are several submissions made during the examining procedure to consider. A statement of grounds which needed to rely on such a reference would therefore not be sufficient to render the appeal admissible.

However, in the present case there is no doubt that the second auxiliary request is supported by a clear and concise reasoning meeting the requirements set out in Article 10a(2) RPBA 2004. Since it is sufficient that at least one of the requests be adequately substantiated, the statement of grounds complies with Article 108 EPC 1973 and the board therefore concludes that the appeal is admissible.

2. *Form of the impugned decision as a decision "by reference"*

The impugned decision of the examining division relies on references to passages of a communication accompanying a summons to oral proceedings rather than explicitly containing the reasoning itself. However, as the references are specific and, in this case, enable the applicant and the board to determine clearly and unambiguously the reasons why the application has been refused, the decision meets the requirements for a reasoned decision in accordance with Rule 68(2) EPC 1973. In the present case, the board also holds this form of decision to be an appropriate response to the applicant's request for a "decision on the state of the file". The appellant moreover raised no objection to the form of the decision.

3. *Absence of the appellant at the oral proceedings*

3.1 The board considered it to be expedient to hold oral proceedings for reasons of procedural economy (Article 116(1) EPC). Having verified that the appellant was duly summoned the board decided to continue the oral proceedings in the absence of the appellant (Rule 115(2) EPC and Article 15(3) RPBA, OJ 11/2007, 536-547).

3.2 The board's decision taken at the oral proceedings is based on objections pursuant to Articles 84 and 123(2) EPC communicated to the appellant with the summons to oral proceedings. The appellant therefore had an

opportunity to comment on these objections both in writing and orally.

3.3 In the light of the above, the board's decision taken at the oral proceedings in the absence of the appellant complies with Article 113(1) EPC.

4. *Article 123(2) EPC*

4.1 The board can find no explicit disclosure in the application as filed for the expressions appearing in claim 1 of each request "low-magnitude signal", "high-magnitude signal" and "intermediate-magnitude signal being of ... a substantially greater magnitude than the low-magnitude signal".

It is therefore necessary to determine whether there is an implicit disclosure of the features incorporating these expressions.

4.2 According to the present invention as originally filed (cf. claim 1), a mast-head amplifier is coupled in-line between a mast-head and a cable and is arranged to amplify a received signal at an amplification level greater than the cable loss. An attenuator is coupled in-line between the cable and receiving circuitry and arranged to attenuate the "receive signal" (implicity, the signal output from the cable). The mast-head amplifier gain may be "relatively high", eg 30 dB (cf. page 13, lines 15-16), such that it is "substantially greater than the loss associated with the cable" (page 13, lines 23-25). The signal applied to the receiver circuitry is of a "substantially greater magnitude than when the receive signal is initially

applied to the mast-head amplifier" (page 12, lines 25-29). According to the specific embodiment of Fig. 3, the input signal has a level of -20 dBm, and the signal output from the cable has a level of approximately 5 dBm.

4.3 The board is however unable to find here a clear and unambiguous disclosure, either explicit or implicit, of a "low-magnitude signal" and a "high-magnitude signal", because these terms, insofar as they imply signals having respective absolute magnitudes lower or higher than a particular level, do not have a clearly defined meaning in the art which would enable the signals to be classified as such (see also point 5 below with respect to the clarity of the claims). For example, a level of -20 dBm may be considered as low or high depending on circumstances.

4.4 Although plausibly the terms "low" and "high" are only intended here to express the signal magnitudes in relative terms rather than to imply absolute levels, the board notes that the distinction is not merely academic but has technical significance. For example, a requirement that the input signal magnitude be lower than a particular value appears to be a technically plausible measure, as exemplified by document D3 which discloses a system for modifying signals output by a mast-head in which the range in which the absolute signal level of the input signal falls is used to determine attenuation values (cf. D3, column 16, lines 30-63).

The board therefore concludes that claim 1 of each request contains subject-matter which extends beyond

the content of the application documents as originally filed, contrary to Article 123(2) EPC.

5. *Article 84 EPC*

5.1 Claim 1 of each request is not clear because the following terms are relative expressions without a well-understood meaning in the art:

"low-magnitude signal", "high-magnitude signal", "intermediate-magnitude signal being .... of a substantially greater magnitude than the low-magnitude signal".

Claim 1 of the second auxiliary request additionally includes the following relative term without a well-understood meaning in the art:

"low distortion".

The scope of protection conferred by claim 1 of each request is therefore unclear.

5.2 Further, it is not clear whether claim 1 of each request is intended to claim an apparatus including the cable and the receiving circuitry, or whether protection is only sought for the combination of the mast head amplifier and the attenuator. Assuming the latter, claim 1 is unclear as the mast head amplifier is defined partly in terms of a feature external to the apparatus, namely the cable loss.

5.3 It is not clear to what extent, if at all, the scope of protection is limited by the following expressions

appearing in claim 1 of the second auxiliary request: "the cable ... exhibiting ... sensitivity to noise"; and "the intermediate-magnitude signal exhibiting an improved noise figure and linearity ...".

In this respect, the first expression concerns a limitation of an apparently subjective nature, and the second expression requires comparison with an undefined further embodiment in order to determine whether an improvement has occurred.

5.4 The requirement of claim 1 of each request that the mast-head amplifier amplifies the low-magnitude signal by *at least twice the cable loss* is unclear, as it is not clear whether the cable loss and amplification factors are linear division and multiplication factors respectively, or whether the cable loss and the amplifier gain should be expressed in decibels (cf. Fig. 5).

5.5 For the above reasons, claim 1 of each request does not comply with Article 84 EPC.

6. The above comments apply *mutatis mutandis* to independent claim 11 of the main request, independent claim 10 of the first auxiliary request, and independent claim 8 of the second auxiliary request.

7. *The appellant's case*

The appellant has provided no arguments in response to the board's objections pursuant to Articles 84 and 123(2) EPC raised for the first time in the communication accompanying the summons to oral

proceedings. The statement of grounds, including the text referred to from the letter dated 20 July 2006, contains specific comments dealing only with the issue of inventive step. None of these arguments have any apparent relevance to the objections relied on by the board.

8. *Inventive step*

As the independent claims of each request do not comply with Articles 84 and 123(2) EPC, the board has no need to consider the issue of inventive step on which the impugned decision was based (cf. Articles 52(1) and 56 EPC).

9. *Conclusion*

Since there is no allowable request, it follows that the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Magliano F. van der Voort