

# **Examiners' Report Paper B 2015 (Electricity/Mechanics)**

## **I. General Considerations**

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### **I. General considerations**

It is noted that any references in this text to the Guidelines for Examination at the European Patent Office refer to the version valid at the date of the examination.

#### **1.1 Introduction**

This year's paper relates to a ski and a ski binding. When a skier falls in deep snow and the ski binding releases the ski boot, the skier may have difficulty in locating the ski if it gets buried in the snow. A solution to the problem of retrieving a ski lost in the snow is providing a ski and a ski binding with a transmitter for emitting radio signals. The radio signal may then be located by a radio receiver, which may be accommodated in the ski boot. The gist of the invention is that the radio transmitter is activated automatically when the ski boot is separated from the ski / ski binding.

#### **1.2 The communication cites three prior art documents D1, D2 and D3.**

**D1** discloses an avalanche beacon, which can be integrated into a watch, a ski, or a ski binding. Each avalanche beacon can operate in a transmitting mode and a receiving mode. Each beacon has a manually operable switch having a switch actuator. In a first position of the switch actuator, the beacon continuously transmits a radio signal but cannot receive a radio signal. In a second position of the switch actuator, the beacon can receive a radio signal but cannot transmit a radio signal. When the avalanche beacon is in the receiving mode, the control unit of the beacon uses the radio signal of another avalanche beacon to calculate the distance and direction to the other avalanche beacon.

**D2** describes a ski tracking system, which allows the tracking and location of a skier in a ski resort. A plurality of stationary radio transmitter-receivers send a stimulating radio signal and receive the response radio signal with a specific frequency from the skier. The known positions of the receivers in combination with the received frequency are processed on a central computer.

**D3** describes a system that indicates when a ski boot is engaged with a ski binding. The system comprises, in the ski binding, a lamp, a switch actuator, and a control circuit. When a ski boot is correctly engaged with the ski binding, the control circuit illuminates the lamp. The system thus visually indicates when the boot has correctly engaged in the binding.

### **1.3 The invention as presented in the application as filed**

- 1.1. The invention as initially claimed concerns a ski for use with a ski boot, the ski comprising a radio transmitter (claim 1) and a ski binding (claim 5). The application further specifies that a switch actuator is automatically moved from a first position in which the radio transmitter is inactive to a second position in which the radio transmitter is activated upon separation of the ski boot from the ski / ski binding. In the embodiments, two alternative solutions are discussed: a two-piece ski binding wherein the switch is integrated into the ski; and a one-piece ski binding wherein the switch is integrated into the ski binding.

### **1.4 The challenges of the paper**

The main challenges of the paper were to:

- a) Amend the client's draft claim set **according to the wishes of the client** to fulfil the requirements of the EPC.
- b) Write a reasoned letter of reply
  - explaining the basis for the amendments of the claims,
  - arguing for two independent claims in the same category (Rule 43(2) and Art. 82 EPC).
- c) Provide arguments that the subject matter of the amended independent claims is new and involves an inventive step in the light of the prior art documents D1-D3.

### **1.5 The marking scheme**

Answer papers were marked on a scale of 0 to 100 marks:

Appropriate amendments to the draft set of claims: Max. **30** marks, min. **0** mark.

Again this year, not the claim set as a whole, but the amendments carried out by the candidate received marks. However, from the marks awarded for the amendments, marks are deducted for unnecessary limitations or non-compliance with the EPC. The overall number of marks **per claim** could not be negative.

For the argumentation max. **70** marks and min. **0** mark were available.

Unless otherwise stated, the individual marks referred to in the various sections of this examiner's report apply to the example set of claims.

Although the marking scheme is divided into separate sections, namely the marks awarded for amendments to the claims and marks awarded for argumentation, the answer paper as a whole was considered and the scheme reflects this.

## II. Amended Claims

### 2. Example set of claims

In the example set of claims below, the starting point taken is the client's draft set of claims. Deletions with respect to the draft set of claims are shown in strikethrough (~~example~~) and insertions are shown in underline.

1. Ski (1) for use with a ski boot (3), the ski (1) comprising a radio transmitter (5) and a switch (4) connected to the radio transmitter (5), the switch (4) comprising an actuator (4a) being moveable between a first position in which the radio transmitter (5) is inactive, and a second position in which the radio transmitter (5) is active, characterized in that the switch (4) comprises an elastic element (4b) arranged for automatically moving the actuator (4a) ~~moves automatically~~ from the first to the second position upon separation of the ski boot (3) from the ski (1).
2. Ski (1) according to claim 1, comprising a further switch (10) arranged to deactivate the radio transmitter (5) ~~when the two-piece ski binding is manually opened~~.
3. One-piece ski binding (8) for use with a ski boot (3), the one-piece ski binding (8) comprising a radio transmitter (5) and a switch (4) connected to the radio transmitter (5), the switch comprising an actuator (4a) being movable between a first position in which the radio transmitter (5) is inactive, and a second position in which the radio transmitter (5) is active, characterized in that the switch comprises an elastic element (4b) arranged for automatically moving the actuator (4a) ~~moves automatically~~ from the first to the second position upon separation of the ski boot (3) from the one-piece ski binding (8).
- ~~4. Ski binding (8) according to claim 3 comprising a further switch (10) arranged to deactivate the radio transmitter when the one-piece ski binding (8) is manually opened.~~
4. ~~5.~~ Ski (1) according to claim 1 or 2, or one-piece ski binding (8) according to claim 3 ~~2 or 4~~, wherein the actuator (4a) is a metal plate, a U-shaped bar or a push button.

### 3. Expected amendments to the draft set of claims

#### 3.1 General remarks

The draft set of claims contains features which result in a claim, or claims, which are considered not to comply with the EPC. Marks were awarded for making appropriate amendments to the draft set of claims for bringing it into accordance with the EPC.

**15 marks** for the independent claims and **15 marks** for the dependent claims were available. All in all, 10 amendments are expected, each being rewarded with 3 marks.

**No marks were awarded for merely filing a claim provided by the client.**

It is noted that full marks were awarded for amendments that differ from those of the example set of claims, provided their scope is comparable. This was considered on a case-by-case basis. Marking of the dependent claims was adapted correspondingly.

#### Examples

- a) Instead of two independent claims directed to the respective embodiments (viz. a ski and a one-piece ski binding), a single independent claim directed to both embodiments. Such a claim, however, in most cases leads to objections as lack of support in the application as originally filed, lack of clarity, lack of conciseness or inconsistency of back-references of dependent claims relating to only one of the two embodiments.
- b) Some candidates preferred to amend the expression “for use with a ski boot” in claim 1 by specifying that a two-piece ski binding is used: e.g. “Ski for a two-piece ski binding (8) for attaching ~~for use with a ski boot~~”. This amendment does not unnecessarily limit the claim: it is clear from the description that the first embodiment can be realized only by means of a two-piece ski binding. The amendment further has basis in the originally filed application and is clear. However, the amendment “Ski having a two-piece ski binding (8) for attaching ~~for use with a ski boot~~” limits the claim unnecessarily, cf. 3.2 and 4.1.1
- c) Purely formal changes in the claim wording: e.g. some candidates used the expressions “first switch” and “second switch” in the independent and dependent claims, respectively. These expressions do not change the scope of the claims and are clear. Also, it is considered sufficient to add in claim 3 “one-piece” to the ski binding once only, either at the beginning of the claim or in the characterizing portion.

- d) Adding expressions like “[ski] for a system for retrieving a ski lost in the snow” to claim 1 or 3 was not considered to introduce unnecessary limitations or unclarities into the claim.

**No double penalization:** If a single amendment / expression / feature / issue leads to a plurality of objections, i.e. unnecessary limitation, clarity, Art. 123(2) EPC etc., the maximum number of marks was deducted once only.

Example:

If in claim 1 the unnecessarily limiting features “metal plate or U-shaped bar” were claimed in an unclear manner while at the same time violating Art. 123(2) EPC, then 3 marks were deducted once only. However, if a claim dependent thereon also introduced a metal plate, 2 additional marks were deducted for lack of clarity of this dependent claim.

Marks for amendments were awarded independently from whether the corresponding feature appears in the expected claim or in another claim.

Example:

Full marks were given for the amendment “bar” -> “U-shaped bar” expected in dependent claim 4, even if “U-shaped bar” was claimed in an independent claim. However, in this case 3 marks were deducted for the independent claim due to the unnecessary limitation.

### 3.2 Claim 1

Inserting the feature “comprising an elastic element for automatically moving the actuator of the switch“ from par. [008] of the description (e.g. by using the wording of par. [010])

This amendment is necessary because the feature that the switch actuator moves automatically from one position to another position is always disclosed only in combination with a helical spring, a leaf spring, or any other elastic element (see pars. [006] and [008]). **(3 marks)**

The method step “moves” has to be reformulated as an apparatus feature, e.g. by the expression “elastic element for automatically moving the actuator “ or “elastic element arranged such that the switch automatically moves the actuator” or “elastic element to automatically move the actuator”. This wording is suggested in the description, par. [010], **in the context of the second embodiment. (3 marks)**

The original claims 1-4 covering the first embodiment relate to a ski without mention of any ski binding. Therefore, adding “two-piece ski binding” was not considered necessary when amending claim 1 with the feature from the description.

Furthermore, in the light of the description (and also in the light of D3) it is clear that, although a ski comprising a radio transmitter and an actuator can only be used in combination with a two-piece ski binding, the front and rear part of the two-piece ski binding are separate elements from the ski. This also becomes clear from D3.

### **3.3 Claim 2**

Deleting “when the two-piece ski binding is manually opened.” **(3 marks)**

This expression has no basis in the description. This expression could alternatively be replaced by another allowable expression, e.g. “the further switch (10) being a manually operable switch”. Other expressions like “further switch for deactivating the radio transmitter, irrespective of whether or not the ski boot is engaged with the [two-piece] ski binding” received full marks, as long as they were clear and had a basis in the application as originally filed.

### **3.4 Claim 3**

Adding the expression “one-piece” to “ski binding”. **(3 marks)**

The amendment is necessary because incorporating the switch actuator into a ski binding instead of into a ski, is only disclosed for a one-piece ski binding.

For the same reasons as for claim 1, the elastic element has to be added to the claim (3 marks), and the method feature “moves” has to be reformulated, e.g. by the expression “for moving”. (3 marks)

### **3.5 Claim 4**

Claim 4 must be deleted, because no further switch is disclosed for the second embodiment. (3 Marks)

### **3.6 Claim 5 (new claim 4)**

The unallowable generalisation “bar”, which constitutes an extension of the subject-matter without any basis, has to be limited to “U-shaped bar”. **(3 Marks)**

In addition, the claim dependencies had to be clarified: “ski according to claim 1 or 2, or [one-piece] ski binding according to claim 3”. **(3 Marks)**

Alternative solutions are e.g. “ski (1) or ski binding (8) according to claim 1, 2, or claim 3, respectively” or “ski according to claim 1 or 2, or binding according to claim 3”.

Furthermore, both the number of new claim 4 and the claim number to which new claim 4 refers back had to be adjusted. **(3 Marks)**

Again, any amendments leading to a consistent claim set of comparable scope could also achieve full marks for the amendments. For example, full marks were awarded for replacing claim 4 of the draft set of claims by two dependent claims provided that “U-shaped” was added and that both the claim numbering and the references back to the independent claims (ski / ski binding) were clear.

#### 4. Claims differing from the example claims

Note: The overall number of marks **per claim** could not be negative.

##### 4.1 Deductions for unnecessary limitations

Where an independent claim (claim 1 or claim 3) of an answer paper differs from that of the example solution and results in a claim which is considered to be inappropriate for protecting the client’s invention, e.g. because it does not give the applicant the broadest possible protection for his invention, marks were deducted. Marks were also deducted for an independent claim not corresponding to the applicant’s wish (see below).

**4.1.1** For the independent claims of an answer paper having one or more additional features that are considered to limit the claim unnecessarily, **up to 3 marks** were deducted from the total marks awarded for the claim.

##### Examples:

- a) The independent claim comprises features of the dependent claims such as the further switch, details of the actuator, or details of the elastic element.
- b) If one or more alternatives for the actuator (metal plate, U-shaped bar, or push button) were taken into an independent claim, then an overall amount of 3 marks was deducted for this claim.
- c) As it is clear and implicit, see also the state of the art according to D3 par. **[001]**, a one-piece ski binding always comprises a front binding section, a rear binding section and an intermediate section. These features can therefore be omitted in the passage taken from the description for formulating new claim 3. If however these features were added to claim 3 of the example set of claims, **no marks** were deducted.
- d) An independent claim to the ski comprising a two-piece ski binding unnecessarily limits the scope of protection (**3 marks** were deducted).
- e) If a “ski / a ski binding with a ski boot” was claimed, then **3 marks** were deducted.



- 4.1.2** For a dependent claim of an answer paper having one or more additional features that are considered to limit the claim unnecessarily, then **up to 2 marks** per claim were deducted from the total marks awarded for that claim.

On the other hand, if features which provided a good fall-back position for the client were deleted from the dependent claims, then **up to 2 marks** per claim were deducted from the total marks awarded for the claims. Again, the overall number of marks **per claim** cannot be negative.

Examples:

- a) **No marks** were deducted for a claim 2 claiming that the further switch is a manually operable switch. However, for other features related to details of the switch which were too specific, **2 marks** were deducted.
- b) If one of the metal plate, the U-shaped bar, or the push button (new claim 4) was not claimed in combination with each of the other claims, then **1 mark** was deducted per feature.

**4.2 Deductions for non-compliance with the EPC**

Claim sets which have been amended so that they differ from the client's draft set of claims, but which result in claims which do not fulfil the requirements of the EPC, for example because they result in an unclear claim, did not receive full marks.

- 4.2.1** For an independent claim of an answer paper not fulfilling the requirements of the EPC, for example due to lack of novelty, inventive step, added subject matter, or lack of clarity, **up to 3 marks per issue** (Art. 54, Art. 56, Art. 84, Art. 123 EPC) were deducted from the total marks awarded for that claim.

Examples:

- a) Deletion of technical features in the independent claims of the draft set of claims leading to lack of novelty/ inventive step; addition of technical features from the description leading to unallowable intermediate generalisation.

- b) One independent claim for covering both embodiments by claiming a transmitter, a system, or a device - instead of one claim to a ski and one claim to a one-piece ski binding - has no basis in the application as originally filed, because the first embodiment is always disclosed for a transmitter in a ski and the second embodiment is always disclosed for a transmitter in a “one-piece ski binding”.

An independent claim related to the first embodiment, but not specifying that the transmitter and the switch are embedded in a ski, was penalized with a deduction of **3 marks**, because such a claim violates Art. 123(2) EPC. An independent claim related to the second embodiment, but not specifying that the ski binding is a one-piece ski binding, was penalized with a deduction of **3 marks** or by not awarding the marks foreseen for this challenge, because such a claim violates Art. 123(2) EPC (see below).

- c) Claiming that the actuator is arranged for automatically moving from the first to a second position is only allowable in combination with an elastic element comprised in the switch. Omitting the elastic element infringes Art. 123(2) EPC. **3 Marks** were deducted/not awarded.
- d) Features related to a method step such as “the actuator moves automatically” were penalized (Art. 84 EPC) with a deduction of **2 marks**.
- e) A claim defining “a switch ~~automatically~~ movable between a first position where the ski boot is engaged and in which the radio transmitter is inactive and a second position, where the ski boot is engaged and the radio transmitter is inactive” was considered as not novel over D1 and was penalized with a deduction of **3 marks**: the ski binding mentioned in D1 comprises a switch actuator which is suitable to be moved according to the active/ inactive state of a radio transmitter.

**4.2.2** For a dependent claim of an answer paper not fulfilling the requirements of the EPC, then **up to 2 marks per issue** (Art. 54, Art. 56, Art. 84, Art. 123 EPC) were deducted from the total marks awarded for the claim.

Examples:

- a) Unclear back-references to the independent claim, wrong dependencies, addition of technical features from the description leading to unallowable intermediate generalisations.

- b) Expected claim 4 refers back to two independent claims. If this claim does not clearly refer to “a ski or a ski binding”, **2 marks** were deducted.
- c) Features related to a method step such as “the switch is operated manually” in expected claim 2 were penalized (Art. 84 EPC) with a deduction of **1 mark**.
- d) If a dependent claim claims a “metal plate” and refers back to an independent claim also claiming a “metal plate”, then **2 marks** were deducted for lack of clarity.

#### 4.3 Formal matters (up to -2 marks)

For an answer paper having independent claims according to the example solution it is considered appropriate to use the **two-part form** with respect to one of prior art documents D1-D3. **1 mark** was deducted only if the two-part form is not correct with respect to **any one** of these documents. **1 mark** was deducted if the independent claims were missing **reference signs**.

Example:

D1 is considered to represent the closest prior art. D1 discloses all the technical features of the example independent claims except that the switch actuator comprises elastic means for automatically activating the radio-transmitter upon separation of the ski boot from the ski/ ski binding.

#### 4.4 Solutions not based on the client’s draft set of claims

**4.4.1** The client provides a draft claim set that he proposes for filing, subject to any necessary amendments for fulfilling the requirements of the EPC, whilst giving him the broadest possible protection. Answer papers which have claim sets not based on the draft set of claims are not considered to be in the interest of the client and such claims may therefore receive fewer marks or no marks.

**4.4.2** For additional dependent claims, no marks are available because it was the explicit request of the client not to add new, i.e. further dependent claims. However, new dependent claims are not considered as new if they claim the originally claimed subject matter or subject matter claimed in the client’s draft claim set in a different way.

Example:

The dependent claim relating to details of the switch actuator (new claim 4 in the example claim set) is replaced by two dependent claims, one dependent upon claim 1 or 2 and one dependent upon claim 3. Such dependent claims overcome the unclear back-reference of claim 5 in the draft claim set. No marks have been deducted for such a construction.

**4.4.3** For amendments to the description no marks were available.

### III. Letter of reply to the EPO (up to 70 marks available)

#### 5 Basis of amendments

##### 5.1 General remark

It is noted that the examples for sections of a letter of reply given in the following are, unless otherwise stated, appropriate for the example claim set. For an answer paper having a different claim set, the letter of reply may differ and the answer paper is considered accordingly.

**No marks** were available for

a letter to the applicant

a letter to the marker

All the necessary information should be contained in the letter of reply to the examining division.

##### 5.2 Source of amendment showing Art. 123(2) EPC compliance (22 marks)

The amendments made in the claims are to be identified and a basis for them in the application as filed is to be indicated. Brief explanations may be necessary. **13 marks** were available for arguing the basis of the two independent claims, **9 marks** were available for the dependent claims.

##### 5.2.1 Claim 1 (4 marks)

**4 marks** were available for indicating and explaining a basis for claim 1. For the example claim 1, these marks were awarded according to the following scheme: **2 marks** for appropriately stating original claims 1 and 2 as basis for new claim 1. **2 marks** were available for indicating par. [008]. Depending on the wording of amended claim 1 also par. [010] in combination with par. [012] (providing the link between the two embodiments), could have been cited as further basis for claim 1. If for independent claim 1 the link between pars. [008], [010] and [012] was discussed and if it was made clear that according to the interrelation of these paragraphs the term “spring” in par. [010] can be generalized to “elastic element”, then a further **4 marks** were awarded for claim 3 (see 5.2.3), where this reasoning is necessary. It is noted that indicating par. [008] as basis is sufficient. Par. [010] only suggests the wording convenient to overcome the clarity objections.

Example:

- a) New claim 1 is based on par. **[008]** of the description and claims 1 and 2 as originally filed.
- b) The elastic element from the description applies to all kinds of actuators, not only to the metal plate. Par. **[008]** discloses: “*Furthermore, instead of the helical spring 4b, a leaf spring **or any other elastic element** could be used to automatically move the actuator 4a of the switch from a position in which the radio-transmitter is inactive, into a position in which it activates the radio-transmitter 5 upon separation of the ski boot 3 from the ski 1.*” (underlined passages used for amending claim 1). The second part of the claim wording is taken from par. **[010]** “*The switch 4 comprises a spring 4b for automatically moving the actuator 4a from the first position to the second position upon separation of a ski boot 3 from the one-piece ski binding 8.*” (Underlined passages taken into claim 1).
- c) Par. **[008]** and **[0010]** can be combined, and the expression “spring” can be generalised to “elastic element”: according to par. **[012]** the switch is the same for the two embodiments: “*In this second embodiment, the actuator 4a, the elastic element 4b, and the radio transmitter 5 can be the same as in the first embodiment.*”

### 5.2.2 Claim 2 (3 marks)

**1 mark** was available for indicating and explaining a basis for claim 2, i.e. for stating that the claim is based on original claim 4.

**2 marks** were available for indicating that the clarifying amendment is based on par. **[009]**.

Example:

Claim 2 is based on original claim 4. The claim has been renumbered and the dependency adapted. The clarifying amendment “further” is based on par. **[009]**, second sentence: “*The ski therefore comprises a further switch 10 for deactivating the radio-transmitter 5.*” **(3 marks)**

Further arguments as to why the claim is now clear are marked as discussed under “clarity” (see section 6).

### 5.2.3 Claim 3 (9 marks)

**9 marks** were available for indicating and explaining a basis for claim 3. For the example claim 3, these marks were awarded according to the following scheme:

**3 marks** were awarded for appropriately stating par. **[010]** and original claim 5 as basis for new claim 3.

**4 marks** were awarded for arguing that according to par. [008], [010] and [012] the term “spring” can be generalized to “elastic element”.

**2 marks** were awarded for arguing that the front, rear and intermediate section can be omitted.

Example:

- a) New claim 3 is based on original claim 5 and par. [010] of the description: “The one-piece ski binding 8 comprises a front binding section 8a, a rear binding section 8b, a radio-transmitter 5 and a switch 4. The switch 4 is connected to the radio-transmitter 5. The switch 4 comprises an actuator 4a, which moves between a first position, in which the radio-transmitter 5 is inactive, and a second position in which the radio-transmitter 5 is active. The switch 4 comprises a spring 4b for automatically moving the actuator 4a from the first position to the second position upon separation of a ski boot 3 from the one-piece ski binding 8.” (The underlined passages have been taken for formulating claim 3). **(3 marks)**
- b) Basis for replacing the specific feature “spring” by the more general feature “elastic element” is found in in par. [012]: “In this second embodiment, the actuator 4a, the elastic element 4b, and the radio transmitter 5 can be the same as in the first embodiment.” (cf. section 5.2.1 b) and c) above). **(4 marks)**.
- c) As it is clear and implicit, see also the state of the art according to D3 par. [001], a one-piece ski binding always comprises a front binding section, a rear binding section and an intermediate section. These features can therefore be omitted in the feature taken from the description for formulating new claim 3. In addition, from par. [010] it is clear that the invention can be implemented into any part of the ski binding: “However, the radio transmitter and the switch could be anywhere in the ski binding”. Consequently, the second sentence of par. [010] can be isolated from the rest of the description. **(2 marks)**

**Full 9 marks** were available for any complete and convincing reasoning in the case where the independent claim differs from the expected solution.

If for independent claim 1 the link between pars. [008], [010] and [012] was discussed and if it was made clear that according to the interrelation of these paragraphs the term “spring” in par. [010] can be generalized to “elastic element”, then the full **4 marks** were available for claim 3, in correspondence with point b) of the example above.

#### 5.2.4 Claim 4 (6 marks)

**6 marks** were available for indicating and explaining a basis for claim 4. For the example claim 4, these marks were awarded according to the following scheme:

**2 marks** were available for stating that the claim has the same wording as original claim 3 and only the claim number and the back-references are changed.

**4 marks** were available for indicating and explaining a basis for the additional features “U-shaped bar and press-button” and that the technical features of this dependent claim are disclosed for both embodiments.

##### Example:

Claim 4 is based on the wording of original claim 3, only the claim number and the back-references having been changed. The additional features “U-shaped bar and press-button” are taken from the description, par. **[008]**: “*Alternatively the actuator 4a may have a different form, such as a U-shaped bar or a press button*”. The switch is the same for the two-piece ski binding and the one-piece ski binding according to par. **[012]**: “*The switch 4 and the radio-transmitter 5 are the same for both embodiments of the invention*”. Therefore, the technical features are disclosed in the claimed scope for the two embodiments corresponding to independent claim 1 and claim 3. Consequently, claim 4 can be dependent upon both independent claims 1 and 3 without adding additional subject-matter.

#### 6. Art. 84 EPC (11 marks)

##### 6.1 Two independent apparatus claims (8 marks)

The example set of claims comprises two independent claims in the same category. Therefore, arguments addressing the requirement of conciseness under Article 84 EPC and the formal requirements of Rule 43(2) EPC are expected. **8 marks** are available for a reasoning supporting two independent claims in the same category. Rule 43(2) EPC requires without prejudice to Article 82 EPC that a European patent application may contain more than one independent claim in the same category (product, process, apparatus or use) only if the subject-matter of the application involves one of the following:

- (a) a plurality of interrelated products,
- (b) different uses of a product or apparatus,
- (c) alternative solutions to a particular problem, where it is inappropriate to cover these alternatives by a single claim.



### Example:

For the present application two alternative solutions are proposed: On one hand integrating the radio transmitter into the ski for use with a two-piece ski binding, on the other hand integrating the transmitter into a one-piece ski binding. Both embodiments are based on the same inventive concept. A switch actuator activates automatically a radio transmitter upon separation of the ski boot from the ski binding. As is well-known in the art two different types of ski bindings exist: two-piece ski bindings and one-piece ski bindings, see e.g. D3 par. **[001]**. Each type of ski binding has its own advantages related to weight, robustness and flexibility.

The two alternative solutions correspond to the implementation of the inventive idea into the two alternative types of ski bindings. Since the two-piece ski binding does not comprise a bottom plate such as a one-piece ski binding, the switch actuator is not comprised in the ski binding itself, but is integrated into the ski. Therefore, two alternative solutions are realized for one and the same inventive concept resulting in a very similar claim wording for independent claim 1 and independent claim 3. Both independent claims have identical characterizing portions. Consequently, the requirements of both Art. 82 EPC (unity) and Rule 43(2) EPC (third exception listed under Rule 43(2) (c) EPC: alternative solutions) are fulfilled. **(8 marks)**

A convincing argumentation not comprising all the aforementioned effects could also achieve full **8 marks**.

If candidates were able to formulate one single allowable independent claim, similar arguments were expected, because a single independent claim has to be related to both alternatives, i.e. a ski and a one-piece ski binding.

Claim 3 is based on original claim 5 which already claimed a ski binding. Therefore, the subject matter of new claim 3 was searched. In addition, search examiners are expected to search the details of embodiments as described in the description and thus the one-piece ski binding was subject of search. Consequently, new claim 3 relates to searched subject matter and is allowable under Rule 137 (5) EPC. It was not expected that candidates present these arguments. However, up to **3 marks** were available for addressing this issue provided that the total number of marks in this section does not exceed **8 marks**.

## **6.2 Clarity objection in the communication (3 marks)**

The examiner objected to original claim 4 because of a lack of clarity regarding the term “switch” (see communication, point 3). Answer papers should have included a response to this point. **3 marks** were awarded for addressing this issue. This may have been presented in combination with an argument for justifying the basis for the amendment of the corresponding claim (see 5.2.2).

Example:

The examiner objected to original claim 4 because of a lack of clarity (*“it is not clear from the wording of the claim whether or not [... the switch mentioned in claim 4] is the same switch as that defined in claim 2”* (see communication, point 3). The addition of “further” distinguishes the additional switch from the switch of claim 1. The amendment is based on par. [009] (see above). Therefore, the clarity objection in the communication under point 3 is now overcome.

**7. Novelty of the independent claim (up to 6 marks)**

It is sufficient to mention a single technical feature which renders claim 1 novel with respect to each of D1, D2 and D3.

Example:

- (1) Claim 1 is novel with respect to D1 because D1 does not disclose that the switch comprises an elastic element arranged for automatically moving the actuator from the first to the second position upon separation of the ski boot from the ski / one-piece ski binding. **(2 marks)**
- (2) D2 does not disclose that the switch comprises an elastic element arranged for automatically moving the actuator from the first to the second position upon separation of the ski boot from the ski / one-piece ski binding. **(2 marks)**
- (3) D3 does not disclose a radio-transmitter. D3 does not disclose that the switch comprises an elastic element arranged for automatically moving the actuator from the first to the second position upon separation of the ski boot from the ski /one-piece ski binding. **(2 marks)**

**8. Inventive step argumentation for the independent claims (up to 31 marks)**

It is appropriate to provide arguments which are structured to follow the problem solution approach (see Guidelines G-VII 5).

**8.1 Identifying the closest prior art (7 marks)**

In selecting the closest prior art, the first consideration is that it should be directed to a similar purpose or effect as the invention, or at least belong to the same or a closely related technical field as the claimed invention.

### 8.1.1 Stating the closest prior art (1 mark)

For stating an item of prior art as being the closest prior art in a consistent manner with the two-part form of the independent claim, **1 mark** is available.

For the example independent claims, D1 is considered to represent the closest prior art, since it addresses the same purpose as that of the invention; for a clear statement to this effect, **1 mark** is available.

For a statement identifying D2 or D3 as closest prior art, no marks are awarded.

### 8.1.2 Arguments justifying the choice of closest prior art (6 marks)

Discussing D1 (**2 marks**), discussing D2 (**2 marks**) and discussing D3 (**2 marks**). Full **6 marks** were available even if D1 was not chosen as closest prior art, but sound reasoning was provided for each of the three documents, why the document is arguably considered as closest prior art or not.

Example for the example independent claim:

The closest prior art is D1, because D1 also mentions a radio transmitter and a switch, onto which the inventive concept is based. In addition, D1 has the most features in common and addresses the same purpose of retrieving a ski in deep snow. Since this is the underlying purpose of the invention, D1 is the closest of the available prior art (**2 marks**).

The system in D2 is not adapted for retrieving a ski in deep snow (see description of the application par. [013]). However, this is a key feature of the invention (**2 marks**).

D3 is completely silent about retrieving a ski in the snow and does not mention a radio transmitter (**2 marks**).

Sound argumentation not comprising all the aforementioned arguments could also achieve all **6 Marks**.

### 8.2. Formulation of the objective technical problem (7 marks)

The next stage is to establish in an objective way the technical problem to be solved. This requires the steps of:

(1) identifying, in terms of features, the difference between the claimed invention and the closest prior art, i.e. the distinguishing features of the claimed invention (**1 mark**);

(2) stating the technical effects or the advantages of the difference (**3 marks**); and

(3) formulating a problem which is derived from these technical effects (**3 marks**).

Example:

The subject matter of claim 1 differs from D1 by the features of the characterising portion, namely that the switch comprises an elastic element for automatically moving the actuator from the first to the second position upon separation of the ski boot from the ski. (**1 mark**).

The **technical effect** of the specific type and arrangement of the switch is that the transmitter is inactive when the boot is attached to the ski of claim 1, or to the ski binding according to claim 3.

With respect to the system disclosed in D1, the transmitter therefore does not consume electric energy when the ski is used. This saves battery power. The system described in D1 on the other hand is designed for group excursions, where the transmitter must be active when the ski is used so as to be in the retrieving mode. This can only be done by a manual switch, whereas in the present invention the transmitter is activated automatically (**3 marks**).

Citing the effects/ advantages provided by the client in his letter attracts **2 marks**:  
*With respect to D1, the invention has the advantage that the transmitter is inactive when a ski boot is attached to the ski. Only in case of separation of ski and ski boot does the radio-transmitter become active. This saves battery power.*

The **objective technical problem** may therefore be formulated as:

Providing a system for retrieving a ski lost in snow by simultaneously prolonging the battery life of the system, thereby overcoming the disadvantages of the system disclosed in D1. (**3 marks**)

A convincing argumentation not comprising all the aforementioned effects can also achieved full **7 marks**. Marks may be redistributed accordingly between the formulation of the effect/advantages of the invention and the formulation of the problem as long as they are consistent overall.

### 8.3 Arguments in support of inventive step (17 marks)

Arguments should support the features of the independent claim. They should be convincing and well structured. In order to obtain full marks in this section, arguments which fully answer the question as to why the skilled person, knowing the teaching of the prior art as a whole, would not arrive at the claimed subject matter had to be presented. Such arguments can be structured to consider the following aspects:

- Would the skilled person arrive at the subject matter of the claim by considering the teaching of the closest prior art on its own?
- Would the skilled person consider combining the teaching of the closest prior art with that of other prior art documents in order to solve the objective technical problem?
- If the skilled person were to combine the teaching of the closest prior art with other items of prior art, would they arrive at the subject matter of the claim?
- Example:

#### 8.3.1 Considering D1 on its own (6 marks)

The skilled person would not consider changing D1 whose purpose is to provide an avalanche beacon for locating a skier buried in snow. Thus having a beacon where the radio transmitter is actually inactive when the ski boot is attached to the ski/ski binding would make the beacon of D1 useless for its intended purpose. Even if the skilled person realised that incorporating the beacon in the ski/ski binding does provide D1 with the capability to locate a ski buried in the snow, D1 provides no motivation whatsoever to provide a switch whose actuator is operable with an elastic element to sense if a ski boot is attached or not. The handheld unit shown in Fig. 1 of D1 shows only a switch for switching between an emitting and a receiving mode. The apparatus may in addition implicitly comprise an on/off switch. D1 provides no further details about implementing the system into a ski binding. D1 suggests only making the transmitter-receiver unit very small in order to implement it into a watch or into a ski. The skilled person therefore might consider providing a similar, manual switch on the ski to solve the problem posed, but this would not lead to the invention as claimed in claim 1 or 3: The on/off switch would not be arranged such that it switches the radio transmitter on when the ski boot is separated from the ski binding.

In addition, the skilled person would be motivated by D1 to fix the transmitter-receiver on a front and/or rear portion of the ski, rather than at the ski-binding, for the following reasons. Firstly, the transmitter-receiver would be easily accessible for switching manually or by using a ski stick. Secondly, if the ski is buried deep in snow, the end portions of the ski are more likely to protrude out of the snow thus leading to a better signal transmission.

### **8.3.2 Considering D1 + D2 (4 marks)**

In D2 the skilled person would not find any useful teaching for arriving at the invention: D2 discloses a switch used only for completely disabling the radio transmitter. D2 furthermore discloses a passive transmitter which does not require a switch in order to be active. This leads further away from the active transmitter used in the invention and disclosed in D1: If the skilled person combines the teaching of D1 and D2 he would either implement the passive radio transmitter into the system of D1 or use an active radio transmitter for the ski tracking of D2. In either case the skilled person would have no incentive to install an actuator which is moved automatically when the ski boot is detached from the ski, because this does not provide any advantage for a ski tracking system.

### **8.3.3 Considering D1 + D3 (6 marks)**

In the unlikely event that the skilled person turned to D3 to solve the problem, he would see that a switch operable by a ski boot is known. However, D3 actually discourages the skilled person from using the switch since it clogs with snow or ice. Therefore, the switch disclosed in D3 is not suitable for the application suggested in the present invention. In addition, D3 teaches that a switch having an elastic element can activate a circuit only when the boot is engaged with the binding, whereas in the invention the circuit is only activated when the ski boot is separated from the ski/ ski binding.

D3 mentions only optical and acoustic signals. D3 is silent about radio signals. Therefore, if the skilled person combines the teaching of D1 and D3 he could only arrive at a system emitting acoustic signals if the ski is lost in the snow.

Consequently, even by combining the teachings of D1 and D3 the skilled person would not arrive at the combination of technical features of present claim 1, since D3 does not mention or suggest activating a radio transmitter upon separation of the ski boot from the ski. Therefore, none of the three documents D1-D3 discloses or suggests the inventive concept of activating a radio-transmitter upon separation of the ski boot.

#### 8.3.4 Claim 3

The above reasoning applies for both alternative solutions of independent claim 1 and 3. It is concluded that the invention defined in claim 1 and claim 3 involves an inventive step. **(1 mark)**.

All the other claims are dependent on claim 1 or claim 3 and therefore also relate to inventive subject matter.

It was not expected that candidates provide all the above-listed arguments. With convincing reasoning comprising many of the above-listed arguments, full marks could be achieved. On the other hand, the above-listed arguments are not exhaustive and other convincing arguments may attract marks.

## IV. Annex

### Example set of claims

1. Ski (1) for use with a ski boot (3), the ski (1) comprising a radio-transmitter (5) and a switch (4) connected to the radio-transmitter (5), the switch (4) comprising an actuator (4a) being moveable between a first position in which the radio-transmitter (5) is inactive, and a second position in which the radio-transmitter (5) is active, characterized in that the switch (4) comprises an elastic element (4b) arranged for automatically moving the actuator (4a) ~~moves automatically~~ from the first to the second position upon separation of the ski boot (3) from the ski (1).
2. Ski (1) according to claim 1 comprising a further switch (10) arranged to deactivate the radio-transmitter (5) ~~when the two-piece ski binding is manually opened~~.
3. One-piece ski binding (8) for use with a ski boot (3), the one-piece ski binding (8) comprising a radio-transmitter (5) and a switch (4) connected to the radio-transmitter (5), the switch comprising an actuator (4a) being movable between a first position in which the radio-transmitter (5) is inactive, and a second position in which the radio-transmitter (5) is active, characterized in that the switch comprises an elastic element (4b) arranged for automatically moving the actuator (4a) ~~moves automatically~~ from the first to the second position upon separation of the ski boot (3) from the one-piece ski binding (8).
- ~~4. Ski binding (8) according to claim 3 comprising a further switch (10) arranged to deactivate the radio-transmitter when the one-piece ski binding (8) is manually opened.~~
4. ~~5.~~ The ski (1) according to claim 1 or 2, or one-piece ski binding (8) according to claim ~~3 2 or 4~~, wherein the switch actuator (4a) is a metal plate, a U-shaped bar or a push-button.