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**D E C I S I O N**  
**of 5 October 2000**

**Case Number:** T 0641/98 - 3.5.1

**Application Number:** 88302180.0

**Publication Number:** 0282347

**IPC:** H04N 7/16

**Language of the proceedings:** EN

**Title of invention:**

Low-power multi-function cellular television system

**Patentee:**

SUITE 12 GROUP

**Opponent:**

AB Sweden On Line  
British Telecommunications plc

**Headword:**

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**Relevant legal provisions:**

EPC Art. 108  
EPC R. 64(b)

**Keyword:**

"Grounds of appeal (sufficient)"  
"Inventive step (no)"

**Decisions cited:**

T 0563/91, T 0840/93

**Catchword:**

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Case Number: T 0641/98 - 3.5.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.1  
of 5 October 2000

**Appellant:** SUITE 12 GROUP  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 20 May 1998  
revoking European patent No. 0 282 347 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** P. K. J. van den Berg

**Members:** R. S. Wibergh  
S. C. Perryman

## Summary of Facts and Submissions

I. This is an appeal by the proprietor of European Patent No. 0 282 347 against the decision of the Opposition Division to revoke the patent.

II. The two respondents had opposed the patent on the grounds that the cellular television system according to the invention was not new or did not involve an inventive step having regard to - among others - the documents

X1: Hewitt et al, "A cost-effective 19 GHz digital multipoint radio system for local distribution applications", British Telecom Technology Journal, Vol. 2, No. 4, 1984, p.94-101

X3: Evans, "MMDS technology - an international opportunity, p.321-325, IEE Conference Publication 268, 1986

X4: Shindo et al. "Radio subscriber loop system for high-speed digital communications", IEEE International Communications Conference 1981, Conference record Vol. 3, p.66.1.1 - 66.1.5

Objections under Article 100(b) EPC (insufficiency of disclosure) and Article 100(c) EPC (subject-matter extending beyond the content of the application as filed) had also been raised.

III. The Opposition Division held that the television system as defined in claim 1 was known in its entirety from X4 and thus lacked novelty. This view was based on the understanding that the claim did not exclude so-called

"frequency sectorisation" of cells, a technique used in X4.

IV. The patentee (appellant) lodged an appeal against this decision. Together with the statement setting out the grounds of appeal claims according to a new main request and nine auxiliary requests were filed. Claim 1 of the main request contained a number of amendments compared with the claim on which the decision was based. In particular, it explicitly excluded frequency sectorised cells. In the appellant's opinion, however, this feature had already been implied by the wording of the claim before the Opposition Division. There were also a number of clarifications.

V. On 5 September 2000 the appellant filed new claims according to a main request and three auxiliary requests.

Claim 1 of the **main request** read as follows (omitting the reference signs):

A point-to-multipoint low-power cellular television system having at least two cells located substantially adjacent to each other, each cell having an area and having at least one low-power transmitter station located therein with a substantially omnidirectional transmitting antenna for transmitting a television signal at substantially the same frequency in the millimetre waveband, and a plurality of subscriber receiver stations, each subscriber station having a directional receiving antenna directed to receive said television signal from only one of said omnidirectional transmitting antennas, said at least two cells partly overlapping each other, whereby, in use, said

transmitting antenna in each cell transmits, at least in part, the same television signal in the said millimetre waveband, and said transmitting antenna and each of the directional receiving antennae within a cell are arranged to isolate a television signal transmitted from the transmitting antenna within a given cell from the television signal transmitted from an adjacent cell by using at least one diversity technique uniformly throughout all cells to distinguish the television signals transmitted by the antenna in one cell from the television signals transmitted by the antenna in the other cell, wherein said at least one diversity technique includes polarization diversity, excluding a system wherein the at least one diversity technique includes frequency sectorisation within each cell.

Claim 1 according to the **first auxiliary request** contained a number of clarifications. It was in particular stated that the transmitting antennas transmit the same television signal "at said substantially the same frequency".

Claim 1 according to the **second auxiliary request** omitted the final "exclusion feature" of the main request. It was instead specified that the television signal is transmitted at the same frequency in the millimetre waveband "throughout said respective cell".

Claim 1 according to the **third auxiliary request** was similar to the second auxiliary request but contained some further clarifications.

VI. Oral proceedings before the Board were held on 5 October 2000 in the presence of the appellant and

Respondent 2. Respondent 1 had informed the Board in advance that he would not attend the hearing.

- VII. The appellant argued that the invention was both new and inventive. Compared with the nearest prior art, X4, the invention saved bandwidth by dispensing with frequency sectorisation. The auxiliary requests had been reformulated for clarity reasons but had roughly the same scope as the main request.
- VIII. Respondent 2 argued that the appeal was insufficiently substantiated and therefore inadmissible. The claims had been amended in a way which contradicted Article 123(2) EPC. Furthermore, the invention did not involve an inventive step.
- IX. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of one of the four requests submitted on 5 September 2000.

Respondent 2 requested that the appeal be dismissed.

Respondent 1 has filed no requests and made no submissions with respect to the substantive issues.

## **Reasons for the Decision**

### 1. *The grounds of appeal*

- 1.1 Respondent 2 maintains that the present appeal is inadmissible because there is no statement impugning the decision, as required by Rule 64(b) EPC. None of the requests before the Opposition Division had been

maintained, but instead the appellant had filed ten new requests with the statement setting out the grounds of appeal. In such a case, Respondent 2 argues, the principles enounced in decision T 840/93 (OJ 1996,335) ought to be followed, namely that claims filed at the appeal stage and not considered by the Opposition Division should not be admitted into the proceedings.

1.2 According to the appellant, claim 1 of the main request filed on appeal does not add anything to the claim considered by the Opposition Division as this claim was always understood by the appellant. The amendments merely served to clarify the appellant's more limited view of the claim.

1.3 Article 108 EPC stipulates that an appellant must file a written statement setting out the grounds of appeal. According to the jurisprudence of the Boards of appeal the grounds may take the form of new claims which have been amended with a view to overcoming the objections raised by the Opposition Division (eg the unpublished decision T 563/91, point 1.2). Thus, if the main request filed with the appeal was more limited than the request before the Opposition Division, as submitted by Respondent 2, this does not in itself imply that the grounds of appeal are deficient.

The most important change in claim 1 is the explicit exclusion of frequency sectorisation. In the Board's view, introducing this feature was only a natural reaction to the Opposition Division's decision not to accept the appellant's interpretation of the claim.

1.4 Decision T 840/93, cited by the respondent, concerns the refusal of a patent application which was one of



several pending divisional applications. The board in that case held that the filing of new claims was not justified since, in view of the existence of other divisional applications, the appeal was not the appellant's final opportunity to save something. Therefore the board restricted itself to a judicial review of the requests refused by the Examining Division. The facts in the case T 840/93 are thus so particular that the decision is not deemed to be relevant for the present case.

1.5 The appeal is therefore held to be sufficiently substantiated.

2. *Added subject-matter*

The patent-in-suit was opposed in particular under Article 100(c) EPC, and objections with respect to Article 123(2) EPC against amendments to the claims have been maintained throughout the appeal proceedings. However, since the invention as defined in the main claim of all requests is regarded as not inventive (see points 7 to 10 below), there is no need to go further into the issue of added subject-matter. For the purpose of this decision, therefore, the present claims are regarded as properly based on the patent application as filed.

3. *Clarity*

Claim 1 of the main request (and also of the first auxiliary request) contains a feature which is expressed in a "negative" manner, namely as the exclusion of frequency sectorisation. Since "positive" formulations are in general preferred, it might be

discussed whether the wording employed is proper in the circumstances. However, the feature is certainly clear in the sense that there can be no doubt as to its meaning. It is therefore perfectly possible to examine the invention as now claimed as to novelty and inventive step.

*The appellant's main request*

4. *The invention*

The invention according to claim 1 is a cellular television system. A number of low-power transmitters in the millimetre band (the preferred frequency range is 27.5 to 29.5 GHz) equipped with omnidirectional antennas broadcast a television signal to subscribers. A transmitter station and the subscribers associated with it define a cell. Since all stations transmit in principle the same signal, isolation must be provided between neighbouring cells to reduce interference. This is achieved by polarization diversity. As is described in the patent, in particular with reference to Figure 3, the stations may for example be arranged in a pattern such that any one station transmits a signal having another polarisation (horizontal or vertical) than the signals from the four nearest stations. Furthermore, claim 1 explicitly excludes frequency sectorisation. Frequency sectorisation is a technique which involves the division of a cell into sectors, the transmitted frequency in each sector being different. Thus, in accordance with the invention, all subscribers in a cell receive the same television signal at the same frequency.

5. *The prior art*

- 5.1 The parties agree that X4 describes the closest prior art. This document concerns a television system which transmits at 26 GHz and consists of base stations provided with omnidirectional antennas and receiver stations. The transmitter stations are arranged in a hexagonal cell pattern (Figure 2). This known system differs from the invention mainly in that each cell is split up into four sectors and the available frequency band is divided between the sectors. Polarisation is mentioned as a possible addition to the frequency sectorisation. It is not disclosed to use polarisation diversity alone, ie without sectorisation.
- 5.2 X1 describes a cellular radio system working at 19 GHz. Cells are "preferably subdivided into sectors" (page 94). The detailed description of the sectorisation (page 96) contains a reference to X4.
- 5.3 X3 is an article about MMDS, or Multichannel Multipoint Distribution Service, operating at 2.5 GHz. It is stated (page 323) that at 2.5 GHz "there is complete freedom from 'sporadic E' interference and much reduced occurrence of ducting, thereby mitigating the long range interference which VHF, and even UHF, transmission can experience. MMDS transmitters can be vertically or horizontally polarized, with close to 20 dB of polarization rejection being obtained, thereby permitting closer geographical separation of co-channel and adjacent channel allocations than is practicable with VHF and UHF transmissions". There is no reference to cells or sectorisation.

6. *Novelty*

It appears to be common ground that the invention as

now claimed is not known from any single document and in particular not from X4. Thus, the invention is new.

7. *Inventive step*

7.1 It is assumed that the skilled man starts out from X4. In the system described in X4 sectorisation is used. The appellant's main argument is that it required an inventive step to recognise that the sectorisation could be disregarded. The Board will first address this question.

7.2 Although X4 exclusively describes sectorised cells, the related paper X1 mentions that the sectorisation is "preferably" performed. The respondent has argued that the word "preferably" suggests the possibility of broadcasting a signal of the same frequency over the whole cell, and the Board agrees that this possibility indeed has to be regarded as disclosed. However, since in both documents sectorisation is clearly regarded as a valuable technique, the question is whether the skilled person would at all have considered a system which does not employ it.

7.3 In a sectorised cell each quadrant requires a quarter of the total bandwidth available. As is well known, bandwidth has its price. Normally a government body decides on the use of different frequency bands. Operators of TV stations cannot freely select the frequencies but have to manage with the bandwidth they are able to secure. Under such circumstances it is clear that a main issue in any radio system design will always be how to use this bandwidth efficiently.

7.4 In the Board's view it is therefore unthinkable that a

skilled person would fail to recognise that a sectorised system, such as the one shown in X4, is sub-optimal in terms of bandwidth.

Furthermore, it has not been claimed that a technical prejudice existed against non-sectorised cells. Nor does the available prior art suggest that there was one. The word "preferably" in X1, in particular, implies that a configuration without sectors was not regarded as unworkable but merely as less good.

It follows that the skilled person who studied X4 would be aware that sectorisation has certain serious disadvantages. Realising this he would as a matter of course consider ways to avoid these disadvantages. Thus the Board finds that, contrary to the appellant's view, no inventive step was involved in recognising that the sectorisation described in X4 could be disregarded.

- 7.5 It remains to identify the technical problem with respect to X4 and examine whether the invention provides a non-obvious solution to this problem.
- 7.6 It is stated in X4 (page 66.1.2) that "frequency assignments are reversed at each cell interface". This is taken to mean that one purpose of the sectorisation is to reduce interference between cells. Therefore, the **technical problem** is to avoid sectorisation by finding some other kind of interference suppression technique which could be employed instead.
- 7.7 One hint towards a **solution** to this problem is contained in X4 itself, which mentions that "in order to reduce the interference between areas, polarization diversity... can be adopted". It is true that

polarisation diversity is only mentioned in combination with sectorisation. However, it is made clear that this technique can be employed to reduce interference (something which was no doubt well known to the skilled person in any case).

7.8 A further investigation into polarisation diversity techniques would reveal X3. The passage quoted above - "MMDS transmitters can be vertically or horizontally polarized... thereby permitting closer geographical separation of co-channel and adjacent channel allocations" - shows that polarisation diversity had already been used to isolate transmitters from each other. X3 is directly applicable to a cellular system where co-channel interference is expected to be strong.

7.9 At this point the skilled person would be contemplating a system of overlapping cells with transmitters operating at the same frequency but using different polarisations. Considering the hexagonal cell geometry in X4 it might now be thought that such a system would be useless since, each cell having six neighbours, at least three different polarisations would be needed to ensure that no two neighbouring stations transmit signals with the same polarisation. However, the hexagonal structure is clearly not the only possible geometry. If the spacing between transmitters is increased the interference will obviously be less severe. It would therefore be possible to use polarisation diversity if only the cells are less densely packed. The result is a less good system in terms of coverage and a better system in terms of bandwidth. An obvious advantage has been gained at the expense of an equally obvious disadvantage.

7.10 It follows that the system of claim 1 lacks an inventive step. The appellant's main request must be refused.

*The appellant's auxiliary requests*

8. As to claim 1 of the first auxiliary request the appellant has stated that the scope of this claim is intended to be the same as that of the main request. Indeed the differences seem to be purely a matter of formulation which do not alter the conclusions above. Thus, this request must also be refused for lack of inventive step.
9. Claim 1 of the second auxiliary request has been drafted in such a way so as to avoid the "exclusion feature" contained in the main request. This relates merely to an issue under Article 84 EPC (see point 3 above) but does not affect the reasoning leading to the conclusion that the invention claimed lacks inventive step.
10. Claim 1 of the third auxiliary request has substantially the same scope as the claim of the preceding request and for the same reasons is also not allowable.
11. Since none of the appellant's requests can be granted, the appeal must be dismissed.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

M. Kiehl

P. K. J. van den Berg