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**Datasheet for the decision
of 18 April 2012**

Case Number: T 1747/09 - 3.5.03

Application Number: 01944374.6

Publication Number: 1230740

IPC: H04B 1/00

Language of the proceedings: EN

Title of invention:

Satellite communication system having frequency reuse in non-blocking manner

Applicant:

The DIRECTV Group, Inc.

Headword:

Satellite communication system/DIRECTV

Relevant legal provisions:

EPC Art. 56, 84, 113(1)

Keyword:

"Clarity (main and 1st to 3rd auxiliary requests) - no"

"Inventive step (4th to 6th auxiliary requests) - no"

"Substantial procedural violation - no"

Decisions cited:

-

Catchword:

-



Case Number: T 1747/09 - 3.5.03

D E C I S I O N
of the Technical Board of Appeal 3.5.03
of 18 April 2012

Appellant:
(Applicant)

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Decision under appeal:

**Decision of the Examining Division of the
European Patent Office posted 20 March 2009
refusing European patent application
No. 01944374.6 pursuant to Article 97(2) EPC.**

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 decision of the examining division refusing European patent application No. 01944374.6 with international publication number WO-A-01/97388.

The refusal was based on the ground that the subject-matter of claims 1 and 11 did not meet the requirement of inventive step pursuant to Article 52(1) in combination with Article 56 EPC with respect to the disclosure of the following document:

D1: US-A-96/31016

In an *obiter dictum*, the examining division referred to a further document, to be referred to as document

D2: DAVIS et al: "Increasing the Capacity of Existing Terrestrial Outdoor Radio Mobile Systems by means of UAV-HALE Platforms", Proceedings of the 51st IEEE Vehicular Technology Conference, Tokyo, Japan May 15-18 2000

- II. The appellant filed an appeal against the above decision and requested that the impugned decision be set aside and a patent granted on the basis of the pending claims (ie those refused by the examining division). It was further requested that the appeal fee be reimbursed, implicitly due to an alleged infringement of the right to be heard, Article 113(1) EPC, as no opportunity had been given to comment on document D2. Auxiliary requests were made for oral

proceedings and remittal of the case to the examining division.

- III. In a communication accompanying a summons to oral proceedings the board gave a preliminary opinion in which, *inter alia*, issues pursuant to Articles 123(2) and 84 EPC (added subject-matter and clarity respectively) were raised. The board advised that if at the oral proceedings it were to conclude that the claims complied with Articles 123(2) and 84 EPC, it would be necessary to discuss inventive step in the light of the examining division's reasons. With regard to the request for reimbursement of the appeal fee, the board gave a preliminary opinion that there had been no infringement of Article 113(1) EPC.
- IV. In response to the board's communication, the appellant filed claims of new main and three auxiliary requests to replace the claims on file, together with supporting arguments. The request for reimbursement of the appeal fee was withdrawn.
- V. Oral proceedings were held on 18 April 2012. During the course of the oral proceedings, the appellant filed claims of fourth to sixth auxiliary requests. The appellant requested that the decision under appeal be set aside and a patent granted on the basis of claims of the main request or alternatively auxiliary requests 1 to 3 submitted with the letter of 16 March 2012, or of auxiliary requests 4, 5 or 6 as filed during the oral proceedings.

After due deliberation, the board's decision was announced at the end of the oral proceedings.

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

"A communication system for use with a geostationary satellite (18) having a first position (P2) above a service area (26), said satellite (18) broadcasting a first beam at a first frequency to the service area (26), the system comprising:
at least one device having a second position (P1) above the service area (26), said device generating a second beam having the first frequency to the service area (26), said device defining a blocking area (50), and said device not generating said second beam within the blocking area (50), and
user terminals (28) outside the blocking area (50) configured to receive the first beam and the second beam,
characterized in that the at least one device comprises a first stratospheric platform (12; 12A), the stratospheric platform (12; 12A) having a substantially fixed separation angle with respect to the satellite said blocking area (50) having a separation angle between the first position of the satellite (18) and the second position of said stratospheric platform (12; 12A) less than a predetermined angle."

Claim 1 of the **first auxiliary request** is the same as claim 1 of the main request with the exception that the wording "with respect to the satellite" following the term "fixed separation angle" has been deleted.

Claim 1 of the **second auxiliary request** is the same as claim 1 of the first auxiliary request with the exception that the wording "substantially fixed" has

been added to now read "at least one device having a substantially fixed second position (P1)", and the wording "the stratospheric platform (12; 12A) having a substantially fixed separation angle" has been deleted.

Claim 1 of the **third auxiliary request** is the same as claim 1 of the second auxiliary request with the exception that the last clause of the preamble now reads "user terminals (28) outside the blocking area (50) configured to receive the first beam and the second beam, each user terminal comprising an antenna which has a beam width wide enough to maintain communication link with the at least one device throughout a flight path thereof". Further, the wording "the stratospheric platform (12; 12A) has been inserted (apparently erroneously) before the term "said blocking area" in the characterising part of the claim.

VII. Claim 1 of the appellant's **fourth auxiliary request**, reads as follows:

"A communication system for use with a geostationary satellite (18) having a first position (P2) above a service area (26), said satellite (18) broadcasting a first beam at a first frequency to the service area (26), the system comprising:

at least one device having a second position (P1) above the service area (26), said device generating a second beam having the first frequency to the service area (26), said second position (P1) of said at least one device defining a blocking area (50), and said device not generating said second beam within the blocking area (50) so that no interference will be formed between the beams of the at least one device and the

satellite, wherein said blocking area is defined by said separation angle, which is an angle between the first position of the satellite and the second position of the at least one device with one of a plurality of user terminals at the vertex, and wherein said separation angle is less than a predetermined angle, and
user terminals (28) outside the blocking area (50) configured to receive the first beam and the second beam,
characterized in that the at least one device comprises a first stratospheric platform (12; 12A), the stratospheric platform (12; 12A) having a substantially fixed separation angle with respect to the satellite."

Claim 1 of the **fifth auxiliary request** is the same as claim 1 of the fourth auxiliary request with the exception that the wording "wherein the user terminals (28) comprise directional antennas" has been added to the end of the claim.

Claim 1 of the **sixth auxiliary request** is the same as claim 1 of the fifth auxiliary request with the exception that the wording "wherein said predetermined angle is 4 degrees" has been added to the end of the claim.

Reasons for the decision

1. *Article 113(1) EPC in respect of the first instance proceedings*

The appellant argued in the statement of grounds that document D2 was introduced into the proceedings for the first time with the written grounds of the refusal. Thus, the applicant had had no opportunity to comment on this document.

However, the board notes that document D2 is mentioned in the decision to refuse the application only in an "obiter dictum" (in a section entitled "Further remarks"), and was expressly not used in the reasons for the refusal. Thus, document D2 is not part of the decisive argument for rejecting the application due to a lack of inventive step, namely that based on D1 combined with common general knowledge. It was therefore immaterial to the final decision (ie refusal of the application) whether or not the appellant could have commented on D2. It appears to be undisputed that the appellant was fully able to comment on the decisive line of argumentation based on D1 (Article 113(1) EPC). Therefore, there was no procedural violation, in particular no substantial procedural violation which would justify reimbursement of the appeal fee under Rule 103 EPC (the request for which has in any case been subsequently withdrawn).

2. *Admissibility of the main and first to sixth auxiliary requests filed after oral proceedings had been arranged (Article 13(3) RPBA)*

The board considered that the filing of all these requests related to *bona fide* attempts to overcome various objections raised by the board, either in the communication accompanying the summons to oral proceedings, or at the oral proceedings. They also raised no complex issues that the board could not deal with at the oral proceedings. Hence the board exercised its discretion to admit these requests pursuant to Article 13(3) RPBA.

3. *Main and first to third auxiliary requests - claim 1 - clarity*

In the board's view, claim 1 of each these requests is not clear within the meaning of Article 84 EPC with respect, *inter alia*, to the definition of the "blocking area". The relevant parts of claim 1 of the main request read "said device [NB: the stratospheric platform] defining a blocking area (50), and said device not generating said second beam within the blocking area" and "said blocking area (50) having a separation angle between the first position of the satellite (18) and the second position of said stratospheric platform (12; 12A) less than a predetermined angle". A blocking area defined by a device "not generating said second beam" can be interpreted in the sense of an area in respect of which the device has taken active measures to stop transmitting a beam because interference would otherwise occur. However, a blocking area defined by a

device "not generating" can also be interpreted in a passive sense as embracing any area having a separation angle less than the predetermined angle, eg outside a metropolitan area to which the platform is primarily intended to transmit, where there is a fortuitous near alignment of satellite and platform, although the device has taken no active measures to avoid transmitting a beam to such an area. The scope of protection conferred by the term "blocking area" is therefore not clear within the meaning of Article 84 EPC.

Similar considerations arise in respect of claim 1 of each of the first to third auxiliary requests.

Consequently, claim 1 of each of the main and first to third auxiliary requests is not allowable.

4. *Fourth auxiliary request - claim 1 - inventive step*

4.1 The present invention concerns a communication system incorporating a stratospheric platform. As stated in the description, a stratospheric platform may comprise one of many types of proposed stratosphere-based devices such as unmanned planes, balloons and dirigibles. Stratospheric platforms have been proposed as an alternative to satellites as they are cheaper and easier to deploy. The appellant accepted that the use of stratospheric platforms belonged to the common knowledge of the skilled person. The starting point for the present invention is considered to be a communications system comprising a stationary stratospheric platform.

4.2 The basic idea underlying the present invention as claimed is to deploy a stationary stratospheric platform which uses the same frequency band as a geostationary satellite. In order to avoid interference between the two systems, the difference in elevation angle ("separation angle") seen from the position of a user terminal on the earth's surface between the satellite and the platform (ie with the user at the vertex) is made to be not less than a predetermined angle (according to the description, either 4 or 7 degrees) in areas served by beams of both systems, and in arranging for the platform to not project a beam into areas in which the difference in elevation angle is less than the predetermined angle ("blocking area"). In other words, the separation angle as seen from the ground is such that the usual parabolic antennas can distinguish between the two systems, and, if the ground location is such that they cannot, then the platform does not illuminate the area concerned.

4.3 The skilled person who wished to design a platform-based communications system inevitably would face the related problems of limited available bandwidth and interference with pre-existing satellite systems. The problem to be solved is regarded by the board as to deploy a stratospheric platform in a bandwidth efficient manner without causing interference to a geostationary satellite.

4.4 In the view of the board, there are no fundamental conceptual differences between platforms and satellites. The skilled person would therefore find it obvious to seek a solution to the bandwidth and interference problem in the field of satellites when deploying a

platform. Document D1 is concerned with this problem, and indeed, the appellant admitted that document D1 was the most relevant document in the present case.

4.5 Document D1 deals primarily with the interference between a geostationary satellite and a system of low earth orbit (LEO) satellites. In order to use bandwidth efficiently, both systems use the same frequency band. Interference arises because the position of the LEO satellite is not fixed relative to the earth's surface so that at a particular time from certain ground positions the separation angle falls below a minimum required to avoid interference. Claim 1 of document D1 discloses the following solution, which the board notes is not limited to a particular choice of satellite systems (eg geostationary, geosynchronous, LEO):

"A method of limiting interference between transmissions from a first satellite and from one or more second satellites located within one or more orbital locations, comprising:
determining whether a forbidden area of the surface of the earth, within which said first satellite and each of said orbital locations are separated by less than a predetermined minimum discrimination angle, is located within the field for view of the first satellite, and
allowing transmission by the first satellite only to areas outside said forbidden area."

4.6 The "forbidden area" defined here is, in the board's view, the same as the "blocking area" defined in claim 1 of the fourth auxiliary request. By implementing such a blocking area, the skilled person wishing to solve

the problem of interference between a stationary stratospheric platform and a geostationary satellite would arrive at a communications system in accordance with claim 1 of the fourth auxiliary request without the exercise of inventive skill.

4.7 The appellant disagreed, arguing that the skilled person would not apply the solution of document D1 to a stratospheric platform that is stationary because D1 is only concerned with interference caused by moving LEO satellites. The inventive solution furthermore had the advantage over that of D1 in that it avoided the requirement of D1 of a smart antenna system with a steerable beam.

4.8 However, the board notes that the present application, although, at least implicitly, embracing a platform which is stationary, is also directed to moving platforms (cf. the description, page 5, lines 23-25: "... the elevation angle and azimuth angle for stratospheric platform 12 will vary depending on its location that may vary depending on the stratospheric platform"). Moreover, the satellite may be geostationary (cf. original claim 17), but may also be "geosynchronous" (cf. original claim 1) which implies some movement, ie not stationary. Therefore the present application is apparently not limited to a stationary, ie fixed, communications system but also embraces systems with a non-fixed separation angle between the platform and the satellite, without specifically being directed to either.

As such, the present invention is, in the board's view, not essentially different to that of document D1,

because D1 also discloses a general concept, as illustrated by the following passage at page 28, lines 4-8:

"Furthermore, the above equations for the forbidden beam are not specific to a combination of a GSO [geostationary] and a non-GSO satellite, but may be applied to any two satellites, so that a forbidden beam may be calculated in any situation involving interference between two satellites and transmission from or reception by one of the satellites may be inhibited in the forbidden beam."

It follows in the board's view that the skilled person would, without the exercise of inventive skill, recognise that the teaching of D1 could be also applied to the combination of two geostationary satellites, or, by analogy, to a geostationary satellite and a stationary platform.

4.9 The board also notes that the description of the present application includes no details of the antenna or beam forming circuitry present in the platform. It is therefore mere conjecture as to whether the claimed embodiment might include simplified circuitry with respect to what is disclosed in document D1. An argument based on mere conjecture is not considered as convincing with respect to inventive step.

4.10 The appellant also argued that starting out from document D1, the skilled person has no incentive to replace a system of LEO satellites by one or more stratospheric platforms. However, the board has not taken D1 as the starting point; the starting point is

instead a communications system comprising a stratospheric platform. Hence there is no step required of replacing the LEO satellites of D1 by one or more stratospheric platforms.

4.11 The board concludes that the subject-matter of claim 1 of the fourth auxiliary request does not involve an inventive step (Articles 52(1) and 56 EPC).

5. *Fifth auxiliary request - inventive step*

Claim 1 of the fifth auxiliary request differs from claim 1 of the fourth auxiliary request in that the user terminals are required to comprise directional antennas. This feature is however conventional in satellite receiving systems which normally use parabolic antennas, to minimise interference and maximise the strength of the received signal. The use of directional antennas for receiving a signal from a stratospheric platform is considered by analogy to be obvious and to not contribute to inventive step. Nor did the appellant argue otherwise.

The subject-matter of claim 1 of the fifth auxiliary request therefore does not involve an inventive step either (Articles 52(1) and 56 EPC).

6. *Sixth auxiliary request - inventive step*

Claim 1 of the sixth auxiliary request differs from claim 1 of the fifth auxiliary request in that the predetermined [separation] angle is required to be 4 degrees. Document D1 gives examples of 3, 5 and 7 degrees (cf. page 25 line 29 to page 26, line 1).

4 degrees lies within this range and therefore does not contribute to inventive step either. Nor did the appellant argue otherwise.

The subject-matter of claim 1 of the sixth auxiliary request therefore does not involve an inventive step either (Articles 52(1) and 56 EPC).

7. *Remittal*

In the statement of grounds, the appellant conditionally requested remittal of the case to the examining division. This request is not reasoned, but was made plausibly in connection with the request for reimbursement of the appeal fee, which was subsequently withdrawn. As there was no substantial procedural violation committed by the examining division (see above), and as the board can see no other reason to justify remittal, this request is rejected.

8. *Conclusion*

Claim 1 of each of the appellant's requests is not allowable. In consequence, there is no allowable request and the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

G. Rauh

A. S. Clelland