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Datasheet for the decision of 28 January 2011

Case Number: T 1130/08 - 3.5.03

Application Number: 01995292.8

Publication Number: 1350344

IPC: H04B 7/185

Language of the proceedings: EN

Title of invention:
Integrated or autonomous system and method of satellite-terrestrial frequency reuse using signal attenuation and/or blockage, dynamic assignment of frequencies and/or hysteresis

Proprietor:
ATC Technologies, LLC

Opponent:
Rose, David

Headword:
Cellular communications system/ATC TECHNOLOGIES

Relevant legal provisions:
EPC Art. 54, 56, 123(2)

Keyword:
"Inventive step - main request and first and third auxiliary requests (no)"
"Novelty - fourth and sixth auxiliary request (no)"
"Added subject-matter - second and fifth auxiliary requests (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 1130/08 - 3.5.03

D E C I S I O N
of the Technical Board of Appeal 3.5.03
of 28 January 2011

Appellant: (patent proprietor)
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Decision under appeal: **Decision of the opposition division of the European Patent Office posted 20 May 2008 revoking European patent No. 1350344 pursuant to Article 101(3)(b) EPC and corrected with a letter posted 3 July 2008.**

Composition of the Board:

Chairman: A. S. Clelland
Members: F. van der Voort
R. Moufang

Summary of Facts and Submissions

I. This appeal is against the decision of the opposition division revoking European patent No. 1350344 which is based on European patent application 01995292.8 which was published as international application WO 02/47357 A pursuant to Article 158(1) EPC 1973. The opposition was filed against the patent as a whole and on the grounds set out in Article 100(a) and (b) EPC.

II. In the course of the opposition proceedings, reference was made, *inter alia*, to the following documents:

D1: US 6 052 560 A; and
D2: EP 0 597 225 A.

III. The proprietor (appellant) lodged an appeal against the decision. With the statement of grounds of appeal the appellant filed claims of a main request and six auxiliary requests and submitted arguments in support. The appellant argued, *inter alia*, that the opposition was inadmissible and requested that the decision under appeal be set aside and that the patent be maintained on the basis of the claims of one of the main and first to sixth auxiliary requests. Oral proceedings were conditionally requested.

With a letter dated 21 December 2009, the appellant withdrew its objection that the opposition was inadmissible. Further, it submitted amended first to third auxiliary requests and replaced the fourth to sixth auxiliary requests by only the method claims of the first to third auxiliary requests, respectively. However, explicit claim amendments for the fourth to sixth auxiliary requests were not submitted.

IV. In response to the statement of grounds of appeal, the respondent (opponent) requested that the appeal be dismissed and submitted arguments in support. Oral proceedings were conditionally requested.

V. The parties were summoned by the board to oral proceedings.

In a communication accompanying the summons, the board informed the parties, *inter alia*, that at the oral proceedings it would be necessary to discuss the questions of whether or not the subject-matter of claim 1 of the main request was novel having regard to the disclosure of D1 and whether or not the subject-matter of independent method claim 47 of the main request was novel having regard to the disclosure of D2.

As to the auxiliary requests the board noted that if one or more of the auxiliary requests were held admissible it would be necessary to discuss the question of whether or not the amendments made to the claims complied with the requirements of Articles 84 and 123 EPC and, if answered positively, the question of whether or not the claimed subject-matter was novel and involved an inventive step having regard to prior art documents on file and taking into account the common general knowledge of a person skilled in the art of telecommunications. The board further noted that it was not clear which of the claims of the first to third auxiliary requests were exactly part of the fourth to sixth auxiliary requests and requested the appellant to clarify this.

VI. In response to the board's communication, the appellant filed, with a letter dated 24 November 2010, complete sets of claims of main and first to sixth auxiliary requests and withdrew its request for oral proceedings. Further, it informed the board that it would not attend the scheduled oral proceedings.

VII. Oral proceedings were held on 28 January 2011 in the absence of the appellant.

In accordance with its written submissions, the appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of claims of a main request or, alternatively, on the basis of claims of one of first to sixth auxiliary requests, in this order, all requests as filed with the letter dated 24 November 2010.

The respondent requested that the appeal be dismissed.

At the end of the oral proceedings the board's decision was announced.

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

"A cellular communications system, comprising:

a space based system comprising at least one satellite, each satellite comprising at least one antenna and establishing a first set of cells and transmitting and receiving Global System for Mobile Communications (GSM) based waveforms using at least a first portion of at least one predetermined frequency band used by the first set of cells;

wherein said at least one predetermined frequency

band is designated by a government regulatory agency to provide space based communication;

a ground based system comprising at least one base transceiver station (BTS), each BTS establishing a second set of cells and transmitting and receiving GSM based waveforms utilizing at least a second portion of the same at least one predetermined frequency band, said space based and ground based systems functioning autonomously therebetween and at least one of using and reusing at least a portion of spectrum from the same at least one predetermined frequency band to be used as at least one of an uplink and downlink frequency channel from any of the frequencies within the at least one predetermined frequency band;

at least one subscriber terminal communicating with one of said space based system and with said ground based system when located in at least one of the first and second set of cells; and

at least one radio resource manager (RRM) determining available communication links between said at least one subscriber terminal and at least one of said space based system and said ground based system."

Claim 1 of the **first auxiliary** request reads as follows:

"A cellular communications system, comprising:

a space based system comprising at least one satellite, each satellite comprising at least one antenna and establishing a first set of cells and transmitting and receiving Global System for Mobile Communications (GSM) based waveforms using at least a first portion of at least one predetermined frequency band used by the first set of cells;

a ground based system comprising at least one base

transceiver station (BTS), each BTS establishing a second set of cells and transmitting and receiving GSM based waveforms utilizing at least a second portion of the one predetermined frequency band,

at least a portion of the second set of cells sharing at least a portion of a common geographic area and having overlapping coverage with the first set of cells,

said space based and ground based systems functioning substantially autonomously and each using at least a portion of commonly shared spectrum from the same at least one predetermined frequency band to be used as at least one of an uplink and downlink frequency channel from any of the frequencies within the at least one predetermined frequency band;

at least one subscriber terminal communicating with one of said space based system and with said ground based system when located in at least one of the first and second set of cells;

a separate network operations controller (NOC) and mobile switching centre (MSC) for each of the space based system and the ground based system; and

a separate radio resource manager (RRM) for each of the space based and the ground based system, each radio resource manager determining available communication links between said at least one subscriber terminal and the respective space based system or ground based system."

Claim 1 of the **second auxiliary** request differs from claim 1 of the first auxiliary request in that the last two paragraphs are replaced by the following two paragraphs:

"a separate radio resource manager (RRM) for each of the space based system and the ground based system, each radio resource manager determining available communication links between said at least one subscriber terminal and the respective space based system or ground based system,

wherein the RRM which determines available communication links between the at least one subscriber terminal and the ground based system is adapted to determine, independently and without communication with the RRM which determines available communication links between said at least one subscriber terminal and the space based system, what frequencies are not being used for satellite communication by the space based system."

Claim 1 of the **third auxiliary** request differs from claim 1 of the first auxiliary request in that the last two paragraphs are replaced by the following two paragraphs:

"and at least one radio resource manager (RRM) determining available communication links between said at least one subscriber terminal and at least one of said space based system and said ground based system,

wherein said RRM further monitors in band interference and avoids using channels containing levels of interference exceeding a predetermined threshold."

Independent method claim 46 of the third auxiliary request is identical to claim 1 of the sixth auxiliary request, see below.

Claim 1 of the **fourth auxiliary** request reads as follows:

"A method of assigning to a requesting subscriber unit a communication channel commonly shared between a space based communication system and a ground based communication system, comprising the steps of

configuring a first satellite spot beam, associated with the space based system, having a plurality of communication channels associated therewith;

configuring at least one terrestrial cell, associated with the ground based system, that at least partially geographically overlaps the first satellite spot beam;

requesting by a dual mode subscriber terminal a communication channel;

at least one of the ground based system and the space based system substantially autonomously determining channel availability;

assigning to the requesting dual mode subscriber unit at least one of an unused channel and, for reuse with the dual mode subscriber terminal, a used channel having a sufficiently weak signal strength; and

operating the space based and ground based communications systems autonomously using a separate network operations controller (NOC), mobile switching centre (MSC) and radio resource manager (RRM) for each of the space based and ground based communications systems."

Claim 1 of the **fifth auxiliary** request differs from claim 1 of the fourth auxiliary request in that the last paragraph is replaced by the following paragraph:

"using a separate radio resource manager for each of the space based and ground based communication

systems, wherein the RRM which determines available communication links between the dual mode subscriber terminal and the ground based system is adapted to determine, independently and without communication with the RRM which determines available communication links between said dual mode subscriber terminal and the space based system, what frequencies are not being used for satellite communication by the space based system."

Claim 1 of the **sixth auxiliary** request differs from claim 1 of the fourth auxiliary request in that the last paragraph is replaced by the following paragraph:

"further comprising the step of at least one of the ground based system and the space based system autonomously monitoring inband interference and avoiding use and/or reuse of channels that would cause levels of interference exceeding a predetermined threshold."

Reasons for the Decision

1. *Admissibility of the opposition, the appeal, and the requests*

1.1 The appellant withdrew its objection that the notice of opposition is inadmissible. In the present case, the board sees no reason to consider the opposition inadmissible.

1.2 The appeal complies with Articles 106 to 108 EPC and Rule 99 EPC and is therefore admissible.

1.3 With its reply to the statement of grounds of appeal the respondent requested that the fifth and sixth auxiliary

requests as filed with the statement of grounds of appeal not be admitted. This request was however not made in respect of the auxiliary requests which were subsequently filed by the appellant by way of replacement.

2. *Main request*

2.1 Both claim 1 as granted and claim 1 of the main request include the feature "at least one subscriber terminal communicating with one of said space based system and with said ground based system when located in at least one of the first and second set of cells" (underlining by the board). Since, in accordance with the patent specification, a subscriber terminal can communicate with either the space-based or ground-based system when it is located in the first or second set of cells, respectively, the board interprets the above feature accordingly in that the underlined "with" may be ignored.

2.2 D1 discloses, using the language of claim 1 of the main request, a cellular communications system which includes:

a space-based system 10 (col. 2, line 56, to col. 3, line 9, and Fig. 1) including a satellite 12 with an antenna 12A, establishing a first set of cells, i.e. spot beams 14, and transmitting and receiving Global System for Mobile Communications (GSM) based waveforms (col. 6, lines 4 to 11) using at least a first portion of at least one predetermined frequency band, e.g. the L-band, used by the first set of cells (col. 3, lines 5 to 9);

a ground-based system (col. 5, lines 41 to 55, "associated cellular systems" and "terrestrial communications via at least one cellular ... standard")

including at least one base transceiver station (col. 6, lines 27 to 31, "first cellular base station"), each base transceiver station establishing a second set of cells and transmitting and receiving GSM based waveforms (col. 6, lines 4 to 9, "GSM (cellular)", and col. 6, lines 56 to 59, "terrestrial GSM protocol");

at least one subscriber terminal 18A, 18B (Fig. 1) communicating with one of the space-based system and the ground-based system when located in at least one of the first and second sets of cells (col. 6, lines 6 to 8); and

a radio resource manager determining available communication links between the at least one subscriber terminal 18A, 18B and the ground-based system (as implied by the GSM standard).

2.3 Since claim 1 does not specify the "at least one predetermined frequency band", and since in the patent specification it is explicitly stated that "as defined in connection with the present invention, a frequency band comprises any set of frequencies, and is not limited to a consecutive set or series of frequencies" (paragraph [0145] of the B-publication), in connection with the system of D1, the collection of frequencies used in the space-based and ground-based systems of D1 may also be referred to as "at least one predetermined frequency band".

Consequently, D1 further discloses that the space-based and ground-based systems use "at least a portion of spectrum from the same at least one predetermined frequency band to be used as at least one of an uplink and downlink frequency channel from any of the frequencies within the at least one predetermined

frequency band", in which each base transceiver station of the ground-based system transmits and receives "GSM based waveforms utilizing at least a second portion of the same at least one predetermined frequency band".

2.4 Claim 1 further includes the feature that "said at least one predetermined frequency band is designated by a government regulatory agency to provide space based communication".

In the board's judgement, this feature does not further define the claimed cellular communications system in terms of its constructional features. Even if it is assumed that this feature implies that the system is adapted to operate at a specific frequency band, in particular the L-band, a cellular communications system which also operates in the L-band, but without this band having been designated by a government regulatory agency, does not differ from the claimed system in this respect in terms of the technical features of the system. Hence, at least in the context of an examination of inventive step, the feature in question may be ignored.

2.5 When faced with the problem of implementing the cellular communications system of D1, it would have been obvious to a person skilled in the art, namely by merely using his/her common general knowledge, to implement the space-based and ground-based systems with separate components, since D1 does not require or suggest any sharing of components of the space-based and ground-based systems. In this respect, it is also noted that, in D1, only the space-based system is illustrated in the figures. In the board's view, this also suggests a separate implementation of the space-based and ground-

based systems and, hence, an independent functioning of these systems, using, for example, an already existing terrestrial cellular communications system for the ground-based system.

2.6 It is arguable that the subject-matter of claim 1 differs from the system of D1 in that the claimed system includes the feature "said space based and ground based systems functioning autonomously therebetween".

Claim 1 does not however define the term "autonomously". The board further notes that in claim 1 as granted the term "substantially autonomous" is used in the same context and that in the patent specification a distinction is made between integrated and autonomous embodiments, see paragraph [0040] of the B-publication: "The satellite and terrestrial components can operate in an integrated manner, or autonomously. For example, in an integrated embodiment, the satellite and terrestrial components can share a common network operations controller (NOC), mobile switching center (MSC), and/or Radio Resource Manager (RRM). In an autonomous embodiment, a separate NOC, MSC and/or RRM is provided for each of the satellite and terrestrial components.". Similarly, Fig. 7c is a block diagram illustrating a "satellite-terrestrial system having autonomous satellite and terrestrial components" or an "autonomous satellite-terrestrial system" (col. 29, lines 22 to 27, and col. 38, lines 31 to 34), in which "by advantageously providing separate NOCs 506a, 506b, MSCs 508a, 508b, RRMs 720a, 720b, VLRs 702a, 702b, HLRs 706a, 706b, and AUCs 718a, 718b in this embodiment, the satellite and terrestrial components, while sharing and/or being assigned to at least a portion of a common

frequency band can operate independently of each other." (paragraph [0169]). The term "autonomously" is accordingly understood by the board as meaning that the space-based and ground-based systems operate independently and use separate components.

2.7 It follows that the skilled person, aware of the disclosure of D1, would without the exercise of inventive skill have arrived at a system in which the space-based system and the ground-based system, using the language of claim 1, function "autonomously therebetween". He would thereby have arrived at a system which includes all the technical features of claim 1.

2.8 The board therefore concludes that the subject-matter of claim 1 lacks an inventive step having regard to the disclosure of D1 when taking into account the common general knowledge of the skilled person (Articles 52(1) and 56 EPC).

2.9 The main request is therefore not allowable.

3. *First auxiliary request*

3.1 Claim 1 of the first auxiliary request essentially differs from claim 1 of the main request in that it additionally includes the following features:

i) at least a portion of the second set of cells shares at least a portion of a common geographic area and has overlapping coverage with the first set of cells; and

ii) a separate network operations controller (NOC) and mobile switching centre (MSC) and a separate radio

resource manager (RRM) are provided for each of the space based system and the ground based system.

3.2 D1 discloses that "a number of contiguous spot beams 14 may span a much larger area, i.e., forming a satellite footprint servicing much of Asia" (col. 2, lines 62 to 65). Further, the mobile terminals are dual-mode mobile terminals which can operate in either the GSM (cellular) or ACeS (satellite) mode (col. 6, lines 4 to 8). Hence, it would have been obvious to the skilled person that, if the system were implemented in Asia, the set of cells of the terrestrial cellular system would have partly or even completely overlapping coverage with the set of cells of the satellite-based system and, hence, that the sets of cells share at least a portion of a common geographic area. The above-mentioned feature i) does not therefore contribute to an inventive step.

Neither does feature ii), since it merely specifies well-known basic components of any space-based or ground-based wireless communications system (see, e.g., D1, col. 2, lines 56 to 59, and col. 3, lines 30 to 44, and Fig. 2 ("channel unit controller 30", "MSC 20"), in which providing these components separately for each of the systems is obvious for the reasons as set out above in respect of claim 1 of the main request.

Nor do the further minor differences in language of claim 1 of the first auxiliary request and claim 1 of the main request, e.g. "substantially autonomously" and "commonly shared spectrum" instead of "autonomously therebetween" and "spectrum", respectively, contribute to an inventive step. Nor did the appellant argue otherwise.

3.3 In view of the above and the reasons as given in respect of claim 1 of the main request, the board concludes that the subject-matter of claim 1 of the first auxiliary request lacks an inventive step having regard to the disclosure of D1 when taking into account the common general knowledge of the skilled person (Articles 52(1) and 56 EPC).

3.4 The first auxiliary request is therefore not allowable.

4. *Second auxiliary request*

4.1 Claim 1 of the second auxiliary request includes the following feature:

"wherein the RRM which determines available communication links between the at least one subscriber terminal and the ground based system is adapted to determine, independently and without communication with the RRM which determines available communication links between said at least one subscriber terminal and the space based system, what frequencies are not being used for satellite communication by the space based system."

4.2 The appellant argued that this feature is based on paragraphs [0040] and [0170] of the patent as granted.

The board notes that these paragraphs correspond to passages at page 7, lines 21 to 35, and page 35, lines 22 to 35, of the application as filed, the relevant parts of which read as follows (underlining by the board):

"For example, a RRM associated with the terrestrial component can comprise or utilize, for example, a suitable antenna operatively connected to a spectrum analyzer and/or other signal detection means to search a band of radio frequencies for the presence of radio signals, to determine what frequencies are currently being utilized within a range or ranges of frequencies of interest. The terrestrial RRM can therefore determine, independently and without communication with a RRM associated with the satellite component, or any other satellite component equipment, what frequencies are not being used by the system. Since the terrestrial RRM knows the frequencies used across a range of frequencies of interest, as well as the frequencies used by the terrestrial component, the terrestrial RRM can also determine or deduce the frequencies that are currently being used by the satellite component. Similarly, the satellite component functions in substantially the same manner to, inter alia, determine the frequencies currently being used by the terrestrial component." and

"For example, the RRMs 720a, 720b can comprise or utilize, for example, a suitable antenna operatively connected to a spectrum analyzer capable of searching a band of radio frequencies for the presence of radio signals, to determine what frequencies are currently being utilized within a range or ranges of frequencies of interest. RRM 720b can therefore determine, independently and without communication with RRM 720a associated with the satellite component, or any other satellite component equipment, what frequencies are not being used by the system for satellite communication. Since the RRM 720b knows the frequencies used across a range of frequencies of interest, as well as the

frequencies used by the terrestrial component, RRM 720b can also determine or deduce the frequencies that are currently being used by the satellite component. Similarly, the satellite component functions in substantially the same manner to, inter alia, determine the frequencies currently being used by the terrestrial component.".

4.3 Hence, according to each of these passages, in order to determine, independently and without communication with the RRM of the space-based system, what frequencies are not being used for satellite communication, the RRM of the ground-based system utilizes, *inter alia*, a spectrum analyzer and/or other signal detection means capable of searching a band of radio frequencies. Further, the RRM of the space-based system is provided with corresponding means.

However, the above-cited feature of claim 1, see point 4.1, only concerns the RRM of the ground-based system, whilst the claim does not include corresponding features for the RRM of the space-based system. Further, claim 1 does not require that the RRM of the ground-based system utilizes a spectrum analyzer or other signal detection means.

4.4 The board notes that the application as filed does not otherwise provide a basis for the above-cited feature. In particular, claims 21, 22, 25 and 31 as filed relate to channel monitoring or in-band interference monitoring, whereas claim 1 does not require any monitoring. Further, the RRM 720 referred to at page 34, lines 1 to 10 merely determines which channels are being used by the whole system 500 (Fig. 5).

4.5 The board therefore concludes that claim 1 is based on a generalisation of the originally disclosed subject-matter and thus includes subject-matter which extends beyond the content of the application as filed. Claim 1 therefore violates Article 123(2) EPC.

4.6 The second auxiliary request is therefore not allowable.

5. *Third auxiliary request*

5.1 Claim 1 of the third auxiliary request differs from claim 1 of the first auxiliary request in that the last two paragraphs are replaced by the following two paragraphs:

i) "and at least one radio resource manager (RRM) determining available communication links between said at least one subscriber terminal and at least one of said space based system and said ground based system," and

ii) "wherein said RRM further monitors in band interference and avoids using channels containing levels of interference exceeding a predetermined threshold."

5.2 Paragraph i) corresponds to the last paragraph of claim 1 of the main request, see point VIII. Paragraph ii) merely specifies well-known properties of a RRM according to the GSM standard and, hence, the feature in question does not contribute to an inventive step.

5.3 In view of the above and the reasons as given in respect of claim 1 of the main and first auxiliary requests, the board concludes that the subject-matter of claim 1 of

the third auxiliary request lacks an inventive step having regard to the disclosure of D1 when taking into account the common general knowledge of the skilled person (Articles 52(1) and 56 EPC).

5.4 The board further notes that independent method claim 46 does not meet the requirements of the EPC for the same reasons as set out below in respect of claim 1 of the sixth auxiliary request, which is identical to claim 46, see point VIII above and point 8 below.

5.5 The third auxiliary request is therefore not allowable.

6. *Fourth auxiliary request*

6.1 D2 discloses, using the language of claim 1 of the fourth auxiliary request, a method of assigning to a requesting subscriber unit 500 (Figs 2 and 10, col. 15, lines 48 to 52, and col. 16, lines 48 to 52) a communication channel commonly shared (Fig. 4, col. 10, lines 1 to 6) between a space-based communication system 100 (Fig. 1) and a ground-based communication system 200 (Fig. 2). The method includes the steps of:

configuring a first satellite spot beam, i.e. cells 106, associated with the space-based system 100, having a plurality of communication channels associated therewith (col. 4, lines 36 to 46, col. 5, lines 44 to 56);

configuring at least one terrestrial cell, i.e. secondary region 202 (col. 6, lines 44 to 49, Fig. 2), associated with the ground-based system 200, that at least partially geographically overlaps the first satellite spot beam 106 (Fig. 2);

requesting by a dual mode subscriber terminal 500

a communication channel (col. 11, lines 7 to 12, and col. 15, line 58, to col. 16, line 4);

the ground-based system 200 substantially autonomously determining channel availability (col. 7, lines 21 to 30); and

assigning to the requesting dual mode subscriber unit an unused, i.e. available, channel (col. 16, lines 11 to 22 and 48 to 52).

6.2 D2 further discloses that the ground-based system 200 uses a network operations controller, i.e. secondary system controller 600 (Figs 2 and 6), which includes a switch 622 for connecting a call to the appropriate ports of a transceiver 608 and/or public switched telecommunications network (PSTN) interface 620 (col. 17, lines 3 to 8). The secondary system controller 600 couples to the public switched telecommunications network (PSTN) 210, through which it may route call traffic (col. 8, lines 30 to 35), and performs various procedures, e.g. a call connection request procedure 1000 (Fig. 10), which establishes and maintains the channels and connections needed to allow a call to take place (col. 16, lines 8 to 10), and handoff (col. 17, lines 20 to 46). Hence, the secondary system controller 600 implicitly constitutes a mobile switching centre which typically connects a PSTN to a wireless communication system. The secondary system controller 600 further includes a processor 612 for controlling the channels to which a receiver 604 and transceiver 608 are tuned (col. 12, lines 10 to 12). Hence, this processor 612 constitutes a radio resource manager for the ground-based system 200.

The satellites 102 of the space-based system 100

communicate with a nearby central switching office 208 which couples to the PSTN 210 (col. 8, lines 14 to 17 and 25 to 30), through which the switching office 208 may route call traffic (col. 8, lines 32 to 35). The space-based system supports handoff procedures between different satellites (col. 6, lines 21 to 40, "passing off"). Hence, it is implicit that the space-based system 100 includes a network operations controller and a mobile switching centre. Further, the space-based system allocates orthogonal channels (col. 24, lines 30 to 35) and an acquisition channel 410 broadcast by the space-based system may identify another channel to be used in transmitting initial registration or other messages from the subscriber unit 500 back to the space-based system (col. 10, line 48, to col. 11, line 6). These capabilities imply that the space-based system includes a radio resource manager.

Since the space-based system 100 and the ground-based system 200 are interconnected only via the PSTN 210, it is implicit that the systems are operated autonomously.

6.3 The appellant argued that D2 did not disclose separate network operations controllers, mobile switching centres and radio resource managers for each of the space-based and ground-based communication systems, since D2 referred to "a subordinate communication system that cooperates with a primary communication system" and to a "hierarchical network of communication systems" (D2, col. 2, lines 37 to 40, and col. 3, lines 2 and 3). Further, D2 expressly used a single central switching office 208.

In the context of D2 it is however clear that the terms

"subordinate" and "hierarchical" relate to the different areas of coverage of the primary, i.e. the space-based, system, the secondary, i.e. the ground-based, system, and, optionally, a tertiary system and to the order of preference in which a subscriber uses these communication systems. The system with the smallest area of coverage is preferred because it accommodates the greatest communication traffic capacity per unit area, thereby freeing up communication trafficking capacities in systems with larger areas of coverage (col. 8, line 40, to col. 9, line 4, and col. 23, line 56, to col. 24, line 3). The board notes that the primary system is monitored by the secondary system in order to determine which channels are available to the secondary system and that the secondary system informs the tertiary system about the channels available to the tertiary system (col. 2, lines 49 to 56, and col. 12, lines 53 to 58). As set out at point 6.2 above, each system nevertheless operates autonomously in that it uses its own components independently of the other systems, the central switching office 208 being considered as being part of the space-based system 100 only.

The appellant's arguments are therefore not convincing.

6.4 The board concludes that the subject-matter of claim 1 of the fourth auxiliary request lacks novelty having regard to the disclosure of D2 (Articles 52(1) and 54 EPC).

7. *Fifth auxiliary request*

7.1 Claim 1 of the fifth auxiliary request defines a method

in terms of steps which essentially correspond to the constructional features of the system of claim 1 of the second auxiliary request. The board notes in particular that claim 1 includes the same feature of claim 1 of the second auxiliary request as referred to at point 4.1 above.

7.2 Consequently, for the same reasons as set out at points 4.3 and 4.4 above, claim 1 of the fifth auxiliary request includes subject-matter which extends beyond the content of the application as filed and, hence, violates Article 123(2) EPC.

7.3 The fifth auxiliary request is therefore not allowable.

8. *Sixth auxiliary request*

8.1 Claim 1 of the sixth auxiliary request differs from claim 1 of the fourth auxiliary request in that the last paragraph is replaced by the following paragraph:

"further comprising the step of at least one of the ground based system and the space based system autonomously monitoring inband interference and avoiding use and/or reuse of channels that would cause levels of interference exceeding a predetermined threshold."

8.2 This feature is known from D2, since in D2 the secondary system controller 600 of the secondary, i.e. ground-based, system 200, which resides at monitoring location 204, autonomously monitors the primary, i.e. space-based, system 100 in order to determine which channels are available to the secondary system, thereby avoiding use of channels that would cause levels of interference

exceeding a predetermined threshold (col. 7, lines 16 to 41, "significant interference").

Further, for the reasons set out at point 6.1, the remaining features of the claim are also known from D2.

8.3 The subject-matter of claim 1 of the sixth auxiliary request therefore lacks novelty having regard to the disclosure of D2 (Articles 52(1) and 54 EPC).

9. There being 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:

G. Rauh A. S. Clelland