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Datasheet for the decision of 23 January 2018

Case Number: T 1132/14 - 3.5.05

Application Number: 08746159.6

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Language of the proceedings: EN

Title of invention:
Systems and methods for providing an ATC overlay data link

Applicant:
Aviation Communication & Surveillance Systems, LLC

Headword:
ATC modulation/AVIATION

Relevant legal provisions:
EPC Art. 123(2)

Keyword:
Added subject-matter - all requests (yes)

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Case Number: T 1132/14 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 23 January 2018

Appellant: (Applicant)	Aviation Communication & Surveillance Systems, LLC 19810 N. 7th Avenue Phoenix, Arizona 85027-4400 (US)
Representative:	De Anna, Pier Luigi DeAnna-Patent Schubertstraße 10 80336 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 22 November 2013 refusing European patent application No. 08746159.6 pursuant to Article 97(2) EPC**

Composition of the Board:

Chair	A. Ritzka
Members:	K. Bengi-Akyuerek
	D. Prietzel-Funk

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division to refuse the present European patent application for lack of inventive step (Article 56 EPC) with respect to the claims of a main request and an auxiliary request, having regard to the disclosures of

D2: US-A-5 929 783;
D4: EP-A-1 372 127;
D5: EP-A-0 829 978.

II. With the statement setting out the grounds of appeal, the appellant re-filed the claims of the main request and the auxiliary request underlying the appealed decision. It requested that the examining division's decision be set aside and that a patent be granted on the basis of either of those claim requests.

III. In a communication annexed to the summons to oral proceedings pursuant to Article 15(1) RPBA, the board gave its preliminary opinion on the appeal. In particular, it confirmed the finding of the decision under appeal that claim 1 lacked inventive step (Article 56 EPC), having regard to the disclosure of D4 but combined with prior-art document

D6: US-A-2005/0111580,

which the board introduced into the appeal proceedings under Article 114(1) EPC.

IV. By letter of reply dated 22 December 2017, the appellant submitted amended claims according to a new main request and a new auxiliary request, replacing the

former main and auxiliary requests on file.

V. Oral proceedings were held on 23 January 2018, during which the appellant, in response to objections raised by the board under Articles 123(2) and 56 EPC, filed a new main request replacing the main request on file. All the pending claim requests were admitted into the proceedings and discussed.

The appellant's final request was that the decision under appeal be set aside and that a patent be granted on the basis of the new main request submitted during the oral proceedings before the board or on the basis of a first auxiliary request filed as "main request" with the letter dated 22 December 2017 or of a second auxiliary request filed as "auxiliary request" with the letter dated 22 December 2017.

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

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

"A method for encoding an overlaid [sic] message onto a provided modulated Air Traffic Control (ATC) signal and for decoding said overlay message, the method comprising:

selecting an overlay modulation scheme, wherein overlay modulation includes modulating a signal that has previously been modulated, including cases where a single or a plurality of modulations were previously applied to the signal; and

modulating the provided modulated ATC signal with the overlay message to form an overlay-modulated signal using the selected overlay modulation scheme,

wherein the overlay modulated signal is transmitted

at a frequency of 1030 or 1090 MHz, and

demodulating the overlay modulated signal with a first modulation scheme to produce a first message;

demodulating the overlay modulated signal with a second modulation scheme to produce an overlay message; and

wherein the first message and the overlay message are independently demodulated from the overlay modulated signal."

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

"A method for encoding an overlaid [sic] message onto a provided Air Traffic Control (ATC) signal modulated with a first message, the method comprising:

selecting an overlay modulation scheme, wherein overlay modulation includes modulating a signal that has previously been modulated, including cases where a single or a plurality of modulations were previously applied to the signal; and

modulating the provided modulated ATC signal with the overlay message to form an overlay-modulated signal using the selected overlay modulation scheme,

wherein the ATC signal is transmitted a frequency of 1030 or 1090 MHz, and

wherein the first message and the overlay message are respectively independently demodulatable from the overlay-modulated signal."

Claim 1 of the **second auxiliary request** comprises all the features of claim 1 of the first auxiliary request and adds the following phrase:

"wherein the ATC signal is initially modulated with a pulse position modulation scheme, and wherein the

overlay modulation is applied with phase shift keying PSK as phase shift keying modulation".

Reasons for the Decision

1. MAIN REQUEST

Claim 1 of the main request comprises the following features, as labelled by the board:

A method for encoding an overlay message onto a provided modulated Air Traffic Control (ATC) signal and for decoding said overlay message, the method comprising the steps of:

A) selecting an overlay modulation scheme wherein overlay modulation includes modulating a signal that has previously been modulated, including cases where a single or a plurality of modulations were previously applied to the signal;
B) modulating the provided modulated ATC signal with the overlay message to form an overlay-modulated signal using the selected overlay modulation scheme,
C) wherein the overlay-modulated signal is transmitted at a frequency of 1030 or 1090 MHz;
D) demodulating the overlay-modulated signal with a first modulation scheme to produce a first message;
E) demodulating the overlay-modulated signal with a second modulation scheme to produce an overlay message,
F) wherein the first message and the overlay message are independently demodulated from the overlay-modulated signal.

1.1 *Added subject-matter (Article 123(2) EPC)*

1.1.1 The present application as originally filed teaches that the modulation, encoding and transmission of a certain ATC (Air Traffic Control) signal are performed at the transmitter side, i.e. at *one* ATC device such as an ATC transponder, while receipt, decoding and demodulation are done at the receiver side, i.e. at *another* ATC device such as a TCAS receiver (see e.g. page 8, lines 17-18; page 9, lines 15-21, or page 14, lines 6-8). Features A) to F) of claim 1, however, cover the case that modulation, encoding and transmission of a certain ATC signal and the receipt, decoding and demodulation of that ATC signal are performed by the same device. The board therefore finds that this is not supported by the original application, thus infringing Article 123(2) EPC.

1.1.2 As to feature D) of claim 1, the original application indicates consistently that the transmitted "overlaid modulated signal 117" is demodulated by a first modulation scheme, i.e. by "PPM demodulation 135", in order to recover only and exclusively the "primary ATC data 103" (see e.g. page 14, lines 14-15, in conjunction with Fig. 1, step 135). However, it does not disclose or imply that the recovered message could be any arbitrary message such as a "first message" as claimed. Hence, the board holds that feature D) amounts to an unallowable generalisation of the application's original content.

1.1.3 As to feature F) of claim 1, the application as filed unequivocally teaches that it is the signal received at the respective ATC receiver, i.e. the "overlaid modulated signal 117", that is in fact *demodulated* and not "the first message and the overlay message" as

claimed (see page 14, lines 14-15; Fig. 1, step 135).

The "first message", i.e. the primary ATC signal, and "the overlay message" are actually obtained as a *result* of the independent PPM-based and PSK-based demodulation processes (see page 14, lines 1-5 and 14-19, in conjunction with Fig. 1, steps 130 and 135). The board notes that claim 19 of the application as filed likewise cannot constitute a proper basis for feature F), since that claim does not mention at all any original or modulated ATC signal which is modulated with an overlay message to form an overlay-modulated signal. Consequently, feature F) constitutes an unallowable extension of the application's original disclosure.

1.2 For the three reasons above, the main request is not allowable under Article 123(2) EPC.

2. FIRST AUXILIARY REQUEST

Claim 1 of this auxiliary request differs from claim 1 of the main request in that it no longer includes features D) and E) but now specifies that (emphasis added by the board)

G) the overlay message is encoded onto a provided ATC signal modulated with a first message;
H) the ATC signal is transmitted at a frequency of 1030 or 1090 MHz;
I) wherein the first message and the overlay message are respectively independently demodulatable from the overlay-modulated signal.

2.1 *Added subject-matter (Article 123(2) EPC)*

2.1.1 As to feature G), the original application as filed states consistently that the provided ATC signal, i.e. the "primary ATC data 103", is modulated with a first modulation scheme, i.e. with "pulse position modulation PPM" (cf. page 13, lines 9-12 and 18-20, in conjunction with Fig. 1, step 103; see also claim 2). However, it does not disclose or imply that the provided ATC signal could be modulated with any arbitrary message such as a "first message" as claimed. Hence, the board holds that feature G) amounts to an unallowable generalisation of the application's original content.

2.1.2 As to feature H), it is apparent to the board that the original application teaches that it is the "overlaid modulated signal 117" that is *transmitted* to the respective receiver, rather than the "ATC signal" (see page 14, line 6, in conjunction with Fig. 1, step 117).

2.1.3 As to feature I), the board notes that the observations set out in point 1.1.3 above apply *mutatis mutandis* to that feature.

2.1.4 The appellant did not make any further comments on this auxiliary request at the oral proceedings before the board.

2.2 In view of the above, the first auxiliary request is likewise not allowable under Article 123(2) EPC.

3. SECOND AUXILIARY REQUEST

Claim 1 of this auxiliary request differs from claim 1 of the first auxiliary request in that it further specifies that (emphasis added by the board)

J) the ATC signal is initially modulated with a pulse position modulation (PPM) scheme;
K) the overlay modulation is applied with phase shift keying (PSK) as phase shift keying modulation.

3.1 *Added subject-matter (Article 123(2) EPC)*

3.1.1 Since claim 1 of this second auxiliary request also includes features G) to I), the objections raised under Article 123(2) EPC in points 2.1.1 to 2.1.3 above equally apply to that claim.

3.1.2 The appellant did not make any further comments on this auxiliary request at the oral proceedings before the board.

3.2 Hence, the second auxiliary request is not allowable under Article 123(2) EPC either.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

K. Götz-Wein A. Ritzka

Decision electronically authenticated