BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS | BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE | CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [X] To Chairmen
(D) [ ] No distribution

D E C I S I O N
of 3 May 2006

Case Number: T 0890/05 - 3.4.01

Application Number: 97954783.3

Publication Number: 0895601

IPC: G01S 5/02

Language of the proceedings: EN

Title of invention:
Improved real-time clock apparatus for fast acquisition of GPS signals

Patentee:
MOTOROLA, INC.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 52(1), 56

Keyword:
"Inventive step - no (all requests)"

Decisions cited:
-

Catchword:
-

Case Number: T 0890/05 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 3 May 2006

Appellant:	MOTOROLA, INC. 1303 East Algonquin Road Schaumburg, IL 60196 (US)
Representative:	Cross, Rupert Edward Blount Boult Wade Tennant Verulam Gardens 70 Gray's Inn Road London WC1X 8BT (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted 17 February 2005 refusing European application No. 97954783.3 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman:	H. Wolfrum
Members:	R. Bekkering
	R. Moufang

Summary of Facts and Submissions

I. European patent application 97 954 783.3 (publication nos. WO-A-98 32027 and EP-A-0 895 601) was refused pursuant to Article 97(1) EPC by a decision of the examining division dispatched on 17 February 2005.

II. The applicant (appellant) lodged an appeal against the decision on 8 April 2005 and paid the appeal fee on the same day. The statement setting out the grounds of appeal was received on 27 June 2005.

III. Reference is made to the following documents:

D4: E. Saur, "Ein Kreuzkorrelations-Empfänger mit minimierten systematischen Meßfehlerbeiträgen für die geodätische Punktbestimmung mit dem Global Positioning System", PhD Thesis, Rheinische Friedrich-Wilhelms-Universität, Bonn, 1989

D6: US-A-5 594 453

IV. Oral proceedings, requested as an auxiliary measure by the appellant, were held on 3 May 2006.

V. The appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the following documents:

Main request:

Claims: No. 1 to 9 filed with letter of 3 April 2006;
Description: Pages 2 to 21 as published;
Pages 1 and 1a filed with letter of 27 October 2003;
Drawings: Sheets 1/4 to 4/4 as published.

First auxiliary request:

Claims: No. 1 to 9 filed with letter of 3 April 2006 (marked as first auxiliary request);
Description and drawings as for the main request.

Second auxiliary request:

Claims: No. 1 to 9 filed at the oral proceedings;
Description and drawings as for the main request.

Third auxiliary request:

Claims: No. 1 to 8 filed with letter of 3 April 2006 (marked as second auxiliary request);
Description and drawings as for the main request.

Fourth auxiliary request:

Claims: No. 1 to 7 filed with letter of 3 April 2006 (marked as third auxiliary request);
Description and drawings as for the main request.

The appellant furthermore requested that the case be remitted to the examining division for further prosecution should the board intend to rely on document D6.

Moreover, at the end of the oral proceedings the appellant requested that the proceedings be continued in writing.

VI. Claim 1 according to the main request reads as follows:

"*1. An apparatus for improving the acquisition time of global positioning satellite (GPS) signals, comprising:*
a GPS receiver (FIG. 2) for receiving GPS signals including a code and for obtaining a precise time reference signal from the GPS signals;
a real–time clock circuit (30) coupled to said GPS receiver (FIG. 2);
means for calibrating said real–time clock circuit (30) using said precise time reference signal;
receiver time base means (9, 11) for providing a first time reference signal;
means for synchronizing said real-time clock circuit (30) to said first time reference signal;
means for supplying a second time reference signal by said real time clock circuit to said GPS receiver when said precise time reference signal obtained from said GPS signal is not available; and
means for conducting a constrained code phase search using said second time reference signal, the constrained code phase search being a fraction of a total code phase search space."

VII. Claim 1 according to the first auxiliary request contains, with respect to claim 1 of the main request, the following additional feature:

"*the second time reference signal having a resolution substantially less than 1 millisecond*".

VIII. Claim 1 according to the second auxiliary request contains, with respect to claim 1 of the main request, the following additional feature:

"*wherein the apparatus is arranged such that when the GPS receiver is in a power off mode, the receiver time base means is arranged to be powered off and the real-time clock circuit (30) is arranged to be powered on*".

IX. Claim 1 according to the third auxiliary request reads as follows:

"*1. An apparatus for improving the acquisition time of global positioning satellite (GPS) signals, comprising:*
a GPS receiver (FIG. 2) for receiving GPS signals including a code and for obtaining a precise time reference signal from the GPS signals;
a real-time clock circuit (30) coupled to said GPS receiver (FIG. 2) comprising:

> *a free—running low power oscillator (15) for generating a first clock signal (40) at a predetermined rate,*
> *an N bit counter circuit (38), responsive to said first clock signal, for generating an N bit counter value and a second clock signal (18), and*

an M bit counter circuit (36), responsive to said second clock signal (18), for generating an M bit counter value;

means for calibrating said real-time clock circuit (30) using said precise time reference signal;
receiver time base means (9, 11) for providing a first time reference signal;
means for synchronizing said real–time clock circuit to said first time reference signal;
means for generating a second time reference signal using the M bit counter value and N bit counter value;
means for supplying the second time reference signal to said GPS receiver when said precise time reference signal obtained from said GPS signal is not available;
means for conducting a constrained code phase search using said second time reference signal, the constrained code phase search being a fraction of a total code phase search space".

X. Claim 1 according to the fourth auxiliary request reads as follows:

"*1. An apparatus for improving the acquisition time of global positioning satellite (GPS) signals, comprising:*
a GPS receiver (FIG. 2) for receiving GPS signals including a code and for obtaining a precise time reference signal from the GPS signals;
a real-time clock circuit (30) coupled to said GPS receiver (FIG. 2) comprising:

a free–running low power oscillator (15) for generating a first clock signal (40) at a predetermined rate,

an N bit counter circuit (38), responsive to said first clock signal, for generating an N bit *counter value and a second clock signal (18), and an M bit counter circuit (36), responsive to said second clock signal (18), for generating an M bit counter value;*

means for calibrating said real-time clock circuit (30) using said precise time reference signal;

receiver time base means (9, 11) for providing a first time reference signal;

means for synchronizing said real–time clock circuit to said first time reference signal, the means for synchronizing comprising a flipflop interface (32) having a clock input for receiving the first time reference signal, a data input for receiving the N bit counter value and an output for providing the N bit counter value synchronized to the first time reference signal;

means for generating a second time reference signal using the M bit counter value and N bit counter value at the output of the flipflop interface (32);

means for supplying the second time reference signal to said GPS receiver when said precise time reference signal obtained from said GPS signal is not available;

means for conducting a constrained code phase search using said second time reference signal, the constrained code phase search being a fraction of a total code phase search space."

XI. Furthermore, all requests include a corresponding independent claim directed to a method for improving the acquisition time of global positioning satellite (GPS) signals for a GPS receiver.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.

2. Main request

2.1 Novelty, inventive step over document D4

2.1.1 Document D4, considered by the examining division in the decision under appeal to form the closest prior art, is concerned with a cross-correlation receiver for geodetic point determination using the Global Positioning System (GPS). The equipment used comprises a GPS receiver for receiving GPS signals having a precise time reference signal associated therewith and a real-time clock circuit coupled to said GPS receiver (see "Uhr-Kalender", pages 67 to 68, point 5.9.2 and figure 5-20; "CMOS-Uhr", page 81, point 6.6). The real-time clock serves to provide, after switching on the apparatus, the rough real time, date etc... which, in combination with almanac data, is used to determine the position of the most suitable four GPS satellites (see pages 67 to 68, point 5.9.2 and page 81, point 6.6). After computation of the expected Doppler-frequencies, the corresponding pseudo random noise (PRN) codes of the satellites are loaded for the search of the correlating code phases. According to document D4, finding a satellite signal with a search over 1023 chips and an integration time of 10 msec per chip number is possible within about 10 seconds. Without knowledge of the ephemerides and time a search over all possible code phases and frequency intervals in the worst case could take up to 20 minutes (see page 68, lines 16 to 21).

The circuitry performing the coarse acquisition (C/A) code correlation (see C/A code generator, phase shifter, correlator (see page 35, figure 5-2)), on the other hand is timed by counter 4b providing the receiver time T_{Rec} (see page 72, point 6.1 and page 73, figure 6-1), which is derived from the 1 msec time base provided by the reference oscillator (at 10 MHz) (see "Rb-Atomnormal", page 35, figure 5-2) and calibrated to the GPS-time after the first measurement.

The real-time clock, on the other hand, has its own quartz-oscillator and is independent of the reference oscillator (at 10 MHz) (see document D4, page 67, point 5.9.2). There is no mention in document D4 of the real-time clock being adjusted to the GPS-time (although, as such, this would appear to be required in view of the relatively low accuracy of the real-time clock (see page 68, second paragraph)). Furthermore, there is no indication of any adjustment of the receiver time T_{Rec} based on the real-time clock. Such an adjustment in the start-up phase of the receiver would allow a reduction of the number of steps required to obtain correlation. As indicated above, however, document D4 is satisfied with a search over all 1023 chips taking about 10 seconds. In fact, document D4 is not concerned with any shortening of the start-up phase of the receiver to about a second, this generally not being an issue with the type of geodetic equipment addressed in document D4.

2.1.2 Rather, in the board's view, document D6 addressed below, which, much like the application in suit, specifically addresses the issue of providing a GPS receiver having a rapid acquisition of satellite signals following a time duration in a low power standby mode (see document D6, column 2, lines 62 to 67), constitutes closer prior art and provides a more appropriate starting point for the assessment of inventive step.

2.2 Sufficiency of disclosure, Article 83 EPC

In the decision under appeal the examining division has also objected under Article 83 EPC that the application did not provide a plausible solution for common uses of the apparatus involving switch-off times of hours or days. In these cases the accuracy of standard quartz oscillators was held to be insufficient to allow for a constrained code phase search. It is, however, noted that, according to the application in suit, the invention may be used in a power cycled system in which a position fix is required once every 30 seconds or so (see application as filed, page 3, second paragraph). Standard quartz oscillators provide a sufficient accuracy for such an application. The requirements of Article 83 EPC, are, therefore, considered to be met.

2.3 Request for remittal to first instance

The appellant has requested that the case be remitted to the department of first instance so as to have the opportunity for the issue of patentability over document D6 to be decided upon by two instances. In particular, in view of the fact that the document was addressed for the first time by the board in the summons to the oral proceedings and not in detail, a remittal was argued to be appropriate.

In the board's opinion, however, in view of the circumstances of the present case, in particular the fact that document D6 had been cited in the international search report pertaining to the application in suit and accordingly had been known to the appellant from the onset and the fact that the application is over nine years old, a remittal to the examining division for further prosecution is not appropriate. Furthermore, the appellant was informed in a detailed communication pursuant to Article 11(1) RPBA issued over five months prior to the oral proceedings of the possible relevance of this document in the pending case, leaving the appellant with sufficient opportunity to take appropriate action.

Accordingly, the appellant's request for remittal is refused.

2.4 Novelty, inventive step over document D6

2.4.1 Document D6 discloses a GPS apparatus which alternates between a normal operation mode and a low power stand-by operation mode in order to reduce power consumption, thereby extending battery life. The apparatus comprises a GPS receiver and a real-time clock (see figure 1A and corresponding description). As explained in document D6 (see column 7, lines 31 to 67), the real-time clock (RTC) 38 provides a wakeup interrupt signal to the microprocessor section 24 of the receiver at the completion of a selected standby time duration. The microprocessor section 24 selects the time duration and initializes the real-time clock 38 with a digital control signal. Furthermore, the real time clock 38 also provides time of day information to the microprocessor section 24 in a time signal. The microprocessor section 24 uses the time of day information in the estimation of the locations in space of the GPS satellites in order to estimate the initial (Doppler-) frequency adjustment and the initial time of arrival (TOA) adjustment used for the subsequent acquisition. When the GPS receiver enters the normal mode after a time duration in the standby mode, the microprocessor section 24 executes instructions in the executable program 26 to estimate new adjustments to the replica frequency and to the replica TOA, based upon the new time and upon the new locations of GPS satellites and of the GPS receiver, for the subsequent acquisition of the GPS satellite signal. The adjustments are provided to the carrier correlator 18 and to the code correlator 19 for the initial frequency and initial TOA of the replica for the searches for the GPS IF frequency and for the GPS IF TOA, respectively. Subsequent acquisition occurs most rapidly where the frequency and the TOA of the initial replica most closely approximate the frequency and the TOA of the GPS IF signal, respectively. When the frequency of the replica matches the frequency of the GPS signal to within approximately 500 Hertz referred to the GPS carrier frequency (0.3 ppm), and the TOA of the replica matches the TOA of the GPS signal to within approximately 500 μs, the acquisition time is fast because no or few additional adjustments are required to obtain correlation. The reference oscillator 21, the timer 22, and the real time clock 38 receive power and continue to operate during the low power standby mode in order to provide the reference frequency, the reference TOA, and the time of day for use in subsequent acquisition.

The estimated new adjustments to the frequency and the TOA are derived from the time elapsed between the time of day of the last location fix and the new time of day from the real-time clock, and learned frequency and TOA corrections as a function of time according to a first embodiment (see figure 3 and corresponding description) or as a function of both time and temperature according to a second embodiment (see figure 4 and corresponding description).

The GPS receiver acquires the GPS signal by adjusting a replica signal, based upon the reference frequency and the reference TOA, to correlate to the GPS signal. The acquisition is fast when the initial adjustment to the replica provides correlation with no or few additional adjustment cycles (see document D6, column 3, lines 50 to 55). The replica PRN code start position at the time of full correlation is the time of arrival (TOA).

2.4.2 According to the application in suit, a substantial part of the acquisition time for a first fix after a power on is taken by the step of code synchronization. Code synchronization is the process of aligning the replica PN code sequence with that received from the satellite. Most modern GPS receivers use an algorithm known as sequential detection for this process by which the replica PN code is adjusted in phase until correlation is achieved. Since the receiver reference clock phase is not known relative to the satellites, the entire code phase space must be searched at power-on (1023 total chips)(see page 3, table 1 and page 4, lines 8 to 13 of the application as published).

By allowing accurate time to be maintained during power-off periods or when GPS signals are unavailable, the acquisition time can be greatly reduced by means of a constrained code phase search algorithm, where the code phase is constrained to be only over the code phase ranges at which the code phase is likely to be (based on current precise time, known location of the satellite, and estimated uncertainty in position since the unit has been switched off). This substantially reduces the search process to a small fraction of the total code phase search space (see page 9, lines 1 to 10 of the application as published).

In the board's view there can be no doubt that in document D6 the no or few additional adjustment cycles required to obtain correlation refer to the alignment of the replica PRN code with respect to that received from the satellite and thus correspond to the constrained code phase search of the application in suit.

2.4.3 The appellant argued in this respect that according to document D6 the TOA of the replica matched the TOA of the GPS signal to within approximately 500 µs (see column 7, lines 56 to 62) and the time interval of the reference TOA signal approximately matched the time interval of the GPS signal code of 1 millisecond (see column 6, lines 41 to 46). Accordingly, in document D6 a full code phase search had to be carried out. A gain in acquisition time was only brought about by the omission of the subsequent bit synchronisation step becoming unnecessary.

In the board's opinion, however, it is clear from document D6 that the inaccuracy of 500 µs mentioned in column 7, lines 56 to 62 provides an upper limit, smaller inaccuracies leading to only a few or even no additional adjustments in the course of the code correlation process being required to obtain correlation, thereby providing the reduction in acquisition time sought. This finding is confirmed by the statement in column 2, lines 18 to 24 that "*the subsequent acquisition is fast when the initial replica frequency is within 500 Hertz (0.3 parts per million) of the GPS frequency and the initial replica TOA is within 500 µs of the GPS TOA. Typically, the greater the differences between the initial replica frequency and the GPS frequency and between the initial replica TOA and the GPS TOA, the greater the time required to acquire the GPS signal*". On the other hand, there is no mention in document D6 of a reduction in acquisition time due to bit synchronisation.

The appellant argued furthermore that because the oscillator 21 was kept running in the standby phase, having a high power consumption due to its high frequency, the apparatus of document D6 would not be usable in battery power operation.

This argument could already not convince due to the very fact that in document D6 the standby mode is specified to be a low power mode, the purpose of which, as is apparent from the discussion of the background of the invention, is to extend battery life (see column 1, lines 56 to 63). Furthermore, it is noted that claim 1 under consideration is not limited to an apparatus with a low power oscillator or for battery power operation.

In the apparatus of document D6, real time clock 38, with its own clock source, reference oscillator 21 and timer 22 are always powered on and provide the reference time signal allowing for a rapid acquisition following a standby phase. Accordingly, in the board's view, they form what is defined in claim 1 as the real time clock circuit supplying the second time reference signal.

2.4.4 In view of the above, document D6 discloses an apparatus having all features of claim 1 in suit with the exception of the following features:

- *means for calibrating said real—time clock circuit (30) using said precise time reference signal;*
- *receiver time base means (9, 11) for providing a first time reference signal; and*
- *means for synchronizing said real-time clock circuit (30) to said first time reference signal;*

2.4.5 Accordingly, the subject-matter of claim 1 according to the main request is novel over document D6.

2.4.6 Inventive step

As far as the above first feature providing a distinction over document D6 is concerned, the function of these means for calibrating is to correct for the inevitable drift of the real time clock circuit due to its limited accuracy. By calibrating the real time clock circuit using the GPS time as measured, it is ensured that the drift of the real time clock circuit only accumulates over the standby period. Since in document D6 the correction for drift in the reference frequency is performed over the duration of the standby period, such a calibration could arguably be considered implicit. At any rate, a skilled person working on the technical field at issue of GPS receivers, faced with the problem of an ever increasing deviation of the real time clock circuit time from precise time would consider providing means for calibrating this circuit to precise GPS time available during normal operation of the apparatus.

As far as the remaining above features are concerned, the effect of these means for synchronizing said real-time clock circuit to a first time reference signal provided by receiver time base means is, as indicated in the description of the application, to obtain a read-out of the time as provided by the real time clock circuit, synchronised to the measurement epoch of the receiver. As such, this effect is not apparent from claim 1 in suit which does not mention measurement epochs. Taking, nonetheless, this effect for the purposes of the problem-solution approach, the objective problem to be solved would be how to make the time signal from the real time clock circuit available to the GPS receiver. In this context, it is noted that, as this problem is unrelated to the problem addressed above underlying the provision of means for calibrating the real time clock circuit, it has to be considered independently.

As would be readily apparent to the skilled person, the code correlator and the GPS receiver in general of document D6 require a synchronisation between the time of read-out of the time signal and the timing of their calculation operations. In this context, it would be obvious for the skilled person to fetch the time from the real time clock circuit in synchrony with each measurement epoch. The provision of suitable receiver time base means to this end in the apparatus of document D6, as far as these are not already present for instance in the form of local oscillator system 15 (see figure 1A and corresponding description), and the provision of apposite synchronising means such as a flip-flop or some other input register, is considered to be part of normal design practice of the skilled person, not requiring any inventive skills.

For the reasons given above, the subject-matter of claim 1 according to the main request does not involve an inventive step (Articles 52(1) and 56 EPC).

2.5 The argumentation above applies, *mutatis mutandis*, to the subject-matter of independent claim 6 directed to a corresponding method for improving the acquisition time of global positioning satellite (GPS) signals for a GPS receiver. The subject-matter of claim 6 according to the main request, thus, also lacks an inventive step (Articles 52(1) and 56 EPC).

2.6 For the reasons above, the main request is not allowable.

3. Auxiliary requests

As discussed above, in the board's view the gist of the application in suit, namely a rapid acquisition due to a constrained code phase search based on the maintenance of accurate time during standby periods, is rendered obvious by document D6. The auxiliary requests merely add, in the board's opinion, minor details of the concrete implementation of this scheme which would readily occur to the skilled person.

3.1 First auxiliary request

In particular, as regards claim 1 according to the first auxiliary request, it would be obvious to the skilled person that the time signal available after the standby period as provided in document D6, corresponding to the second time reference signal, should have a resolution below the length of a C/A PRN code, ie below 1 msec, in order to allow for the correlation with no or only a few additional adjustments sought.

Accordingly, the subject-matter of claim 1 according to the first auxiliary request, and that of independent claim 6 for in substance the same reasons, does not involve an inventive step (Articles 52(1) and 56 EPC).

The first auxiliary request is, thus, not allowable.

3.2 Second auxiliary request

Claim 1 according to the second auxiliary request contains the further feature that the apparatus is arranged such that when the GPS receiver is in a power off mode, the receiver time base means is arranged to be powered off and the real time clock circuit (30) is arranged to be powered on.

In document D6 the circuits in the correlator and the microprocessor sections operate synchronously with a clock signal. When these circuits do not receive a clock signal, the digital states of the circuits are retained and the power consumed in the circuits is reduced by at least an order of magnitude. In the low power standby mode, the flow of the clock signal driving those sections is inhibited (see column 7, lines 1 to 15). Furthermore, in the low power standby mode the flow of power to the RF section is inhibited (see column 6, lines 57 to 65). Accordingly, the time base of the receiver is in substance powered off. On the other hand, as discussed above, the reference oscillator, the timer and the real time clock continue to be powered during the low power standby mode.

The appellant argued that in document D6 the reference oscillator 21, forming part of the receiver's time base, was kept running in the standby mode, whereas in the apparatus according to the application in suit the time base had a separate oscillator which was powered off to save battery power. Although it is questionable whether claim 1 unambiguously defines any distinction in terms of number and configuration of oscillators of the apparatus with respect to document D6, in the board's view any modifications in this respect in the details of the circuitry lie within the competence of the skilled person. In particular, no inventive skills are seen to be required in replacing one (low power) oscillator as provided in document D6 by a (low power) oscillator and a further oscillator for the time base being powered off during standby.

Thus, the subject-matter of claim 1 according to the second auxiliary request, and that of independent claim 6 for in substance the same reasons, lacks an inventive step (Articles 52(1) and 56 EPC).

The second auxiliary request is, therefore, not allowable.

3.3 Third and fourth auxiliary request

According to claim 1 of the third auxiliary request in substance the real time clock circuit is now defined to comprise a free running oscillator and two counters. As in the board's view there is nothing out of the ordinary for an average practitioner in this specific circuit implementation, clock circuits generally being formed of an oscillator and one or more counters, the subject-matter of the claim is considered to be obvious.

Finally, with the further features of claim 1 of the fourth auxiliary request in substance a flip-flop, clocked by the receiver, is used to read out the time information from the (N-bit) counter of the real time clock circuit. Again, in the board's view, there is nothing uncommon to the skilled person in this specific circuit solution. As discussed above, also in the apparatus of document D6 the time information must be obtained by the receiver in a set time relation with respect to its time base. The claimed solution is one common way of achieving this.

Accordingly, the subject-matter of claim 1 according to the third and fourth auxiliary request, and that of independent claims 5 and 4, respectively, for in substance the same reasons, does not involve an inventive step (Articles 52(1) and 56 EPC).

The third and fourth auxiliary requests are, thus, not allowable either.

4. Request for continuation in writing

Finally, at the end of the oral proceedings, the appellant requested that the proceedings be continued in writing. In particular, the appellant argued that more time would be required to provide an expert opinion on the teaching of document D6.

The board is, however of the opinion that the appellant has had sufficient time and opportunity to address the issues raised by the board. As indicated above, the appellant was informed in a detailed communication pursuant to Article 11(1) RPBA issued over five months prior to the oral proceedings of the board's understanding of this document and of its possible relevance in the pending case. Furthermore, the case was discussed in great length at the oral proceedings. The appellant thus had sufficient opportunity to present its comments on the grounds and evidence held against it. In fact, the appellant made written submissions prior to the oral proceedings, submitted further amendments in the oral proceedings and was, furthermore, assisted by a technical adviser throughout the oral proceedings. Accordingly, the board sees no reasons for not reaching a final decision at the conclusion of the oral proceedings.

Accordingly, the appellant's request that the proceedings be continued in writing is refused.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

R. Schumacher H. Wolfrum