

## NAG Library Function Document

### nag\_complex\_safe\_small\_number (X02ANC)

#### 1 Purpose

nag\_complex\_safe\_small\_number (X02ANC) returns the **safe range** of complex floating-point arithmetic.

#### 2 Specification

```
#include <nag.h>
#include <nagx02.h>
double nag_complex_safe_small_number
```

#### 3 Description

nag\_complex\_safe\_small\_number (X02ANC) is a constant defined in the C Header file.

nag\_complex\_safe\_small\_number (X02ANC) is defined to be the smallest positive model number  $z$  such that for any  $x$  in the range  $[z, 1/z]$  the following can be computed without undue loss of accuracy, overflow, underflow or other error:

$-w$   
 $1/w$   
 $-1/w$   
 $\sqrt{w}$   
 $\log(w)$   
 $\exp(\log(w))$   
 $y^{(\log(w)/\log(y))}$  for any  $y$   
 $|w|$

where  $w$  is any of  $x$ ,  $ix$ ,  $x + ix$ ,  $1/x$ ,  $i/x$ ,  $1/x + i/x$ , and  $i$  is the square root of  $-1$ .

#### 4 References

None.

#### 5 Arguments

None.

#### 6 Error Indicators and Warnings

None.

#### 7 Accuracy

None.

## 8 Parallelism and Performance

nag\_complex\_safe\_small\_number (X02ANC) is not threaded in any implementation.

## 9 Further Comments

None.

## 10 Example

None.

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