

# NAG Library Routine Document

## X02ANF

**Note:** before using this routine, please read the Users' Note for your implementation to check the interpretation of *bold italicised* terms and other implementation-dependent details.

### 1 Purpose

X02ANF returns the **safe range** of complex floating point arithmetic.

### 2 Specification

FUNCTION X02ANF ( )

REAL (KIND=nag\_wp) X02ANF

### 3 Description

X02ANF 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 Parameters

None.

### 6 Error Indicators and Warnings

None.

### 7 Accuracy

None.

### 8 Further Comments

None.

## 9 Example

See Section 9 in X02AJF.

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