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 Arguments

None.

6 Error Indicators and Warnings

None.

7 Accuracy

None.

8 Parallelism and Performance

X02ANF is not threaded in any implementation.

9 Further Comments

None.

10 Example

See Section 10 in X02AJF.