

NAG Library Routine Document

F06KCF

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

F06KCF multiplies a complex vector by a real diagonal matrix.

2 Specification

```
SUBROUTINE F06KCF(N, D, INCX, X, INCX)
```

```
INTEGER N, INCX, INCX
```

```
double precision D(*)
```

```
complex*16 X(*)
```

3 Description

F06KCF performs the operation

$$x \leftarrow Dx$$

where x is an n element complex vector and $D = \text{diag}(d)$ is a real diagonal matrix.

Equivalently, the routine performs the element-by-element product of the vectors x and d

$$x_i = d_i x_i, \quad i = 1, 2, \dots, n.$$

4 References

None.

5 Parameters

- 1: N – INTEGER *Input*
On entry: n , the number of elements in d and x .
- 2: D(*) – ***double precision*** array *Input*
Note: the dimension of the array D must be at least $\max(1, 1 + (N - 1)|\text{INCX}|)$.
On entry: the vector d .
- 3: INCX – INTEGER *Input*
On entry: the increment in the subscripts of D between successive elements of d .
- 4: X(*) – ***complex*16*** array *Input/Output*
Note: the dimension of the array X must be at least $1 + (N - 1)|\text{INCX}|$.
On entry: the incremented array X must contain the n element vector x .
On exit: the updated vector x .
- 5: INCX – INTEGER *Input*
On entry: the increment in the subscripts of X between successive elements of x .

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Further Comments

None.

9 Example

None.
