Subject: Updating complex parts
From: Van Snyder
Reference: 04-384r1, 05-128, WG5/N1626-J3-015

1 Detailed specification

Provide a syntax that allows one to update or reference the real and imaginary parts of a complex variable individually without updating or referencing the whole thing. For consistency allow reference to the real and imaginary parts of a complex named constant.

2 Syntax

Allow the real and imaginary parts of a complex variable to be accessed by component-like syntax.

The "component" names considered by subgroup were RE & IM, REAL & IMAG, and REAL & AIMAG.

Subgroup chose RE and IM. They are short, and their use is common in the scientific and engineering communities. Being different from the intrinsic function names will lead to less confusion, since these are not intrinsic function references.

3 Edits

Edits refer to 04-007. Page and line numbers are displayed in the margin. Absent other instructions, a page and line number or line number range implies all of the indicated text is to be replaced by associated text, while a page and line number followed by + (-) indicates that associated text is to be inserted after (before) the indicated line. Remarks are noted in the margin, or appear between [and] in the text.

[Editor: Insert ", complex part selectors" after "component selectors".] 19:4

[Editor: Add a right-hand side for *designator* (R603):] 103:13+

or *complex-part-designator*

[Editor: Insert a new subclause before **6.1.3 Type parameter inquiry**:] 106:2+

6.1.2$\frac{1}{2}$ Complex parts

A **complex part designator** is used to designate the real or imaginary part of a complex data object, independently of the other part.

R614$\frac{1}{2}$ *complex-part-designator* **is** *designator* % RE
or *designator* % IM

C615$\frac{1}{2}$ (R614$\frac{1}{2}$) The *designator* shall be of complex type.

If *complex-part-designator* is *designator*%RE it designates the real part of *designator*. If it is *designator*%IM it designates the imaginary part of *designator*. The type of a *complex-part-designator* is real, and its kind and shape are those of the *designator*.

NOTE 6.6$\frac{1}{2}$

The following are examples of complex part designators:

```
impedance%re      !-- Same value as REAL(impedance)
fft%im            !-- Same value as AIMAG(fft)
x%im = 0.0        !-- Sets the imaginary part of X to zero
```

[Editor: "component ... substring" ⇒ "subobject".] 273:1-2

[Editor: "component ... substring" ⇒ "subobject".] 428:32-33

[Editor: "Part ... component" ⇒ "subobject".] 434:26-27