

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

## 1 Detailed specification

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

## 2 Syntax

6 Allow the real and imaginary parts of a complex variable to be accessed by component-like syntax.  
 7 The “component” names considered by subgroup were RE & IM, REAL & IMAG, and REAL & AIMAG.  
 8 Subgroup chose RE and IM. They are short, and their use is common in the scientific and engineering  
 9 communities. Being different from the intrinsic function names will lead to less confusion, since these  
 10 are not intrinsic function references.

## 3 Edits

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

16 [Editor: Insert “, complex part selectors” after “component selectors”.] 19:4

17 [Editor: Add a right-hand side for *designator* (R603):] 103:13+  
 18 **or** *complex-part-designator*

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

### 6.1.2<sup>1</sup>/<sub>2</sub> Complex parts

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

23 R614<sup>1</sup>/<sub>2</sub> *complex-part-designator* **is** *designator* % RE  
 24 **or** *designator* % IM

25 C615<sup>1</sup>/<sub>2</sub> (R614<sup>1</sup>/<sub>2</sub>) The *designator* shall be of complex type.

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

#### NOTE 6.6<sup>1</sup>/<sub>2</sub>

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

29 [Editor: “component ... substring” ⇒ “subobject”.] 273:1-2

30 [Editor: “component ... substring” ⇒ “subobject”.] 428:32-33

31 [Editor: “Part ... component” ⇒ “subobject”.] 434:26-27