Annex A

Syntax

This annex contains the formal syntax definition of Verilog-AMS HDL. The conventions used are described in Section 1. For completeness the *IEEE 1364-1995 Verilog HDL* grammar has been included with the Verilog-AMS grammar.

A.1 Source text

A.2 Natures

A.3 Disciplines

A.4 Declarations

A.5 Module instantiation

A.6 Mixed-signal

A.7 Behavioral statements

A.8 Analog expressions

A.9 Expressions

A.9.1 Concatenations

A.9.2 Expressions

A.9.3 Function calls

A.9.4 Primaries

A.9.5 Expression left-side values

A.9.6 Operators

```
ams_unary_operator ::=
      + | - | ! | ~
unary_operator ::=
      + | - | ! | ~ | & | ~& | | | ~| | ^ | ~^ | ^~
binary_operator ::=
       + | - | * | / | % | == | === | != | !== | && | ||
      | < | <= | > | >= | & | | | ^ | ^~ | ~^ | >> | <<
```

A.9.7 Numbers

```
number ::=
       decimal_number
      | octal_number
      | binary_number
```

```
    | hex_number
    | real_number
decimal_number ::=
    [ sign ] unsigned_number
    | [ size ] decimal_base unsigned_number
sign ::=
     + | -
size ::=
    unsigned_number
unsigned_number ::=
    decimal_digit { _ | decimal_digit }

binary_number ::=
    [ size ] binary_base binary_digit { _ | binary_digit }
octal_number ::=
    [ size ] octal_base octal_digit { _ | octal_digit }
hex_number ::=
    [ size ] hex_base hex_digit { _ | hex_digit }
decimal_base ::=
    'd | 'D
octal_base ::=
    'o | 'O
hex_base ::=
    'h | 'H
binary_base ::=
    'b | 'B
decimal_digit ::=
    0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9
binary_digit ::=
    x | X | z | Z | 0 | 1
octal_digit ::=
    x | X | z | Z | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7
hex_digit ::=
    x | X | z | Z | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | a | b | c | d | e | f | A | B | C | D | E | F
real_number ::=
     [ sign ] unsigned_number . unsigned_number
    | [ sign ] unsigned_number [ . unsigned_number ] e [ sign ] unsigned_number
    | [ sign ] unsigned_number [ . unsigned_number ] E [ sign ] unsigned_number
    | [ sign ] unsigned_number [ . unsigned_number ] scale_factor
scale_factor ::=
    T | G | M | K | k | m | u | n | p | f | a
```

A.10 General