RENESAS Tool News

A Note on Using the C Compiler Packages --M3T-NC308WA and M3T-NC30WA-- for the M16C MCU Family --On Address Calculations Made in an Iteration Statement--

Please take note of the following problem in using the C compiler packages --M3T-NC308WA and M3T-NC30WA--for the M16C MCU family:
- On address calculations made in an iteration statement

1. **Products and Versions Concerned**
   - The M3T-NC308WA V.1.00 Release 1 through V.5.40 Release 00
     (the C compiler package for the M32C/90, M32C/80, and M16C/80 series)
   - The M3T-NC30WA V.1.00 Release 1 through V.5.40 Release 00A
     (the C compiler package for the M16C/60, M16C/30, M16C/20, M16C/10, M16C/Tiny, and R8C/Tiny series

2. **Description**
   When address calculations are made in an iteration statement, incorrect results will be yielded if the increment of the loop counter is greater than one.

3. **Conditions**
   This problem occurs if the following conditions are all satisfied:

   (1)   In the program exists such an iteration statement as "for" or "while".

   (2)   The loop counter is of type signed int, unsigned int, signed short or unsigned short.

   (3)   The increment of the loop counter is greater than one.

(4)   In an iteration statement exists such an address
       calculation that references an array)
       Here, the array is any one of these types, signed int,
       unsigned int, signed short and unsigned short.

(5)   The controlling expression in an iteration statement
       performs a comparison with a constant expression.

(6)   The variables used in the loop counter and for address
       calculations are those whose domains have been reserved
       in the stack frame.

(7)   The optimizing option -OS or -OS_MAX(-OSM) is used.

Example:
```
----------------------------------------------------
unsigned char buf[];      /* Condition (4) */
unsigned char *p;
for ( i=0; i<2; i+=2 ) {   /* Conditions (1), (2), (3), and (5) */
   p = buf + i*2;        /* Condition (4) */
  *p=0x00;
 }
----------------------------------------------------
```

4. Workaround
Place a dummy asm function within the iteration statement.

Example:
```
--------------------------------------------------
 unsigned char buf[];
 unsigned char *p;
 for ( i=0; i<2; i+=2 ) {
    asm()I;              /* Dummy asm function placed */
       p = buf + i*2;
      *p=0x00;
   }
--------------------------------------------------
```

5. Schedule of Fixing the Problem
We plan to fix this problem in the next release of the products.