Please take note of the following problem in using the M3T-NC30WA C-compiler package for the M16C/60, M16C/30, M16C/Tiny, M16C/20, M16C/10, and R8C/Tiny series MCUs:

- On a multiplication between a variable of type unsigned/signed long and an immediate value

1. **Versions Concerned**
   M3T-NC30WA V.5.00 Release 1 through V.5.30 Release 1

2. **Description**
   Performing a multiplication between a variable of type unsigned/signed long and an immediate value may result in the C compiler being terminated forcefully with the following error message displayed:

   The program has performed an illegal operation . . . .

3. **Conditions**
   This problem occurs if the following two conditions are satisfied:
   (1) Any of the optimizing options O1, -O2, -O3, -O4, -O5, -O, -OR, and -OS is used.
   (2) A multiplication is performed between a variable of type unsigned/singed long and an immediate value of 0xffffffff.

4. **Example**

   unsigned long g;          /* Condition (2) */
   void func(void)
5. **Workaround**
   This problem can be circumvented by going through the following steps:
   
   (1) Define a temporary auto variable `tmp`.
   (2) Assign the immediate value `0xffffffff` in Condition (2) to `tmp`.
   (3) Place a dummy asm function immediately after the assignment expression in (2).
   (4) Perform the multiplication between a variable and the temporary auto variable in (1) instead of the immediate value.

   Example:
   
   ```c
   unsigned long g;
   void func(void)
   {
       unsigned long tmp;       /* Temporary auto variable tmp defined */
       tmp = 0xffffffff;        /* Immediate value assigned to tmp */
       asm();                   /* Dummy asm function placed */
       g = g * tmp;             /* tmp used instead of immediate value */
   
   ...  
   }
   ```

6. **Schedule of Fixing the Problem**
   We plan to fix this problem in our next release of the product.