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A Note on Using C Compiler Packages M3T-NC308WA and M3T-NC30WA --On Reading Members of Bit Fields in an Array--

Please take note of the following problem in using the M3T-NC308WA and M3T-NC30WA C-compiler packages:

- On reading members of bit fields in an array
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1. Products and Versions Concerned

M3T-NC30WA V.5.00 Release 1 through V.5.30 Release 1

(used for the M16C/60, M16C/30, M16C/Tiny, M16C/20, M16C/10,
and R8C/Tiny series MCUs)

M3T-NC308WA V.5.00 Release 1 through V.5.20 Release 1

(used for the M32C/80 and M16C/80 series MCUs)

2. Description

The values of members of bit fields in an array may be incorrectly read out.

2.1 Conditions

This problem occurs if all the following conditions are satisfied:

- (1) Any of the optimizing options -O1, -O2, -O3, -O4, -O5, -O, -OR, and -OS is selected at compilation.
- (2) A constant is assigned to a member of a bit field in an array.
- (3) The above member of the bit field is read out after the assignment in (2).
- (4) The subscript of the array is altered in between (2) and (3).

2.2 Example

struct STRUCT1 {
 unsigned int b0:1;

```

};

extern struct STRUCT1  s[10];
extern unsigned int    i, dummy;

void func(void)
{
    s[i].b0 = 0;        /* Condition (2) */

    i = 0;              /* Condition (4) */
    if (s[i].b0 == 1) { /* Condition (3) */
        dummy++;
    }
}

```

3. Workaround

Place a dummy asm function immediately before reading out a member of a bit field.

```

-----
struct STRUCT1 {
    unsigned int  b0:1;
};

extern struct STRUCT1  s[10];
extern unsigned int    i, dummy;

void func(void)
{
    s[i].b0 = 0;
    i = 0;
    asm();          /* Dummy asm function placed */
    if (s[i].b0 == 1) {
        dummy++;
    }
}

```

4. Schedule of Fixing the Problem

We plan to fix this problem in our next release of the products.

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