RENESAS Tool News

Note on Using the C Compiler Package for RH850 Family

When using the CC-RH C compiler package for the RH850 family, take note of the problem described in this note regarding the following point.

- Optimization of access to external variables placed over a 4-Mbyte or greater range of addresses (No.6)

Note: The number which follows the description of the precautionary note is an identifying number for this precaution.

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1. Applicable Product
   CC-RH V1.00.00 to V1.02.00

2. Description
   If the optimization of access to external variables is enabled, access may be to addresses other than those intended in access by the same function to external variables separated by 4 to 8 Mbytes.
   CC-RH will output the following warning messages in this case.

   - V1.00.00 to V1.01.00
     W0550010 : Illegal displacement in ld instruction.
   - V1.02.00
     W0550011 : Illegal operand (range error in immediate).

3. Conditions
   The problem arises when all conditions from (1) to (4) listed below are met.
   (1) The optimization of access to external variables is enabled by designating the -Omap option or -Osmap option.

(2) The same function includes access to two or more global variables*.
Designation of the -Osmap option is limited to cases where the two or more global variables are in the same section.

(3) The difference between the higher and lower addresses of the global variables in (2) is 4 or more Mbytes (0x400000) but less than 8 Mbytes (0x800000).

(4) The size of the global variable in (2) is at least 2 bytes.

*: Enabling the optimization of access to external variables leads to access to external variables being EP (element-pointer) relative.

An example of statements satisfying the condition when the optimization of access to external variables is enabled in V1.02.00 is given below.
```
-----------------------------------------------------------------------
int a;
char b[4194300];
int c;  // Condition (3): The difference between the addresses of
        // variables a and c is 4M bytes (0x400000).
        // Condition (4): The size of variable c is at least 2 bytes.
void func() {
    a=0;
    c=0;  // Condition (2): Access to variables a and c
        // A warning (W0550011) is output in response to the
        // instruction for access to variable c.
}
-----------------------------------------------------------------------
```

4. Workaround
Do not designate the -Omap option or -Osmap option in compiling C source files for which a warning message shown in 2 is output.

5. Schedule for Fixing the Problem
This problem will be fixed in the next version.