

PRODUCT DESCRIPTION

Cpm idle slots analyzer is a ucode tool that measures the idle slots of the CPM (A situation where no requests to the CPM scheduler are pending)

This utility detects if idle slots are available during the application CPM activity. It can be used to figure out whether the application CPM requirements are met. The utility counts the free CPM slots and records the time-stamp on the DPR. This DPR area is user-defined (Start address and size).

The utility assigns itself the lowest CPM scheduler priority. As such, it will be served only if absolutely no other requests (channels, dma, etc.) are pending.

WHO WE ARE?

DoGav Systems Ltd. has worked closely with Motorola for over 16 years on a variety of Micro-Controllers (MC68hcxx), High-End processors (680x0, 60x, 75x, 74xx), DSP (56xxx) and Integrated Communications platforms.

Our company has written application code, customized microcode, consulted to both customers and Motorola on many successful programs.

Working with [Arnewsh Inc.](#), DoGav has provided world wide training for PQI, PQII and C-Port.

DoGav Systems Ltd. is the only company in Israel, (and one of very few world wide) licensed by Motorola to customize PQI / PQII CPM microcode

**CPM IDLE SLOTS
ANALYZER**

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Version 1.0

USER REFERENCE

PACKAGE CONTENTS

Object-Level function - installs the uCode patch into the Dual Port Ram. It comes with a header file containing the prototype of the function (The C source file is available on request).

REQUIREMENTS

In order to use this utility, the application should meet the following requirements:

1. Allocate area on the DPR, for time-stamp and time elapsed since previous idle slot.
2. Enable the time-stamp register.

These requirements are not necessary if the utility is implemented in “count idle slots only” mode.

FUNCTION DESCRIPTION

The following function takes care of all the uCode patch associated procedure.

```
void InstallUcode (  
    UINT32 Immr)
```

Where:

Immr = value of the DPR's beginning address.

UTILITY OPTIONS & COMMANDS

There are four possibilities to invoke the utility:

1. With the command **0x08c1001e** to enable the option “count idle slots only”. The overhead of this option is less than 20 CPM clocks.
2. With the command **0x08c3001e** to enable the option “write time-stamp”. In this case the time-stamp (32 bits, copied from time-stamp register) is written to the user supplied table, whenever idle slot is detected. The overhead of this option is about 28 CPM clocks.
3. With the command **0x08c5001e** to enable the option “write busy duration”. In this case the table is filled with the number of clocks elapsed since last idle slot. Each entry in the table occupies 16 bits. 0xffff is written if the elapsed time was bigger than 64k (unlikely to happen). The overhead of this option is about 28 CPM clocks.
4. With the command **0x08c7001e** to enable the option “write both”. In this case options 2 and 3 are combined, except that the elapsed time occupies 32 bits (instead of 16 bits), in order to maintain the alignment. The overhead of this option is about 28 CPM clocks.

To deactivate the utility use the command **0x08c9001e**.

STRUCTURE DESCRIPTION

```
typedef struct  
{  
    UINT32 CPMCntr;  
    UINT16 StartPtr;  
    UINT16 EndPtr;  
    UINT8 TS_resv[12];  
} s_CPMidle;
```

Where:

1. CPMCntr – Idle slots counter.
2. StartPtr – Start address of the user supplied table (Must be aligned to 4).
3. EndPtr – Last entry's address of the user supplied table.

Note: The user should supply only StartPtr and EndPtr. The counter is cleared by the utility upon command invocation.

UCODE VERSION

Generally, almost any uCode patch is mask version dependent. The object we supply takes care of the actual Hip version and setup the proper patch. The current patch supports all CPM Rom versions.

WHICH TRAPS ARE USED

The default supplied patch uses traps 1 and 2. In case of conflicting trap with other patches, the customer can request different traps number

HOW TO INSTALL THIS PRODUCT

The user should link the supplied library file with its application.

HOW TO WORK WITH THIS PRODUCT

The utility uses page 10 (offset 0x8A00). This page contains over 200 reserved bytes, of which about 80 bytes are used.

Prior to invoking the utility, the following steps should be carried out:

1. Call the C-function *InstallUcode* (supplied as lib file) in order to install the patch. This function should be called by the application only once right after the Ethernet driver initialization.
2. Fill the structure as explained earlier.

Note:

The user should be aware of the dual port ram which is used and locked by the patch. The patch is rather small, and as a result, only the minimum (2kb) is used.

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