

CERNTECH MÉRNÖKIRODA KFT.

TESTING PROCEDURES
(Áramkör Tesztelési Leírások)

(SZ-1)

MSZ EN ISO 9001 : 2001

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ügyvezető

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1 Testing of DDL Cards

The SIU card must be connected into the emulator card (FEIC), the DIU card must be plugged into a “plug-in” DRORC card. Before the DRORC card is connected into a 66 MHz, 64-bit, 3.3V PCI slot, the PC must be completely switched off.

1.1 Login to Linux

Login: `aliceddl,`
Password: `*****`

Work directory: `./home/aliceddl/rorc/vers.4.4/rorc/Linux`

It is enough to type **Linux** to enter the work directory.

1.2 Emulator card settings

First you have to configure the FEIC card for the communication. Type the `feic.menu` command.

feic.menu

The switches of the `feic.menu` command are the following:

- m** :the identification number of your DRORC card on the PCI bus. If more DRORC cards are plugged into the PC, then you have to give the identification number of the card which your link is connected to. You can see the identification numbers of the DRORC cards on the PCI bus, if you type the `rorc_find` command.
- c** :if you use a integrated DRORC card with two DDL channels, you must give the number of the channel that is actually connected to the SIU. Channel A= 0; Channel B= 1.

Choose menu 1 (Set the FEIC parameters), and set the following parameters.

PATGEN mode: **2** –alternating (0000/FFFF); **3** –flying 0; **4** –flying 1;
EVENT length: it is worth to set it to the max length, this is 256 kword (**0f**).
TRIG mode: **3**.
FLCRT mode: **3**.
TRDIS mode: **3**.
SEED value: **0001**.

Then, with *yes*, you can accept the parameters and they will be loaded into the emulator card. Example: If you connect the SIU card to channel B of an integrated DRORC, whose number on the bus is 1, then the command looks like this: `feic.menu -m 1 -c 1`

1.3 Card Tests

You must set the DIU card in receiver mode, and the SIU card in transmitter mode. It is possible with the `farx` or the `fbrx` command. `Farx` uses channel a, while `fbrx` uses the channel B on the integrated DRORC card. (On plug-in DRORC cards there is only channel A).

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farx -p

The important switches of the `farx` command are the following:

- p** : the pattern, for that the receiver is waiting. **0** –flying 0; **1** –flying 1; **a** alternating (0000/FFFF). Default: alternating.
- e** : the number of events. Default: infinite number of events (-e 0).
- m** : if more DRORCs are plugged into the PCI bus, you must give which card is connected to the SIU. Default value: 0.

For example: `farx -m 1 -p 0 -e 1000` will transmit 1000 events with flying 0 pattern.

It is important to start the receiver with the same pattern that you set in `feic.menu`. In any other case you will get a comparison error. The default parameters of this command are infinite number of events and alternating pattern. You can stop data transmission with Ctrl+C. After this, the command makes an automatic reset process.

You should carry out the test procedure with flying 0, and flying 1, and alternating patterns. In case of a comparison error the test software stops and shows status and error information. You can reset the SIU card with `siu_reset`. You can reset both the DRORC and the DIU with the `rorc_reset -b` command.

During the test you must check the correct behavior of the front LED, too. The relationship between the LED and the states of the card is shown in the following table:

LED	COLOR	Function at SIU	Function at DIU
Front LED	off	No power or logic device is not configured	No power or logic device is not configured
	The status of the Front LED is updated in each 0.4 sec.		
	red	Link down (No optical signal, or laser disabled, or laser fault, or offline state)	Link down (No optical signal, or laser disabled, or laser fault, or offline state)
	yellow	Link is up but Link full (XOFF) exceeded 0.2 sec.	Link is up but RORC busy exceeded 0.2 sec.
	green	Link up. No data transmission and Link full (XOFF) did not exceed 0.2 sec	Link up. No data transmission and RORC busy did not exceed 0.2 sec.
	blinking green	Data transmission happened and Link full (XOFF) did not exceed 0.2 sec.	Data transmission happened and RORC busy did not exceed 0.2 sec.

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If the front LED works well and the test scripts run without errors, the tested SIU and DIU cards are OK. However, it is advisable to test a card with at least two other cards. Choose one SIU, and do the tests with all the DIU cards, then choose one DIU and do the test with all the SIU cards. Then carry out the tests with the cards in pairs. Thus all the cards will be tested twice.

1.4 Supply Current Measurement

To measure the supply current of the optical transceivers, you can use the `rorc_send_command -w`.

```
rorc_send_command -w siupm  
rorc_send_command -w diupm
```

Further switches of the `rorc_send_command` are the following:

- m** : if more DRORCs are plugged into the PCI slots, you must give, which one is connected to the SIU.
- c** : if you use an integrated DRORC card, you must give the number of the channel which is actually connected to the SIU. Channel A= 0; Channel B= 1.

The last three digits of the received value are the code of the command you have sent. The first four digits are the measured value in a hexadecimal format.

For example: ...**06bf**072, ...**05d6**071.

This hexa number you have to convert to a decimal value. Then, there is a formula that gives you the current in milliamps.

$$I[\text{mA}] = (D + 1014) / 50.86.$$

1.5 Burning the Identification Number in

The DDL cards has a 2 Kb serial EPROM to store hardware identification data, such as hardware version, logic device type, links speed, and serial number. The commands are the `diu_id` and `siu_id`. If you type in these commands without any parameter, you get back the identification numbers previously written in the EPROM.

```
siu_id -V -v -p -b -s  
diu_id -V -v -p -b -s
```

The meaning of the parameters are the following:

- V** : major version.
- v** : minor version.
- p** : type of the logic device on the card, e.g. 20K60E or 20K100E (DDL 2v1 cards) or APA150 or A3P250 (DDL 2v3 cards).
- b** : link speed in Mbps: 2125 or 2500.
- s** : serial number.
- m** : the identification number of DRORC card, which is connected to the SIU under test,

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or in which the DIU under test is plugged in.

For example: `diu_id -v2 -v1 -p20K60E -b2125 -s00310 -m1`

You can look over the list of parameters of all commands with the **-h** (or: `-h|more`) switch. For example: `siu_id -h`.

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2 Appendices

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FNY SZ-1/2
FNY SZ-1/3

DDL cards test sheet
DRORC cards test sheet
HOLA cards test sheet

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