

# Radim 5 - Software

## Instruction Manual

## PC Program for the Radim5 instrument

The **Radim5** program is intended for collection and storing of data from the Radim5 monitor. It works in the Windows 95/98/T environment.

The **minimum PC configuration** must comply with the following requirements:

- operating system for Windows 95 and higher
- 486 and higher processor
- 16 MB RAM
- VGA graphic card
- HD min RS232
- 1 x RS232
- 1 x LPT.

**The operation of the system retains the rules of operation of the MS-Windows system.**  
**It can be controlled using the menu, mouse or functional keys.**  
The functions and a description are given in the following text.

### 1 Introduction

#### 1.1 Installation

As this is an application for Windows 95 and higher, the applications should be installed in the standard manner used for these systems.

The program should be installed in the following manner:

The first diskette contains the SETUP.EXE program. After turning on the program, it is necessary to follow the installation program. After entering the place of installation, the program begins to install itself automatically and asks the operator to insert the next installation diskette. The program announces the end of installation. The program is then installed.

#### 1.2 Description of the program

The program works in two basic modes, OFF LINE and ON LINE. If the instrument is not connected to the PC, the text OFF LINE appears in the bottom line on the right. In the OFF-LINE mode, the operator can view stored data and store data in files. In the ON-LINE mode, in addition to the above functions, communication with the instrument function can be set and the data is read from the measuring memory.

#### 1.3 Connecting Radim5 to the PC

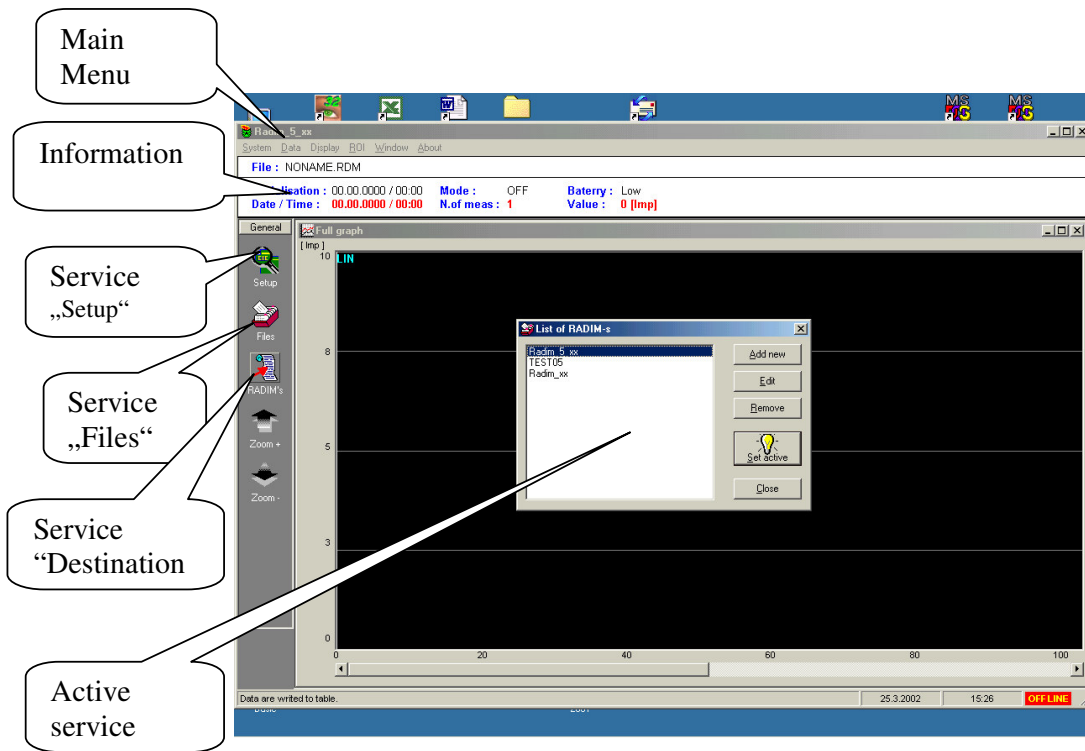
The cable supplied with the instrument is connected to the server port (RS232-port) of the computer and the connector on the side of the Radim5 monitor. After connecting the cable, the **LED 232 must be on constantly**.

"System" and then "Communication" are selected from the main menu. In the centre of the main window, a small window appears, in which the **number of the series port** can be entered (if you don't know the number of the port - this information is sometimes not given on the PC, a suitable number must be found experimentally. For large PC's, the right number is usually 2 and, for "notebooks", usually 1, unless this port is occupied by an external mouse).

### 1.4 Designation of the instrument and files - "Radims" icon

A production number is assigned by the manufacturer to each instrument (see the label on the front of the monitor) and this number - e.g. 9 means "Radim5 - 09". As some users could have more than one monitor, it is useful if all the results stored the files are accompanied by the number of the monitor. The icon "Radims" in the left column of the main menu - see below is used to automatically assign this number. A sub-window appears in the middle of the main panel after opening this function, offering:

Designation	Function
<b>Add new</b>	adding a new instrument and file prefix to the list
<b>Edit</b>	name of the instrument and set - e.g.: Radim 5 09
<b>Remove</b>	removal of an instrument from the list
<b>Set Active</b>	confirmation that the designated instrument - file is "active" and that the results will be stored in the file with this name
<b>Close</b>	closing the service



### 1.5. Setup

When you click on the "Setup" icon, the PC reads the important information from the Radim5 monitor. Information that data is being read from the Radim5 instrument appears in the bottom left-hand corner of the main panel. The Setup service offers choice of the measuring regimes and permits reading of the measured results. The following appears in the centre of the main panel - see Fig. 1 "Setup".

### Information on the state of Radim5:

On the right-hand side of the Setup window, the following windows are located:

- Battery** state of the batteries
- Memory** gives the number of time intervals that can be stored in the memory (NOTE: The number of time intervals can differ from the number of measurements, as time "runs" even when Radim5 is turned off).
- Background Counter** number of background impulses - for details, see below
- Counter** number of impulses counted in the last interval (measurement terminated) or the interval being measured
- Serial No.** production number of the monitor.

The following information is provided on the left-hand of Setup:

- Measurement:** Off - measurement turned off, or On - measurement turned on
- High voltage:** information on whether HV is turned on or off (HV is automatically turned on in the Meas regime and is turned off in the Bckg and Test regimes)

### Choice of the measuring regime:

Selection of the variant offered by the window can be made between:

- Meas** radon measurement - see Chap. 3.3
  - Bckg** background measurement - see Chap. 3.3 and the note below - "Background determination"
  - Test** testing and depicting the results of the test
- NOTE:** In selecting the regime, it is necessary to **confirm** the selection by pressing the **Set** button. The Radim5 instrument switches to the selected regime as soon as the instrument is turned on using the On/Off switch.

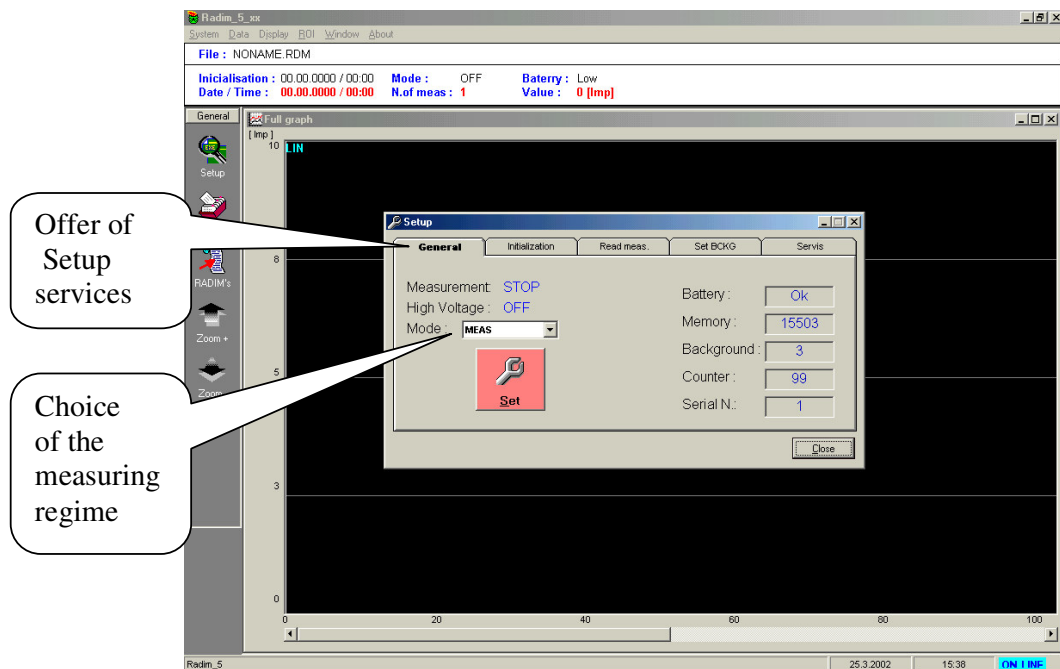


Fig. 1 "Setup"

## Choice of services under Setup:

The upper panel of the Setup window offers a range of other services:

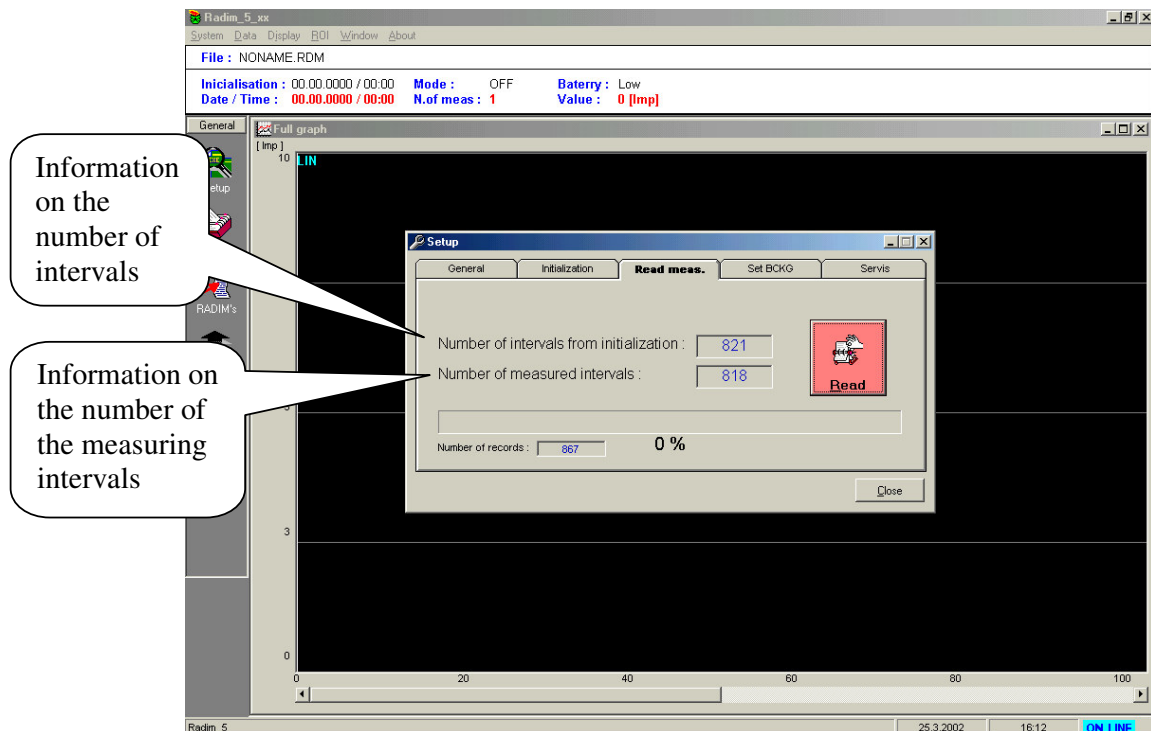
- Servis** available only for the manufacturer. It is necessary to know the password allowing access to the special functions
- Set Bckg** manual entry of the number of impulses in the background - see the note below on "Background determination"
- Initialization** zeroing of the "time" and impulse counter and transfer of information on the time from the computer to the Radim5 program - see Chap. 4.4 **NOTE: following Initialization, the measuring results are all zeroed!!!!**
- Read meas** reading the results of the measurement - for details, see below.

### **Reading the results of measurement using "Read meas"**

After opening this option, information appears on the number of "time" intervals stored in the memory, i.e. the "Number of intervals from initialization" and the number of intervals that were used for the measurement, i.e. the "Number of measured intervals". The user gains a basic concept of the content of the memory - see Fig. 2.

As soon as the "Read" icon is opened, the program automatically initiates **entry of the entire memory of Radim5 into the Radim5 xx file**, where xx denotes the production number of the monitor. This obligatory entry into the file corresponding to the Radim5 with production number xx is very important because it excludes the possibility of loss of the results of the measurement during further handling of the data.

After clicking on "Read", a picture appears on the PC, as depicted in Fig. 8. As soon as the name of the file is entered and confirmed, the entry of the memory of Radim5 into the file is reflected in a growing row of blue rectangles in the lower part of the window.



**Fig. 2 „Read measurements“**

After reading the file, the program names the entire "pathway" where the data are stored, e.g.: "C:\Program Files\Radim5\DATA\Radim5 xx\Radim5 xx.RDM" - see Fig. 3. It is recommended that the user make notes of what was measured in the stored file so that the results that the instrument contains are apparent.

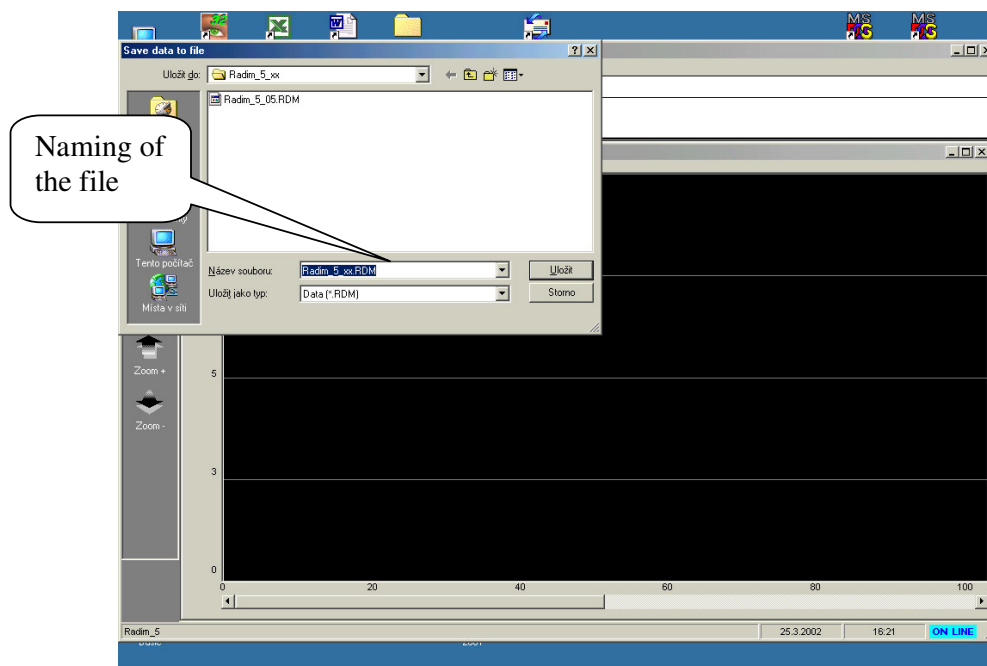


Fig. 3

## Processing of the measuring results

### Recommended procedure:

"Window" is selected from the main Menu in the upper panel. The following appears in a small table:

- Full graph,
- ROI,
- Data,
- Arrange windows.

Select **Full graph** - a window opens in the main panel, depicting the results of all the measurements stored in the memory.

Select **Files** in the left-hand column of the main panel and, after this is opened, the data sets stored in the memory are depicted. For example: Radim5 01, Radim5 02, etc. The appropriate file is selected and the content of the memory is depicted in the "Full graph" window. The manner of depiction depends on the choice made from the **"Display"** selection ("Display" is depicted in the upper panel in the main Menu).

**Display** offers the following options:

- **Expand**: only "Full graph" or "Full graph" and ROI.
- **Y-scale LIN/LOG**: choice of linear or logarithmic Y axis
- **Y-scale Bq/m3/Count**: the Y-axis depicts either RC or the number of impulses
- **X-scale Num/Time**: the "time" axis can depict either the number of the measured interval or the date + hours.

As the Radim5 memory can contain the results of measurement in a great many rooms or other sites, usually separated by turning the instrument on and off, it is necessary to find the "room" of interest in the memory. This is an easy matter if the user recorded the start and end of the measurement. If this information is not available, the "Data" option can be of considerable use - see below. Prior to processing the "room", the results of the measurement can be viewed manually in the following manner: the cross, controlled by the mouse, is placed on the result of interest and the left-hand button of the mouse is clicked. A white line appears in the window, corresponding to the results and, above the window, in the white field, can be read the date of the measurement, number of the interval and result of the measurement (impulses or RC) - See Fig. 4. There is a moveable panel at the bottom of the figure, that can be "drawn along" using the mouse, so that the white line can be moved through the whole memory.

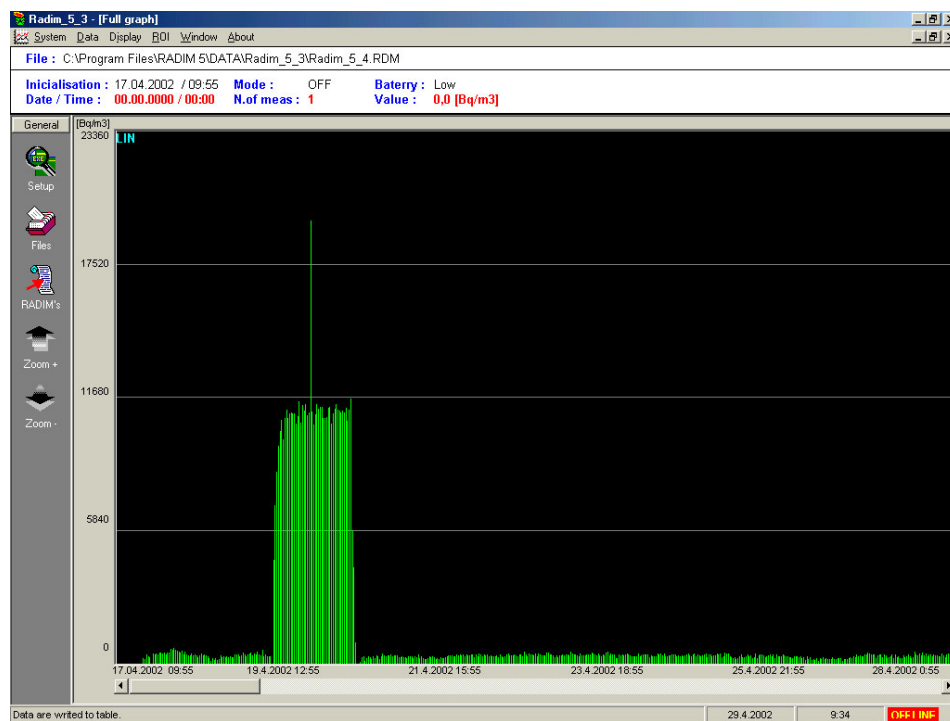


Fig. 4 "results of measurements"

### Choice of the "room"

The cursor - cross is placed on the left-hand edge of the part of the region in "Full graph" that we wish to select and the right-hand button of the mouse is clicked. The cursor is placed on the right-hand edge of the region and the right-hand button is again clicked - the selected region is then displayed as a hatched area in the window - see Fig. 5.

The correctness of the choice can be confirmed by selecting "Expand" in the "Display" option, and this depicts as Full graph the selected area located in the graph with the name "ROI".

### Processing the delimited area - ROI:

Window is selected from the options in the main Menu, followed by ROI. Another graph is added to the window, depicting ROI (if the window is maximalized using the usual options under Windows, then Full graph is exchanged for ROI). The results of the individual measurements can then be read by moving the square in the lower panel.

The entire measurement, depicted in ROI can be processed statistically by selecting "**ROI**" and then **R.O.I. info** from the options in the main Menu. Following this operation, further lines appear above the main window, where the following is given:

ROI time interval (ROI from xxxxxxxxx to xxxxxxxxx).

Mean

Minimum and maximum value

and the standard deviation of the mean (denoted as St. Dev.).

The Export to file option (the small window in the R.O.I. options) can be used to export data from ROI to the ASCII file with the TXT extension. This file can be read using the WORD program as:

From:26.03.2002 / 16:39

To:27.03.2002 / 15:39

Mean:465,39

Standard deviation: 159,80

Max:233

Min:967

Num.	Date	Time	Value [Bq/m3]
1	26.3.	2002 19:9	300,000
2	26.3.	2002 19:39	386,667
3	26.3.	2002 20:9	293,333
4	26.3.	2002 20:39	400,000
5	26.3.	2002 21:9	346,667
6	26.3.	2002 21:39	420,000
7	26.3.	2002 22:9	393,333

etc.

**Note:** It is useful to remember where the program stored the text file. The following options are offered: "Radim5 xx.txt". When the file is opened using Word, Excel, etc., it is necessary to open "Program files" and then "Radim5" in the main directory and then to find the subdirectory Radim5 xx and open the file with the .txt extension.

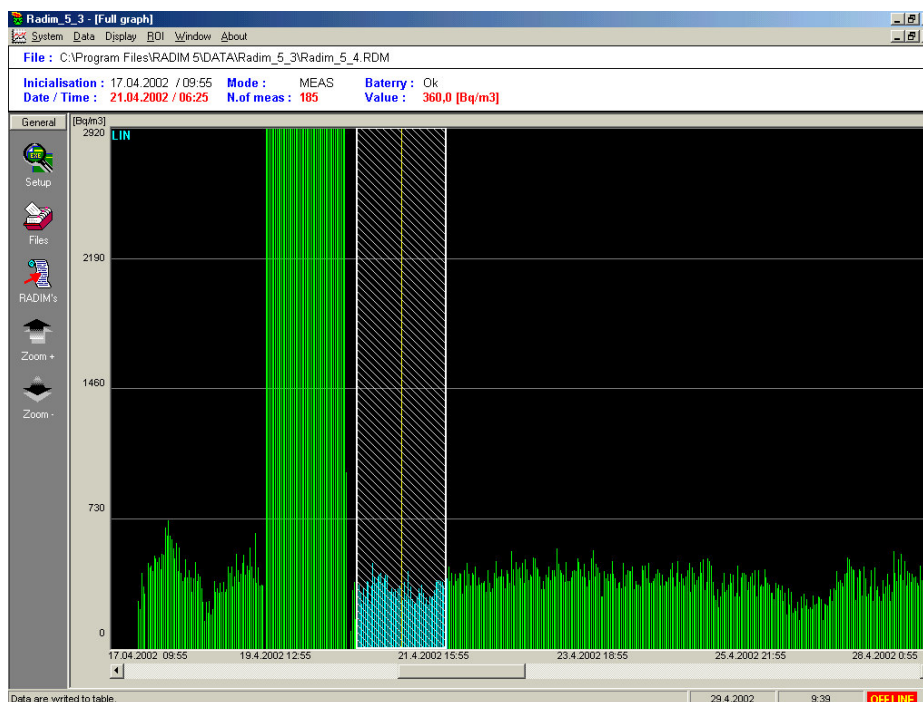


Fig. 5 „Region Of Interest“

## Other options in the ROI service:

"Zoom+" (or the CTRL+F1 key combination) expands the selected area,

"Zoom-" (or the CTRL+F2 key combination) diminishes the selected area,

"R.O.I. delete" deletes the defined area (Note: the defined area is denoted by a bright green colour, not white).

Some users prefer work with the keyboard over use of the mouse. Then:

- the cursor can be **moved** by pressing "arrow left" or "arrow right" (arrows next to the numerical part of the PC keyboard).
- a selected part can be designated: using ROI left (key F4) and using R.O.I. right (key F5)
- the scale of the Y axis can be increased using the "up" arrow and decreased using the "down" arrow.

## "Data" option

Sometimes it is very useful to read the results of the measurement in numerical form. The "Data" option under **Windows** is used for this purpose. After this is opened, a table appears in the window, giving the serial number of the interval, the time, number of impulses, RC, "HV" and "Battery" - see Fig. 6. Depiction of the "HV" and "Battery" values is very useful, because the user knows immediately whether normal measurement did not take place during some of the intervals or whether the instrument was turned off because of "Battery Low". These "special" intervals are designated by a red colour in the table.

No.	Date	Time	n [Imp]	a [Bq/m3]	HV	Battery
1	25.3.2002	18:39	0	0,00	Off	Ok
2	25.3.2002	18:39	0	0,00	Off	Low
3	25.3.2002	19:09	0	0,00	On	Ok
4	25.3.2002	18:39	0	0,00	Off	Low
5	25.3.2002	19:09	0	0,00	On	Ok
6	25.3.2002	19:09	0	0,00	On	Ok
7	25.3.2002	19:39	365	2433,33	On	Ok
8	25.3.2002	20:09	40	266,67	On	Ok
9	25.3.2002	20:39	41	273,33	On	Ok
10	25.3.2002	21:09	45	300,00	On	Ok
11	25.3.2002	21:39	48	320,00	On	Ok
12	25.3.2002	22:09	62	413,33	On	Ok
13	25.3.2002	22:39	57	380,00	On	Ok
14	25.3.2002	23:09	65	440,00	On	Ok
15	25.3.2002	23:39	69	460,00	On	Ok
16	26.3.2002	00:09	73	486,67	On	Ok
17	26.3.2002	00:39	75	500,00	On	Ok
18	26.3.2002	01:09	103	686,67	On	Ok
19	26.3.2002	01:39	90	600,00	On	Ok
20	26.3.2002	02:09	90	600,00	On	Ok
21	26.3.2002	02:39	107	713,33	On	Ok
22	26.3.2002	03:09	96	640,00	On	Ok
23	26.3.2002	03:39	132	880,00	On	Ok
24	26.3.2002	04:09	113	753,33	On	Ok
25	26.3.2002	04:39	102	680,00	On	Ok
26	26.3.2002	05:09	104	693,33	On	Ok
27	26.3.2002	05:39	83	553,33	On	Ok
28	26.3.2002	06:09	110	733,33	On	Ok
29	26.3.2002	06:39	117	780,00	On	Ok
30	26.3.2002	07:09	129	860,00	On	Ok
31	26.3.2002	07:39	91	606,67	On	Ok
32	26.3.2002	08:09	108	720,00	On	Ok
33	26.3.2002	08:39	82	546,67	On	Ok
34	26.3.2002	09:09	67	446,67	On	Ok
35	26.3.2002	09:39	91	606,67	On	Ok

Fig. 6. „Table Data“

**Note 1: Recommended procedure of the background determination**

To determine the background the following procedure is recommended :

- select Bckg- mode in Setup service,
- place the Radim5 monitor outdoor and start measurement,
- measure background for about 5 hours,
- stop measurement,
- use standard procedure of reading of all data and then define ROI, which corresponds to the background measurement. Using “ROI info” determine the mean value of the counts/0.5hour,
- in the Setup service select “set BCKG” and write the number of impulses.

**Note 2: High power in Setup service**

When the monitor Radim5 is connected to PC by Setup service the needed **power increased considerably**. Therefore use Setup for the necessary time to determine mode of operation and reading the results. Do not forget disconnect the Radim5 monitor when needed operation is completed.

**Note 3 : Initialization after the battery replacement**

When the battery are replacing the “time clock” ( see above) stops and time is not determined properly. In order to set time the “**Initialization**” **procedure must be used again** after the replacement of the battery.

“

**Note 4 : measurement stop when “Test”, Initialization” and “Set BCKG” procedure is used.**

When “Test”, Initialization” and “Set BCKG” procedure is used going measurement **stops automatically**. Use usual procedure of the Radim5 starting to continue measurement.