IceRobotics

IceTag System
for Animal Activity Recording

User Manual

Incorporating
IceTag3D™
IceReader™
and
IceTagAnalyser™ 2008

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FOREWORD

This manual provides user information on the IceTag3D™ motion sensor for animal activity recording, including IceTagAnalyser 2008 software and IceReader™ desktop reader unit. The system is designed by IceRobotics Ltd, Logan Building, Roslin BioCentre, Roslin, Midlothian, Scotland, UK, EH25 9TT. The content includes detailed installation and operating instructions.

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FCC STATEMENT

“This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference”

USER STATEMENTS

The user is cautioned that changes / modifications not approved by the responsible party could void the user’s authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The device carrier frequency is 127KHz and has a peak output power of -36.1dBmicroV/m at 300m.

The Category II Radio communication device (127 kHz TX) complies with Industry Canada Standard RSS-310. Ce dispositif de radio communication de catégorie II (127 kHz) respecte la norme CNR-310 d’Industrie Canada.

1. INTRODUCTION

The IceTag3D motion sensor, IceReader download unit and IceTagAnalyser 2008 software together provide a powerful tool enabling animal researchers and institutions to closely monitor, record and report animal activity.

Mounted on the hind leg of an animal, the IceTag3D motion sensor incorporates accelerometer technology to monitor lying and standing/stepping behaviour. The device has a tough plastic housing designed to withstand the farm environment, and a simple strap mechanism for easy attachment and removal.

The package comes complete with an IceReader for the purposes of wireless activation, data download and IceTag3D status reporting on your PC using the IceTagAnalyser 2008 software.

This user manual describes the installation and use of the IceTag3D device, IceReader and IceTagAnalyser 2008.

1.1 IceTag3D, IceReader & IceTagAnalyser 2008 Key Features

- MS Windows application for downloading data from IceTag3D devices
- Wireless activation and desk top download using portable IceReader unit attached to PC or Laptop
- Stores up to 60 days of activity between downloads
- Tough IceTag3D housing, designed to withstand the farm environment
- Replaceable strap
- 12 month international replacement guarantee*

1.2 Recommended Minimum System Requirements

- IBM compatible PC with Windows
- Windows 98 Operating System or later version
- CD-ROM drive for CD installation
- USB port
- Adobe Acrobat Reader software

The IceTag3D motion sensor system has been specifically calibrated with dairy cows. Use of the system with other animals is easily applicable but will require validation and may require revised calibration, which on request will normally be provided free-of-charge by IceRobotics. For details of the animal calibration process, please contact IceRobotics at support@icerobotics.com.

*Note: The IceReader wireless download unit is designed for desktop use only. It is not designed to withstand the farm environment. Outdoor use of the IceReader, or its use within the farm environment, may invalidate your product warranty.

2. ICETAG3D SYSTEM CONTENTS

The IceTag3D system comprises the following components:

2.1 Hardware

- IceTag3D motion sensor
- IceReader wireless download unit
- USB interface cable
- Velcro leg straps for one-time use
- Velcro strap cutter

2.2 Software and Documentation

This system is provided with a CDROM disk containing the following software and off-line documentation:

- IceTagAnalyser 2008 software program
- User manual in pdf format
- USB drivers

3. INSTALLATION

This section contains step-by-step instructions on how to install the IceTagAnalyser 2008 software onto your PC, how to activate and communicate with IceTag3D motion sensors using IceReader and how to attach and remove an IceTag3D device to an animal.

3.1 Installing the IceTagAnalyser 2008 Software

Insert the IceTagAnalyser 2008 CD into the CD-ROM drive on your PC and follow the step-by-step guide to run the setup program on the IceTagAnalyser 2008 CD.

3.2 Connecting the IceReader

Using the USB cable provided connect the IceReader to any USB port on your PC. The first time the IceReader is connected, the operating system may prompt for a driver installation. On most versions of Microsoft Windows the drivers for the IceReader are included in the Microsoft Windows operating system. Therefore no driver installation should be necessary.

The green LED on the IceReader will be illuminated if the IceReader is being powered. The amber LED will illuminate on the IceReader when the IceTagAnalyser 2008 software has recognised the IceReader and is ready for use.

If the amber LED on the IceReader does not illuminate, then driver installation may be required. These can be installed from the IceTagAnalyser 2008 software CD. Simply re-run the setup application for IceTagAnalyser 2008 and select the 'Full' installation option instead of 'Typical' installation. A 'Typical' installation will not install the drivers as most versions of Windows XP already have the required drivers pre-installed. The setup program will install the drivers in a sub-directory alongside IceTagAnalyser; this is typically C:\Program Files\IceRobotics\IceTagAnalyser\USB Drivers. A document called 'DriverInstallation DI3D-001-001.pdf', found in the 'USB Drivers' folder, details how to register the installed drivers with your system.

3.3 Communicating with an IceTag3D Motion Sensor Device

To activate or communicate with an IceTag3D device swipe the IceTag3D over the IceReader. The amber LED on the IceTag3D will flash to indicate that the IceTag3D has been read. To verify that the system is functioning correctly check that the IceTag3D information is displayed on the screen. This section describes IceTagAnalyser and its use.

3.4 Attaching an IceTag3D Device to an Animal

The IceTag3D is attached to an animal's hind leg using the Velcro strap provided. The IceTag3D should be mounted with **the red arrow pointing upwards**. Figure 1 shows a correctly attached IceTag3D and illustrates the attachment in three steps:

1. Thread one end of the Velcro strap through the smaller, left hand side lug. The smooth, yellow side of the Velcro should face inwards against the animal's leg. Press the Velcro back onto itself to fasten.
2. Loop the strap around the animal's leg and through the bigger, right hand side lug.
3. Press the Velcro back onto itself to fasten. Check the attachment is loose enough to allow two to three of your fingers to be inserted between the strap and the animal's leg.

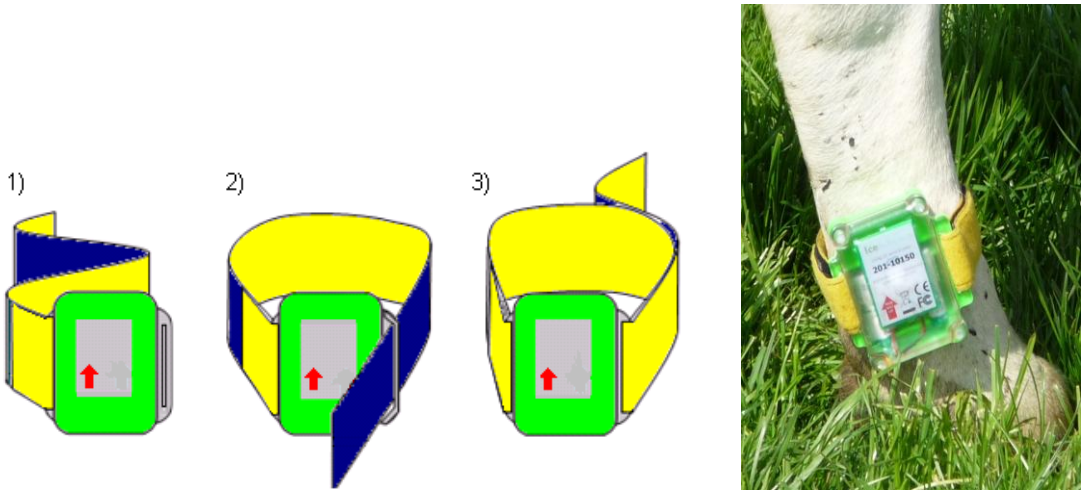

Figure 1. Attaching an IceTag3D to an animal

3.5 Removing an IceTag3D from an Animal

Using the supplied yellow safety cutter, hook the blade shield over the strap and with a downward motion cut through the yellow strap to remove the IceTag3D.

4. ICETAGANALYSER 2008

The IceTagAnalyser 2008 software and IceReader are used to activate the IceTag3D motion sensor device for use, to query device status and to download recorded data. This chapter introduces the most common actions performed with the IceTagAnalyser 2008 software.

4.1 Introducing the IceTagAnalyser 2008

IceTagAnalyser 2008, illustrated in figure 2, provides a menu driven computer interface for communicating with your IceTag3D devices.

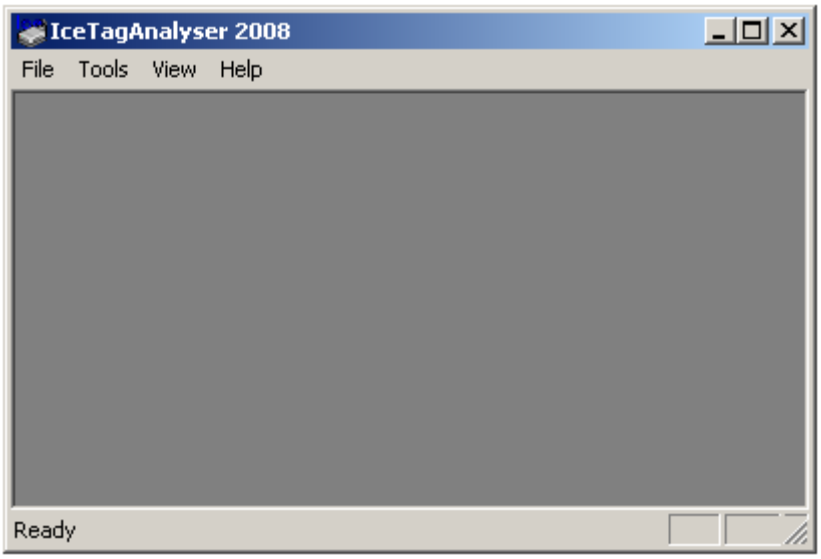

Figure 2. IceTagAnalyser Interface Window

4.2 Getting IceTag3D Device Information

To display IceTag3D device information select `Tools`. This will produce a pull-down menu illustrated in figure 3. Section 6 discusses earlier IceTag versions.

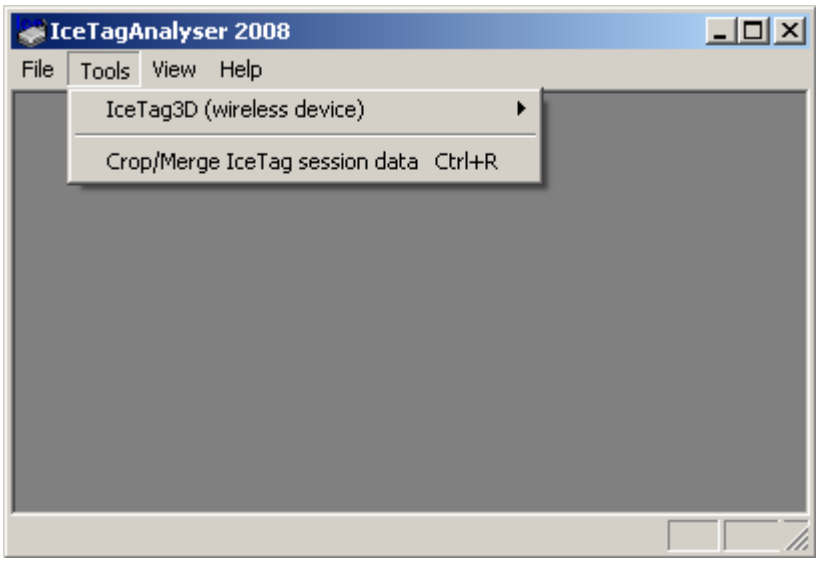

Figure 3. The pull-down menu for displaying IceTag3D device info.

From the pull-down menu select `IceTag3D (wireless device) > Display IceTag3D Device Info`. This will bring up the IceTag3D Device Info dialogue box

illustrated in figure 4. Any IceTag3D now swiped across the IceReader will show the IceTag3D information on the screen.

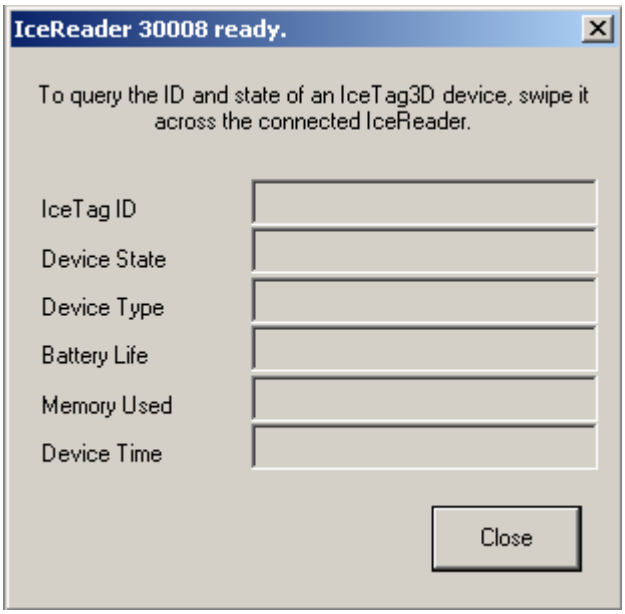

Figure 4. IceTag3D Device Info dialogue box

The IceTag3D Device Information dialogue box provides the opportunity to view details of any swiped IceTag3D. The `Close` button closes the IceTag3D Device Information dialogue box.

Swipe an IceTag3D over the IceReader. The amber LED on the IceReader will flash to indicate that the IceTag3D has been read. The IceTag3D information will be displayed on the screen.

- `IceTag ID` shows the unique identification number allocated to the IceTag3D and will correspond to the number on the IceTag3D label.
- `Device State` shows whether the IceTag3D is active or idle.
- `Device type` shows the IceTag3D version and the firmware version.
- `Battery Life` confirms the health of the battery.
- `Memory Used` shows what percentage of the IceTag3D memory has been used.
- `Device Time` shows the date and time of the clock within the IceTag3D device. This should correspond to the actual time.

4.3 Activating an IceTag3D

To activate an IceTag3D select `Tools`. This will produce a pull-down menu illustrated in figure 5. From the pull-down menu select `IceTag3D (wireless device) > Activate IceTag3D device`. This will bring up the Activate IceTag3D Device dialogue box illustrated in figure 5.

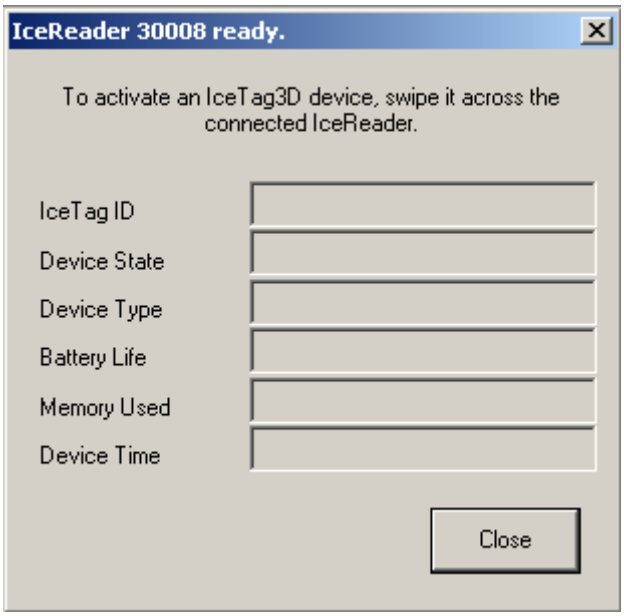

Figure 5. IceTag3D device activation dialogue box.

Warning: Activation of an IceTag3D will clear any previously recorded data on the device.

Swipe an IceTag3D over the IceReader. The amber LED on the IceReader will flash to indicate that the IceTag3D has been read. The IceTag3D in now active and will show a flashing LED.

The IceTag3D device activation dialogue box is the same as the IceTag3D Device Info dialogue box but now the `Device State` field will read `Active`.

4.4 Downloading Data from an IceTag3D Device

To download data from an active IceTag3D device, select `Tools`. From the pull-down menu select `IceTag3D (wireless device) > Download IceTag3D Session Data`. This will bring up the Download IceTag3D Session Data dialogue box illustrated in figure 6.

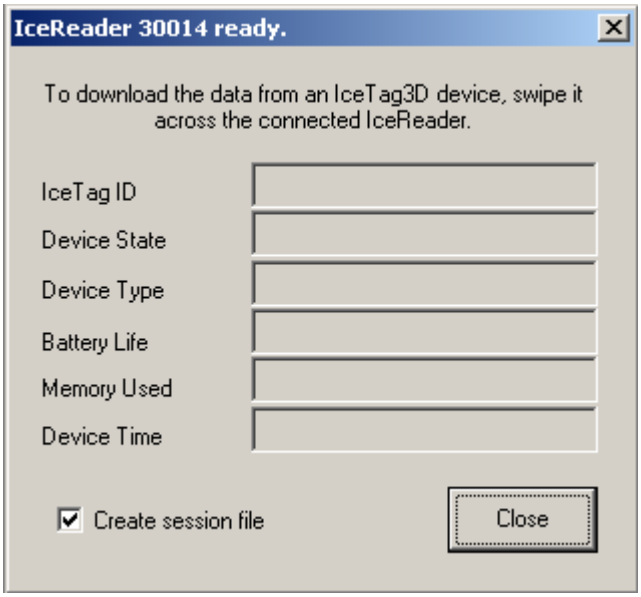

Figure 6. The Download IceTag3D Session Data dialogue box

The `Download` dialogue box is the same as both the IceTag3D device activation dialogue box and the IceTag3D Device Info dialogue box, but provides the following additional tick box:

Create session file: When this box is ticked the data downloaded from the IceTag3D will be automatically turned into a session file. If this box is not ticked the IceTag3D will download a non-viewable compressed data file only. This option allows significant disk space saving on your PC by storing data in a non-viewable compressed data file. A typical session file will be approximately four times the sizes of a non-viewable compressed data file.

Swipe an IceTag3D over the IceReader. The amber LED on the IceReader will flash to indicate that the IceTag3D has been read. The IceTag ID, Device Status, Device Type, Battery Life, Memory Used, and Device Time fields in the dialogue box will be filled in with the values from the device. The Dialogue box will be overwritten by a Status box stating: `Downloading from device,` followed by the device ID. The data from the device is now downloaded into IceTagAnalyser 2008 on your PC. To cancel any download click `Cancel` during the download process. Cancelling during download will cause all the data to remain on the IceTag3D for future download.

If the tick box in the bottom left corner of the Download IceTag3D Session Data dialogue box `Creates session file` has been ticked the data will be stored automatically as a session file in the IceTagAnalyser Sessions File folder. The name of the saved file will correspond with the IceTag ID, and the date and time of when the IceTag3D is activated. For example 'IceTag3D20110108_21-06-2008_12;30;15'.ses. All session files are labelled '*.ses'.

If the tick box in the bottom left corner of the Download IceTag3D Session Data dialogue box `Create session file` has *not* been ticked the data will be automatically stored as a non-viewable compressed file in the IceTagAnalyser Raw File folder and will be saved with the same filename as a session file but with a 'raw_bin' suffix. These file formats are saved on your PC in 'My Documents' in a folder labelled 'My Data' with four sub-folders. These are labelled Exports, Raw, Reports and Sessions. To access these folders close the Download IceTag3D Session Data dialogue box by clicking `Close`. From the pull-down menu select `file > open…`. This will open the 'Open' file dialogue box illustrated in figure 7. To view the 'Sessions' files folder click on the top of the three buttons on the left of the 'Open' file dialogue box. The middle button will open the 'Reports' files folder. To view a list of compressed data files in the 'Raw' files folder click on the bottom button. To view compressed data files they must first be converted to session files. Within IceTagAnalyser 2008 all compressed data files are automatically converted to session files when they are opened.

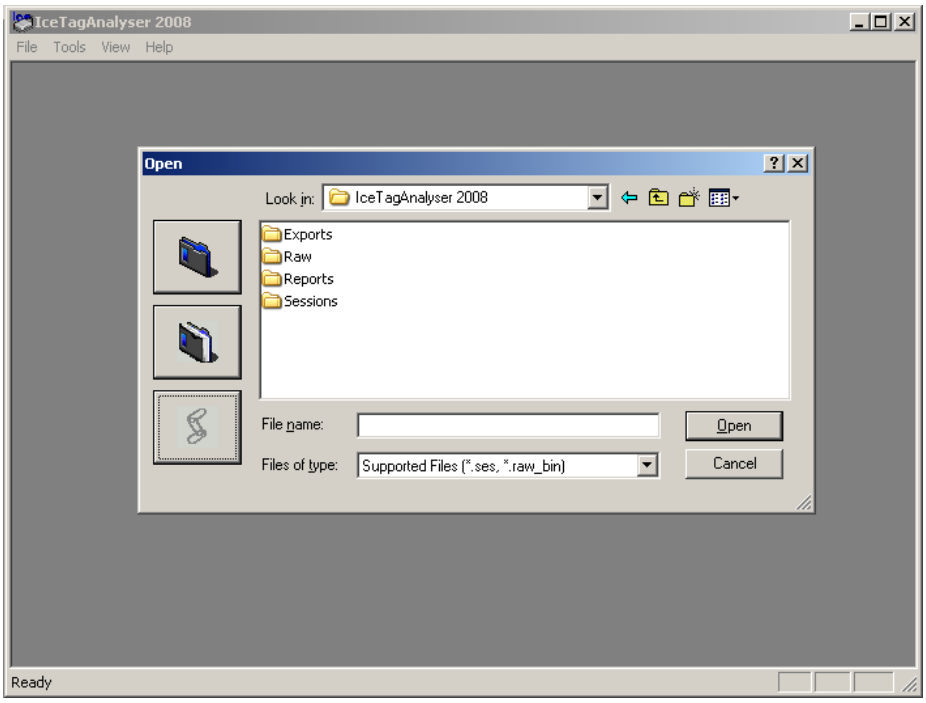

Figure 7. The Open file dialogue box

4.5 Viewing Recorded Data

The IceTag3D Analyser provides utilities for simple viewing of recorded data sessions. To view a downloaded IceTag3D session, select `File > Open` from the pull-down menu. Select a downloaded session to view from the Sessions folder. This opens a window in the display that shows a text view of the session, as illustrated in figure 8. The top left of the window displays the session header information comprising the IceTag, Site and Animal IDs, and any notes associated with the session.

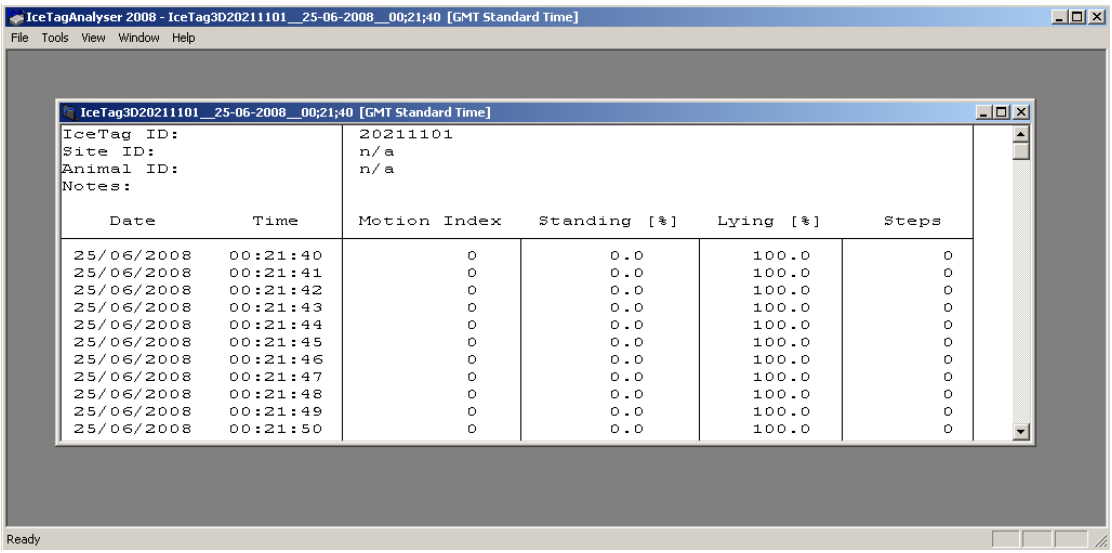

Figure 8. Viewing recorded session data

A number of options for viewing the data are available through the “View” pull-down menu, as illustrated in figure 9. Measured animal activity can be shown by the second, minute, hour, day, week or summarised for the whole recording period. For example, select `View > Per minute` to show the recorded data in minute intervals.

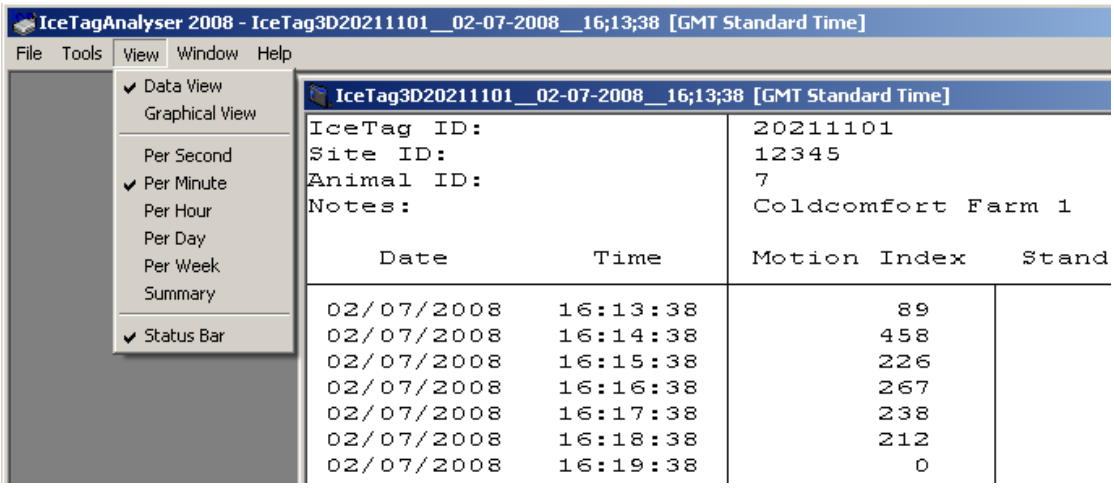

Figure 9. The View menu options

4.5.1 Changing Session Header Information

Note that session files are, by default, read-only. To enable changes to files you must first change the file attributes in ‘Options’. From the pull-down menu select `File > Options`. In the ‘Default Paths’ tab un-tick the read only tick box. Any session files now created will be read/write files. To change read-only properties of session files already created and stored in the session file folder, right click on the session file you want to alter. Click `Properties` and ‘un-tick’ the read only tick box in the ‘Attributes’ section. IceTagAnalyser enables you to change session header information, such as the animal ID or site ID, while viewing the data. Move the mouse pointer over the session header data, the pointer will change to a hand

symbol. Click on the header data to bring up a dialogue box, as illustrated in figure10 that enables you to enter new header information.

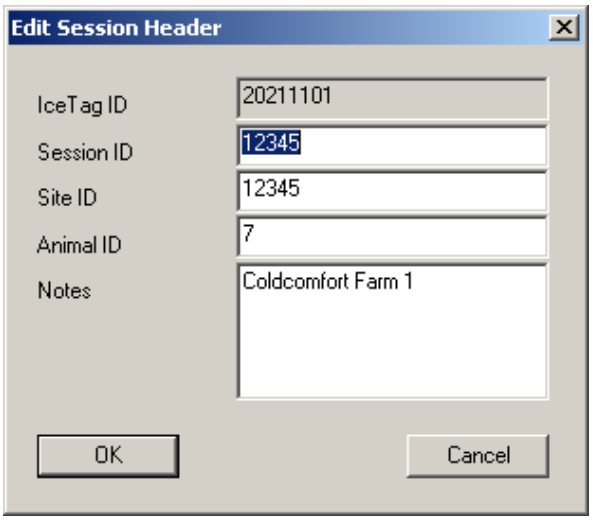

Figure 10. Changing session header information

4.5.2 Changing Session Start Time/Date

In some experiments, it may be helpful to change the session times from different IceTag3Ds to start at the same point. Files must be changed from 'read only' to read/write format. Section 4.5.1 explains how to change the file from 'read only' to 'read/write'. Changing session start time/date can also be helpful if an IceTag3D is activated using a PC that has incorrect time and date settings. ***It is important to note that care is required when dealing with several sessions. Data time co-ordination is dependant on PC time and must be carefully co-ordinated to match different session times appropriately*.**

To change the start time and date of a session file, move the mouse over the column that displays the acquisition times of the recorded data. When the mouse pointer changes to a hand symbol, click to display the dialogue box in figure 11.

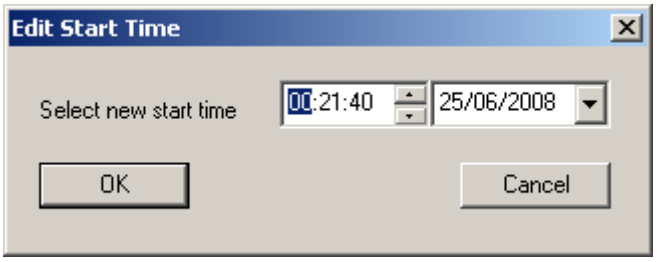

Figure 11. Changing the session start time and date.

4.5.3 Graphical View

Select `View > Graphical View` from the pull-down menu to view the recorded data in a graphical format. As with the Data View, the activity can be shown by the second, minute, hour, day, week or as a total. Figure 12 shows a screen shot of data in graphical view.

Figure 12. Graphical data view

Move the mouse pointer over the “Standing [%]” in the left section of the window. The mouse pointer changes to a hand to show that this area of the screen is clickable. Click on “Standing [%]” to hide the standing information in the graphical view. Active and lying information can also be hidden in this way. This is a useful tool for finding times of interest in the recorded session. The motion index is represented on a logarithmic scale to improve visibility of motion. All other values are on a linear scale.

4.6 Creating Reports

When an experiment requires that data be collected from multiple animals at the same time, it can be useful to collate the multiple session data into a single session. It may also be useful to truncate the recorded data to remove recordings before the IceTag3D was attached and after it was removed. The Create Report tool enables you to do this. Select `Tools > Crop/Merge IceTag session data` to open the `Create Report` dialogue box, illustrated in figure 13.

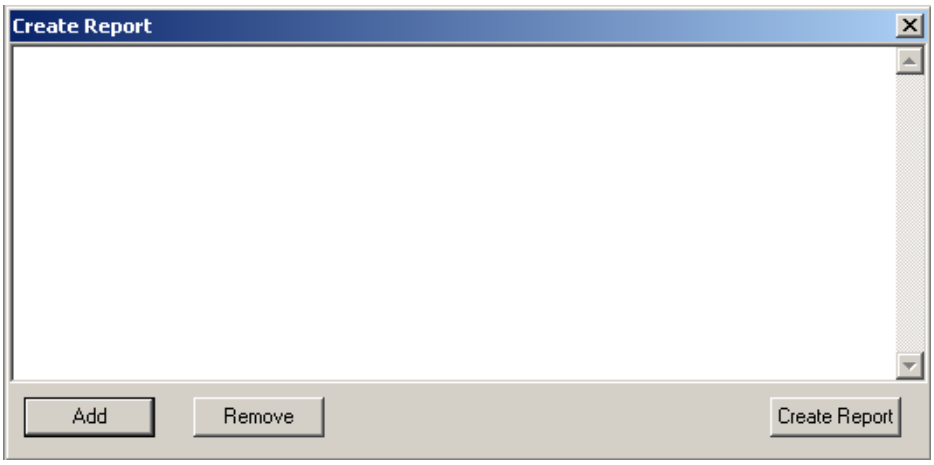

Figure 13. Create Report dialogue box

Click the Add button on the dialogue box to add a session to the report; this brings up a file selection dialogue box. Select a recorded session to add to the report; this brings up the `Add Session` dialogue box. The `Add Session` dialogue box, illustrated in figure 14, enables you to crop the start and end times to the times of interest. Click `Add` to add this session to the report. The 'Include in report' tick box allows you to add or remove session header information from the cropped session file.

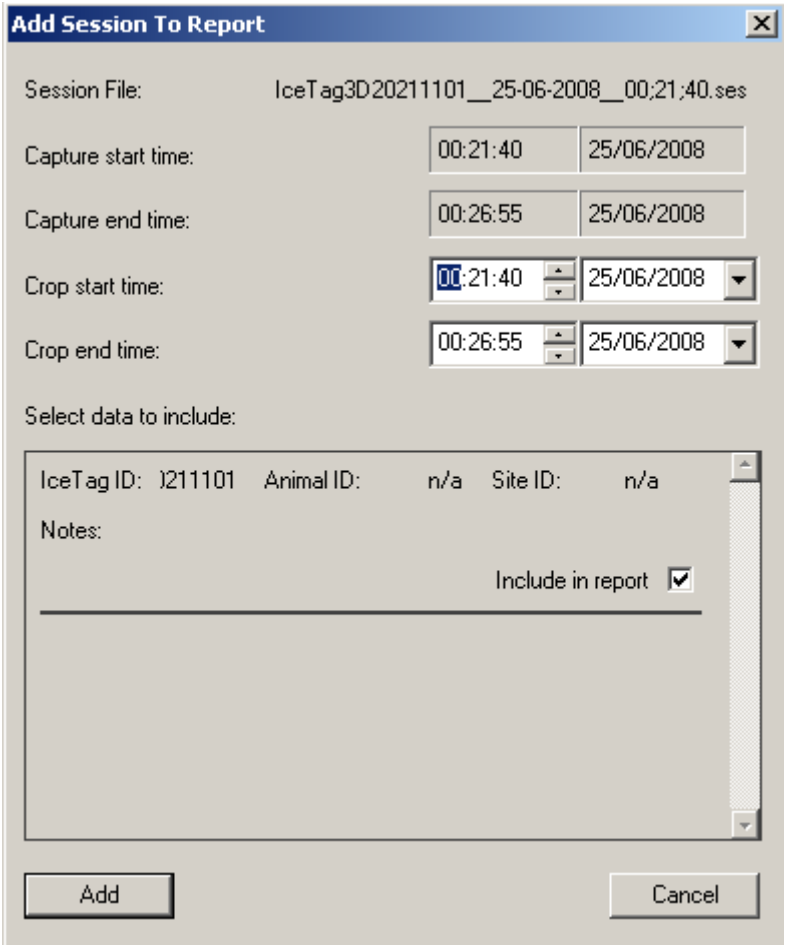

Figure 14. Add Session dialogue box

When all the sessions of interest have been added, in the `Create Report` dialogue box click `Create Report` to create the report. ***Warning, adding two sessions with large time period gaps between the files may create very large reports.***

Cropped and merged session files have the same file format as the downloaded session files; they can be viewed, edited and exported in the same way.

4.7 Exporting Data

Both session files (suffixed '.ses') and non-viewable compressed data files (suffixed '.raw_bin') can be exported by IceTagAnalyser to other programs for further analysis. A '.ses' file can be exported as a Comma Separated Value (CSV) file or as a Microsoft Access Database file. CSV files can easily be read in most popular statistical analysis programs.

4.7.1 Exporting Open Session Files

To export a session file that is currently open in IceTagAnalyser, select `File > Export` from the menu. The file will be exported using the data granularity and separating characters specified in the options (see section 4.8).

4.7.2 Exporting multiple files with Explorer

Both '.ses' files and '.raw_bin' files can be exported using Windows Explorer. In the Session file folder right click on the session file you want to export and select `Export`. The file will be exported using the data granularity and separating characters specified in the options (see section 4.8). ***NB: More than one session file can be selected at once.*** Exporting multiple files with Explorer also applies to '.raw_bin' files in the Raw file folder.

4.7.3 Exporting from a Command Prompt or a Batch File

IceTagAnalyser 2008 supports a number of command line options that can be used to open or export session files. This can be useful, should scripted/batch file exporting be required. IceTagAnalyser 2008 supports the following command line options:

```
IceTagAnalyser.exe [/exp [/format:csv/mdb] [/force]] <filename>
```

where

`<filename>`	Full path and name of a .ses file
`/exp`	Option will export file to csv or mdb. If omitted, file will be opened in IceTagAnalyser.
`/format:csv`	Exports file as csv (output file name will not be prompted)
`/format:mdb`	Exports file as mdb (output file name will not be prompted)
`/force`	Export will overwrite existing files without prompting

For command-line exports, the output path and output format (time granularity and delimiters) are taken from the current IceTagAnalyser settings. Appendix B contains some command-line examples.

4.8 Options

Select `File > Options` from the pull-down menu to set the application options for the IceTagAnalyser 2008 software. The options that are configurable include the default path for Raw, Session, Report and Export file storage settings; export settings for the CSV files and Device Probing COM settings. Figure 15 shows the 'default paths' tab. Downloaded session files are, by default, set as read-only. The 'read only' tick boxes on the 'default Paths' tab allow this safety feature to be overridden.

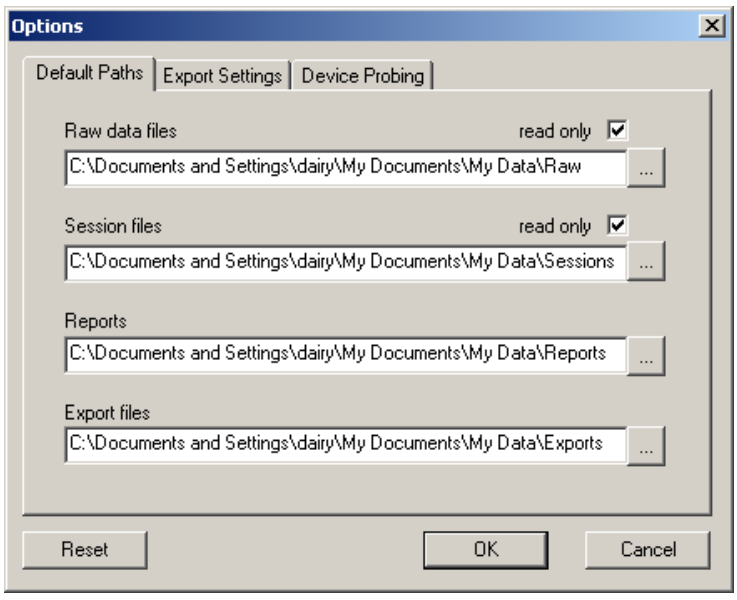

Figure 15. Default directory settings

Figure 16 shows the export options, which enable you to include the line headers in the exported CSV files, to choose the data and line delimiters, the granularity of the exported data (by the second, minute, hour, day, week or data summary).

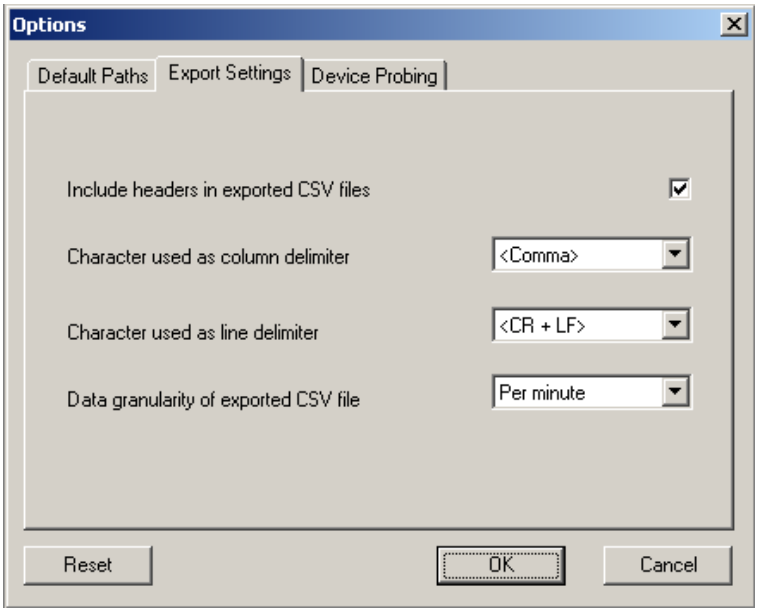

Figure 16. Export options

Figure 17 shows the “Device Probing” settings. Device probing is used to prevent conflicts with other serial devices that may be plugged into your PC and to speed up connection times. On connecting an IceReader IceTagAnalyser 2008 will probe all known COM ports for a valid device. This may cause conflicts with other serial devices that are connected to a system.

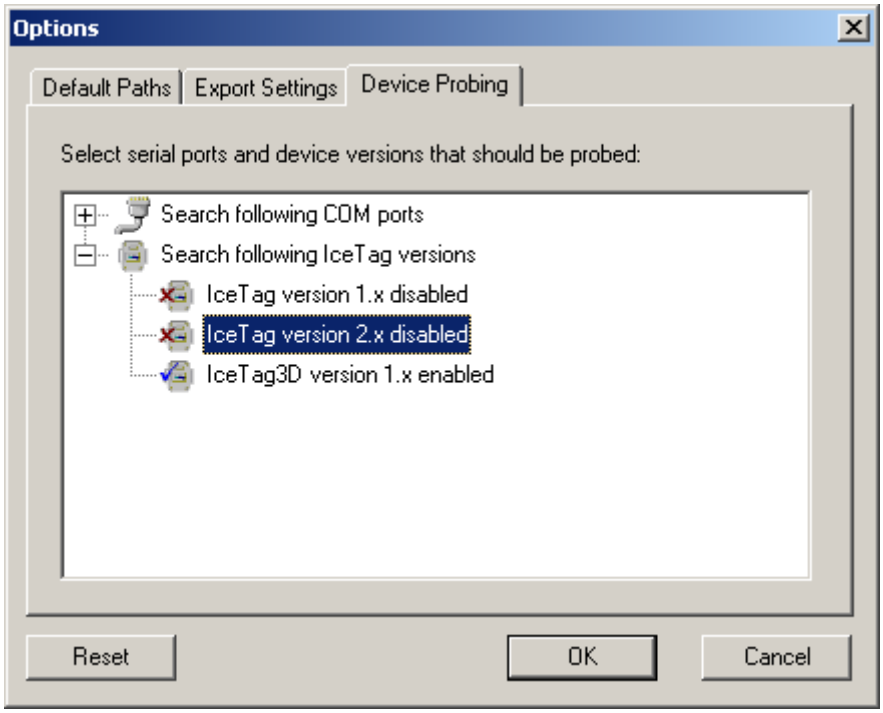

Figure 17. Device Probing with only IceTag3D enabled

To prevent such conflicts the Device Probing window will allow probing to be toggled on certain COM ports. For additional performance increases, the probing of particular IceTag device versions can also be toggled. In the example shown, IceTagAnalyser 2008 will only probe IceTag3D version 1.x devices.

5. INTERPRETING THE RECORDED DATA

The IceTag3D analyses the movement of an animal's leg and defines standing, lying and step with a Motion Index. The Motion Index provides detail on how active the animal has been. For each second the Motion Index is typically a value between 0 and 30, with 0 indicating no movement and 30 indicating vigorous motion of the leg that second. Viewing the data per-minute, per-hour or per-day, the program sums the Motion Index for each second of the given time period.

Where the animal is active, a step count indicates the number of steps taken by the animal during that time. The reported step count is the number of steps taken by the leg on which the IceTag3D is located.

Figure 18 shows an extract of an exported CSV file from an IceTag3D which was recording the activity of an animal. The Export Options were set to report the activity minute by minute. The data shows the date and time interval and the percentage of time spent during that interval standing or lying, a step count and an indication of activity from the Motion Index.

Tag ID:		155891			
Site ID:		Coldcomfort			
Animal ID:		#218			
Date	Time	Motion Index	Standing [%]	Lying [%]	Steps
20/09/2008	16:41:24	20.4	79.6	0	9
20/09/2008	16:42:24	58.3	41.7	0	25
20/09/2008	16:43:24	61.3	38.7	0	26
20/09/2008	16:44:24	30.4	69.6	0	13
20/09/2008	16:45:24	33.5	66.5	0	13
20/09/2008	16:46:24	80.8	19.2	0	37
20/09/2008	16:47:24	45.2	54.8	0	19
20/09/2008	16:48:24	4.8	95.2	0	2
20/09/2008	16:49:24	5	95	0	2
20/09/2008	16:50:24	8.3	91.7	0	4
20/09/2008	16:51:24	9.2	90.8	0	3
20/09/2008	16:52:24	0	100	0	0
20/09/2008	16:53:24	0	100	0	0
20/09/2008	16:54:24	0	100	0	0
20/09/2008	16:55:24	2.7	97.3	0	1
20/09/2008	16:56:24	0	100	0	0
20/09/2008	16:57:24	0	100	0	0
20/09/2008	16:58:24	2.9	97.1	0	1
20/09/2008	16:59:24	0	100	0	0
20/09/2008	17:00:24	2.7	97.3	0	1
20/09/2008	17:01:24	0	100	0	0
20/09/2008	17:02:24	0	100	0	0
20/09/2008	17:03:24	2.3	97.7	0	1
20/09/2008	17:04:24	0	100	0	0
20/09/2008	17:05:24	3	97	0	0
20/09/2008	17:06:24	2.9	97.1	0	1
20/09/2008	17:07:24	13.1	86.9	0	6
20/09/2008	17:08:24	13.5	86.5	0	5
20/09/2008	17:09:24	1.7	98.3	0	1
20/09/2008	17:10:24	44.2	55.8	0	16
20/09/2008	17:11:24	21	79	0	8

Figure 18. Extract from example recording

Note that an animal may be recorded as being active, but have taken no steps. This can occur, for example, when an animal is standing and shuffling its feet, but is not actually stepping; this can be a useful measure of restlessness. In figure 18, at 17:05 the animal is measured to be slightly active (3) but no steps have been measured, a manual observation taken at this time showed that the animal was standing at a food trough and shuffling its feet. A 'Step' requires that the animal lift the tagged leg **and** move it forwards.

6. USING ICETAGANALYSER 2008 WITH ICETAG 1.X AND 2.X DEVICES

IceTagAnalyser 2008 is provided ready enabled for use with IceTag 3D devices but can also be used with earlier generation IceTag devices. Use Device Probing in the options menu to choose different IceTag versions. To change IceTag versions, select `File > Options` and click the 'Device Probing' tab. Click on 'search following IceTag versions'. This allows you the option of enabling or disabling IceTag versions as shown in figure 19.

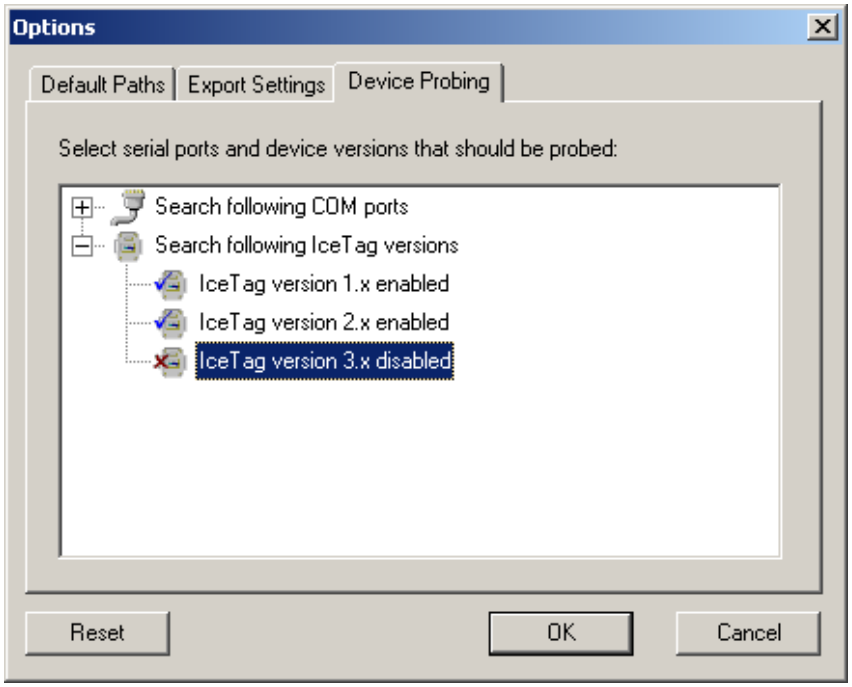

Figure 19. Device Probing with IceTag3D disabled

On enabling IceTag 2.x and disabling IceTag 3.x, IceTagAnalyser will only display IceTag2 information on the tools menu as shown in figure 20.

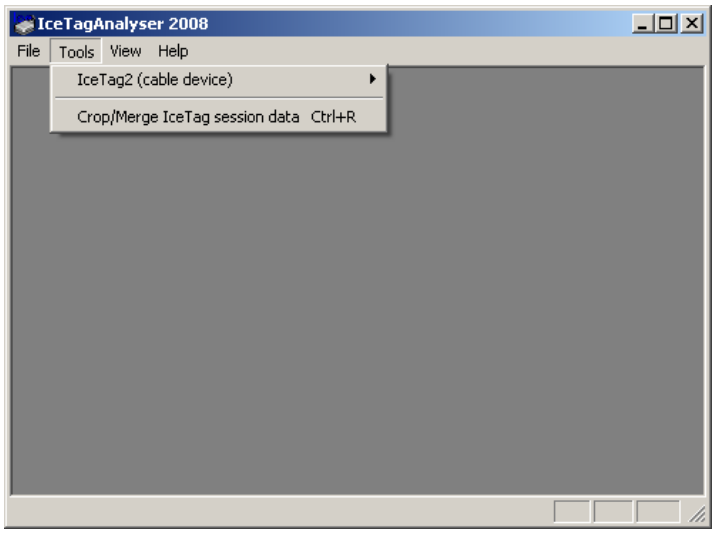

Figure 20.Tools pull-down menu showing only IceTag2 (cable device)

If you change the Device Probing settings you will be prompted to restart IceTagAnalyser 2008 to set your selections as your default options. To re-enable any device version, return to `File > Options`, and double click the version you want to use. You will again be prompted to restart IceTagAnalyser 2008 to re-set your default options. This will provide the full functionality of the previous IceTagAnalyser version for IceTag2 device interface as covered by User Manual Revision 4. Copies of this manual are available through support@icerobotics.com.

Appendix A: Troubleshooting

This section describes how to investigate any problems with the IceTag3D system. If you cannot find the solution to your problem here, contact support@icerobotics.com.

A.1 Connecting the IceReader to your computer

A.1.1 My PC cannot find any drivers for the IceReader

The first time the IceReader is connected, the operating system may prompt for a driver installation. On most versions of Microsoft Windows, the drivers for the IceReader are included in the Microsoft Windows operating system. For versions of Windows where the drivers are not included as standard, contact support@icerobotics.com.

A.1.2 IceTagAnalyser 2008 cannot find the IceReader

Check that the IceReader is plugged into a USB port on your PC and that all the connections are secure. Try closing IceTagAnalyser 2008 and restarting it. If IceTagAnalyser 2008 still cannot find the IceReader, contact support@icerobotics.com.

A.2 Swiping an IceTag3D

A.2.1 The IceReader cannot read the IceTag3D

Try connecting the IceReader again; some PCs take a little time to recognise that a device has been plugged in. Check the IceReader status by unplugging and re-plugging the IceReader into the USB port on the PC. The green LED on the IceReader should illuminate. When IceTagAnalyser 2008 recognises the IceReader, the amber LED on the IceReader will be illuminated. If IceTagAnalyser 2008 still cannot read the IceTag3D, try connecting to a different USB port on your PC. If IceTagAnalyser 2008 still does not read the IceTag3D, contact s support@icerobotics.com.

A.3 Downloading Data

A.3.1 Errors when downloading data from an IceTag3D device.

If an error occurs while downloading data, the data is left on the device. Select Tools > IceTag3D (wireless device) > Download IceTag3D session data, swipe the IceTag3D and try again. Operating two IceReaders in close proximity should present no problem as the IceReaders are programmed to operate on different frequencies. In the unlikely event of two readers causing interference and download problems, contact support@icerobotics.com.

A.4 Attaching Devices

A.4.1 Lesions on animal leg following IceTag removal

This is caused by over-tightening of the straps during device attachment. The IceTag3D should be attached so that it can loosely move around the leg. Using the Velcro strap supplied, ensure that the IceTag3D is fastened to the animal's leg with sufficient room for two to three of your fingers to be inserted between the strap and the animal's leg.

Appendix B: Example command line exports

Using the IceTagAnalyser 2008 command line options can be a quick way of exporting a whole directory of session files to CSV or MDP format, without having to manually open each file individually. This appendix contains some simple examples.

B.1 Exporting a single file to CSV

Open a command line window by clicking the windows `Start` button and selection `Run…` from the menu. Type `cmd.exe` into the edit-box and click OK. This should open a command line window.

Change to the directory that contains the session file using the cd command. For example:

```
cd \Program Files\IceRobotics\IceTagAnalyser\Sessions
```

The following example shows how to export a file called `test.ses` to csv format, where `<path>` would be replaced with the full path to IceTagAnalyser (typically `\Program Files\IceRobotics\IceTagAnalyser`):

```
"C:\<path>\IceTagAnalyser.exe" /exp /format:csv test.ses
```

The above example will prompt for an output name. To force the file to be exported as test.csv or test.mdb, simply add in the /force option:

```
"C:\<path>\IceTagAnalyser.exe" /exp /format:csv /force test.ses
```

B.2 Exporting all files in a directory to CSV

The following example can be used to export all files in the current directory to CSV, where again `<path>` should be replaced with the actual path of IceTagAnalyser.exe:

```
for %f in (*.ses) do "C:\<path>\IceTagAnalyser.exe" /exp /format:csv /force %f
```

NB: If this line is used in a batch file, the two % characters need to be doubled; change `%f` to `%%f`.

Regulatory Compliance Information

	FCC Compliance Statement This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. *Important:* Changes or modifications to this product not authorized by IceRobotics Ltd. could void the EMC compliance and negate your authority to operate the equipment.
	**Disposal and Recycling Information** Your IceTag3D and associated equipment must be disposed of properly according to local laws and regulations. Because the IceTag3D contains a battery, IceTag3D must be disposed of separately from general waste. When an IceTag3D reaches its end of life, contact IceRobotics Ltd. or your local authorities to learn about recycling options.