BMX Event Manager©

Operating Guide for BEM with Mylaps Transponder or Lynx Interfaces

Contents

Introduction

This guide describes the configuration and operation of the BEM program when interfacing to a MyLaps transponder lap time system and the Lynx camera interworking facilities.
The scope of the guide is to cover configuration of the options and settings, pre event activities, post event activities, scoring and trouble shooting.

Screen shots and examples used in this guide are from BEM Version 3.7.x, My-Laps (AMB^{it}) DataCollector and Timing & Scoring programs operating with a MyLaps ProChip (ChipX) transponder system.

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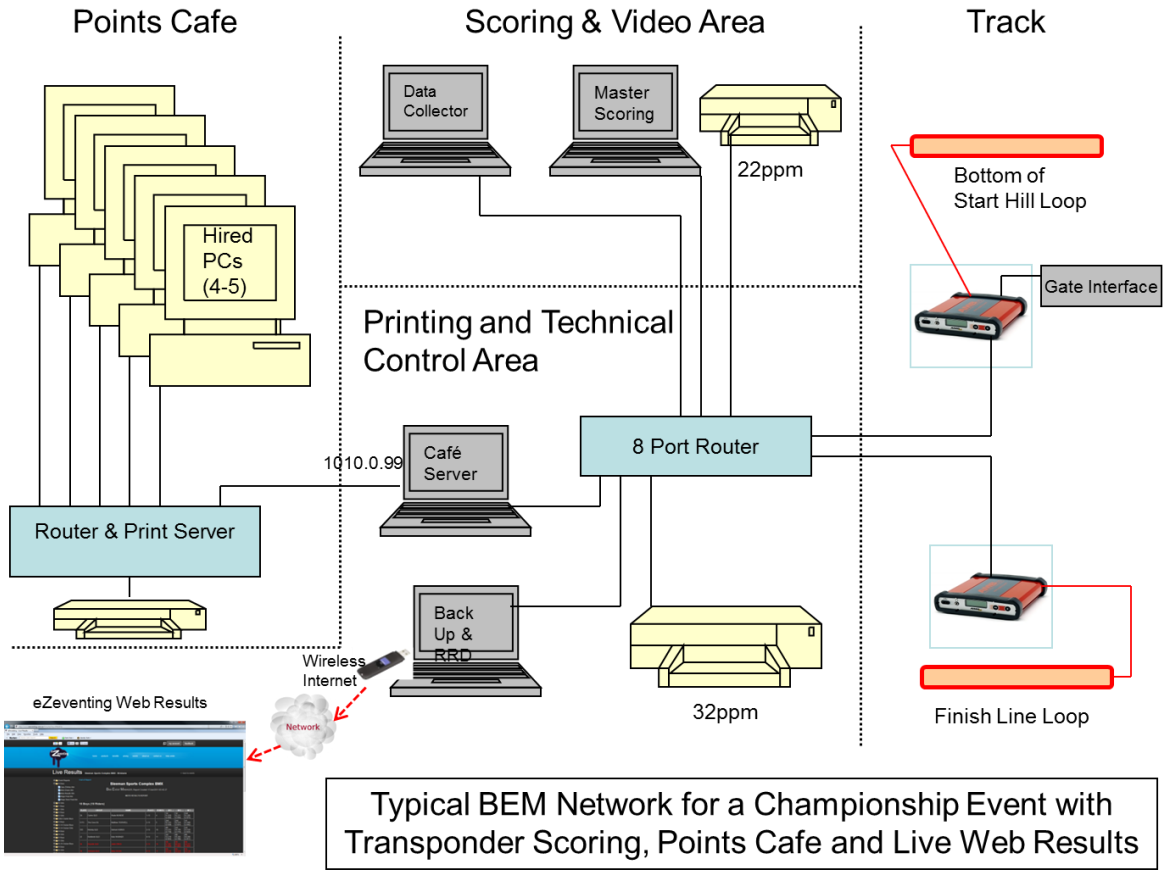
Document Date: 31 December 2017

Software examples and screenshots from:
BEM race program.
BemTrain training and scoreboard.
MyLaps DataCollector
MyLaps Timing & Scoring

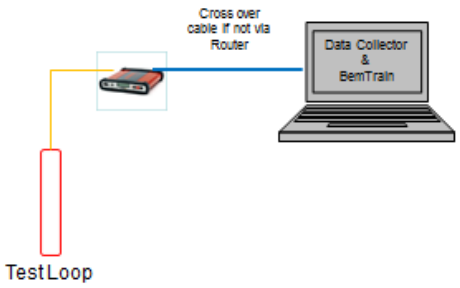
All feedback (good and bad) appreciated to lyndon.downing@bigpond.com

Typical BEM Network Set Up



Typical BEM Network for a Championship Event with Transponder Scoring, Points Cafe and Live Web Results

Transponder Check Station



PC Checks

A common scenario is that laptops and PCs at a BMX event are a collection of association, privately owned and hired machines. To avoid problems during the event, the following checking / set up pre event are recommended

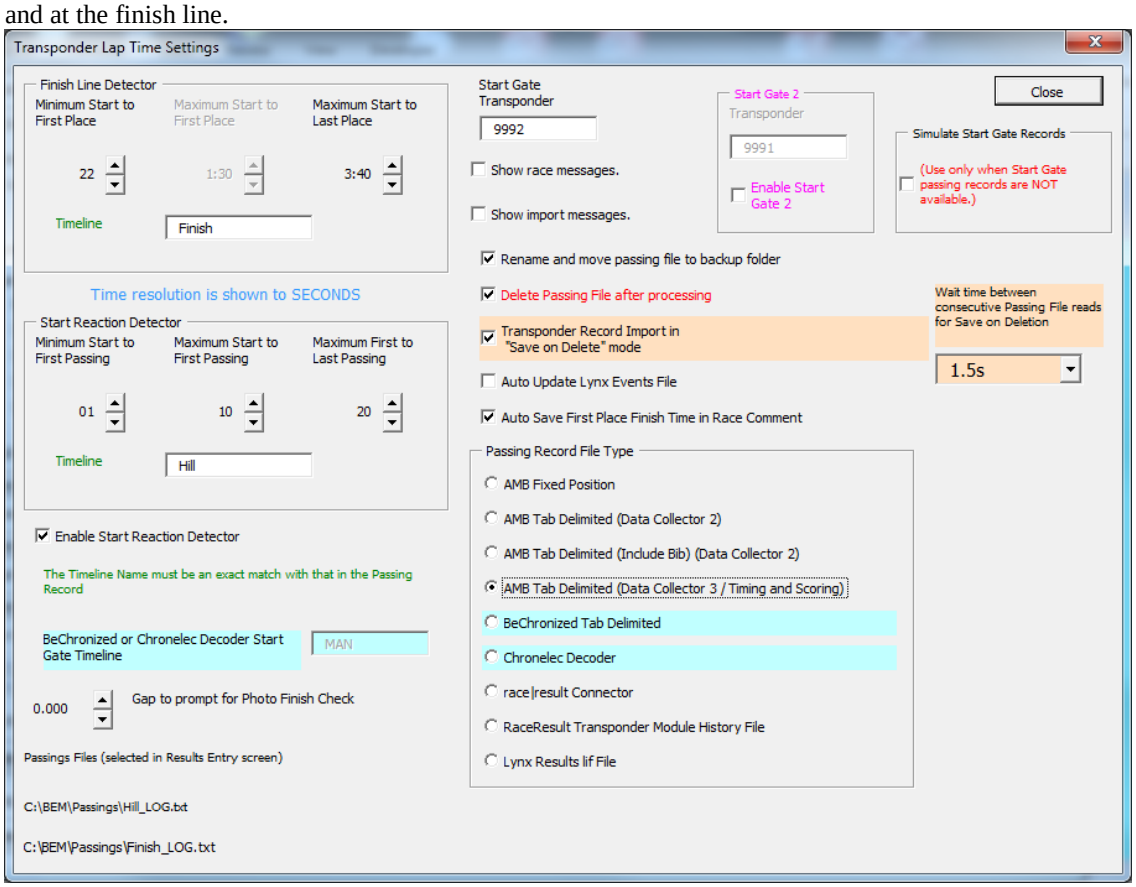
- Pre-Event
    - Run Windows Update to install latest available corrections and service packs.
    - Update the anti-virus definitions.
    - Set up the required network, drive mapping, user and folder permissions as this can often be a time consuming task due to the diverse range of firewall settings, firewall programs and internet security programs encountered, particularly if the computers are from a variety of sources.
- Ensure all computers have the same settings for:
    - Region
    - Time
    - Time zone
    - Time format
    - Date format
    - Language
- Typical set up is:
    - DataCollector / Timing & Scoring PC to write Live Export files to a "Passings Folder" on the BEM PC.

      Note that there are known Windows issues with slow update of mapped drive information that appear to be avoided by having DataCollector write the export files to a mapped folder with full access rights on the BEM PC. Therefore this is the recommended configuration rather than DataCollector / Timing & Scoring writing the export files to its local drive and having BEM read them via a mapped drive.
    - BEM PC:
        - Set the Passing Files 1 and Passing Files 2 to read the files being exported from the DataCollector / Timing & Scoring PC.
        - The Passings Back-up folder should be located on a local drive on the BEM PC.
- The use of separate networks for Points Café and Scoring is strongly recommended to prevent any deliberate or unintended interference with the scoring from the public access Café PCs.
  Refer to the **RRD User Guide** document for detailed information on specific set up requirements for the Café PCs and for sending live results to the eZeventing web site.

BEM Settings and Options

The Transponder and Camera options and settings are accessed via the Options or Result Entry screens in BEM.

The screen shot below shows a typical set up for interfacing with a MyLaps Pro-chip (AMB ChipX) transponder system with DataCollector as the interface using detector timelines at the bottom of the start hill and at the finish line.



Transponder Settings

Finish Line Detector Group

Settings in this group are to configure the finish line decoder to set time windows for sanity checking of passing records to ensure correct linking to the race being scored.

Timeline

Where the passing record type includes the Timeline Name, e.g. DataCollector 3 format, enter the Timeline name that matches the Timeline setting in the Finish Line Decoder.

Minimum Start to First Place

This setting is the elapsed time that must be exceeded from the gate drop to passing detection at the finish line detector for valid result. A typical setting would be 7-10 seconds less than the expected fastest lap time from the fastest class.

Maximum First to Last Place / Maximum Start to Last Place

The definition of this setting changes depending on single or twin detector timelines being used.

Where a single transponder detection loop is used at the finish line, the setting is for **Maximum First to Last Place** for the maximum elapsed time from the first to last placed rider passing the finish line for automatic detection. Typical setting 3m 40s (220 seconds).

Where hill and finish detection timelines are used, the setting is for **Maximum Start to Last Place** to set the maximum normal window for any particular race as an aid to rejection of stray passing records. Typical setting 3m 40s (220 seconds).

Start Reaction Detector Group

Settings in the Start Reaction Detector Group are for the track configuration where two detector timelines are used. Recommended set up is for the second loop to be 10 – 20m after the start gate, typically at the bottom of the start hill.

Note that these settings are only used where the Enable Start Reaction Detector option is selected.

Timeline

Where the passing record type includes the Timeline, e.g. DataCollector 3 format, enter the Timeline name that matches the Timeline setting in the bottom of the start hill Decoder.

Minimum Start to First Passing

This setting is the minimum time from the gate drop to the first passing detection. A typical setting would be 1 or 2 seconds dependant on how far the loop is from the start gate.

Maximum Start to First Passing

The setting is the maximum time expected from the gate drop to the first passing detection. Typical setting would be 10 seconds.

Maximum First to Last Passing

This setting is the maximum time expected from the first to last rider passing in any particular race. Typical setting is 20 seconds which should account for most late reaction starts.

Note that should a rider fall on the start and not pass the loop within the set time, they will still be scored correctly if they cross the Finish Loop within the Maximum Start to Last Place time.

Enable Start Reaction Detector

The option is selected when two detection timelines are used.

Gap to Prompt for Photo Finish Check

With transponders typically fixed to front forks in BMX Racing, experience has shown that variations in placement and bike geometry result in lap time errors for some close results. The setting of this option will generate an operator prompt to do a photo check should the time gap be equal or smaller than the setting. Where transponders are used without a camera back up (not recommended) the set the Gap control to 0 to suppress all prompts.

Typical setting is 0.010 seconds where you have a photo-finish camera as a back-up to take into account the variations for system accuracy and minor fitting differences between fork types and tyre profiles.

Start Gate Transponder

The data entered here must match the pseudo transponder number assigned by the transponder system to gate drop events.

The data 9992 in the example is for a MyLaps (AMB ChipX) system using the Photo Cell input to the decoder to generate gate drop events.

Where the MyLaps Timing & Scoring program is used as the interface, set this to 00-09992.

Start Gate 2 Transponder

The second start gate 2 transponder is only enabled at tracks with two start hills and each start hill gate controller using separate Photo Cell inputs into the decoder.

Typical data is 9991 for a MyLaps (AMB ChipX) system using MyLaps DataCollector program or 00-09991 using MyLaps Timing & Scoring program.

DO NOT ENABLE THE START GATE 2 TRANSPONDER FOR SINGLE HILL TRACKS.

Simulate Start Gate Records

Note that this option should not be used under normal conditions.

The option is provided to allow for results to be determined from the passing records alone and is designed only to be used where start gate records are not available, either due to a fault or where a start gate controller is used that is unable to provide a start signal.

Note that while finishing positions set in this mode of operation are accurate, lap times shown do not accurately reflect the actual lap times.

Messages

The messages settings enable information messages to be displayed should the operator require this level of detail either to confirm the system is operating normally or to assist with fault tracking.

Show Race Messages Option to show details of the first rider to cross the timeline for the race being scored.

Show Import Messages Option allows summary messages for imported passing records to be displayed each time new records are added.

Passing File Handling

Rename and move passing file to back up folder. Option when enabled will move and rename the passing record file to the event back up folder before reading the passing records. Designed to minimise the number of records read each time a new race is scored as the passing file will only contain new records.
Recommended to enable this setting where the import program will re-create the passing file as required. E.g. AMB DataCollector, Sport Timing Data2Text.

Delete Passing File after Processing. Option when enabled deletes the passing record file after import to BEM is completed. The option is designed to stop the build-up of 100s of small text files in the back up folder.
Recommended setting is to enable this option only when passing records are able to be retrieved from the transponder interface program (i.e. AMB DataCollector) and from the decoder.

Transponder Record Import in Save on Delete mode.
This option is to complement the Save on Delete operation for the Live File Export from the software providing the passings.
Recommended to enable this option when using for example the MyLaps DataCollector or Timing & Scoring programs as the transponder interface with the "Save on Deletion of file" option for the Live File Export mode to minimise the risk of file contention between the passings software and BEM programs.

Wait time between consecutive Passing File reads for Save on Deletion.
When Save on Deletion mode is selected, clicking on Lap Time button in BEM does two read cycles of the passing files. This setting controls the minimum delay between consecutive reads of the passing files to allow time for a new passing file to be written. Typical setting is 1.5s however shorter periods can be set where the passing software and BEM are being run on the same PC.

Auto Update Lynx Events File
This option (when enabled) will generate an updated Lynx Event (evt) file when subsequent stages of the event, e.g. Semi Finals are drawn.

Passing Record File Type Group
This group allows the operator to select from a range of pre-defined passing record formats including MyLaps, Chronelec (Tag Heuer), BeChronized, race|result and Lynx timing software. Refer to the individual companies technical data for full specifications.

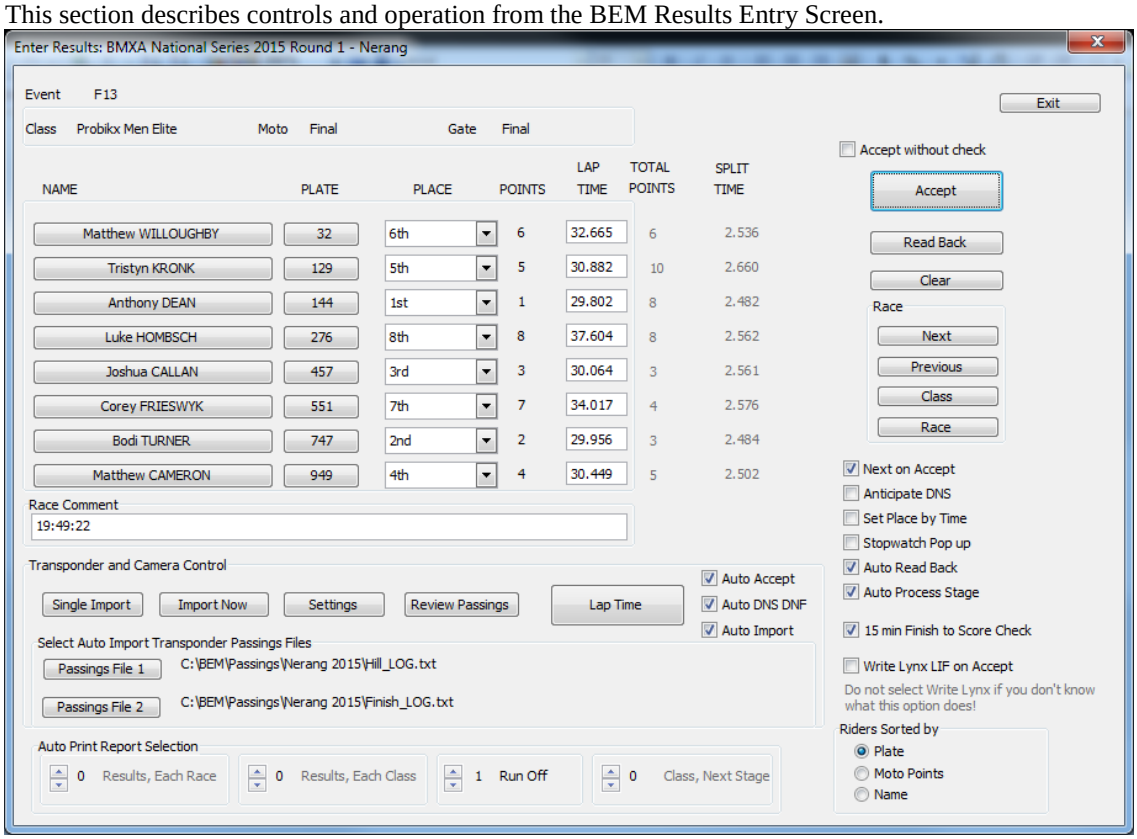
Note: Options with shaded background are provided for compatibility with earlier transponder system interface programs.

AMB Fixed Position is a plain text column dependant format.
Provided for compatibility only as it does not allow for the second timing loop as the timeline location is not included in the format specification.
AMB Tab Delimited (Data Collector v2) for AMB Data Collector v2 and for Sport Timing Decoder to Text file Converter.
Provided for compatibility only as it does not allow for the second timing loop as the timeline location is not included in the format specification.
AMB Tab Delimited (including BIB) provided to give full compatibility with the AMB Data Collector v2 format options.
Provided for compatibility only as it does not allow for the second timing loop as the timeline location is not included in the format specification.

AMB Tab Delimited (Data Collector 3) is the recommended format for use with MyLaps ProChip (ChipX) for both DataCollector and Timing & Scoring interface programs.
Note that this format is compatible with both the BEM DataCollector and BemTrain format user defined file exporter in Timing & Scoring.
BeChronized Tab Delimited is for the text files generated from the BeChronized software.
Chronelec Decoder is to import passing files from the Chronelec / Tag Heuer Protime transponder system.
race|result is to import passing files from the race|result system using their Connector program.
Lynx Results lif File is to import race results from the FinishLynx race camera system .lif results files.
Note: To be able to auto import Lynx results, FinishLynx Event and Schedule files must first be created and imported into the FinishLynx system.
To generate the files, use the Lynx Events and Lynx Schedule output options from the Race List Group from the Main Menu screen in BEM.

Results Entry Controls

This section describes controls and operation from the BEM Results Entry Screen.



Transponder and Camera Control Group

Lap Time Button and Options

The **Lap Time** button calculates the lap times for the particular race shown on the results entry screen from the transponder records or where the Lynx Record Type is used, from the race .lif file.

If the **Auto Accept** option is selected, the function of the **Accept** button is performed after the calculation of the lap times.

The **Auto DNS DNF** option is only available when both Finish and Hill timelines are used. When the option is selected, the program will check for DNS and DNF results by comparing passing records from the Hill and Finish timelines. Where a DNS or DNF is detected, the operator is prompted to accept or reject the auto detect result.

Where the **Auto Import** option is enabled, the program will check for and import any outstanding passing records every time the Lap Time button is clicked before attempting to calculate the lap times.

Single Import button allows for a one off import of a passing record file independent from the normal auto-import files.

Envisaged use is to import records that may have been missed for some reason by the auto-import or deleted in error from BEM.

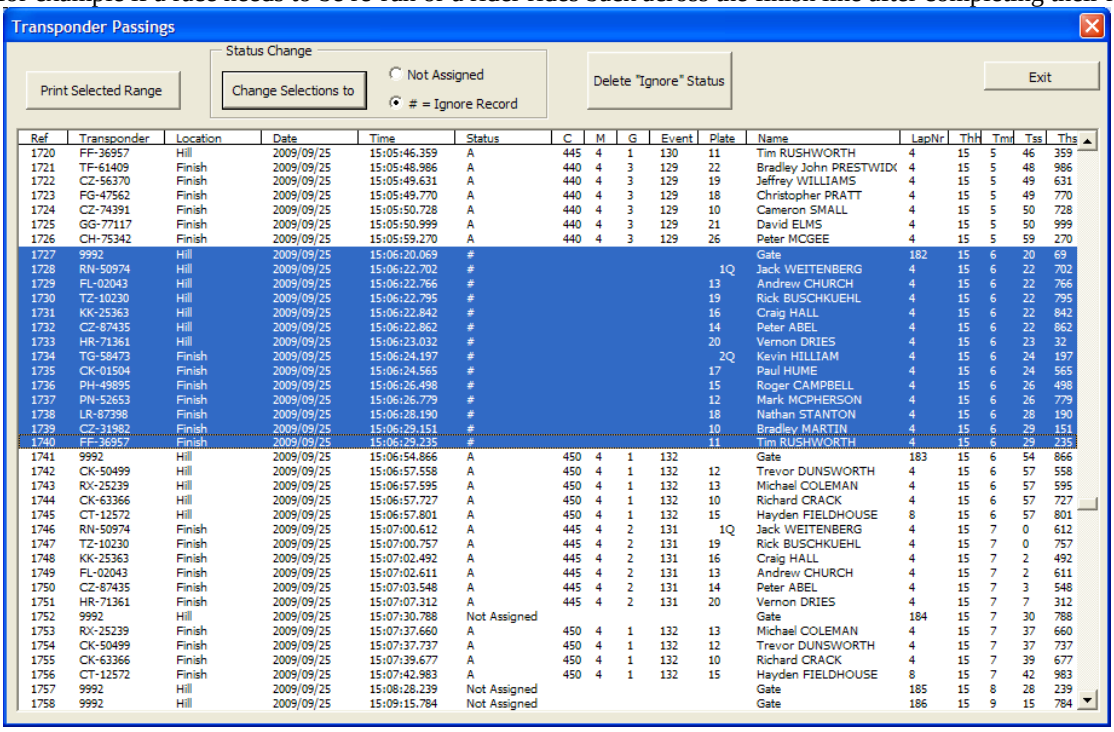
Import Now button imports passing records from the specified auto import file(s). They are processed according to the option settings for Rename and Move and Delete after Processing.

Settings button displays the Transponder Lap Time Settings Screen to enable checking or changing of the settings without having to exit from the Results Entry Screen.

Review Passings button allows the operator to review the transponder records, print one or a range of the records, change the status of selected records and to delete records marked as ignore.
The Status of an individual passing record can be:

assigned (A) where the record is assigned to a race result
not assigned (Not Assigned)
ignore (#) where the operator has explicitly marked the record not to be used.

The record status is changed by the program from Not Assigned to A when results are accepted. Should the error checking routine receive a transponder number not listed against any rider, an error message is given and the name shown as ####. The operator can change the status of any or a range of records to ignore (#) for example if a race needs to be re-run or a rider rides back across the finish line after completing their race.



Ref	Transponder	Location	Date	Time	Status	C	M	G	Event	Plate	Name	LapNr	Thh	Tmi	Tss	Ths
1720	FF-36957	Hill	2009/09/25	15:05:46.359	A	445	4	1	130	11	Tim RUSHWORTH	4	15	5	46	359
1721	TF-61409	Finish	2009/09/25	15:05:48.986	A	440	4	3	129	22	Bradley John PRESTWIDG	4	15	5	48	986
1722	CZ-56370	Finish	2009/09/25	15:05:49.631	A	440	4	3	129	19	Jeffrey WILLIAMS	4	15	5	49	631
1723	FG-47562	Finish	2009/09/25	15:05:49.770	A	440	4	3	129	18	Christopher PRATT	4	15	5	49	770
1724	CZ-74391	Finish	2009/09/25	15:05:50.728	A	440	4	3	129	10	Cameron SMALL	4	15	5	50	728
1725	GG-77117	Finish	2009/09/25	15:05:50.999	A	440	4	3	129	21	David ELMS	4	15	5	50	999
1726	CH-75342	Finish	2009/09/25	15:05:59.270	A	440	4	3	129	26	Peter MCGEE	4	15	5	59	270
1727	9992	Hill	2009/09/25	15:06:20.069	#						Gate	182	15	6	20	69
1728	RN-50974	Hill	2009/09/25	15:06:22.702	#					1Q	Jack WEITENBERG	4	15	6	22	702
1729	FL-02043	Hill	2009/09/25	15:06:22.766	#					13	Andrew CHURCH	4	15	6	22	766
1730	TZ-10230	Hill	2009/09/25	15:06:22.795	#					19	Rick BUSCHKUEHL	4	15	6	22	795
1731	KK-25363	Hill	2009/09/25	15:06:22.842	#					16	Craig HALL	4	15	6	22	842
1732	CZ-87435	Hill	2009/09/25	15:06:22.862	#					14	Peter ABEL	4	15	6	22	862
1733	HR-71361	Hill	2009/09/25	15:06:23.032	#					20	Vernon DRIES	4	15	6	23	32
1734	TG-58473	Finish	2009/09/25	15:06:24.197	#					2Q	Kevin HILLIAM	4	15	6	24	197
1735	CK-01504	Finish	2009/09/25	15:06:24.565	#					17	Paul HUME	4	15	6	24	565
1736	PH-49895	Finish	2009/09/25	15:06:26.498	#					15	Roger CAMPBELL	4	15	6	26	498
1737	PN-52653	Finish	2009/09/25	15:06:26.779	#					12	Mark MCPHERSON	4	15	6	26	779
1738	LR-87398	Finish	2009/09/25	15:06:28.190	#					18	Nathan STANTON	4	15	6	28	190
1739	CZ-31982	Finish	2009/09/25	15:06:29.151	#					10	Bradley MARTIN	4	15	6	29	151
1740	FF-36957	Finish	2009/09/25	15:06:29.235	#					11	Tim RUSHWORTH	4	15	6	29	235
1741	9992	Hill	2009/09/25	15:06:54.866	A	450	4	1	132		Gate	183	15	6	54	866
1742	CK-50499	Hill	2009/09/25	15:06:57.558	A	450	4	1	132	12	Trevor DUNSWORTH	4	15	6	57	558
1743	RX-25239	Hill	2009/09/25	15:06:57.595	A	450	4	1	132	13	Michael COLEMAN	4	15	6	57	595
1744	CK-63366	Hill	2009/09/25	15:06:57.727	A	450	4	1	132	10	Richard CRACK	4	15	6	57	727
1745	CT-12572	Hill	2009/09/25	15:06:57.801	A	450	4	1	132	15	Hayden FIELDHOUSE	8	15	6	57	801
1746	RN-50974	Finish	2009/09/25	15:07:00.612	A	445	4	2	131	1Q	Jack WEITENBERG	4	15	7	0	612
1747	TZ-10230	Finish	2009/09/25	15:07:00.757	A	445	4	2	131	19	Rick BUSCHKUEHL	4	15	7	0	757
1748	KK-25363	Finish	2009/09/25	15:07:02.492	A	445	4	2	131	16	Craig HALL	4	15	7	2	492
1749	FL-02043	Finish	2009/09/25	15:07:02.611	A	445	4	2	131	13	Andrew CHURCH	4	15	7	2	611
1750	CZ-87435	Finish	2009/09/25	15:07:03.548	A	445	4	2	131	14	Peter ABEL	4	15	7	3	548
1751	HR-71361	Finish	2009/09/25	15:07:07.312	A	445	4	2	131	20	Vernon DRIES	4	15	7	7	312
1752	9992	Hill	2009/09/25	15:07:30.788	Not Assigned						Gate	184	15	7	30	788
1753	RX-25239	Finish	2009/09/25	15:07:37.660	A	450	4	1	132	13	Michael COLEMAN	4	15	7	37	660
1754	CK-50499	Finish	2009/09/25	15:07:37.737	A	450	4	1	132	12	Trevor DUNSWORTH	4	15	7	37	737
1755	CK-63366	Finish	2009/09/25	15:07:39.677	A	450	4	1	132	10	Richard CRACK	4	15	7	39	677
1756	CT-12572	Finish	2009/09/25	15:07:42.983	A	450	4	1	132	15	Hayden FIELDHOUSE	8	15	7	42	983
1757	9992	Hill	2009/09/25	15:08:28.239	Not Assigned						Gate	185	15	8	28	239
1758	9992	Hill	2009/09/25	15:09:15.784	Not Assigned						Gate	186	15	9	15	784

The following data fields are displayed in the Transponder Passings Review screen:

Ref — A sequential numbering of the imported passing records.
Transponder — The transponder serial number from the passing record.
Location — The location data from the passing record.
Date — The date from the passing record where the record format includes the date, otherwise is the PC date when the record was imported into BEM.
Time — Time in the passing record format.
Status — Record status of Not Assigned, Assigned or Ignore.
C, M, G — Defines the Class, Moto (stage) and Gate (heat) that the record has been assigned to.
Class is the Class_No data from BEM.
Moto is BEM's internal moto numbering of 1 – 8 for pre-final motos, 16 for final, 15 for semi final etc.
Gate is the heat number for the Class within the stage.
Event — The event number corresponding to the Race List report from BEM.
Plate — Rider race number.
Name — The Rider Name linked to the Transponder Number. Note that if a Transponder Number is received that is not assigned to a rider, the Name will be shown as ####.
Lap Nr — Lap number data from the passing record and is meaningless in this context.
Thh etc. — Break down of the Time field from the passing record into components of hours, minutes, seconds and milliseconds.

Where results are imported from FinishLynx .lif files, records are not stored in BEM as the individual race number is included in each .lif file and that is used to select the particular race and auto set the results in BEM.

Select Auto Import Transponder Passings Files Group

Passings File 1 and **Passings File 2** buttons enable the selection of up to two files for importing passing records. Typical selection with a two loop ProChip system is for a file per decoder.
Note the default file names in the example above from the DataCollector program live output to file generation which is the Timeline Name appended with _LOG.txt.

Check on DataCollector / Timing & Scoring and the drive mapping to be sure that you know where the Live File Export is being sent as experience is that there is often confusion around these settings.

Scoring with Transponders

This section starts with the assumption that all hardware is configured, connected and working, all settings are correct, and the import passings files are correctly specified and **all actions on the Start of Race Day Checklist (see page 36) prior to Race Start Imminent have been completed and signed off.**

The convention used in the instructions is that DataCollector requirements are in normal font and Timing & Scoring specific requirements are in *Italics*.

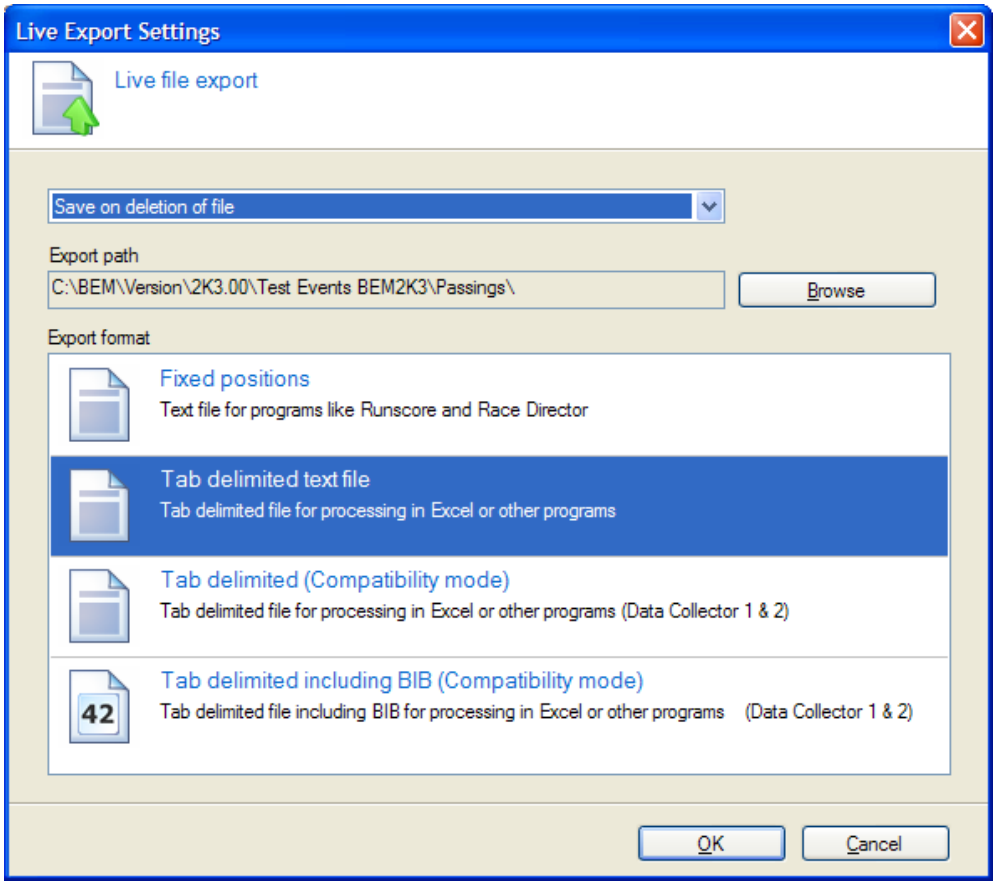
Start of Racing Actions

The start of racing process described here has proven successful in confirming the system is functioning correctly. Where there have been set up errors (almost always human) it allows for the best chance of rapid correction in a controlled situation rather than escalation into chaos that can occur if racing continues to run under a fault scenario.
NOTE the following issues with the Data Collector Program that have been reported to MyLaps but at the time of preparation of this document, corrections are yet to and may never be provided.

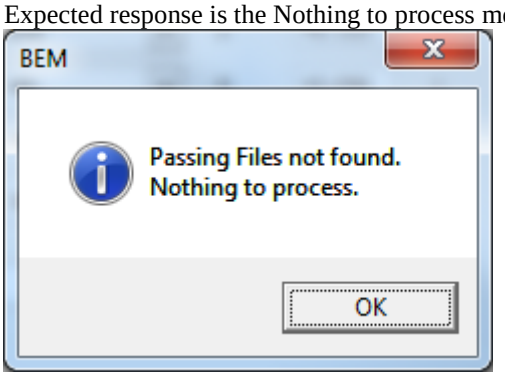
- Spontaneous live file output of passing records occurs when DataCollector is started even though the settings both on the Processing tab and the Live File Settings screen indicate that Live File Export is Disabled.
  Work Around: Toggle Live File Export to enabled then back to disabled.
- Changes made to the Export Path for Live File Export are not saved when Live File Export is Disabled.
  Work Around: Always enable Live File Export when selecting the Export Path event though this may result in unwanted export files that may have to be subsequently deleted.
- Enabling Live File Export in "Save on Deletion of file" mode sometimes results in no file output when the first export file from each decoder are removed. This seems to be a once only occurrence because once it "gets into gear", it continues to work as expected.
  Suggested (but not proven) Work Around: Start the Live File Export towards the end of practice at a time when there is a continual stream of passings. Perform several imports into BEM to exercise the "save on delete" function in DataCollector. Don't forget to request a "quiet time" before competition commences to flush all records from DataCollector and delete all practice passing records from BEM.

In the last few minutes prior to start of racing when the track is clear of all riders:

1. If using the DataCollector Program
   a. Delete all practice / warm up passing records.
   b. Enable Live File Export in Save on Deletion of File mode using an Export format of Tab delimited text file.



2. *If using the Timing & Scoring Program*
   a. Open a new File for all Locations and mark previous Files to be Ignored.
3. To verify that there are no unwanted passings generated, click on the "Import Now" button. Expected response is the Nothing to process message:



   Should any passings be imported, click the Import Now again to ensure that everything is flushed and then go into Review Passings and mark the imported passings as Ignore.
4. Advise the Chief Commissaire that scoring is ready and request that only the first race be run.
5. When to first race is run to completion, click on Lap Time and check that results are entered without any error messages.
6. Should there be problems:
   a. Advise the Commissaire to hold racing while the problem is investigated.

b. When the issue(s) have been identified and corrected, request another single race be run and verify that results are entered without error.
c. Repeat the single race scenario until there is confidence in the set up.

7. Advise the Commissaire that racing can now continue at normal (overlap) pace.
8. Let 2-3 races run and then score them (Lap Time button).
9. Repeat step 8.
10. Should unexplained issues occur, go immediately back to step 6.

Transponder Scoring Tips and Tricks

The following is a compilation of non-mainstream situations and the suggested actions to manage them.

After disconnection and re-connection of the decoders, e.g. day 2 of a two day event, starting DataCollector and selecting Last Opened Event and connect to the decoders, one or both decoders are not visible on the network.

- Check all network connections.
- In DataCollector, try reselecting the decoders or if that fails, use the Start New Event wizard to re-set up the event.
  Anecdotal evidence is that this frequently occurs with the Start Hill decoder and is triggered by the change from the default "Start" timeline name to "Hill".

Clicking on the Lap Time button enters the lap times but no results are set.

- Check Auto Accept option is set.
- Check Set Place by Time option is set.

Clicking on the Lap Time button gives a "Results not Entered" message for all riders.

- You are trying to enter results ahead of the race being run / completed. Click on Clear and wait for the race to be completed.

DNS or DNF has not been called through to scoring.
A rider is missing a transponder.

- Refer the race to the camera operator or other back up system to determine finishing positions.
- Enter results manually.
- Un check the Set Place by Time option.
- Click on Accept to store the new results.
- **Re select the Set Place by Time option** ready for the next transponder result entry.

A rider has the wrong transponder fitted or a bike change has been made without notification to scoring.

- Exit from scoring, go to Review Entries and change the transponder number for the involved rider to the actual transponder number used for the race.
- Go back to the race in question on the Results Entry screen.
- Click on Clear and answer Yes to clear the results.
- Click on Lap Time and check the results are now entered as expected.

How to manage a DNS or DNF result.

- Where the program prompts for auto DNS or DNF detection (available with two timelines), verify the result with Staging or the Track Commissaire before acceptance.
- Where the DNS is called through to scoring before the race is scored:
  - If using the auto DNS and DNF detection, score the result normally with the Lap Time button and confirm the auto DNS prompt.
  - If not using auto DNS, manually set the DNS before clicking the Lap Time button.
- Where a DNF is called through, manually set the DNF before clicking the Lap Time button to avoid the possibility of a finish line passing (where the rider completes the lap) being recorded as a valid placing.

How to manage a REL or DISQ result.

- Where the REL or DISQ is called through after the race has been scored, the following actions are required.
  - Bring the race in question up on the Results Entry screen.
  - Click on Clear and answer Yes to clear the results.
  - Set the REL or DISQ result as required.
  - Click on Lap Time to re-score the race.
- Where the REL or DISQ is called through before the race is scored, enter the REL or DISQ result manually before clicking on the Lap Time button.

How to reverse finishing positions where a close result has been referred for a camera check.

- Bring the race in question up on the Results Entry screen.
- Un-check the Set Place by Time option so that results are now by placing rather than lap time.
- Change the finishing positions as advised by the camera operator.
- Add a note in the Race Comment area as to the changes made and why.
- Click on Accept to store the new results.
- **Re select the Set Place by Time option** ready for the next transponder result entry.

You receive a "Can not identify any valid passing records for riders in this race" message that contains a Start Gate time.

- A false Start Gate record has been generated (known to happen with some gate controllers) shortly after the real Start Gate Event that has a time that is very close to the passing time of the first rider to cross the Hill Loop.
    - Examine the passing records around the time given for the Start Gate in the Error Message to identify the false record.
    - Change the status of the false record to Ignore.
    - Return to the results entry and click on Lap Time.

You receive a "Can not find a Gate Start record" message that contains passing record details for a rider that BEM is trying to associate with a Gate Start Event.

- Note the Passing Time given for the rider in the error message.
- If the Passing Time is not at the expected time for the race being scored then it is likely to be a stray record. For this scenario:
    - Answer Yes to the prompt in the error message to Review Passings Now.
    - The record in question will be selected in the Review Passings screen.
    - Change the status of the record to Ignore.
    - Return to the results entry and click on Lap Time.
- If the Passing Time appears to be correct then:
    - Check the settings for the Start Reaction Detector are correct.
      I.e. May need to make a temporary increase to the Start reaction timer to score the race should there be a fall on the gate that causes the normal setting to be exceeded.
    - Examine the passing records around the record given in the error message for evidence of other riders in the race and for a Start Gate record.
    - If there are valid records at the same time for other riders in the race and no start record is evident, check how long the rider took from gate to hill loop compared to Start Reaction time settings.
        - Go into the Settings and select the Simulate Start Gate Records option.
        - Return to the results entry, click Clear then Lap Time.

Pre Event Activities and Planning for Transponders

The success of running an event with transponders starts with planning the pre-event activities of transponder allocation and fitting to achieve to 100% accuracy in having transponders fitted to the correct bikes.
The methods described in the guide are one of many ways to achieve the desired outcome and feedback and alternative strategies from other user experience is always welcome.

Create Transponder Allocation List

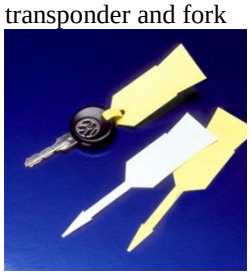
Where the race organiser is providing hired transponders to the competitors, there is a significant operational advantage in having a list of transponders that matches the physical order of the transponders in their trays. This is equally applicable for the situation where pre event allocation of the transponders to competitors is done and where transponders are allocated as riders present for registration at the event.

If you have an existing allocation list from a previous event then load this using the procedure at step 4.b below.

To create an ordered list of transponder in BEM the steps are:

1. For a pre-entry event where allocation of transponders to riders is to occur prior to event registration, label each transponder from 1 to xxx.
   Typical methods used are:

a. Use a permanent fine point felt tip pen and to clean off post event with dishwashing liquid and a scourer or mentholated spirits.
b. Use of plastic key tags (as by vehicle service workshops) that can sit between the transponder and fork



c. BMXV have experimented with using a BROTHER Label Maker using 12mm 'TZ' tape. Numbers are resilient and very easy to ready, but easy to pick off with a pin, or similar) after event.

2. Create a "Pre Allocation Scan" Event in DataCollector / Timing & Scoring using a single decoder. *For Timing & Scoring, start a new file for the decoder so that it will contain only the scanned transponder records.*
3. Scan the transponders one at a time in numbered order using a desk top loop. To increase the distance separation from the desk top loop and the transponders and avoid inadvertent or multiple detection, the following three person operation strategy is suggested.
   a) Person 1 manages the "not yet scanned" transponders and hands one transponder at a time in label order to person 2.
   b) Person 2 scans the transponder and hand's it to person 3 who packs the scanned transponders in scanned (i.e. label) order.
   c) To validate each scanning, use either speakers or headphones plugged into the decoder with the confirmation beep and/or check the screen passing records.
4. At the completion of the scanning
   a. With DataCollector:
      i. **Select Decoder** (if left on "All Passings") and error will be received)
      ii. **Export Passings to file** then
      iii. **Tab delimited text file** as the Export format then
      iv. **Duplicate passings** so that any inadvertent secondary passings detected will be in separate Lap files.
   b. With Timing & Scoring:
      i. Set up a User Defined File Exporter.
      ii. Replay the passings to the exporter to create the export file.
5. To Load the list into BEM:
   d) Run BEM and select the appropriate Event File. E.g. the Event File to be used for Registration.
   e) Verify the Passing Record File Type is AMB Tab Delimited (Data Collector 3)
   f) From BEM's Main Menu, click on **Load List** in the **Transponders** group then select the Lap 1 file created in the previous step.
6. To validate the scanning:
   g) Verify that the correct total number of transponders exist in the allocation list.
   h) Validate at least 1 in 20 (more if time permits) transponders for match with serial numbers to BEM Label Number to physical Label.

Allocate Transponders to Riders

Transponders can be allocated to riders using **Review Entries** in BEM which is suitable where the allocation list is available prior to entries being made and also where changes are made to correct errors, bike changes, replacing lost transponders etc.

A bulk allocation of transponders to riders to be made, with a significant time saving over manual allocation. E.g. typical allocation is around 1 minute for 1000 transponders to be allocated.
Note that this feature requires the event to be created with Toolbox version 3.x and no errors reported with the Class Type data.

To use the bulk allocation feature:

1. Exit BEM and make a pre-allocation safety copy of the Event File so that if a mistake is made with the transponder allocation settings (e.g. different transponders for Cruisers where the

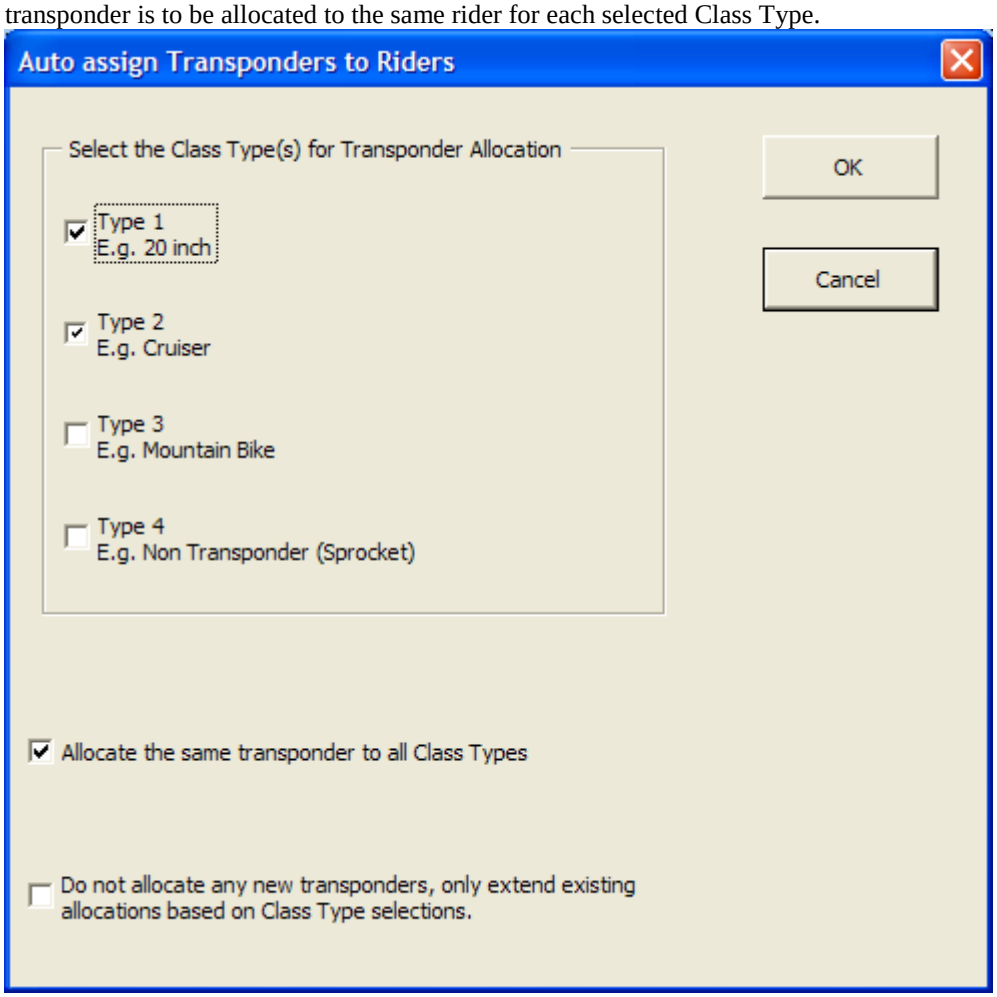
same for 20” and Cruiser was intended), you can avoid a tedious, manual allocation fix. E.g. save the Probikx 2012 Round1.bem file as Probikx 2010 Round 1 Pre Allocation.bem

2. Create an allocation list per the Create Transponder Allocation List section (above.)

3. Manually allocate transponders for any special scenarios such as two riders sharing the same bike and ensure that all private transponders are allocated.

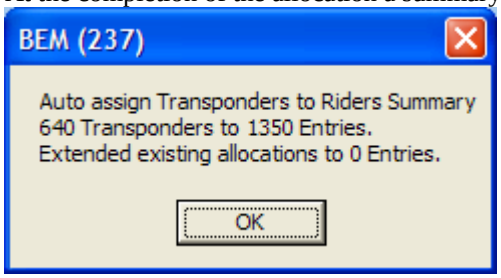
4. From the main menu screen in BEM, click on the **Auto Assign** button in the **Transponders** group.
Note that the **Auto Assign** button will be disabled when the Allocation List is empty and where there are errors reported with the Class Type data.

5. Select the Class or Classes to have the transponders allocated and if the same (or a separate) transponder is to be allocated to the same rider for each selected Class Type.



Note that Class Type numbering is arbitrary and dependant on how the particular event has been set up. Class Types shown are the de facto standard.

6. At the completion of the allocation a summary is given.



Should a transponder allocation be made using the wrong transponders being allocated, e.g. “Allocate the same transponder to all Class Types” being selected when separate transponders were meant to be allocated

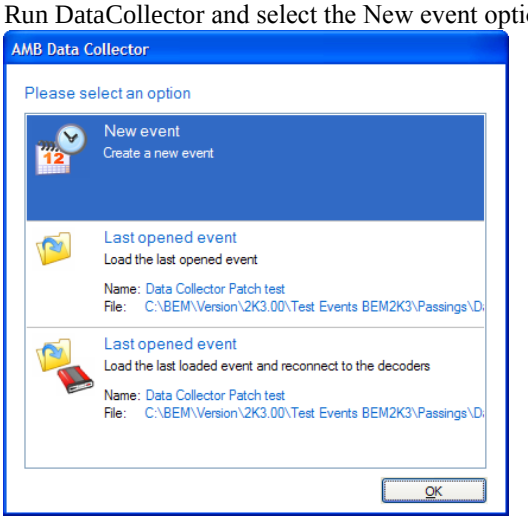
for Cruisers, then to correct this, the operator has the rather tedious task of working through each Cruiser rider in Review Entries and allocating a new transponder for each Cruiser entry or reverting to the pre-allocation safety copy of the Event File (mentioned on the previous page) made before the allocation was made. You did make a pre-allocation safety copy didn't you?

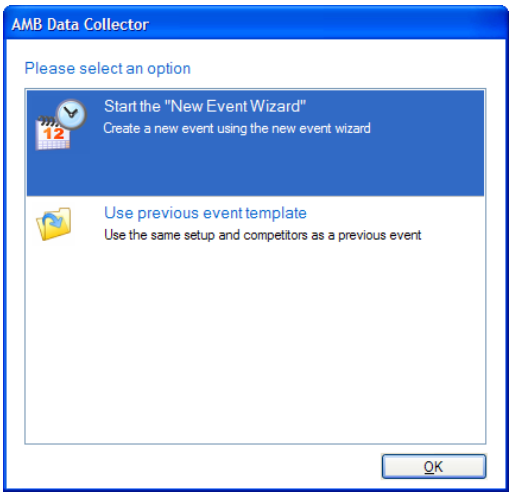
Setting up the Event in DataCollector

This section is a guide to set up the MyLaps DataCollector program for the event and to import the competitor list from BEM.
Note that this section assumes that the decoders are powered up and connected to the network.

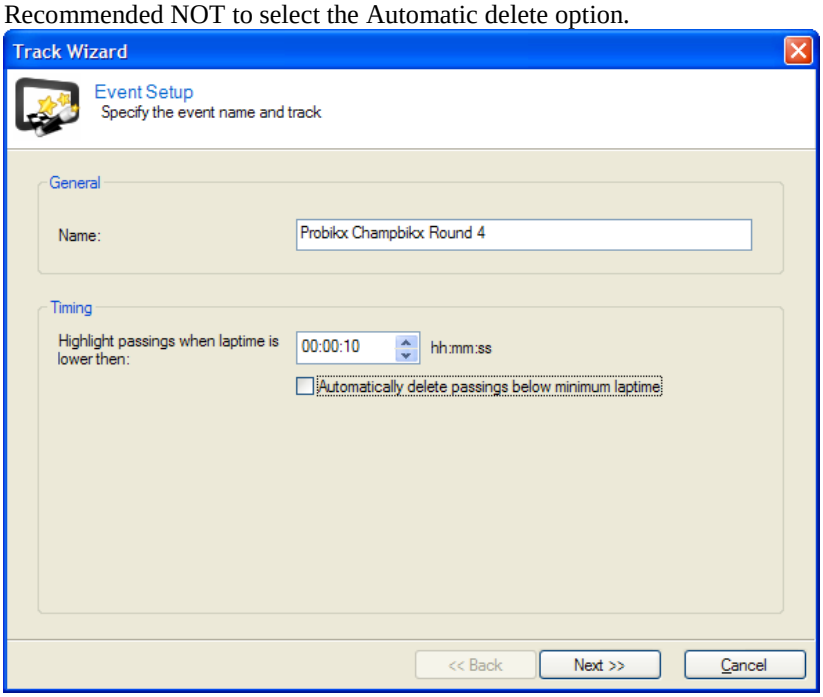
1. In BEM, select **Export Data** from the Main Menu screen then in the Export Data Menu, select **Orbits Competitor Import** format, click on **All Entries** and save the BEM Export with a meaningful file name. E.g. Probikx Orbits Export.txt

2. Run DataCollector and select the New event option then the "Start New Event Wizard"

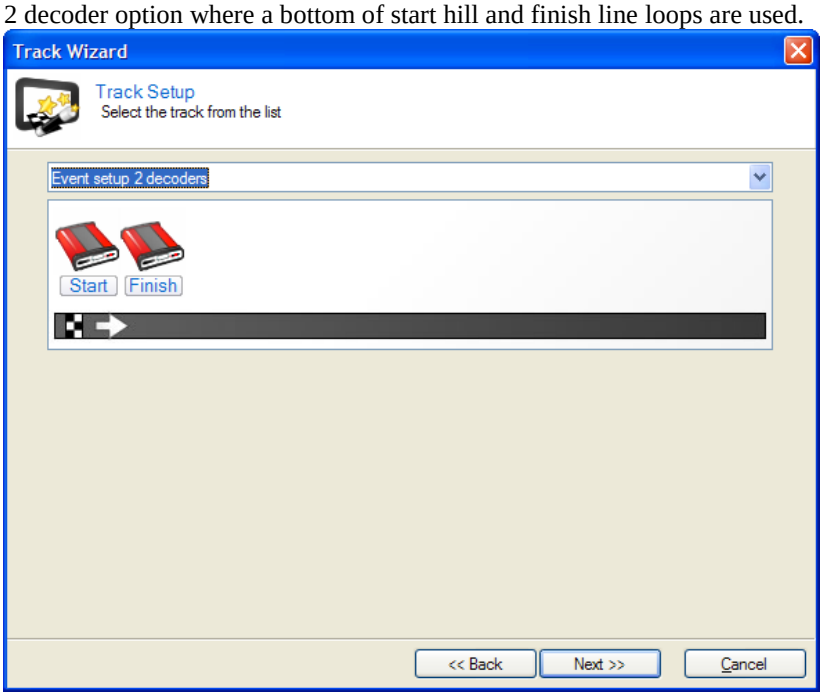




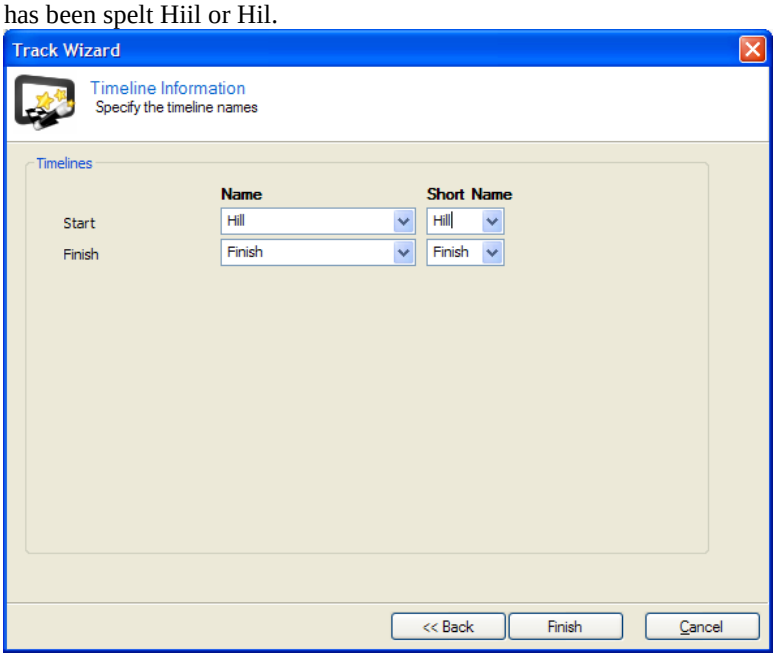
3. Enter the name for the event, E.g. Probikx Champbikx Round 4 and set **Highlight passings when laptime is lower than** to a suggested value of 10 seconds.
Note that a higher value such as 10 minutes would be far more useful to pick up stray passings however this is at the penalty of most start gate records being highlighted with typical race starts being at 30 – 40 second intervals.
Recommended NOT to select the Automatic delete option.



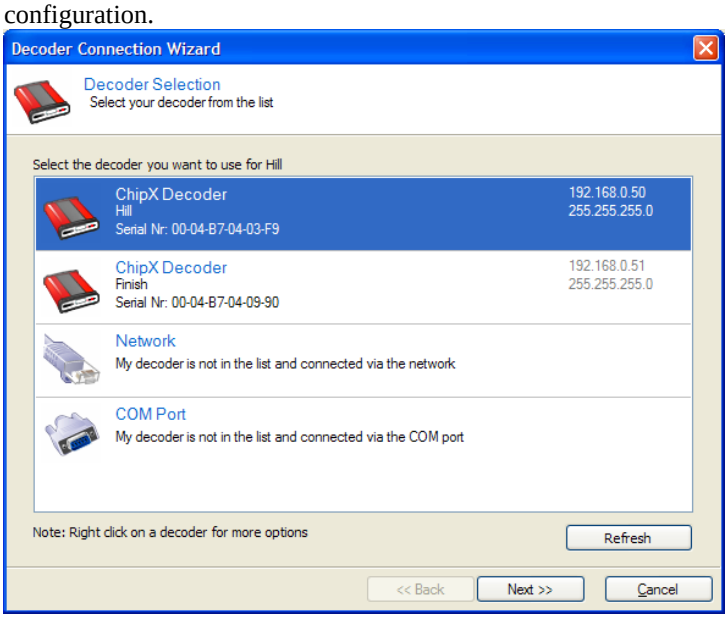
4. Select a 1 or 2 decoder option as appropriate. I.e.
1 decoder option for a fitting verification station or where a single finish loop is used.
2 decoder option where a bottom of start hill and finish line loops are used.



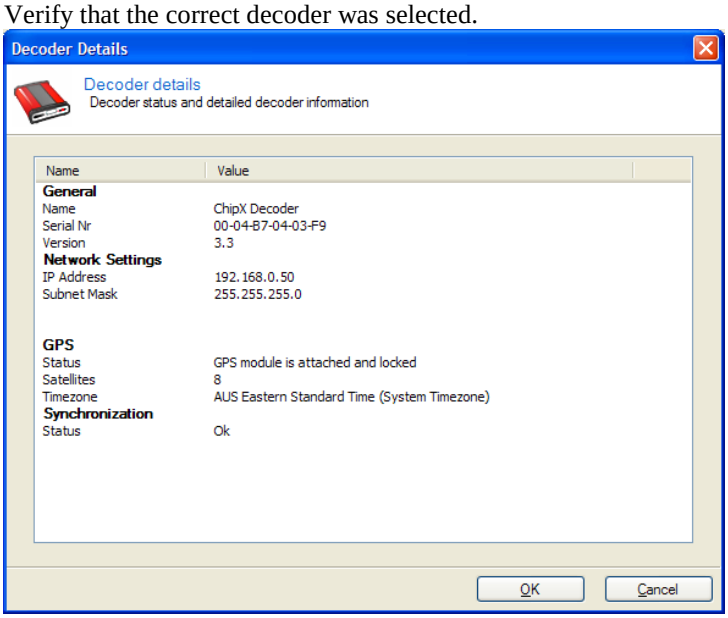
5. Enter the appropriate Timeline Names. These name must match the Timeline name data in the BEM options. See Transponder Settings on page 4 of this guide.
Double check the spelling as an exact match is required, e.g. situations have occurred where Hill has been spelt Hiil or Hil.



6. Save the event set up and then select the appropriate decoder for each Timeline by double clicking on each timeline decoder and selecting the appropriate device then click on Next.
Decoders are normally identified by their IP address as a fixed IP address is the normal configuration.

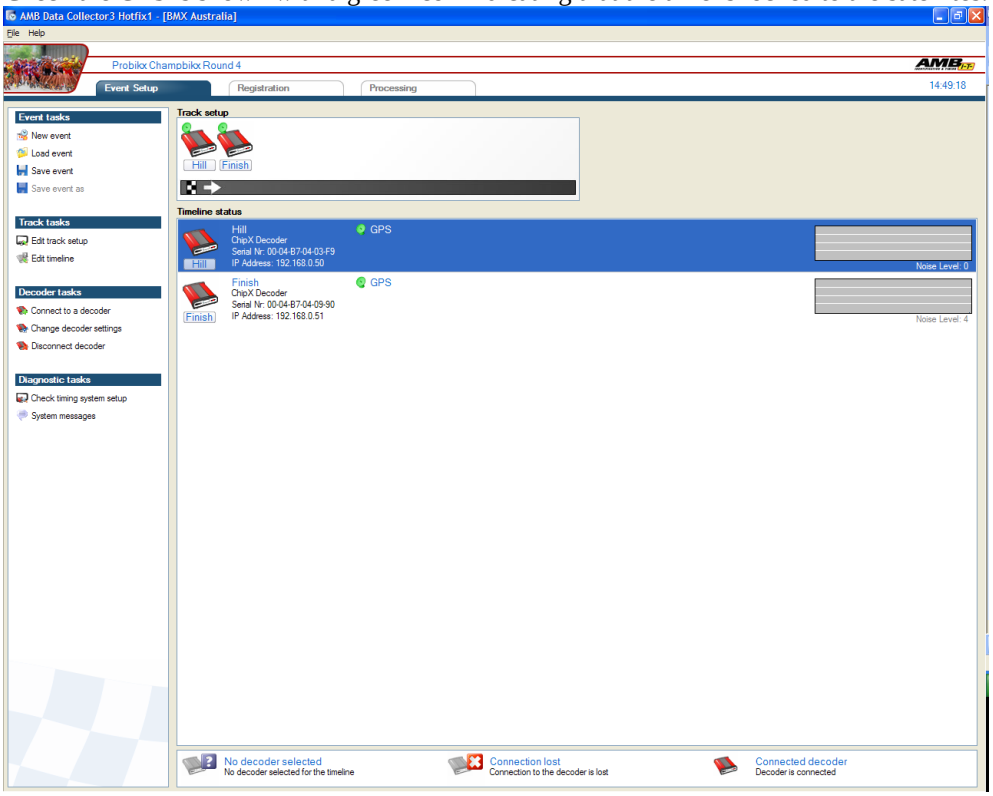


Verify that the correct decoder was selected.



7. Repeat for the Finish decoder. Both decoder's symbols should now be Red indicating that they are active.
Check the noise level being reported for the decoders which for the best results should be around 10 or less. Issues causing higher levels are typically interference from equipment such as PA amplifiers and speakers, photo finish camera power supplies and bad connections on the loop.

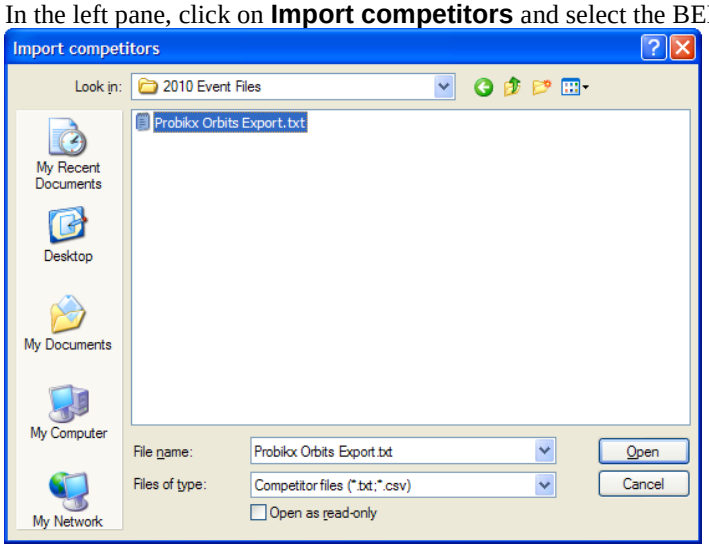
Check the GPS is shown with a green icon indicating that the time is locked to the satellites.



8. To import the list of competitors generated at step 1 of this section:

   a. Click on the **Registration** tab.

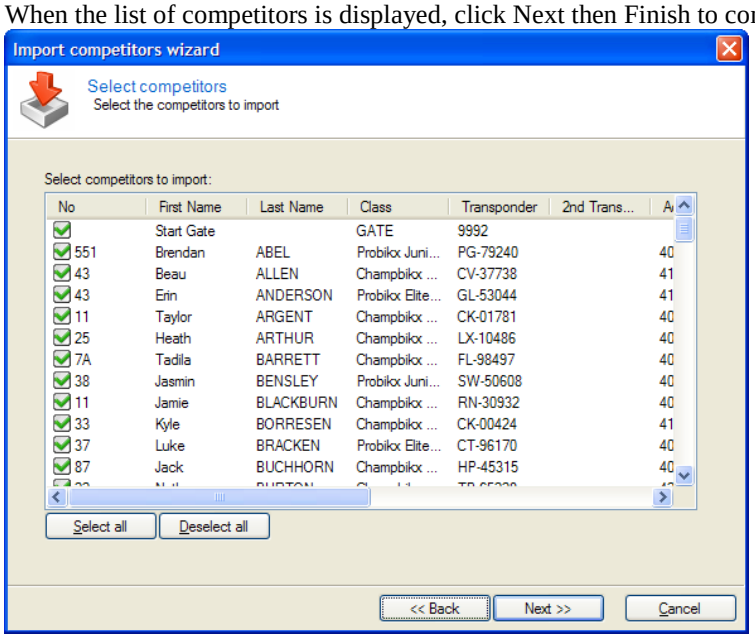
   b. In the left pane, click on **Import competitors** and select the BEM Orbits export file.



c. Next the Import competitors wizard screen is displayed.
If an import template has not been created previously, set up a BEM Import Template so that this can be used for future imports.
Note that BEM export inserts “Start Gate” as the first competitor using the transponder number specified in the Transponder settings.
Notes for a first time set up, set the Field Names in DataCollector to the following export field numbers from BEM: (Additional fields are optional and usually only License and Group are used)

DataCollector Field	Export Field Number	Note
No:	3	
First Name	7	
Last Name	8	
Class	4	
Transponder	5	
[Additional 1	2	License Number]
[Additional 2	13	Group]
[Additional 3	12	State]
[Additional 4	9	Country]

d. When the list of competitors is displayed, click Next then Finish to complete the import.

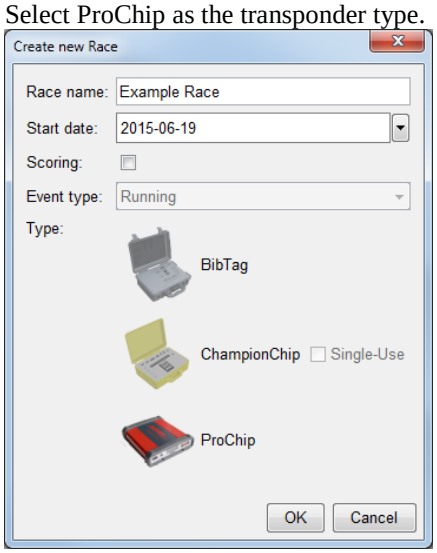


9. Click on the Processing tab to monitor the passings.

Setting up the Event in Timing & Scoring

Note that this section is written on the assumption that Timing & Scoring has been configured in accordance with the recommendations from the **BEM Guide to Timing & Scoring (Toolkit)** document, that two decoders will be used and they are powered up and connected to the network.

1. In BEM, select **Export Data** from the Main Menu screen then in the Export Data Menu, select **MyLaps Timing & Scoring Athlete Import** format, click on **All Entries** and save the BEM Export with a meaningful file name. E.g. Probikx Timing & Scoring Export.txt
2. Run Timing & Scoring, select Start a new race.
3. On the Create new Race window:
    a. Enter the Race Name.
    b. Enter the Race Date.
    c. Ensure the Scoring option is not selected.
    d. Select ProChip as the transponder type.



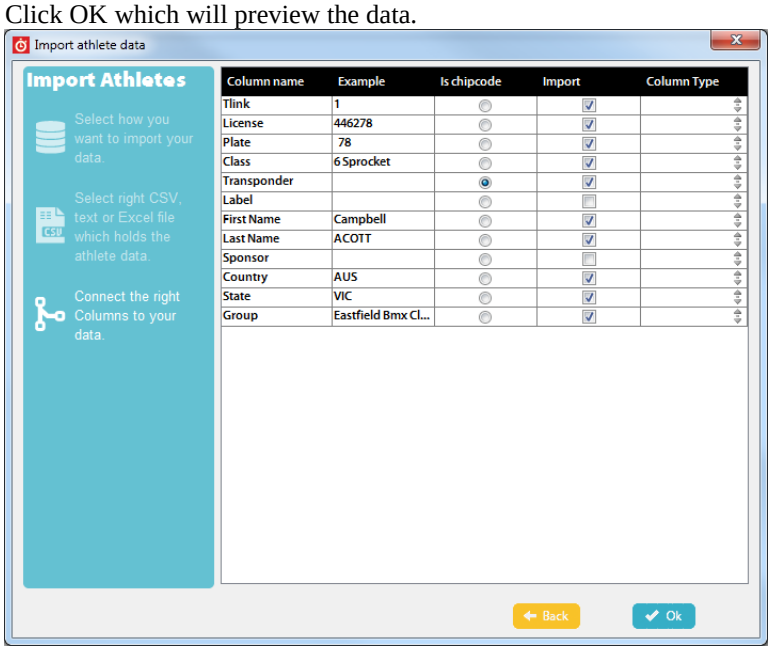
4. To import the list of competitors generated at step 1of this section:

    a. Click on the Athletes icon 

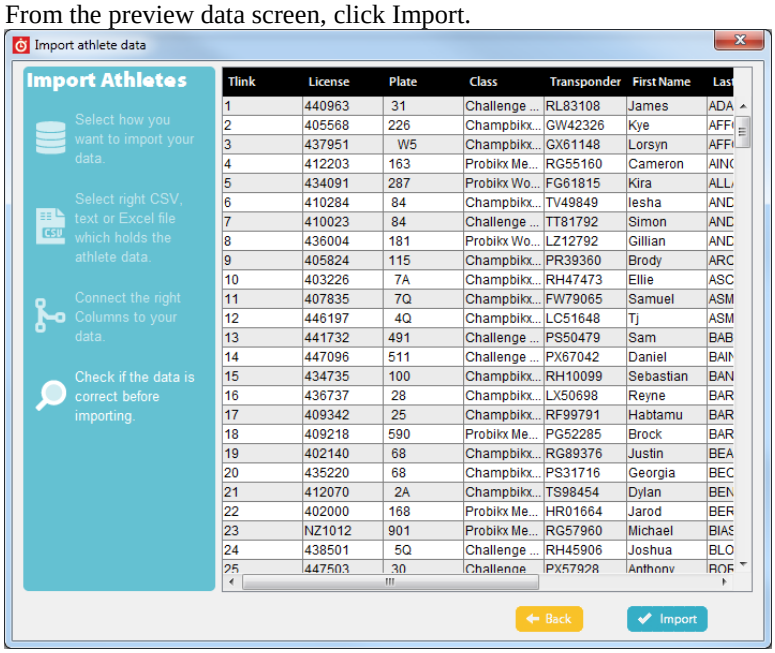
    b. On the Athletes screen click on the Import Athletes icon 

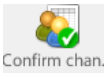
    c. In the Import athlete data screen:
        i. Select File which will present more selections.
        ii. Use the file location File button to select the file created at step 1 of this section then click Open.
        iii. Column separator: [tab]
        iv. Character encoding set: UTF-8
        v. Start importing from row: 1
        vi. Use first row as headers selected.
        vii. Click OK which will present a preview of the data structure.

d. Check that the Is Chipcode is selected for the Transponder Column name. E.g.
Note that the Column Type settings are not required to be set as that only applies when the Scoring functionality in Timing & Scoring is used.
Click OK which will preview the data.



e. From the preview data screen, click Import.

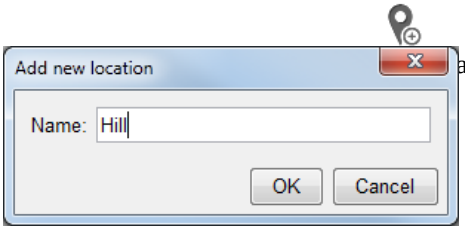


f. You should now be back at the Athletes screen with the data highlighted in blue. Click Confirm Changes icon 

to complete the import.

g. If there are any invalid entries shown (note that Timing & Scoring considers some normal BMX scenarios invalid such as one transponder on two entries for a rider doing two classes) click Delete Invalids.
Unless the invalids are deleted, the name display will not function.

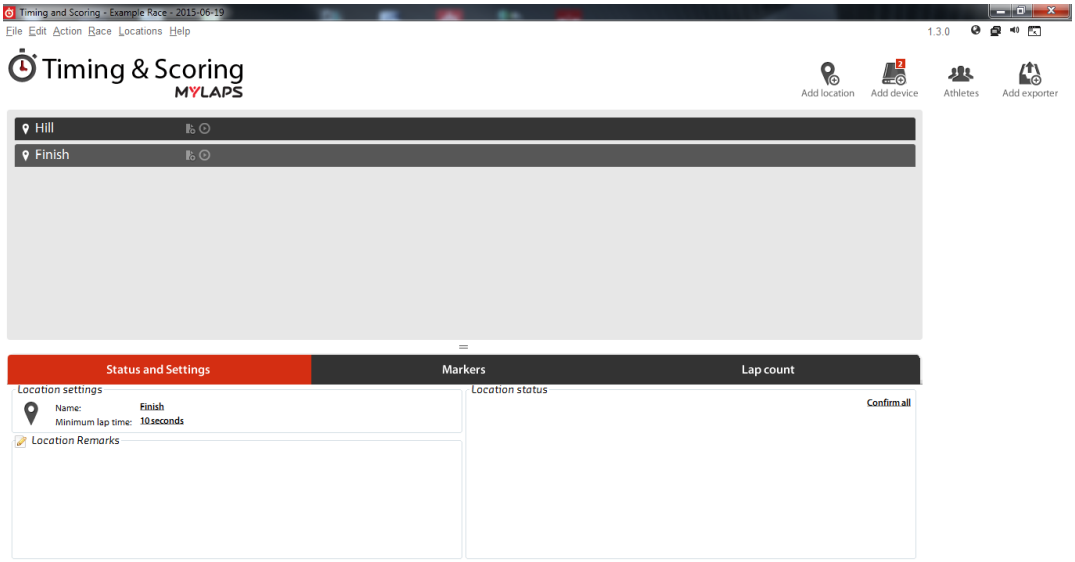
h. Close the Athletes window.

5. 

and name this Hill.

6. Repeat the Add location to create the Finish location.

Your screen should now look very much like this:

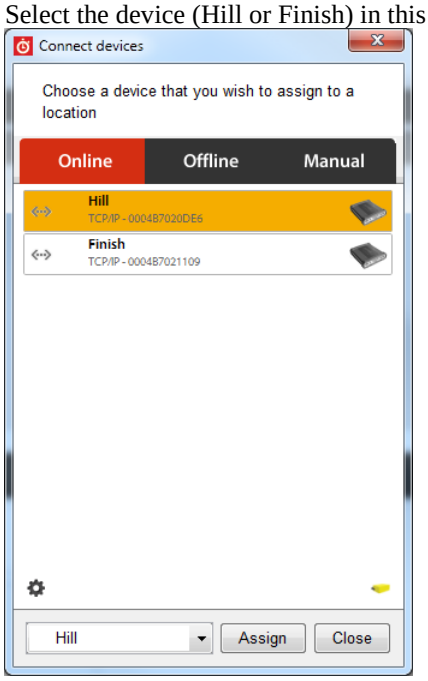


7. Next step is to add devices (i.e. decoders) to each of the Locations.

Start this by clicking on the Add device icon. 

Note that the small red box in the upper right shows the number of unassigned devices available. If this doesn't show 2 (or more depending on what you have connected) then you have an issue with the network that must be corrected before proceeding.

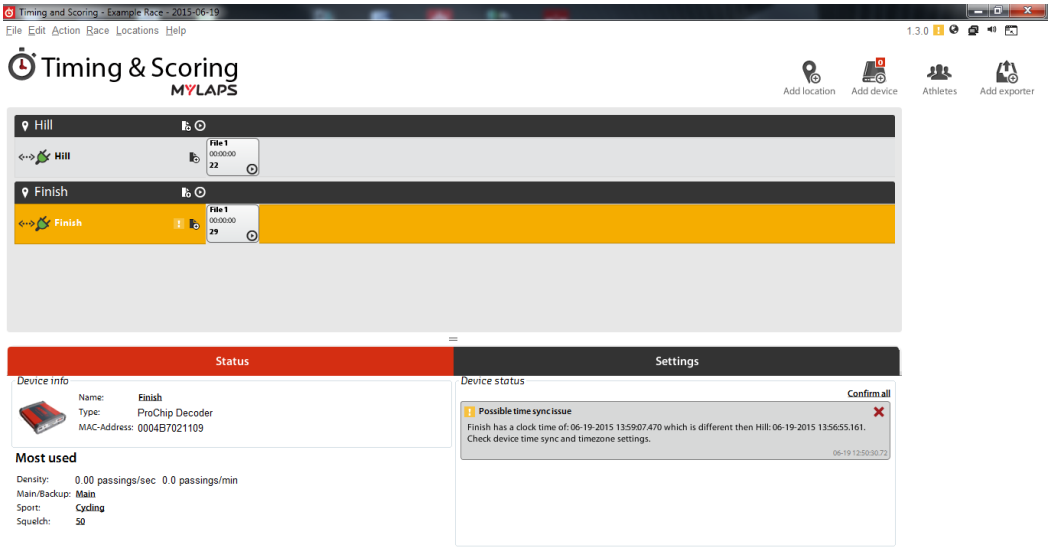
a. Select the device (Hill or Finish) in this example and select the Location name fromm the



b. Repeat to assign a decoder to the Finish Location.

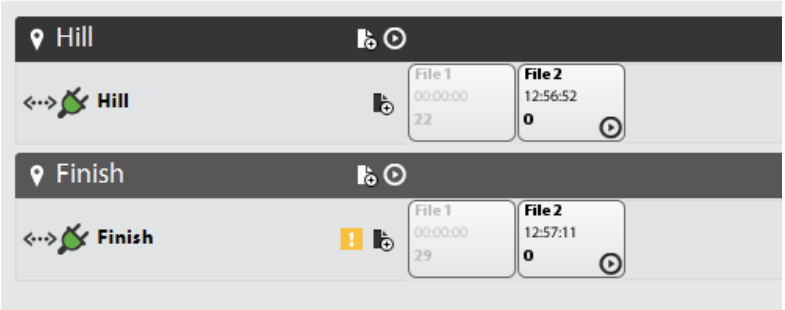
8. Your screen should now look very much like this:

Note that a File 1 is created for each Location that has read in all passings stored in the decoder. Only a few in this example but could be 1000s in practice.

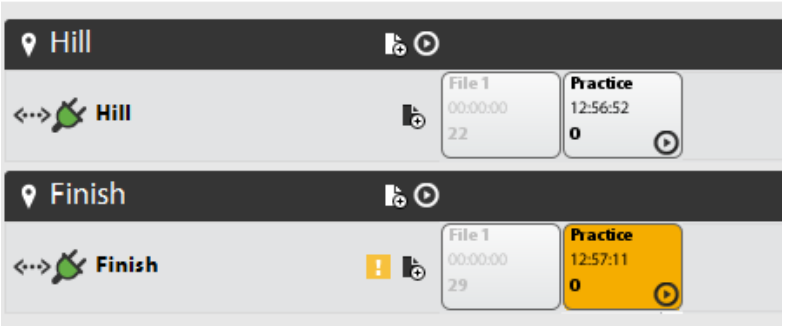


9. Unless you have a specific requirement to process the stored passings read into File 1 for each Location then:
   a. Right click on each File 1 in turn and mark it as Ignore.

b. Right click on each Location in turn and select “Create a new file on all devices”. You will now have a File 2 for each Location

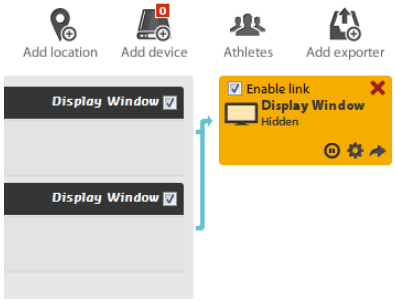


c. Right click on each File 2 in turn and give it a meaningful name, e.g. Practice, Motos etc.



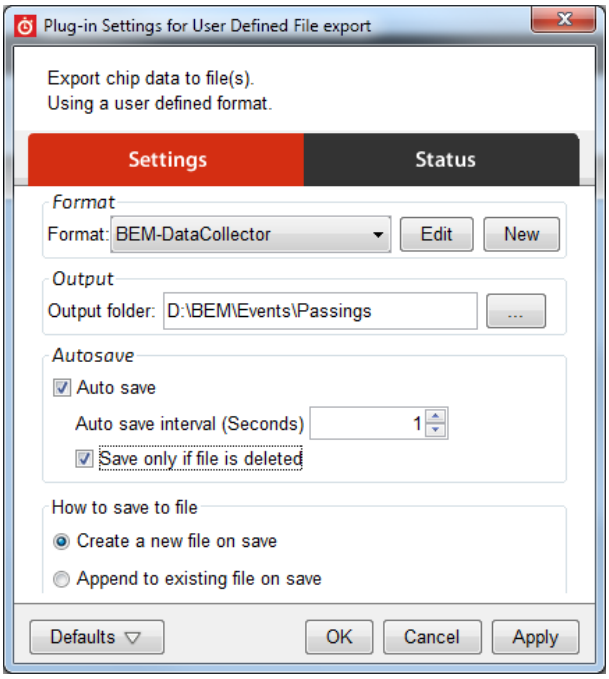
10. Next step is to set up exports to the display window and text file.

a. Clicking on the Add exporter icon  then click on Display Window.
b. Enable the Display Window exports from both Hill and Finish Locations. E.g.



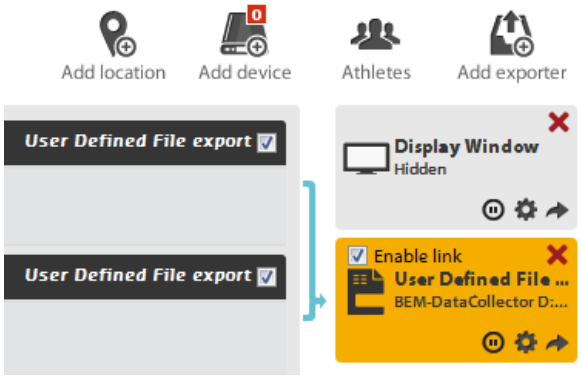
c. Click on the Add exporter icon again and select User Defined File.
d. Click on the User Defined File settings (cog wheel) and check:
   i. Format: BEM-DataCollector. See the BEM Guide to Timing & Scoring (Toolkit) document if you don’t have this option setup.
   ii. Output: Select the Output Folder for the passings.
   iii. Autosave settings:
      1. Autosave ticked.
      2. Autosave interval: 1 second.
         Note that you have to enter this manually as the spin settings will only go down to 5 seconds.
      3. Save only if file is deleted ticked.
   iv. How to save to file: Create a new file on save.

v. Should now look like this



vi. Click Apply then OK.

e. Enable the User Defined File exports from both Hill and Finish Locations. E.g.



11. Note that Pass through will be paused for the Location Files and enabled for the Display Window and User Defined File exporters.
You should set this now as required.

Validate Transponder Fitting

1. When the allocation of transponders to riders is completed:
    a. At events where race plates are issued, suggested option is to print stickers to put on race plates using a BEM export as the source to an appropriate Mail Merge document so that the sticker contains Rider Name, License Number, Class, Race Number, Transponder Label and Transponder Number.
    b. Where race plates are not issued, use a docket or A6 printer at registration to print class and transponder details which avoids (well mostly avoids) fitting of the wrong transponder to the wrong bike for riders entering 20" and Cruiser and for families with multiple riders.
2. As a final validation that the correct transponders are fitted to the correct bikes, at the transponder fitting area set up a validation scanning station using a laptop (preferably with a large external screen running DataCollector either alone or in conjunction with the BemTrain program to make it easy for the riders to see their details), decoder and a small custom loop (or desk top loop) so that as the bikes are leaving the area, they are scanned to validate the transponder number matches the data in BEM.

    To set up DataCollector to display the rider details:
        a. In BEM generate an Orbits export file.
        b. In DataCollector:
            i. Set up a new Fitting Validation Event.
            ii. From the Registration Tab, use the Import Competitors function to import the BEM – Orbits file. If not done already, use the Template function in DataCollector to identify and label the License and Group fields.
            iii. Select the Processing Tab and select the name, class and race number fields to be displayed.
            iv. If using the BemTrain program to display the passings (recommended) then:
                1. Set up Live File Export in DataCollector.
                2. Set up BemTrain in Fitting Station mode (refer to the BemTrain manual).
3. Another suggestion is that a unique coloured dot be put on the plate to indicate validated scanning has been done and anyone fronting up for practice without the dot be directed to the transponder fitting area to be checked and validated.
4. Recommendation that transponder fitters fit all transponders to same fork (generally R/h as this is easier for right handed people to cut off post event); makes it much easier for Stagers to check and retrieval crew to spot transponder for post event recovery.

Post Event Transponder Audit

At the 2009 Queensland State Titles, transponder collection started after the motos in the run-off area after the finish line for riders not qualifying to the elimination stages and continued through the quarter and semi finals for riders not transferring to the next stage. After the finals, all hired transponders were collected again in the run-off area. This process worked very well and achieved a rate of return that was as better than expected.

Some words of caution here.

Don't be too up front when collecting the transponders as the collectors are not finish line judges and several instances across different events have occurred where transponders have been cut off either in error or where a relegation has changed the apparently obvious placing resulting in a mad scramble to find or allocate a new transponder to the rider for the next stage of the event.

Have regard for the feelings of riders who have just missed out on transferring and don't add insult to injury by swooping in to recover their transponder.

While presentations were in progress, all returned transponders were packed into the normal shipping trays (20 per tray) and an audit performed on returns.

For smaller events (say up to 400), practice is simply to pack the transponders back into trays in their numbered sequence and see which are missing.

To audit by scanning the returns:

1. In DataCollector, set up a Transponder Returns Event using only the Finish Line Decoder.
2. Carry one tray of transponders at a time (20 transponders) across the finish line.

3. When all transponders have been scanned into the Returns Event, export the passings from DataCollector using **Export Passings to file** with **Tab delimited text file** as the Export format.
4. From the Main Menu in BEM, click on **Return Check** in the **Transponders** group and select the returns file created in the previous step.
5. BEM then signs off the returns and generates an Outstanding Returns Report of riders still to return their transponders.
6. Take the Outstanding Returns Report to the announcer.

At the afore mentioned Queensland State Titles, the initial outstanding returns report listed 12 riders from some 890 transponders and these were accounted for shortly after the announcements were made.

BEM and Lynx Interfaces

The BEM program Lynx interfaces enable:

- Generation of Lynx Event (.evt) File
- Generation of Lynx Schedule (.sch) File
- Auto update of the Lynx Event file as subsequent stages of the event are drawn (i.e. quarter finals, semi finals)
- Setting results in BEM from Lynx Information (.lif) Files.

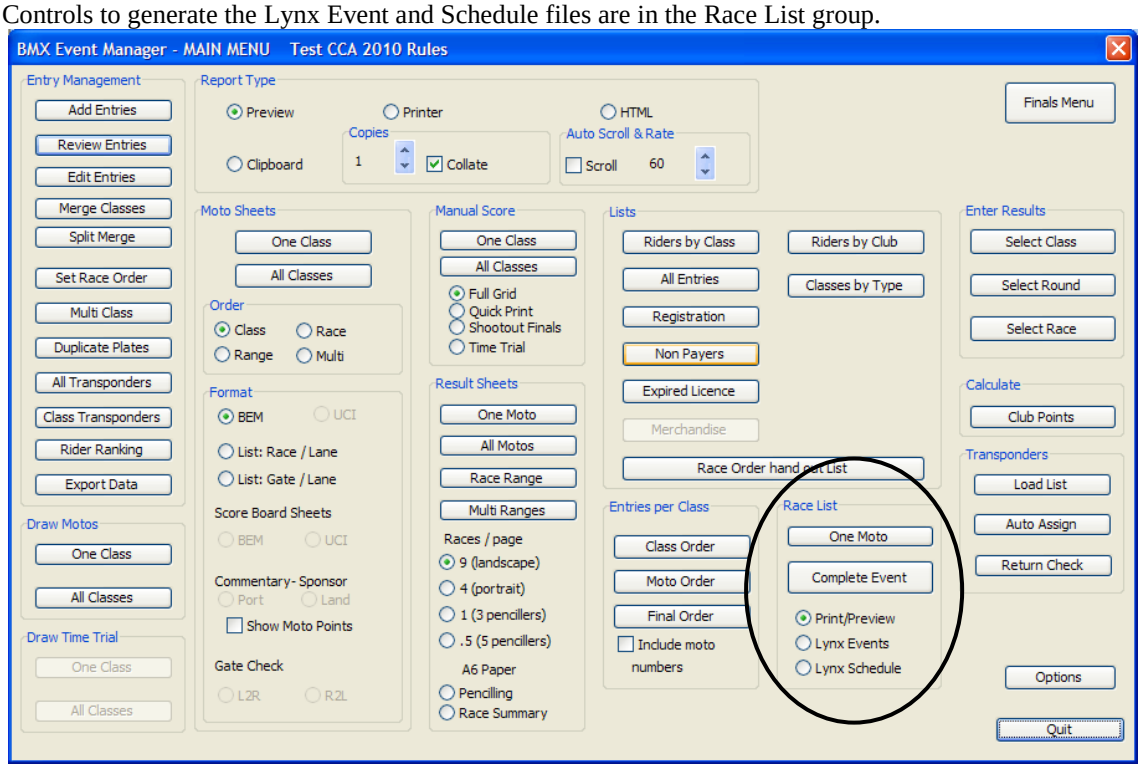
Lynx Operation

Initial Event and Schedule Files

To be able to score the event with the Lynx camera system and then import those results into BEM, a Lynx Event file lynx.evt must be generated in BEM and then imported into the Lynx software. As each race is scored from the camera results, the Lynx Result files (.lif) are used by BEM to score the race.

Once the Motos are drawn in BEM (or Time Trial if applicable), the initial Lynx Event and if required, Lynx Schedule Files are generated from the main menu screen in BEM. These files can be generated for the Complete Event or individually for each Moto (round).

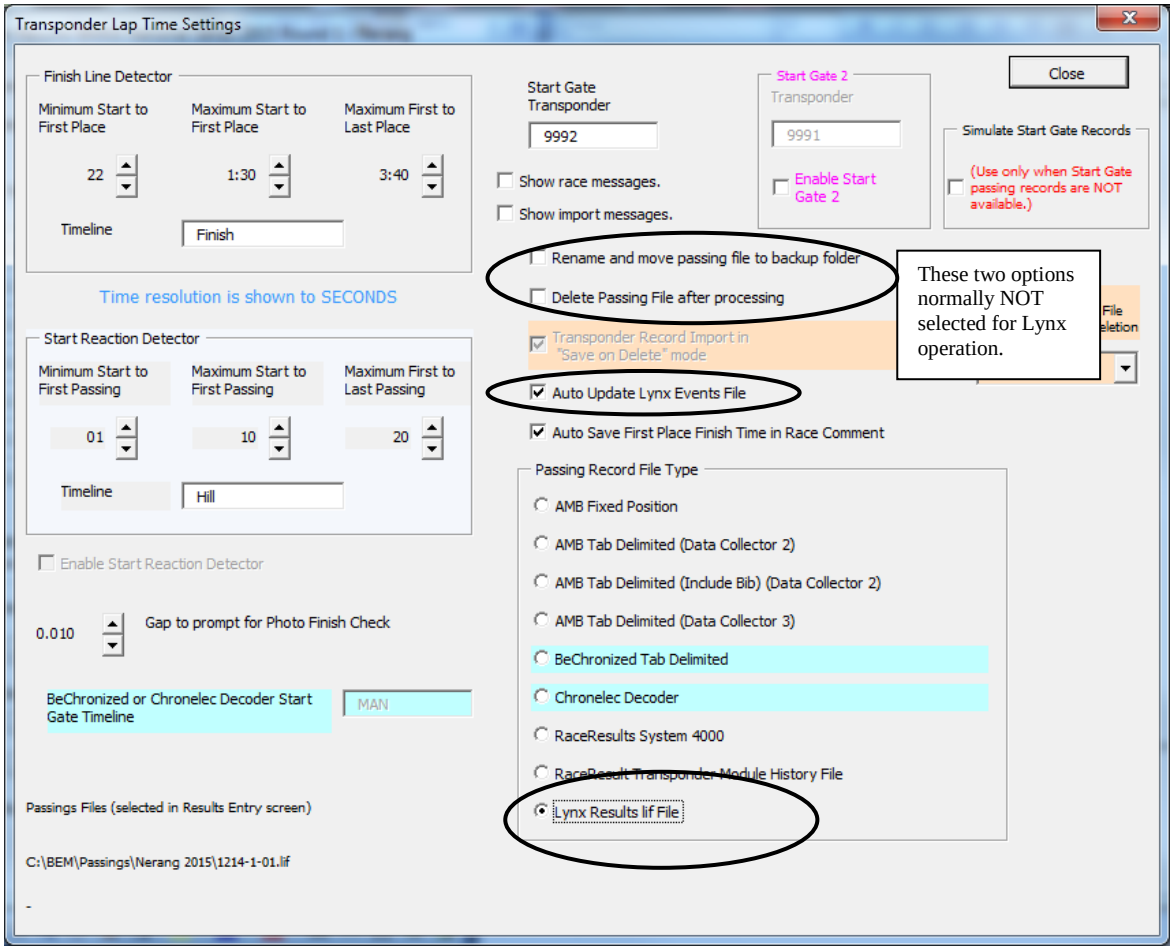
Controls to generate the Lynx Event and Schedule files are in the Race List group.



Set Up Options

The set up options for Auto Update of the Lynx Events file and for import of results from the Lynx Information file are accessed from either the **Transponder and Camera Settings** button in the Options screen or from the **Settings** button in the Results Entry screen. I.e.
Enable Auto Update Lynx Events File
Select Lynx Results lif File as the Passing Record File Type

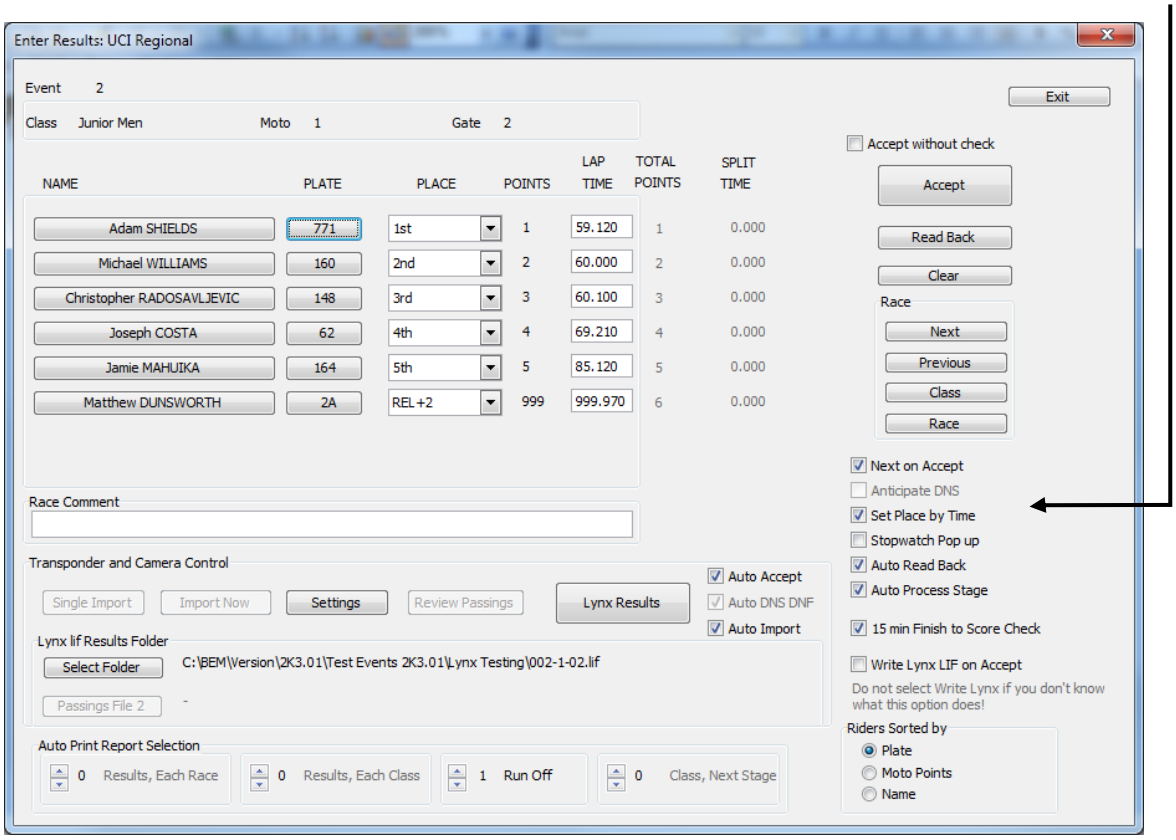
Note that the "Rename and move passing file to backup folder" and "Delete passing File after processing" settings are applied to the .lif result files and **should not be set for Lynx operation** as each race results file has an unique filename.



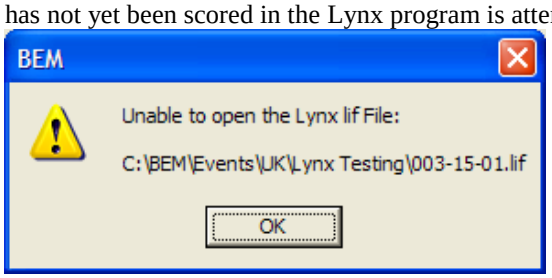
Results Entry from lif Files

To select the folder containing the lif Files, from BEM's Results Entry screen click on the **Passings File 1** button and select any lif file in the folder.

Where lap times are included in the lif file, select the "Set Place by Time" option in the Results Entry screen.



To import results, select the appropriate race then click on the **Lynx Results** button. If the appropriate .lif file exists, results are set in BEM. An error message is given if the .lif file cannot be found, e.g. if a race that has not yet been scored in the Lynx program is attempted to be scored in BEM

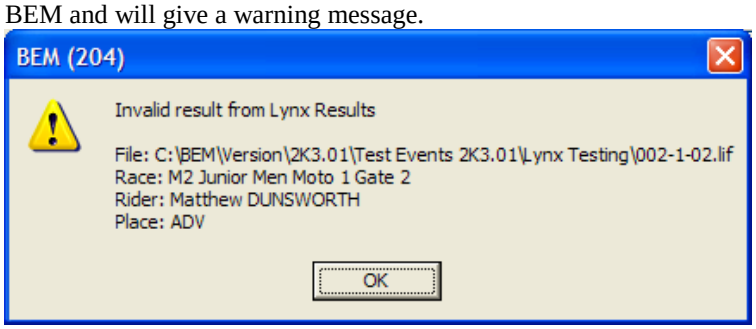


Special Results

Special results in the Lynx .lif file are handled in BEM as follows:

DNS (did not start) is compatible
DNF (did not finish) is compatible
DQ (disqualified) from Lynx is mapped to the BEM equivalent DISQ
SCR (scratched) from Lynx is mapped to BEM's REL (relegated) result.

All other special result from Lynx such as FS (false start) and ADV (advance) are not used or recognised in BEM and will give a warning message.



Track Considerations for Transponders

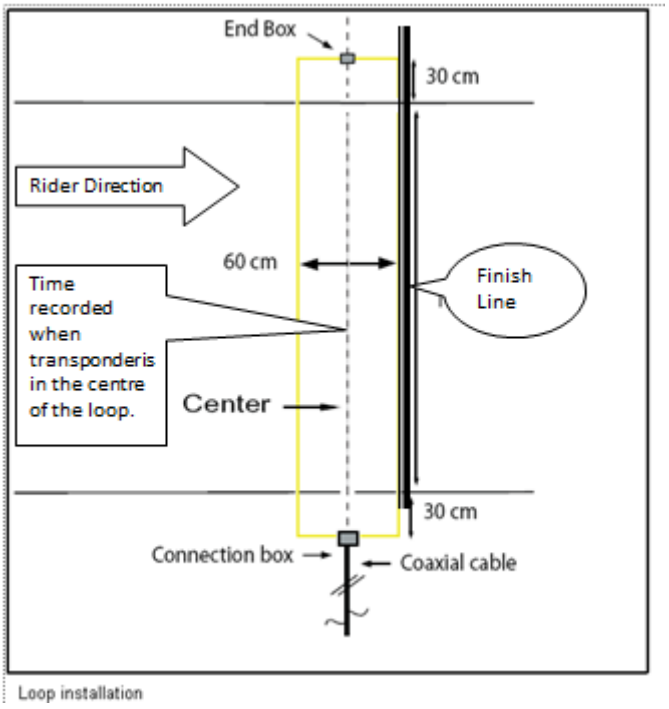
By careful attention to the physical layout of the track and surrounds, much can be done to minimise unintended or stray passings that have the potential to impact on the integrity of the transponder results. Typical causes of stray passings are:

- Riders turning around and riding back across the finish line.
- Riders taking a short cut across the track.
- Officials walking across detector loops with transponders in their pockets.
- Bad layout of loops and cables.

Suggestions to optimise the results are (with many taken from AMB's documentation) are:

- The detection loop wires are parallel to the finish line and the distance between the loop wires is 60 cm
- The connection box and end box are located at the centre line of the detection loop 30 cm on each side of the timing zone
- Avoid excess loop wires by matching the loop to track width.
- No metallic items, electrical devices or wires nearby the detection loop
- Avoid loop wires close to each other or looped.
- Enforce no bike areas at least 2m around detector loops. Strongly recommend the use of plastic mesh barriers where the end of the loop is near a spectator area.
- Have defined and enforced "spectator to staging" and "finish to spectator" routes for riders with bikes that avoid detector loop locations.
- At tracks where straights are very close together, there is the possibility of detecting transponders from the adjacent straight. Should this problem be experienced then refer to the Decoder Manual to adjust the squelch setting on the decoder to increase the signal strength threshold for detection.
- Use rider briefing to reinforce the keep away from loops requirements.
- Experience from events run by BMXV with decoders located in the score room and connecting the track loops using RG-6 Quad-shield coaxial cable is that this configuration provides:
    - Superior signal to noise
    - Resistance to stray passings
    - Improved environment for the decoders.
    - Easier setup by not having to run external power.
    - Major BMXV Clubs are installing permanent in-ground cabling for all the above reasons plus the advantage of a much faster set-up and take-down at events.
- Do not store spare transponders in the scoring room or near the decoders or cabling as stray passings can be picked up through either coax or Ethernet cabling.

- Finish Line Loop
    - Ensure loop is square with the track.
    - Finish line is 30cm past the centre line of the loop to account for the set back of the transponder location on the fork from the leading edge of the front tyre.



Loop installation

Transponder Start of Race Day Checklist

Check list based on bottom of start Hill and Finish line timelines with AMB DataCollector interface to the decoders.

Check with Windows Explorer that all drive mappings between BEM and DataCollector PC's are active and not shown with a red cross. ❒
Create a new event in DataCollector / Timing & Scoring ❒

If first day of the event, clear all passing records from both decoders. ❒
Generate an Orbits / Timing & Scoring Competitor Import format export from BEM ❒
Import the Competitor list into DataCollector / Timing & Scoring ❒
Start of Practice:
- Check that start gate records are being received ❒
- Check that Hill decoder records are being received ❒
- Check that Finish decoder records are being received ❒
- Monitor Display Window for unassigned passing records ❒

Set up Passing Record import to BEM:
- In DataCollector, enable Live File Export (Save on Deletion of File) or in Timing & Scoring, enable the User Define File Export (Auto Save, Save only if file is deleted, Auto save interval 1 second)
- Recommend Export path to a unique day or block folder be used ❒
- In BEM Transponder Settings, verify the correct options are selected. I.e. Rename and Move, Delete after processing, Save on Delete, Data Collector 3, Start Loop Enabled ❒
- In BEM Results Entry:
  - DataCollector
    - Select Passing File 1 to Hill_LOG.txt from Live File Export path ❒
    - Select Passing File 2 to Finish_LOG.txt from Live File Export path ❒
  - Timing & Scoring
    - Select Passing File 1 to Hill.txt from Live File Export path\Hill ❒
    - Select Passing File 2 to Finish.txt from Live File Export path\Finish ❒
- Click Import Now and check records are imported error free. ❒
- Review Passings and verify Start, Hill and Finish records were imported with expected date, time and competitors ❒
- In DataCollector / Timing & Scoring, disable Live File Export ❒
- In BEM, repeat Import Now to flush any remaining passing records ❒
- Review Passings and mark all for Ignore and then Delete ❒

Race Start Imminent
- Request track clear of all practice riders ❒
- In DataCollector / Timing & Scoring
  - Delete all practice- warm up passing records / Start new Timeline Files ❒
  - Enable Live File Export in Save on Deletion of file mode / Enable pass-through. ❒
- Request first race only be run ❒

First Race Complete
- In BEM, click on Lap Time and verify results are set as expected ❒
- Advise racing to continue at normal pace ❒

Post Event
- In DataCollector / Timing & Scoring
  - Disable Live File Export / Pause pass-through ❒
  - Save the event / race file ❒
  - If using eZeventing check that all uploads have been completed before disconnecting any computers. ❒