



SUBJECT: SPIRE HSPOT Interface Control Document

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Project Document

**SPIRE HSPOT Interface Control
Document**

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Distribution



Change Record

ISSUE	DATE	Changes
0.5	22 nd March 2005	Based on template from Sarah Leeks
0.6	5 th April	Updated following implementation of Point Source Photometry AOT
0.7	11 th April	Updated following implementation of Small Source Photometry AOT
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Glossary

CUS Common Uplink System
HSPOT



1. INTRODUCTION

Users of the Herschel satellite enter observations using the HSPOT tool. This tool allows the user to enter information about the required observation (target, observation type, source characteristics etc) and to store this information into the mission database from where the observation can be scheduled for execution on the satellite. In addition HSPOT provides a facility to estimate the time necessary to carry out the observation in order for the user to optimise the observation strategy within a proposal. In order to carry out these functions HSPOT needs to access SPIRE specific code (AOT Logic) which defines the way in which observations will be carried out.

The HSPOT tool is a general purpose observation entry tool that needs customising for each instrument on Herschel. This document details both the instrument-specific parts of the HSPOT user interface for SPIRE and the interface between HSPOT and the SPIRE AOT Logic.

1.1 Scope

1.1.1 User interface

The SPIRE-specific user interface for HSPOT can be defined in terms of the graphical panels displayed in the HSPOT window during observation input and the user parameters that are made available through these input panels.

The following is a description of the fields required in AOT and panel definitions

Instrument: Name of Herschel Instrument

AOT Name: Name of the AOT to appear in HSPOT list of AOTs

CUS Observing Mode Name: CUS name to be used

Panels on screen at start: give the names of the panels that are on AOT screen when it is opened up.

Program Name to Call: Name of code to call to calculate required parameter values

Input Values: Input parameter to code

Return Values: Output parameters from code

Panel: The name of a panel in the display - the name appears on the screen.

Panel Description: This should describe the entries in the panel, whether they are pull down menus, sets of radio buttons etc (a diagram can be provided too) and when they are active.

CUS Name: CUS name of above entry if needed.

For each item on the panel:

Item: The name of an item on the panel (+units). Text appears on HSpot screen.

Entry field: text box, check box, option button, list box or command button

Range of Values: Here the min-max values acceptable for parameter should be given in format min-max. Or if only certain discrete values can be accept/presented-to-user then they should be given here in the order that they should appear on the screen (top to bottom)

Default: Any default starting value

Precision: The precision of numerical values

Units: The units that the value is in. This should be made know to the user.

Action: applicable if the entry field is a command button

Tooltip: Tip to be given to user if mouse pointer hovers over parameter. A tooltip should be given for each entry and each value in Range of Values (and in the same order as listed above).

CUS Name: The name by which this parameter is known in the CUS or the sequencer/translator

CUS Values: "give", "descrete", "values", "in", "quotes"

Format: is this a string, int, double, Boolean [give what 0 means and what `1 means]

CUS default: default value in CUS high level scripts

Source of value: is it user input or from the software

Dependencies: Any dependencies of this entry should be given

Validation: description of how the parameter value is checked and, in case of dependencies, how value is influenced by other HSPOT parameters

Warnings: Here should be written any warnings that should be presented to the user on selection of certain specified values or certain input values.



Call prog with: give the program name and the parameters it takes – give in the form of the actual call command (TBD)

Returned from prog: Give the details of what is returned (TBD)

Notes

- Field names are in Bold. In each field, anything entered in blue italics will be displayed on the AOT screen. Indentation and numbering are optional, but are used here to aid readability.
- Not every field needs to be defined – this usually depends on the entry method in use
- CUS Name and CUS Value refer to names in the AOT Logic, they may refer either to java code or CUS names.

1.1.2 AOT interface

The SPIRE AOT interface is implemented in a combination of java code called from HSPOT during AOT observation definition and a set of CUS definitions that implement each of the SPIRE AOTs – during observation definition HSPOT calls the AOT Logic with the user-entered parameters and this returns the instrument parameters required to implement the observation using the CUS definition of the appropriate observing mode. The combination of user-entered and instrument parameters is stored in the mission database and define the observation that has to be scheduled.

1.2 Structure of Document

Section 2 details the user interface for the SPIRE Photometer AOT and time estimator windows.

Section 3 details the user interface for the SPIRE Spectrometer AOT and time estimator windows.

1.3 Documents

1.3.1 Applicable Documents

AD01	Spire SPOT OR Inputs: Point Sources (SPIRE-ICS-NOT-002142)
AD02	Spire SPOT OR Inputs: Photometric Mapping Observations (SPIRE-ICS-NOT-002263)
AD03	Spire SPOT OR Input: Spectrometer (SPIRE-SAP-NOT-002264)
AD04	Time Estimation for Photometry Modes (SPIRE-ICS-NOT-002145)

1.3.2 Reference Documents

RD01	SPIRE HSPOT ICD and HSPOT ICD Template, Sarah Leeks, Draft 0.4
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2. SPIRE PHOTOMETER AOT

Instrument: SPIRE

AOT Name: *SPIRE Photometer*

AOT Label: SPHOT-0000

Target Types: Fixed Single, Moving Single

CUS Observing Mode Name: Mode_SpirePhoto

Panels on screen at start: Source Type

Input Parameters:

double ra, dec
string source
boolean choppingAvoidOn
integer choppingAvoidNumber
double choppingAvoidFrom1, choppingAvoidFrom2, choppingAvoidFrom3
double choppingAvoidTo1, choppingAvoidTo2, choppingAvoidTo3
double mapSizeX, mapSizeY
double mapOffsetX, mapOffsetY
boolean mapOrientationArray
double mapOrientationConFrom, mapOrientationConTo
string band
double flux, signalToNoise, intTime

Output Parameters

String pswName, pmwName, plwName
double pswFlux, pswSN, pswTime, pswConfFlag
double pmwFlux, pmwSN, pmwTime, pmwConfFlag
double plwFlux, plwSN, plwTime, plwConfFlag

Saved Parameters

All Input Parameters should be saved between sessions



User input

This section defines the panels displayed to the user when the Photometer AOT is selected from the HSPOT Observation Menu.

2.1.1 Panel: Source Type

Panel Description:

Selection of the source type from a list

The screenshot shows a panel titled 'Source type' with three radio button options: 'Point Source', 'Small Map', and 'Large Map'. The 'Small Map' option is selected, indicated by a filled radio button.

Range of Values: *Point Source, Small Map, Large Map*

Entry field: *list of the possible values given above, each with a radio button – only one value may be selected*

Default: *Small Map*

Tooltip: *Point Source, Small Map (<4' diameter), Large Map*

CUS Name: source

Source of value: user

Format: string

CUS Values: "point", "small", "large"

CUS Default: "small"

Dependencies:

When 'Point Source' is selected the 'Chop Avoidance' panel should appear.

When 'Large Map' is selected the 'Large Map Parameters' panel should appear.

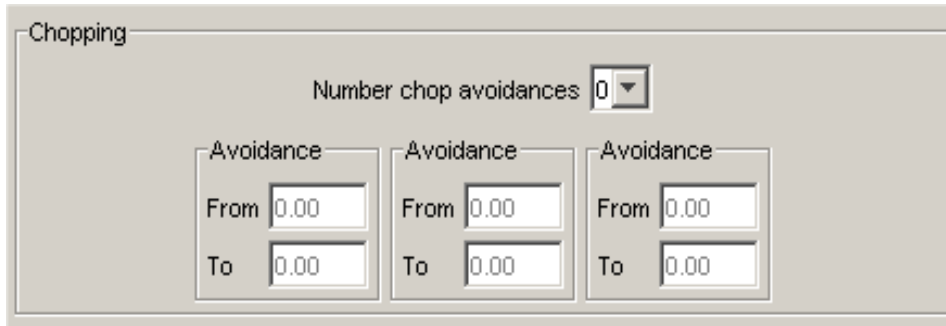
Small Map has no other options.

Validation: none - the three options are mutually exclusive.

2.1.2 Panel: Chop Avoidance

Panel Description:

Allows the user to specify up to three chopping angles to avoid.



CUS Name: choppingAvoidOn

Source of value: HSPOT

Format: boolean

Item: *Number of chop avoidances*

CUS Values: 0, 1, 2, 3

Entry field: pull down list

Default: 0

Tooltips: *The number of chopper avoidance angles to select*

CUS Name: choppingAvoidNumber

Source of value: user

Format: integer

CUS Values: "point", "small", "large"

CUS Default:

Dependencies:

On first displaying this panel, 3 'avoidance' panels should be displayed but be inaccessible

For each 'Number of chop avoidances' one 'Avoidance' box is greyed.

Validation: none – only allowed values can be returned

Warnings:

When Number of chop avoidances is set to any value except 0 then the following warning should appear in a pop-up window with an 'OK' button which must be pressed before the window disappears and the user can continue:

Warning: Selecting a chop avoidance angle places severe constraints on when your observations can be scheduled, and will thus reduce the chances that your observations will be carried out. Are you sure that this chop avoidance selection is essential?

Item: *Avoidance*

Item description: *displays text fields to enter the From and To angles.*

Item: *Avoidance From*

Entry field: text box

Tooltips: *Chopper avoidance angle (angle East of North (degrees))*

CUS Name: choppingAvoidFromN – where N goes from 1 to 3

Source of value: user

Format: double

CUS Values: 0 – 360

CUS Default: 0.0

Precision: TBD

Units: degrees

Dependencies: none

Validation: must be within range of values

Item: *Avoidance To*

Entry field: text box

Tooltips: *Chopper avoidance angle (angle East of North (degrees))*



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CUS Name: choppingAvoidToN – where N goes from 1 to 3

Source of value: user

Format: double

CUS Values: 0 – 360

CUS Default: 0.0

Precision: TBD

Units: degrees

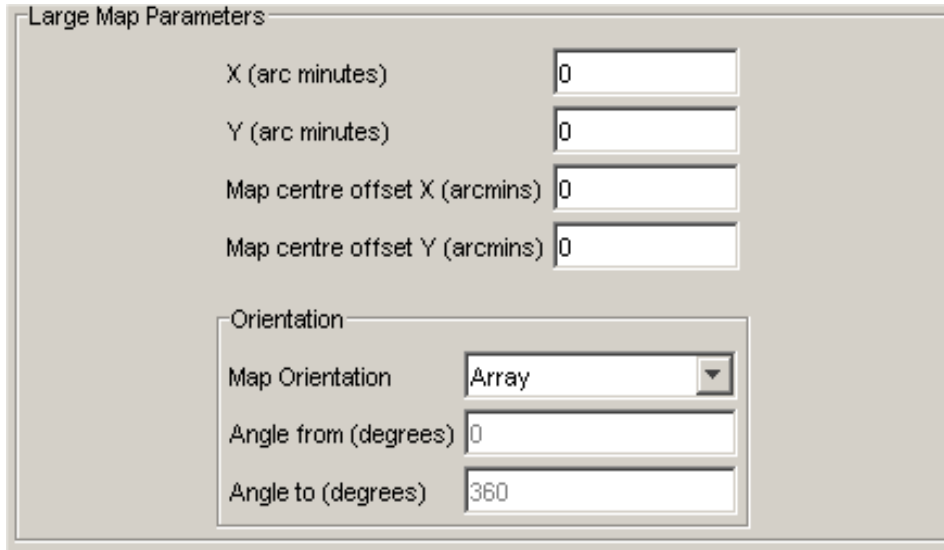
Dependencies: none

Validation: must be within range of values

2.1.3 Panel: Large Map Parameters

Panel Description:

Allows the user to specify map area and orientation



CUS Name: largeMapOn

Source of value: HSPOT

Format: boolean

Item: *X* (arcminutes)* [needs a better description than X]

Entry field: text box

Tooltips: *Map width (arcmin)*

CUS Name: mapSizeX (NOTE using X will get confusing if not changed**)

Source of value: user

Format: double

CUS Values: TBD

CUS Default: 0.0

Precision: 0.1

Units: arcminutes

Dependencies: none

Validation: value should be within range

Item: *Y* (arcminutes)* [needs a better description than Y]

Entry field: text box

Tooltips: *Map height (arcmin)*

CUS Name: mapSizeY (NOTE using Y will get confusing if not changed**)

Source of value: user

Format: double

CUS Values: TBD

CUS Default: 0.0

Precision: 0.1

Units: arcminutes

Dependencies: none

Validation: value should be within range

Item: *Map centre offset X (arcmins *space)*

Entry field: text box

Tooltips: *Map centre offset along X in array coordinates (arcmins)*

CUS Name: mapOffsetX

Source of value: user

Format: double



CUS Values: *TBD*
CUS Default: 0.0
Precision: 0.1
Units: arcminutes
Dependencies: none
Validation: value should be within range

Item: *Map centre offset Y (arcmins *space)*
Entry field: text box
Tooltips: *Map centre offset along Y in array coordinates (arcmins)*
CUS Name: mapOffsetY
Source of value: user
Format: double
CUS Values: *TBD*
CUS Default: 0.0
Precision: 0.1
Units: arcminutes
Dependencies: none
Validation: value should be within range

Panel: *Orientation Constraint*

Panel Description:

Allows the user to specify a map orientation constraint

Item: *Constraint*
Entry field: radio buttons
Tooltips:
CUS Name: mapOrientationCon
Source of value: user
Format: boolean
CUS Values: *Off, On*
CUS Default: false = 'Off'
Dependencies:

On first displaying this panel, the 'Angle from' and 'Angle to' items should be displayed but be inaccessible

If 'On' is selected then these are ungreyed.

Validation: none – only possibility true or false

Warnings:

When 'On' is selected then the following warning should appear in a pop-up window with an 'OK' button which must be pressed before the window disappears and the user can continue:

Warning: Selecting a constraint on the map orientation places severe constraints on when your observations can be scheduled, and will thus reduce the chances that your observations will be carried out. Are you sure that this orientation selection is essential?

Item: *Angle from (degrees)*
Entry field: text box
Tooltips: *Angle of orientation from (angle East of North (degrees))*
CUS Name: mapOrientationConFrom
Source of value: user
Format: double
CUS Values: 0 - 360
CUS Default: 0.0
Precision: 0.1
Units: degrees
Dependencies: none
Validation: value within range

Item: *Angle to (degrees)*
Entry field: text box



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Tooltips: *Angle of orientation to (angle East of North (degrees))*

CUS Name: mapOrientationConTo

Source of value: user

Format: double

CUS Values: 0 - 360

CUS Default: 360.0

Precision: 0.1

Units: degrees

Dependencies: none

Validation: value within range

2.2 SPIRE Photometer AOT Time Estimation

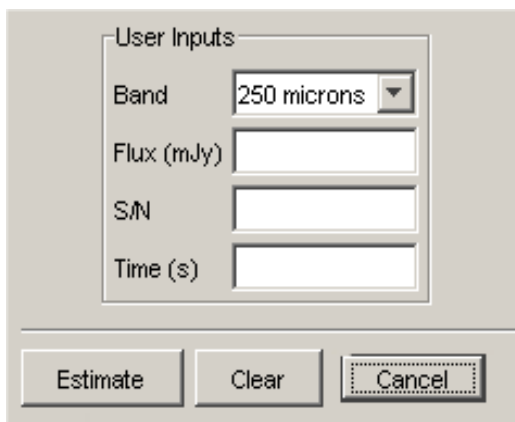
This section defines the panels displayed to the user within the SPIRE Time Estimation window when the 'Observation Estimation' button is pressed on the Spire Photometer AOT window

Panels on screen at start: Time Estimation input in a window named "Source"

2.2.1 Panel: Time Estimation input

Panel Description:

Entry of source parameters for time estimation



Panels on screen at start: User Inputs, Estimate buttons

2.2.1.1 Panel: User Inputs

Panel Description:

Entry of source parameters for time estimation

Item: *Band*

Entry field: pull down list

Range of Values: 250 microns, 360 microns, 520 microns

Default: 250 microns

Tooltips: *Photometer detector array*

CUS Name: band

Source of value: user

Format: string

CUS Values: "PSW", "PMW", "PLW"

CUS Default: "PSW"

Dependencies: none

Validation: none – only three options are available

Item: *Flux (mJy)*

Entry field: text box

Tooltips: *Target flux*

CUS Name: flux

Source of value: user

Format: double

Range of Values: 0.0 to 4000.0 , TBC

CUS Default: -1.0 (displayed as blank field)

Precision: 0.1

Units: mJy

Dependencies: none

Validation: must be greater than 0.0



Item: *S/N*

Entry field: text box

Tooltips: *Required Signal to Noise Ratio*

CUS Name: signalToNoise

Source of value: user

Format: double

CUS Default: -1.0 (displayed as blank field)

Precision: 0.1

Units: None

Dependencies: none

Validation: must be greater than 0.0

Item: *Time (s)*

Entry field: text box

Tooltips: *Required Integration Time on Source (seconds)*

CUS Name: timeInt

Source of value: user

Format: double

CUS Values:

CUS Default: -1.0 (displayed as blank field)

Precision: 0.1

Units: seconds

Dependencies: none

Validation: must be greater than 0.0



2.2.1.2 Panel: Estimate Buttons

Panel Description:

Buttons for controlling time estimation

Item: *Estimate*

Entry field: button

Validation: At least two of Flux, signalToNoise and timeInt must be completed before the code is run.

Action: when pressed the code SpirePhoto is run and a SPIRE Time Estimation Results window is opened containing the Time Estimation Output panel.

Item: *Clear*

Entry field: button

Action: when pressed the Flux, S/N and Time fields on the User Inputs panel are cleared and the band drop down list set back to its default value

Item: *OK*

Entry field: button

Action: when pressed the SPIRE Time Estimation window is closed and the user inputs are saved

Item: *Cancel*

Entry field: button

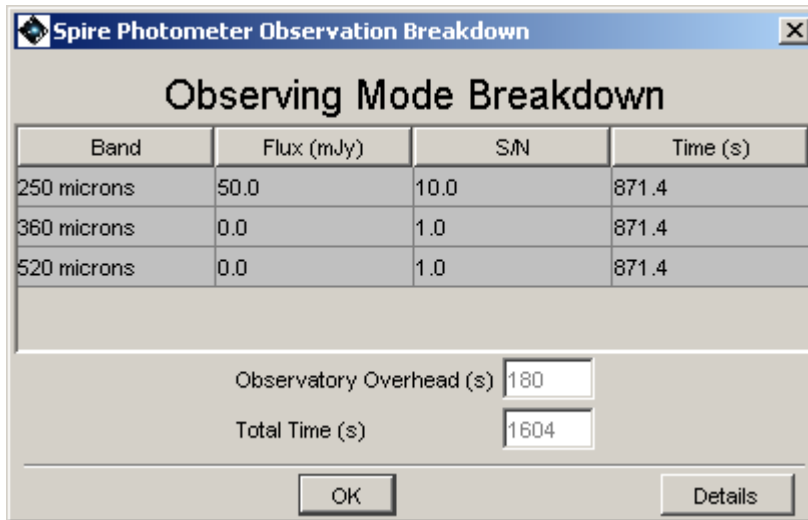
Action: when pressed the SPIRE Time Estimation window is closed without saving the user inputs

2.2.2 Panel: Time Estimation Output

This is displayed in a window titled 'SPIRE Time Estimation Summary'

Panel Description:

Display of time estimation results. These results are obtained by calling the SpirePhoto code



Panels on screen at start: Result boxes, Warning Panel, Time Display, Result Buttons

2.2.2.1 Panel: Result Boxes

Item: pswFlux

Description: Background is red if pswConfused is true

Entry field: text box, uneditable

Tooltips: Flux in 250 microns band

CUS Name: pswFlux

Source of value: HSPOT

Format: double

Precision: 0.1

Warning: If pswConfused is true the following message should be displayed below the result boxes:

[Warning: The confusion limit has been reached in one or more of the flux bands.](#)

Item: pswSignalToNoise

Description: Background is red (TBC) if pswConfused is true

Entry field: text box, uneditable

Tooltips: Signal to noise in 250 microns band

CUS Name: pswSignalToNoise

Source of value: HSPOT

Format: double

Precision: 0.1

Item: pswTime

Description: Background is red (TBC) if pswConfused is true

Entry field: text box, uneditable

Tooltips: Required on source Time per jiggle position

CUS Name: pswTime

Source of value: HSPOT

Format: double

Precision: 0.1

Item: pmwFlux



Description: Background is red if pmwConfused is true

Entry field: text box, uneditable

Tooltips: Flux in 360 microns band

CUS Name: pmwFlux

Source of value: HSPOT

Format: double

Precision: 0.1

Warning: If pmwConfused is true the following message should be displayed below the result boxes:

[Warning: The confusion limit has been reached in one or more of the flux bands.](#)

Item: pmwSignalToNoise

Description: Background is red (TBC) if pmwConfused is true

Entry field: text box, uneditable

Tooltips: Signal to noise in 360 microns band

CUS Name: pmwSignalToNoise

Source of value: HSPOT

Format: double

Precision: 0.1

Item: pmwTime

Description: Background is red (TBC) if pmwConfused is true

Entry field: text box, uneditable

Tooltips: Required on source Time per jiggle position

CUS Name: pmwTime

Source of value: HSPOT

Format: double

Precision: 0.1

Item: plwFlux

Description: Background is red) if plwConfused is true

Entry field: text box, uneditable

Tooltips: Flux in 520 microns band

CUS Name: plwFlux

Source of value: HSPOT

Format: double

Precision: 0.1

Warning: If plwConfused is true the following message should be displayed below the result boxes:

[Warning: The confusion limit has been reached in one or more of the flux bands.](#)

Item: plwSignalToNoise

Description: Background is red (TBC) if plwConfused is true

Entry field: text box, uneditable

Tooltips: Signal to noise in 520 microns band

CUS Name: plwSignalToNoise

Source of value: HSPOT

Format: double

Precision: 0.1

Item: plwTime

Description: Background is red (TBC) if plwConfused is true

Entry field: text box, uneditable

Tooltips: Required on source Time per jiggle position

CUS Name: plwTime

Source of value: HSPOT

Format: double

Precision: 0.1



2.2.2.2 Panel: Warning Panel

Panel Description:

Displays warning messages

Item: warningBox

Description: displays warnings identified in the Result Boxes panel

Entry field: text box, uneditable

Source of value: HSPOT

2.2.2.3 Panel: Time Display

Panel Description:

Displays calculated observing times

Item: overhead

Description: displays default observatory overheads included in the calculated observing time

Entry field: text box, uneditable

Source of value: HSPOT

Format: integer

Item: totalTime

Description: Calculated total time required for the observation

Entry field: text box, uneditable

Source of value: HSPOT

Format: integer

2.2.2.4 Panel: Result Buttons

Panel Description:

Buttons for controlling display of time estimate results

Item: *OK*

Entry field: button

Action: when pressed the Time Estimate Results window is closed

Item: *Details*

Entry field: button

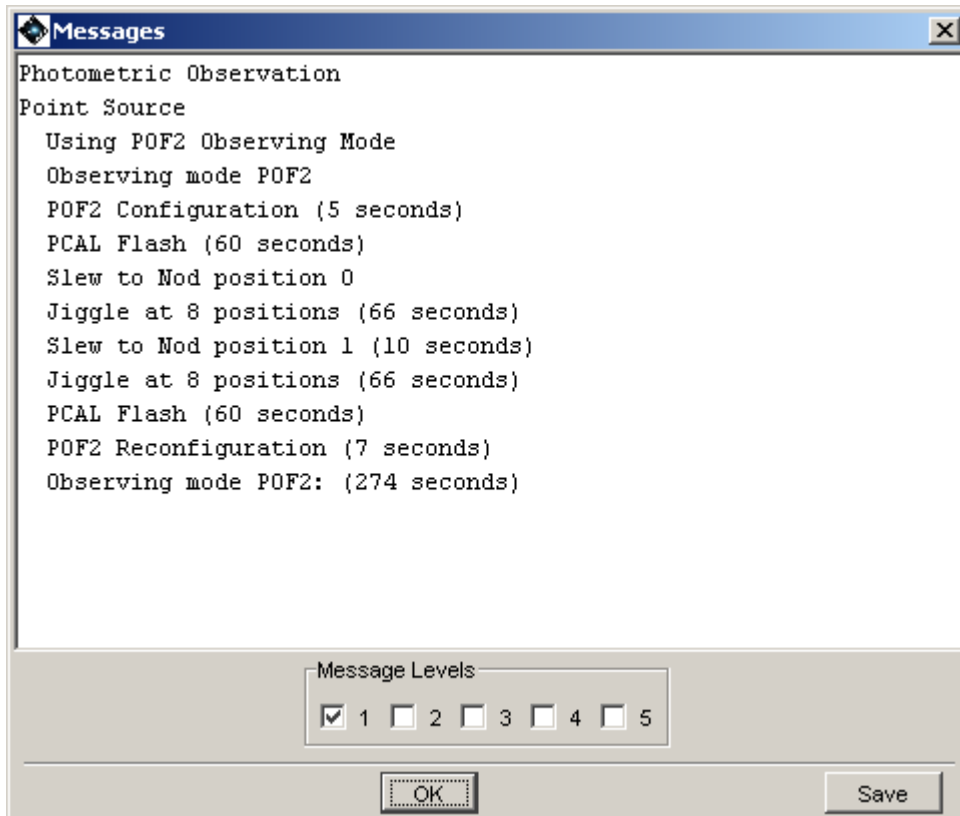
Action: when pressed the Spire Time Estimate Details window is opened containing the Time Estimation Details panel.

2.2.3 Panel: Time Estimation Details

This is displayed in a window titled 'SPIRE Time Estimation Details'

Panel Description:

Display of detailed messages created during time estimation



Panels on screen at start , Messages, Details Buttons

2.2.3.1 Panel: Messages

Item: msgText

Item description: displays the text from the messages generated during time estimation

Entry field: text display, scrollable

CUS Name: msgText

Source of value: HSPOT

Format:

The array of message strings returned from the time estimation is displayed with one string per line. Only those messages with a level corresponding to selected message levels are displayed.

Item: msgLevel1

Item description: selects if messages of level 1 are displayed

Entry field: tick box, default empty

Format: boolean

CUS Name: msgLevel1

CUS Default: false

Source of value: user

Dependencies:

If false, all message strings with level 1 are not shown on the msgText display

Item: msgLevel2



Item description: selects if messages of level 2 are displayed

Entry field: tick box, default empty

Format: boolean

CUS Name: msgLevel2

CUS Default: false

Source of value: user

Dependencies:

If false, all message strings with level 2 are not shown on the msgText display

Item: msgLevel3

Item description: selects if messages of level 3 are displayed

Entry field: tick box, default empty

Format: boolean

CUS Name: msgLevel3

CUS Default: false

Source of value: user

Dependencies:

If false, all message strings with level 3 are not shown on the msgText display

Item: msgLevel4

Item description: selects if messages of level 4 are displayed

Entry field: tick box, default empty

Format: boolean

CUS Name: msgLevel4

CUS Default: false

Source of value: user

Dependencies:

If false, all message strings with level 4 are not shown on the msgText display

Item: msgLevel5

Item description: selects if messages of level 5 are displayed

Entry field: tick box, default empty

Format: boolean

CUS Name: msgLevel5

CUS Default: false

Source of value: user

Dependencies:

If false, all message strings with level 5 are not shown on the msgText display



2.2.3.2 Panel: Details Buttons

Panel Description:

Buttons for controlling display of time estimate details

Item: *OK*

Entry field: button

Action: when pressed the Time Estimate Details window is closed

Item: *Save*

Entry field: button

Action: when pressed the contents of the details text display is written to a file – a file name selection window will open.



2.3 AOR Overview Window

Summary description of the AOR for the Mode Information column on the Observations AORs overview window

Information is displayed in the format

Mode: <source>

where <source> is replaced by the value of the variable 'source'

Example:

Mode: point

2.4 Instrument Footprint

Contents TBD



3. SPIRE SPECTROMETER AOT

Instrument: SPIRE

AOT Name: *SPIRE Spectrometer*

AOT Label: SSPEC-0000

Target Types: Fixed Single, Moving Single

CUS Observing Mode Name: Mode_SpireSpec

Panels on screen at start: *Source Type, Spectroscopic Goals and Point Source Parameters with Low Resolution Point Source Method and Chopping* panels inside.

Returned Values (to be saved):

Input Parameters:

string source
string science
string lowResPointSourceMethod
boolean choppingAvoidOn
integer choppingAvoidNumber
double choppingAvoidFrom1, choppingAvoidFrom2, choppingAvoidFrom3
double choppingAvoidTo1, choppingAvoidTo2, choppingAvoidTo3
Boolean mapFullySampled
double mapSizeX, mapSizeY
double mapOffsetX, mapOffsetY
boolean mapOrientationArray
double mapOrientationConFrom, mapOrientationConTo
string band
double flux, signalToNoise, intTime

Output Parameters

String sswName, slwName
double sswFlux, sswSN, sswTime, sswConfFlag
double slwFlux, slwSN, slwTime, slwConfFlag

Saved Parameters

All Input Parameters should be saved between sessions

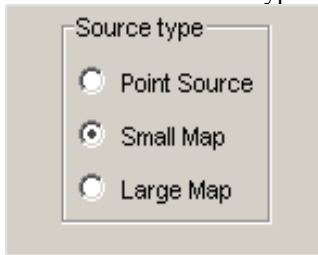
3.1 User input

This section defines the panels displayed to the user when the Photometer AOT is selected from the HSPOT Observation Menu.

3.1.1 Panel: Source Type

Panel Description:

Selection of the source type from a list



Range of Values: *Point Source, Small Map, Large Map*

Entry field: *list of the possible values given above, each with a radio button – only one value may be selected*

Default: *Point Source*

Tooltip: *Point Source, Small Map (<2.6' diameter), Large Map*

CUS Name: source

Source of value: user

Format: string

CUS Values: "point", "small", "large"

CUS Default: "point"

Dependencies:

When 'Point Source' is selected the 'Point Source Parameters' panel should appear.

Small Map has no extra options (only Spectroscopic Goals).

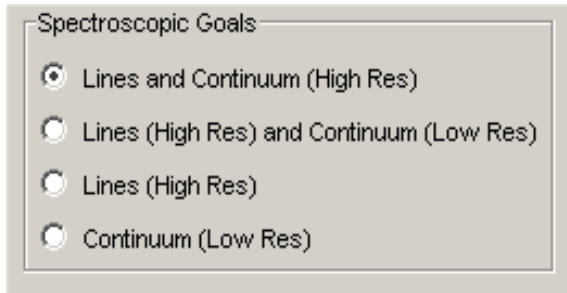
When 'Large Map' is selected the 'Large Map Parameters' panel should appear.

Validation: none - the three options are mutually exclusive.

3.1.2 Panel: Spectroscopic Goals

Panel Description:

Selection of the spectroscopic goals from a list



Spectroscopic Goals

- Lines and Continuum (High Res)
- Lines (High Res) and Continuum (Low Res)
- Lines (High Res)
- Continuum (Low Res)

Range of Values: *Lines and Continuum (High Res), Lines (High Res) and Continuum (Low Res), Lines (High Res), Continuum (Low Res)*

Entry field: *list of the possible values given above, each with a radio button – only one value may be selected*

Default: *Lines and Continuum (High Res)*

Tooltip: *Scientific goal for this observation*

CUS Name: science

Source of value: user

Format: string

CUS Values: “linesAndContinuumHigh”, “linesHighContinuumLow”, “linesSel”, “continuum”

CUS Default: “linesAndContinuumHigh”

Dependencies:

If source = “point” then

if ‘Lines (High Res) and Continuum (Low Res)’ or ‘Continuum (Low Res)’ are selected then within the Point Source Parameters box the Low Resolution Point Source Method box should be ungreyed.

Validation: none - the four options are mutually exclusive.

3.1.3 Panel: Point Source Parameters

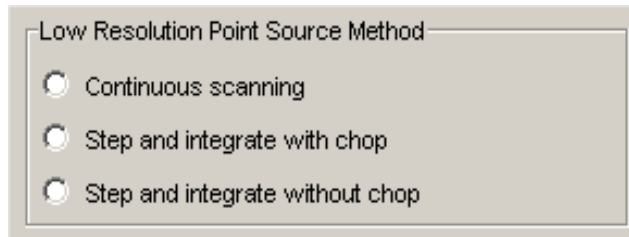
Panel Description:

Container panel for the 'Low Resolution Point Source Method' and 'Chop Avoidance' panels.

Panel: *Low Resolution Point Source Method*

Panel Description:

Selection of the method for obtaining low resolution spectrum



Range of Values: *Continuous scanning, Step and integrate with chop, Step and integrate without chop*

Entry field: *list of the possible values given above, each with a radio button – only one value may be selected*

Default: *None*

Tooltip:

CUS Name: lowResPointSourceMethod

Source of value: user

Format: string

CUS Values: "continuous", "stepWithChop", "stepWithoutChop"

CUS Default: "continuous"

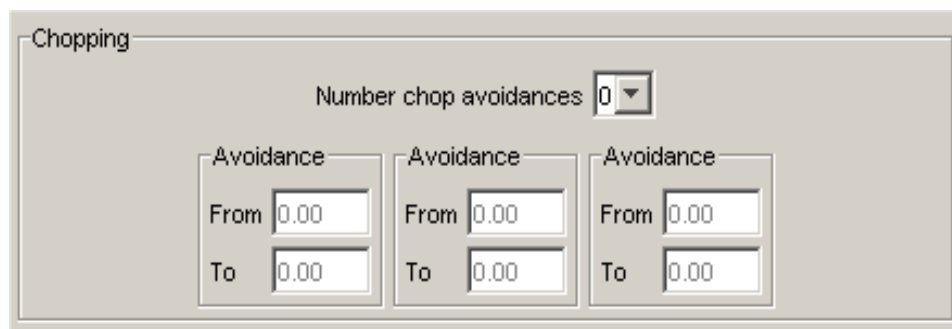
Dependencies: If 'Step and integrate with chop' is selected then the Chop Avoidance panel is activated

Validation: none - the three options are mutually exclusive.

3.1.4 Panel: Chop Avoidance

Panel Description:

Allows the user to specify up to three chopping angles to avoid.



CUS Name: choppingAvoidOn

Source of value: HSPOT

Format: boolean

Item: *Number of chop avoidances*

CUS Values: 0, 1, 2, 3

Entry field: pull down list

Default: 0

Tooltips: *The number of chopper avoidance angles to select*

CUS Name: choppingAvoidNumber

Source of value: user



Format: integer

CUS Values: “point”, “small”, “large”

CUS Default:

Dependencies:

On first displaying this panel, 3 ‘avoidance’ panels should be displayed but be inaccessible

For each ‘Number of chop avoidances’ one ‘Avoidance’ box is ungreyed.

Validation: none – only allowed values can be returned

Warnings:

When Number of chop avoidances is set to any value except 0 then the following warning should appear in a pop-up window with an ‘OK’ button which must be pressed before the window disappears and the user can continue:

Warning: Selecting a chop avoidance angle places severe constraints on when your observations can be scheduled, and will thus reduce the chances that your observations will be carried out. Are you sure that this chop avoidance selection is essential?

Item: *Avoidance*

Item description: *displays text fields to enter the From and To angles.*

Item: *Avoidance From*

Entry field: text box

Tooltips: *Chopper avoidance angle (angle East of North (degrees))*

CUS Name: choppingAvoidFromN – where N goes from 1 to 3

Source of value: user

Format: double

CUS Values: 0 – 360

CUS Default: *0.0*

Precision: TBD

Units: degrees

Dependencies:

Validation: must be within range of values

Item: *Avoidance To*

Entry field: text box

Tooltips: *Chopper avoidance angle (angle East of North (degrees))*

CUS Name: choppingAvoidToN – where N goes from 1 to 3

Source of value: user

Format: double

CUS Values: 0 – 360

CUS Default: *0.0*

Precision: TBD

Units: degrees

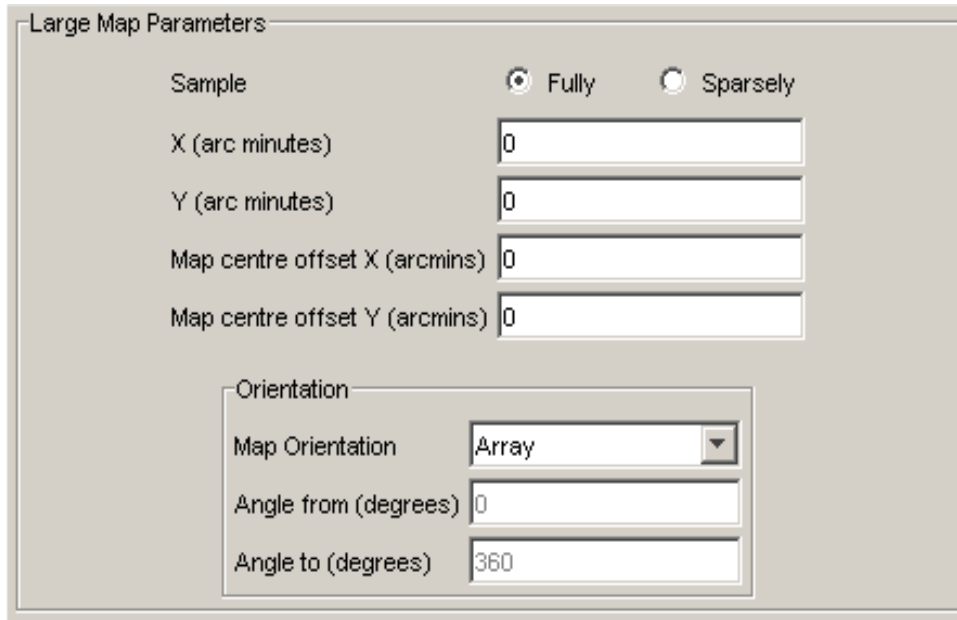
Dependencies:

Validation: must be within range of values

3.1.5 Panel: Large Map Parameters

Panel Description:

Allows the user to specify map area and orientation



CUS Name: largeMapOn

Source of value: HSPOT

Format: Boolean

Item: *Sample*

Entry field: option buttons

CUS Name: mapFullySampled

Source of value: user

Format: boolean

CUS Values: *Fully, Sparsely*

CUS Default: true (*Fully*)

Dependencies: none

Validation: value should be within range

Item: *X* (arcminutes)* [needs a better description than X]

Entry field: text box

Tooltips: *Map width (arcmin)*

CUS Name: mapSizeX (NOTE using X will get confusing if not changed**)

Source of value: user

Format: double

CUS Values: *TBD*

CUS Default: 0.0

Precision: 0.1

Units: arcminutes

Dependencies: none

Validation: value should be within range

Item: *Y* (arcminutes)* [needs a better description than Y]

Entry field: text box

Tooltips: *Map height (arcmin)*

CUS Name: mapSizeY (NOTE using Y will get confusing if not changed**)

Source of value: user

Format: double



CUS Values: *TBD*
CUS Default: 0.0
Precision: 0.1
Units: arcminutes
Dependencies: none
Validation: value should be within range

Item: *Map centre offset X (arcmins *space)*
Entry field: text box
Tooltips: *Map centre offset along X in array coordinates (arcmins)*
CUS Name: mapOffsetX
Source of value: user
Format: double
CUS Values: *TBD*
CUS Default: 0.0
Precision: 0.1
Units: arcminutes
Dependencies: none
Validation: value should be within range

Item: *Map centre offset Y (arcmins *space)*
Entry field: text box
Tooltips: *Map centre offset along Y in array coordinates (arcmins)*
CUS Name: mapOffsetY
Source of value: user
Format: double
CUS Values: *TBD*
CUS Default: 0.0
Precision: 0.1
Units: arcminutes
Dependencies: none
Validation: value should be within range

Panel: *Orientation Constraint*

Panel Description:

Allows the user to specify a map orientation constraint

Item: *Constraint*
Entry field: radio buttons
Tooltips:
CUS Name: mapOrientationCon
Source of value: user
Format: boolean
CUS Values: *Off, On*
CUS Default: false = 'Off'
Precision:

Dependencies:

On first displaying this panel, the 'Angle from' and 'Angle to' items should be displayed but be inaccessible

If 'On' is selected then these are ungreyed.

Validation: none – only possibility true or false

Warnings:

When 'On' is selected then the following warning should appear in a pop-up window with an 'OK' button which must be pressed before the window disappears and the user can continue:

Warning: Selecting a constraint on the map orientation places severe constraints on when your observations can be scheduled, and will thus reduce the chances that your observations will be carried out. Are you sure that this orientation selection is essential?

Item: *Angle from (degrees)*



Entry field: text box

Tooltips: *Angle of orientation from (angle East of North (degrees))*

CUS Name: mapOrientationConFrom

Source of value: user

Format: double

CUS Values: 0 - 360

CUS Default: 0.0

Precision:

Units: degrees

Dependencies: none

Validation: value within range

Item: *Angle to (degrees)*

Entry field: text box

Tooltips: *Angle of orientation to (angle East of North (degrees))*

CUS Name: mapOrientationConTo

Source of value: user

Format: double

CUS Values: 0 - 360

CUS Default: 360.0

Precision:

Units: degrees

Dependencies: none

Validation: value within range

3.2 SPIRE Spectrometer AOT Time Estimation

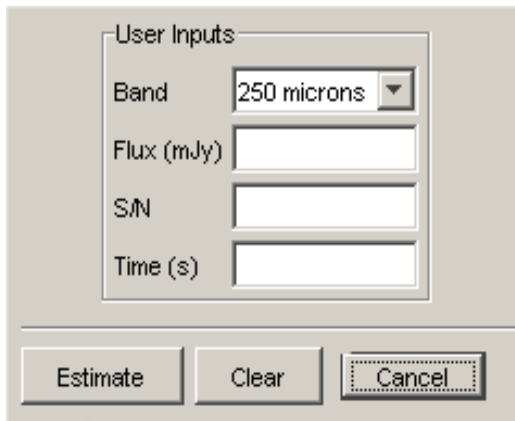
This section defines the panels displayed to the user within the SPIRE Time Estimation window when the 'Observation Estimation' button is pressed on the Spire Spectrometer AOT window

Panels on screen at start: Time Estimation input in a window named "Source"

3.2.1 Panel: Time Estimation input

Panel Description:

Entry of source parameters for time estimation



Panels on screen at start: User Inputs, Estimate buttons

3.2.1.1 Panel: User Inputs

Panel Description:

Entry of source parameters for time estimation

Item: *Band*

Entry field: pull down list

Range of Values: 250 microns, 490 microns

Default: 250 microns

Tooltips: *Spectrometer detector array*

CUS Name: band

Source of value: user

Format: string

CUS Values: "SSW", "SLW"

CUS Default: "SSW"

Dependencies: none

Validation: none – only two options are available

Item: *Flux (mJy)*

Entry field: text box

Tooltips: *Target flux*

CUS Name: flux

Source of value: user

Format: double

CUS Values: 0.0 to 4000.0

CUS Default: -1.0 (displayed as blank field)

Precision: 0.01

Units: mJy



Dependencies: none
Validation: must be greater than 0.0

Item: *S/N*
Entry field: text box
Tooltips: *Required Signal to Noise Ratio*
CUS Name: signalToNoise
Source of value: user
Format: double
CUS Values:
CUS Default: -1.0 (displayed as blank field)
Precision: 0.1
Units: None
Dependencies: none
Validation: must be greater than 0.0

Item: *Time (s)*
Entry field: text box
Tooltips: *Required Integration Time on Source (seconds)*
CUS Name: timeInt
Source of value: user
Format: double
CUS Values:
CUS Default: -1.0 (displayed as blank field)
Precision: 0.1
Units: seconds
Dependencies: none
Validation: must be greater than 0.0



3.2.1.2 Panel: Estimate Buttons

Panel Description:

Buttons for controlling time estimation

Item: *Estimate*

Entry field: button

Validation: At least two of Flux, signalToNoise and timeInt must be completed before the code is run.

Action: when pressed the code SpireSpectro is run and a SPIRE Time Estimation Results window is opened containing the Time Estimation Output panel.

Item: *Clear*

Entry field: button

Action: when pressed the Flux, S/N and Time fields on the User Inputs panel are cleared and the band drop down list set back to its default value

Item: *OK*

Entry field: button

Action: when pressed the SPIRE Time Estimation window is closed and the user inputs are saved

Item: *Cancel*

Entry field: button

Action: when pressed the SPIRE Time Estimation window is closed



3.2.2 Panel: Time Estimation Output

Panel Description:

Display of time estimation results. These results are obtained by calling the SpireSpectro observing mode

Band	250 microns	490 microns
Flux (mJy)	<input type="text"/>	<input type="text"/>
SN	<input type="text"/>	<input type="text"/>
Time (s)	<input type="text"/>	<input type="text"/>

Total Time (s)

Panels on screen at start: Result boxes, Warning Panel, Time Display, Result Buttons

3.2.2.1 Panel: Result Boxes

Item: sswFlux

Entry field: text box, uneditable

Tooltips: Flux in 250 microns band

CUS Name: sswFlux

Source of value: HSPOT

Format: double

Precision: 0.1

Item: sswSignalToNoise

Entry field: text box, uneditable

Tooltips: Signal to noise in 250 microns band

CUS Name: sswSignalToNoise

Source of value: HSPOT

Format: double

Precision: 0.1

Item: sswTime

Entry field: text box, uneditable

Tooltips: Required on source Time per jiggle position

CUS Name: sswTime

Source of value: HSPOT

Format: double

Precision: 0.1

Item: slwFlux

Entry field: text box, uneditable

Tooltips: Flux in 490 microns band

CUS Name: slwFlux

Source of value: HSPOT

Format: double



Precision: 0.1

Item: slwSignalToNoise
Entry field: text box, uneditable
Tooltips: Signal to noise in 490 microns band
CUS Name: slwSignalToNoise
Source of value: HSPOT
Format: double
Precision: 0.1

Item: slwTime
Entry field: text box, uneditable
Tooltips: Required on source Time per jiggle position
CUS Name: slwTime
Source of value: HSPOT
Format: double
Precision: 0.1

3.2.2.2 *Panel: Warning Panel*

Panel Description:

Displays warning messages

Item: warningBox
Description: displays warnings identified in the Result Boxes panel
Entry field: text box, uneditable
Source of value: HSPOT

3.2.2.3 *Panel: Time Display*

Panel Description:

Displays calculated observing times

Item: overhead
Description: displays default observatory overheads included in the calculated observing time
Entry field: text box, uneditable
Source of value: HSPOT
Format: integer

Item: totalTime
Description: Calculated total time required for the observation
Entry field: text box, uneditable
Source of value: HSPOT
Format: integer



3.2.2.4 Panel: Result Buttons

Panel Description:

Buttons for controlling display of time estimate results

Item: *OK*

Entry field: button

Action: when pressed the Time Estimate Results window is closed

Item: *Details*

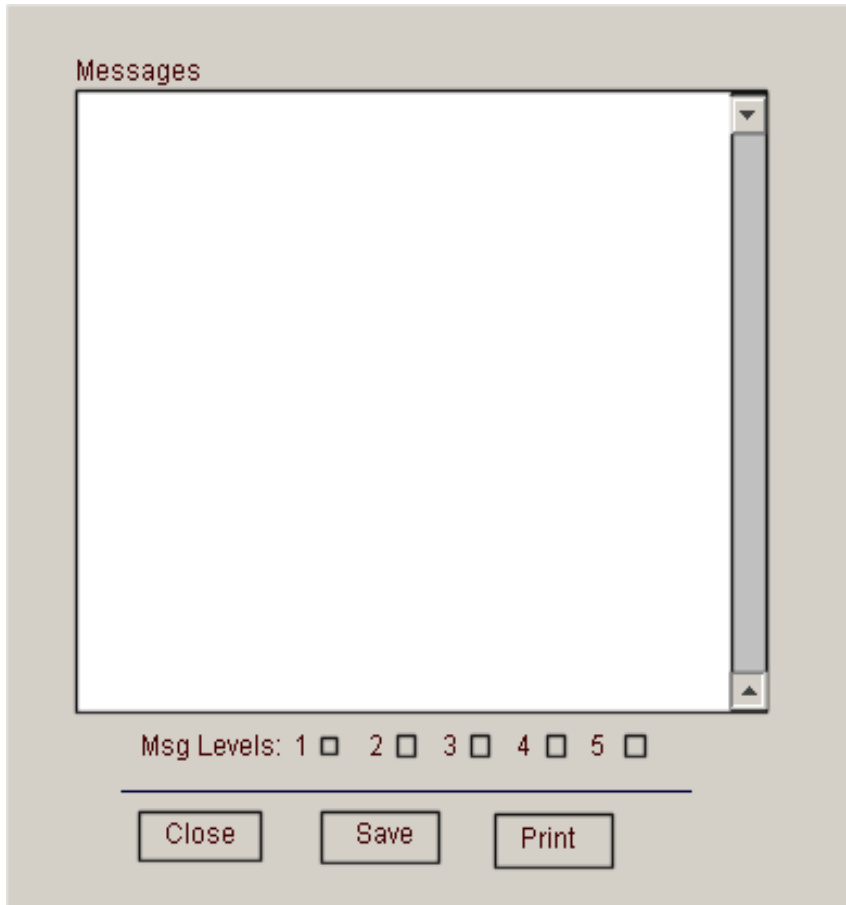
Entry field: button

Action: when pressed the Spire Time Estimate Details window is opened containing the Time Estimation Details panel.

3.2.3 Panel: Time Estimation Details

Panel Description:

Display of time estimation details



Panels on screen at start , Messages, Details Buttons

3.2.3.1 Panel: Messages

Item: msgText

Item description: displays the text from the messages generated during time estimation

Entry field: text display, scrollable

CUS Name: msgText

Source of value: HSPOT

Format:

The array of message strings returned from the time estimation is displayed with one string per line. Only those messages with a level corresponding to selected message levels are displayed.

Item: msgLevel1

Item description: selects if messages of level 1 are displayed

Entry field: tick box, default empty

Format: boolean

CUS Name: msgLevel1

CUS Default: false

Source of value: user

Dependencies:

If false, all message strings with level 1 are not shown on the msgText display

Item: msgLevel2



Item description: selects if messages of level 2 are displayed

Entry field: tick box, default empty

Format: boolean

CUS Name: msgLevel2

CUS Default: false

Source of value: user

Dependencies:

If false, all message strings with level 2 are not shown on the msgText display

Item: msgLevel3

Item description: selects if messages of level 3 are displayed

Entry field: tick box, default empty

Format: boolean

CUS Name: msgLevel3

CUS Default: false

Source of value: user

Dependencies:

If false, all message strings with level 3 are not shown on the msgText display

Item: msgLevel4

Item description: selects if messages of level 4 are displayed

Entry field: tick box, default empty

Format: boolean

CUS Name: msgLevel4

CUS Default: false

Source of value: user

Dependencies:

If false, all message strings with level 4 are not shown on the msgText display

Item: msgLevel5

Item description: selects if messages of level 5 are displayed

Entry field: tick box, default empty

Format: boolean

CUS Name: msgLevel5

CUS Default: false

Source of value: user

Dependencies:

If false, all message strings with level 5 are not shown on the msgText display



3.2.3.2 Panel: Details Buttons

Panel Description:

Buttons for controlling display of time estimate details

Item: *OK*

Entry field: button

Action: when pressed the Time Estimate Details window is closed

Item: *Save Messages*

Entry field: button

Action: when pressed the contents of the details text display is written to a file – a file name selection window will open.

Item: *Print*

Entry field: button

Action: when pressed the contents of the details text display is printed – a printer selection window will open.



3.3 AOR Overview Window

Summary description of the AOR for the Mode Information column on the Observations AORs overview window

Information is displayed in the format

Mode: <source> Goal: <science2>

where <source> and <science2> are replaced by the values of the respective variables

If science=linesAndContinuumHigh then science2=LC(HR)

If science=linesHighContinuumLow then science2=L(HR)+C(LR)

If science=linesSel then science2=L(HR)

If science=continuum then science2=C(LR)

Example:

Mode: point Goal: LC(HR)

3.4 Instrument Footprint

Contents TBD