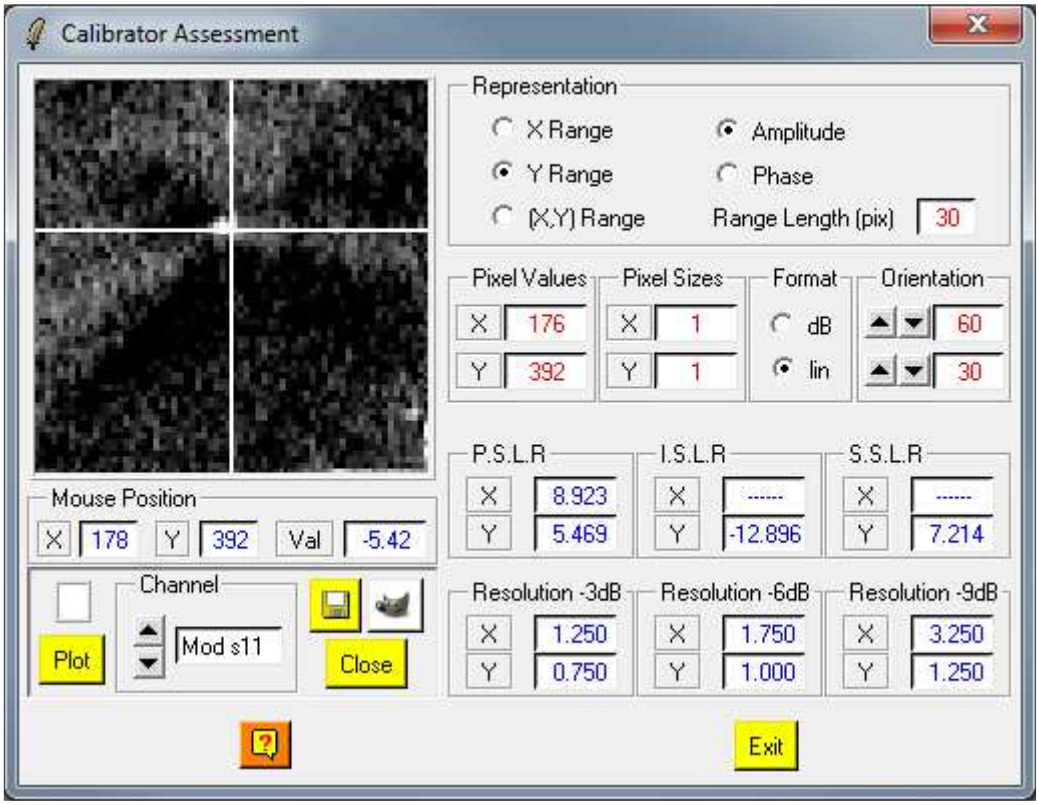
Calibrator Assessment



Description:

This Application is used to balance the relative amplitude and phase of polarisation channels over known targets (e.g. corner reflectors). An estimate of the observing SAR device impulse response is provided to users under the form of 3-D response graphs and characteristic metrics such as P.S.L.R, I.S.L.R, S.S.L.R. The selection of calibration targets and the results display is achieved by the way of an interactive Graphical User Interface.

This Application can only be applied on (2x2) Sinclair matrix **([S2])** raw binary data format.

Comments:

Parameters written in Red can be modified directly by the user from the keyboard.

Mouse Position:

X, Y Give the Mouse pointer position in pixels. The Top-Left position corresponds to the (1,1) value and the Bottom-Right position corresponds to the (Nrows, Ncols) value.

Value Display the pixel value (Note: this functionality is only valid if the active image is an 8-bits Windows Bitmap image).

Functionalities:

Plot Plot the Point Target response

 Save the scatter plot thumbnail as a GIF file.

 Display the scatter plot using GIMP

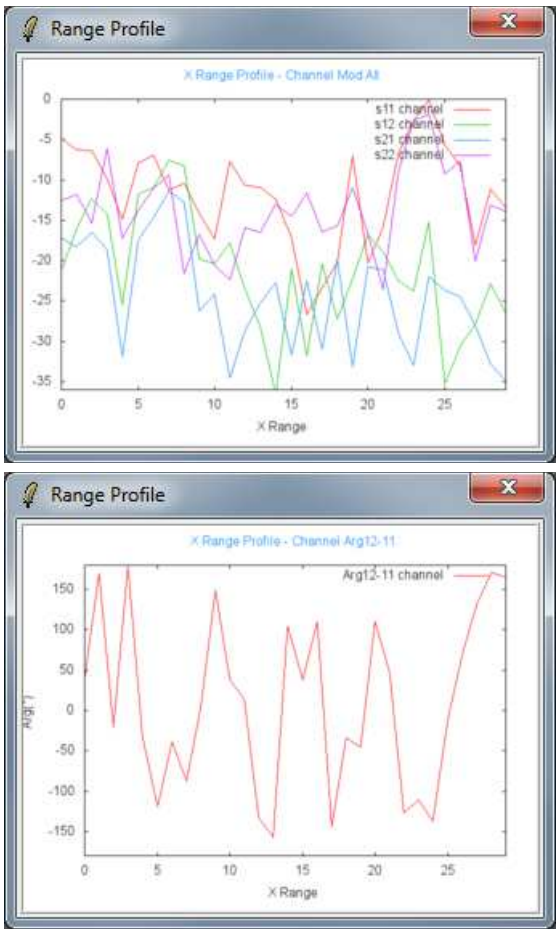
Close Close the Display Window

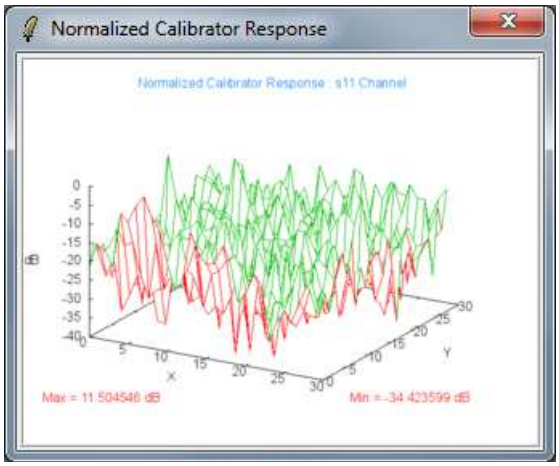
Representation:

X Range Display the 1-D Point Target Response along the X direction

Y Range Display the 1-D Point Target Response along the Y direction

(X, Y) Range Display the 2-D Point Target Response





Amplitude Display the Point Target Amplitude response

Phase Display the Point Target Phase response

Range Length Number of **pixels** used to define the size of the (NxN) window, centred around the Point Target and that is used to estimate its characteristics metrics.

Pixel Values:

Give the Point Target position in pixels.

Pixel Sizes:

Value of the Range and Azimuth spatial resolution (in **meters**) defined along the X and Y directions.

Format:

Define the Point Target Amplitude representation (in dB or linear) .

Orientation Values:

Command the viewing angle and control how the 3-d coordinates of the plot are mapped into the 2-d screen space. These values provide controls for both rotation and scaling of the plotted data. Two rotations (**rot_x** and **rot_z**) control the rotation angles (in degrees) in a virtual 3-D coordinate system aligned with the screen such that initially (that is, before the rotations are performed) the screen horizontal axis is x, screen vertical axis is y, and the axis perpendicular to the screen is z.
The rotation **rot_x** is bounded to the [0:180] range with a default of **60** degrees.
The rotation **rot_z** is bounded to the [0:360] range with a default of **30** degrees.

Note: On a 3-D representation, selecting the graph with the left Mouse button then moving the Mouse inside the Display Window can automatically change the view angles.

P.S.L.R, I.S.L.R, S.S.L.R:

Point Target characteristic metrics estimated in the surrounding window, along the X and Y directions.

Resolution –3dB, -6dB, -9dB:

Point Target range and azimuth spatial resolutions estimated in the surrounding window, along the X and Y directions and for different amplitude values.

Calibrator Assessment Procedure Steps:

- **1** : Point on the Target using the Mouse and the Cross Lines.
- **2** : Select the Point Target by clicking on the left Mouse button.
- **3** : Enter the Pixel Sizes values.
- **4** : Click on Plot button to open the display window
- **5** : Channel: Corresponds to the polarimetric channel to be displayed.
  The different possibilities are :
  Mod s11 = Display the modulus of the s11 scattering element
  Mod s12 = Display the modulus of the s12 scattering element
  Mod s21 = Display the modulus of the s21 scattering element
  Mod s22 = Display the modulus of the s22 scattering element
  Mod All = Display the modulus of the all scattering elements
  Arg 12-11 = Display the Phase Difference between the s12 and s11 scattering elements
  Arg 21-11 = Display the Phase Difference between the s21 and s11 scattering elements
  Arg 22-11 = Display the Phase Difference between the s22 and s11 scattering elements
  Arg All = Display all the Phase Differences
- **6** : Goto step 1 to proceed with another Point Target.
