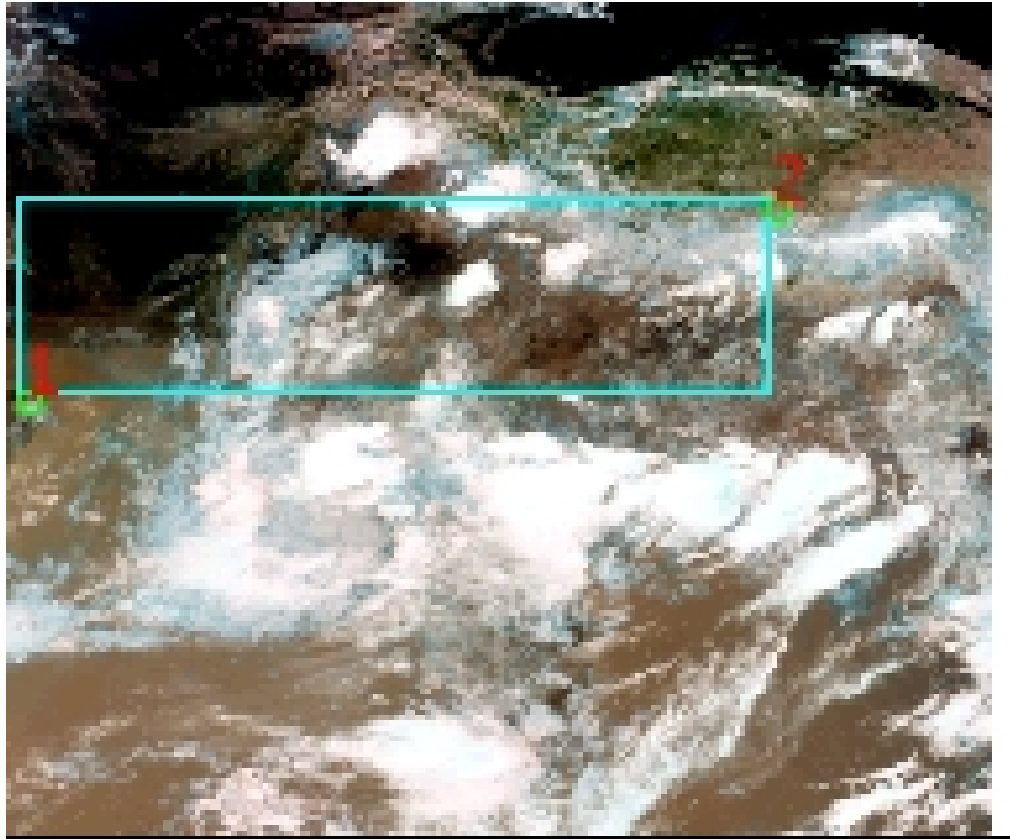


# DQE Report: Location Accuracy of INSAT-3DR-SND STANDARD Product 3RSND\_16JUL2018\_0300

|               |                |                 |               |                 |          |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| Satellite     | INSAT-3DR      | No Of Bands     | 19            | Product Type    | STANDARD |
| Sensor        | SND            | LvlOfProcess    | L1B           | Selected Band   | 2-LWIR3  |
| DOP/Time      | 16-07-18/03:00 | Station ID      | BES           | Field View(deg) | 6.136    |
| Res(Y,X) [Km] | (10.0,10.0)    | Res(Y,X) [uRad] | (280.0,280.0) |                 |          |

(41.793N,54.284W)

(41.793N,105.07E)



(7.019S,54.284W)

(7.019S,105.07E)

GCP Distribution overview for 3RSND16JUL20180300L1BSA1

Image Width: 384 Image Height: 320 No Of GCPs: 2

GCP Coverage(%) 23.36 (N-S) 74.41 (E-W)

## Location Error(E)

Legend —0Km < E <= 50Km —50Km < E <= 100Km —E >100Km

## Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | 3.392  | N         | 0.431  | 3.420 |
| Across | -3.590 | W         | 1.183  | 3.780 |

## Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 11.440     | 0.000  | 14.402     |
| Along   | -1.000     | -1.000 | -999.990   |
| Across  | -1.000     | -1.000 | -999.990   |

## Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean   | Stddev | RMS   |
|--------|------------|--------|--------|-------|
| Along  | 0.000      | 0.454  | 0.00   | 0.454 |
| Across | 0.000      | -1.703 | 0.00   | 1.703 |

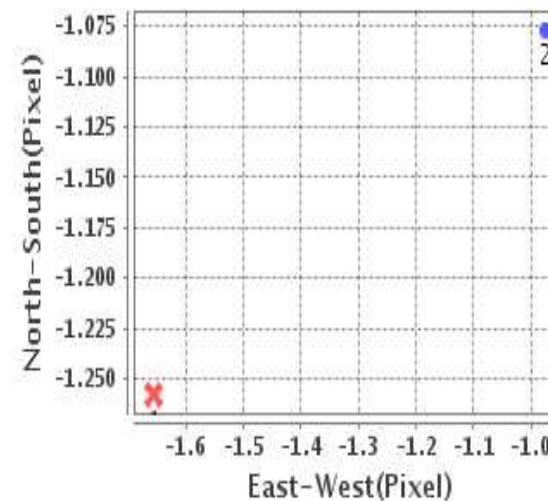
## Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw      |
|----------|----------|----------|
| -999.990 | -999.990 | -999.990 |

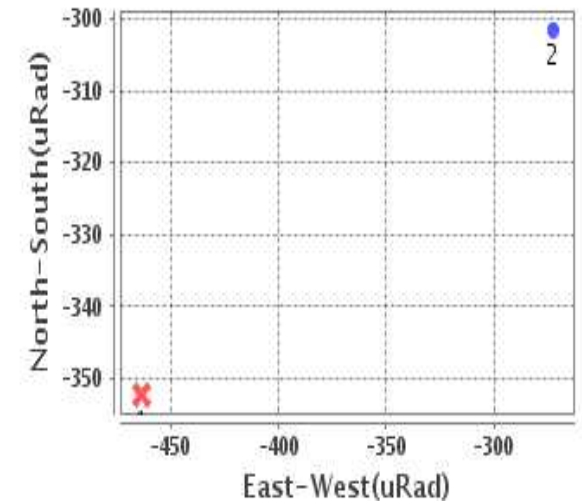
## Reference Used

| Sensor | Resolution | Projection |
|--------|------------|------------|
| ETM    | 500.00     | GGP        |

## Location Error For GCPs(Pixel)



## Location Error For GCPs(uRad)



Detailed Product Information

Ancillary Info

|                   |               |                           |            |
|-------------------|---------------|---------------------------|------------|
| Satellite         | INSAT-3DR     | Generation Date           | 16-07-18   |
| Sensor            | SND           | DQE Date                  | 17-07-2018 |
| PassType          | NONE          | Aquisition Date           | 16-07-18   |
| Imaging Mode      | FULL_FRAME    | Aquisition Time(GMT)      | 03:00      |
| Sat Altitude(m)   | 3.6E7         | Nominal Altitude(Km)      | 3.6E7      |
| Station           | BES           | Predicted Altitude(Km)    | -999.99    |
| Sat Location(deg) | -999.99 E     | Nominal Center Lat(deg)   | 0.0        |
| Format            | hdf5-1.8.8    | Nominal Center Lon(deg)   | 74.0       |
| LvlOfProcessing   | STANDARD      | Predicted Center Lat(deg) | -999.99    |
| DP JobId          | 3RSND_16JUL20 | Predicted Center Lon(deg) | -999.99    |
| ProductCode       | NONE          |                           |            |
| Field View(deg)   | 6.136         |                           |            |

Projection Parameters

|                               |          |
|-------------------------------|----------|
| Projection                    | None     |
| Ellipsoid                     | WGS_84   |
| Datum                         | WGS_84   |
| Zone                          | NotAvail |
| Semi_Major_Axis(Km)           | 6378.14  |
| Semi_Minor_Axis(Km)           | 6356.75  |
| Standard_Parallel1(deg)       | -999.99  |
| Standard_Parallel2(deg)       | -999.99  |
| Projection-Origin_Lon(deg)    | -999.99  |
| Projection-Origin_Lat(deg)    | -999.99  |
| Projection_False_Easting(Km)  | -999.99  |
| Projection_False_Northing(Km) | -999.99  |

Scene Center Desc

|                   |         |
|-------------------|---------|
| Centre Lat(deg)   | 24.406  |
| Center Lon(deg)   | 79.677  |
| Centre Roll(deg)  | -999.0  |
| Centre Pitch(deg) | -999.0  |
| Center Yaw(deg)   | -999.0  |
| SunElevation(deg) | -999.99 |
| SunAzimuth(deg)   | -999.99 |
| SatElevation(deg) | -999.99 |
| SatAzimuth(deg)   | -999.99 |

Scene Corner Desc

|             |        |
|-------------|--------|
| NW_Lat(deg) | 41.793 |
| NW_Lon(deg) | 54.284 |
| SW_Lat(deg) | 7.019  |
| SW_Lon(deg) | 54.284 |
| NE_Lat(deg) | 41.793 |
| NE_Lon(deg) | 105.07 |
| SE_Lat(deg) | 7.019  |
| SE_Lon(deg) | 105.07 |

Band Wise Details

|       |            |            |              |             |
|-------|------------|------------|--------------|-------------|
|       | Res_AL(Km) | Res_AX(Km) | Image Height | Image Width |
| LWIR1 | 10.0       | 10.0       | 320          | 384         |
| LWIR2 | 10.0       | 10.0       | 320          | 384         |
| LWIR3 | 10.0       | 10.0       | 320          | 384         |
| LWIR4 | 10.0       | 10.0       | 320          | 384         |
| LWIR5 | 10.0       | 10.0       | 320          | 384         |
| LWIR6 | 10.0       | 10.0       | 320          | 384         |

GDQE Computation Base

|            |                |                               |        |                        |            |                     |           |
|------------|----------------|-------------------------------|--------|------------------------|------------|---------------------|-----------|
| Projection | MER            | Wildpoint Rejection Threshold | 2.60   | SemiMajorAxis(m)       | 6378137.00 | Mode Of Computation | grid      |
| Ellipsoid  | WGS_84         |                               | -sigma | SemiMinorAxis(m)       | 6356752.31 | Used Reference Type | REFINSREF |
| Datum      | WGS_84         | Unit                          | pixels | Standardparallel1(deg) | 17.0       |                     |           |
| Zone       | Not Applicable |                               |        | Standardparallel2(deg) | 17.0       |                     |           |

\* -999.99 : Not Applicable/Not Available

## References

**JobId :** 3RSND16JUL20180300L1BSA1

(-999.99 - Not Available/Not Computed)

| Ref.No | Source | File Name       | Resolution<br>( m ) | Projection |
|--------|--------|-----------------|---------------------|------------|
| 1      | ETM    | world_Band1.img | 500.0               | GGP        |

## Location Accuracy

### GCP Distribution Statistics

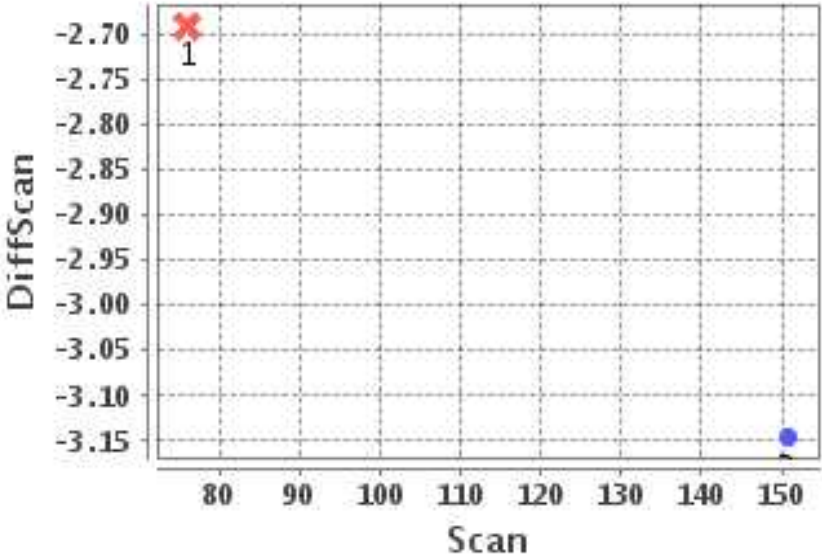
Image Width (pixels) : 384      Image Height (pixels) : 320      No of GCPs : 2

|          | Mean  | StdDev | Min  | Max    | Coverage(in %) |
|----------|-------|--------|------|--------|----------------|
| GCP Scan | 113.4 | 37.4   | 76.0 | 150.75 | 23.36 (N-S)    |
| GCP Pix  | 148.1 | 142.9  | 5.2  | 291.00 | 74.41 (E-W)    |

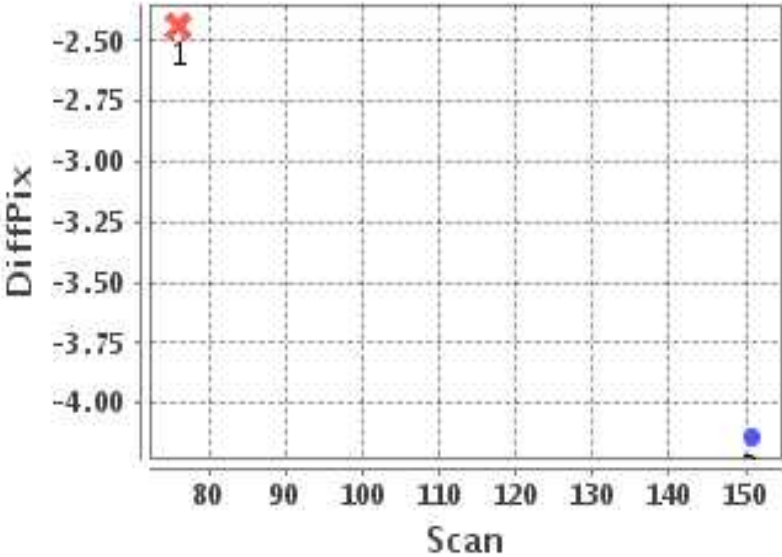
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan  | Pix   | DiffScan<br>(line) | DiffPix<br>(pixel) | DifLat<br>(Km) | Dir | DifLon<br>(Km) | Dir | Status   |
|----|-------|-------|--------------------|--------------------|----------------|-----|----------------|-----|----------|
| 1  | 150.8 | 5.2   | -3.1               | -4.14              | 29.619         | N   | 47.732         | W   | Accepted |
| 2  | 76.0  | 291.0 | -2.7               | -2.44              | 38.231         | N   | 24.064         | W   | Accepted |

Error(Pixels) Vs. GCPScan



Error(Pixels) Vs. GCPScan



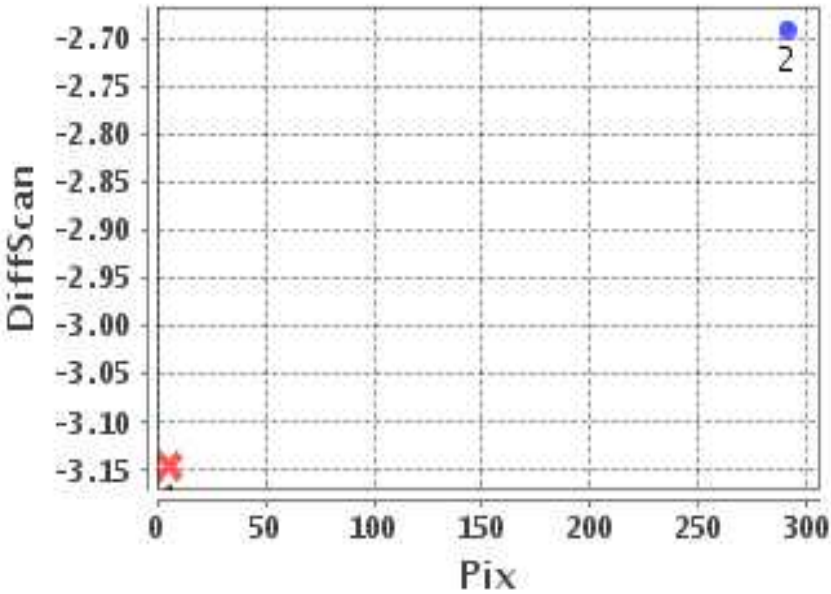
Number Of Points

|       |   |
|-------|---|
| North | 2 |
| South | 0 |
| East  | 0 |
| West  | 2 |

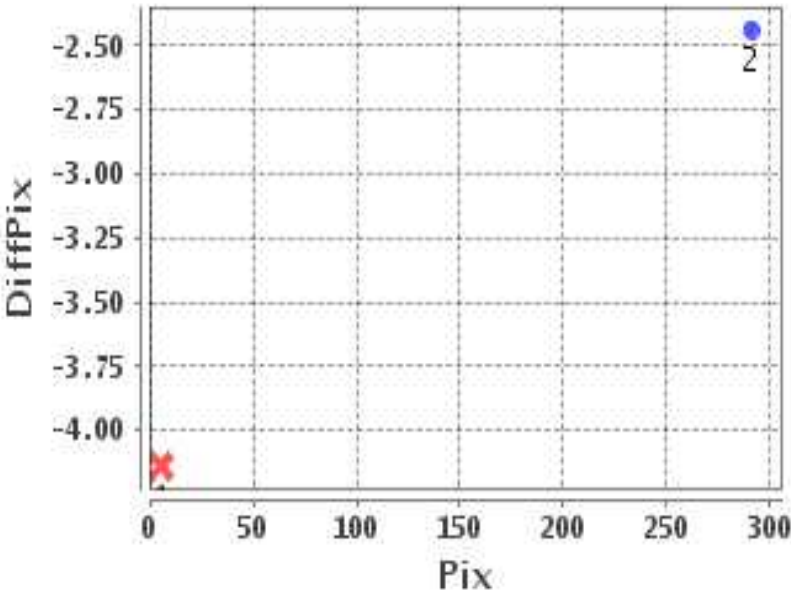
Radial Error ( Km )

|      |       |
|------|-------|
| Mean | 5.067 |
| Min  | 4.517 |
| Max  | 5.618 |
| CE90 | 4.517 |

Error(Pixels) Vs. GCPPix



Error(Pixels) Vs. GCPPix



Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | 3.392  | 0.431  | 3.420 | N   | 2.962    | 3.823    |
| Across ( Km ) | -3.590 | 1.183  | 3.780 | W   | 2.406    | 4.773    |

Block-Wise Geo location Error Statistics

Location Accuracy,Scale,ID

| Scan Range-0-105; Pix Range-0-127 |         |          |
|-----------------------------------|---------|----------|
| Number of GCPs                    | -999    |          |
| Location Error(Km)                |         |          |
| Along(Mean,Dir)                   | -999.99 | NotAvail |
| Across(Mean,Dir)                  | -999.99 | NotAvail |
| Scale(Km)                         |         |          |
| Average Scale (Mean,%Variation)   | -999.99 | -999.9   |
| Internal Distortion(Pixel)        |         |          |
| Along(Mean,Stddev)                | -999.99 | -999.99  |
| Across(Mean,Stddev)               | -999.99 | -999.99  |

|                                     |         |          |
|-------------------------------------|---------|----------|
| Scan Range-0-105; Pix Range-127-255 |         |          |
| Number of GCPs                      | -999    |          |
| Location Error(Km)                  |         |          |
| Along(Mean,Dir)                     | -999.99 | NotAvail |
| Across(Mean,Dir)                    | -999.99 | NotAvail |
| Scale(Km)                           |         |          |
| Average Scale (Mean,%Variation)     | -999.99 | -999.9   |
| Internal Distortion(Pixel)          |         |          |
| Along(Mean,Stddev)                  | -999.99 | -999.99  |
| Across(Mean,Stddev)                 | -999.99 | -999.99  |

|                                     |         |         |
|-------------------------------------|---------|---------|
| Scan Range-0-105; Pix Range-255-384 |         |         |
| Number of GCPs                      | 1       |         |
| Location Error(Km)                  |         |         |
| Along(Mean,Dir)                     | 38.23   | N       |
| Across(Mean,Dir)                    | -24.07  | W       |
| Scale(Km)                           |         |         |
| Average Scale (Mean,%Variation)     | -999.99 | -999.9  |
| Internal Distortion(Pixel)          |         |         |
| Along(Mean,Stddev)                  | -999.99 | -999.99 |
| Across(Mean,Stddev)                 | -999.99 | -999.99 |

| Scan Range-105-212; Pix Range-0-127 |         |         |  |
|-------------------------------------|---------|---------|--|
| Number of GCPs                      | 1       |         |  |
| Location Error(Km)                  |         |         |  |
| Along(Mean,Dir)                     | 29.62   | N       |  |
| Across(Mean,Dir)                    | -47.73  | W       |  |
| Scale(Km)                           |         |         |  |
| Average Scale (Mean,%Variation)     | -999.99 | -999.9  |  |
| Internal Distortion(Pixel)          |         |         |  |
| Along(Mean,Stddev)                  | -999.99 | -999.99 |  |
| Across(Mean,Stddev)                 | -999.99 | -999.99 |  |

|                                       |         |          |
|---------------------------------------|---------|----------|
| Scan Range-105-212; Pix Range-127-255 |         |          |
| Number of GCPs                        | -999    |          |
| Location Error(Km)                    |         |          |
| Along(Mean,Dir)                       | -999.99 | NotAvail |
| Across(Mean,Dir)                      | -999.99 | NotAvail |
| Scale(Km)                             |         |          |
| Average Scale (Mean,%Variation)       | -999.99 | -999.9   |
| Internal Distortion(Pixel)            |         |          |
| Along(Mean,Stddev)                    | -999.99 | -999.99  |
| Across(Mean,Stddev)                   | -999.99 | -999.99  |

|                                       |         |          |
|---------------------------------------|---------|----------|
| Scan Range-105-212; Pix Range-255-384 |         |          |
| Number of GCPs                        | -999    |          |
| Location Error(Km)                    |         |          |
| Along(Mean,Dir)                       | -999.99 | NotAvail |
| Across(Mean,Dir)                      | -999.99 | NotAvail |
| Scale(Km)                             |         |          |
| Average Scale (Mean,%Variation)       | -999.99 | -999.9   |
| Internal Distortion(Pixel)            |         |          |
| Along(Mean,Stddev)                    | -999.99 | -999.99  |
| Across(Mean,Stddev)                   | -999.99 | -999.99  |

|                                     |         |          |
|-------------------------------------|---------|----------|
| Scan Range-212-320; Pix Range-0-127 |         |          |
| Number of GCPs                      | -999    |          |
| Location Error(Km)                  |         |          |
| Along(Mean,Dir)                     | -999.99 | NotAvail |
| Across(Mean,Dir)                    | -999.99 | NotAvail |
| Scale(Km)                           |         |          |
| Average Scale (Mean,%Variation)     | -999.99 | -999.9   |
| Internal Distortion(Pixel)          |         |          |
| Along(Mean,Stddev)                  | -999.99 | -999.99  |
| Across(Mean,Stddev)                 | -999.99 | -999.99  |

|                                       |         |          |
|---------------------------------------|---------|----------|
| Scan Range-212-320; Pix Range-105-255 |         |          |
| Number of GCPs                        | -999    |          |
| Location Error(Km)                    |         |          |
| Along(Mean,Dir)                       | -999.99 | NotAvail |
| Across(Mean,Dir)                      | -999.99 | NotAvail |
| Scale(Km)                             |         |          |
| Average Scale (Mean,%Variation)       | -999.99 | -999.9   |
| Internal Distortion(Pixel)            |         |          |
| Along(Mean,Stddev)                    | -999.99 | -999.99  |
| Across(Mean,Stddev)                   | -999.99 | -999.99  |

|                                       |         |          |
|---------------------------------------|---------|----------|
| Scan Range-212-320; Pix Range-255-384 |         |          |
| Number of GCPs                        | -999    |          |
| Location Error(Km)                    |         |          |
| Along(Mean,Dir)                       | -999.99 | NotAvail |
| Across(Mean,Dir)                      | -999.99 | NotAvail |
| Scale(Km)                             |         |          |
| Average Scale (Mean,%Variation)       | -999.99 | -999.9   |
| Internal Distortion(Pixel)            |         |          |
| Along(Mean,Stddev)                    | -999.99 | -999.99  |
| Across(Mean,Stddev)                   | -999.99 | -999.99  |

\*-999 : no gcp available  
\* -999.99 : values are not computed