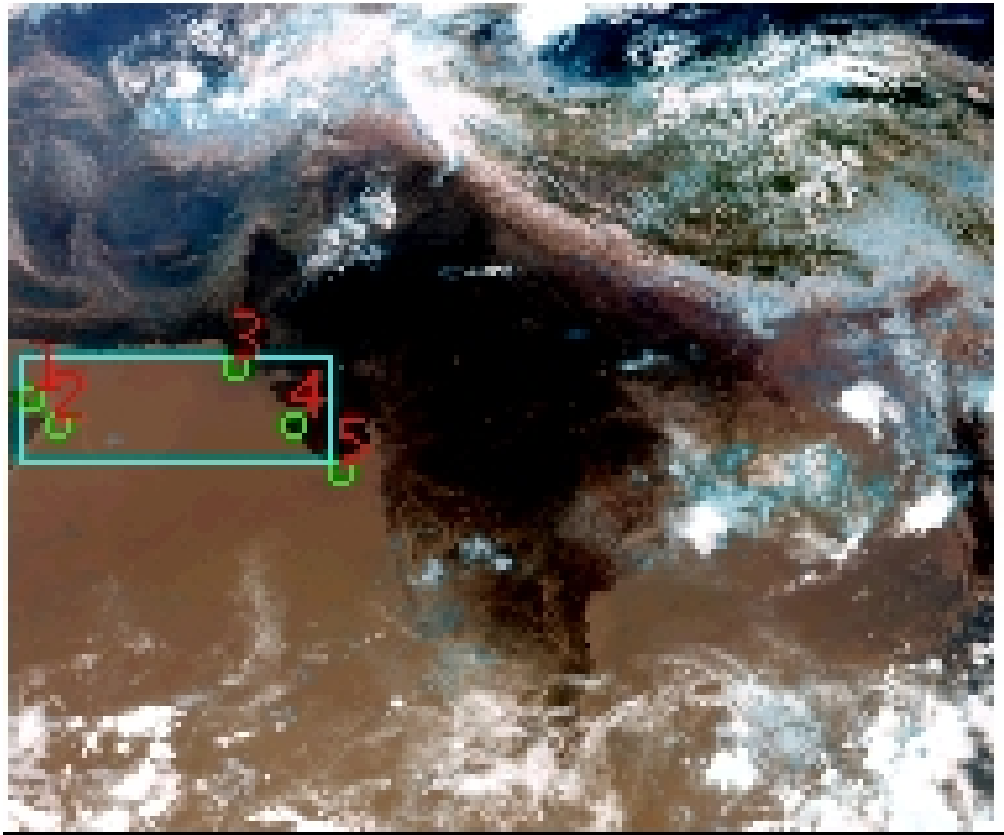


# DQE Report: Location Accuracy of INSAT-3DR-SND STANDARD Product 3RSND\_19MAY2018\_0300

|               |                |                 |               |                 |          |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| Satellite     | INSAT-3DR      | No Of Bands     | 19            | Product Type    | STANDARD |
| Sensor        | SND            | LvlOfProcess    | L1B           | Selected Band   | 2-LWIR3  |
| DOP/Time      | 19-05-18/03:00 | Station ID      | BES           | Field View(deg) | 6.136    |
| Res(Y,X) [Km] | (10.0,10.0)    | Res(Y,X) [uRad] | (280.0,280.0) |                 |          |

(41.791N,54.335W)

(41.791N,105.082E)



(7.065S,54.335W)

(7.065S,105.082E)

GCP Distribution overview for 3RSND19MAY20180300L1BSA1

Image Width: 384 Image Height: 320 No Of GCPs: 5

GCP Coverage(%) 12.50 (N-S) 30.66 (E-W)

## Location Error(E)

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

## Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | 3.206  | N         | 0.449  | 3.238 |
| Across | -5.287 | W         | 1.167  | 5.414 |

## Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 11.463     | 1.036  | 14.629     |
| Along   | 13.211     | 2.072  | 32.114     |
| Across  | 10.282     | 1.003  | 2.818      |

## Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean   | Stddev | RMS   |
|--------|------------|--------|--------|-------|
| Along  | 1.028      | -0.078 | 0.41   | 0.416 |
| Across | 0.842      | -2.440 | 0.33   | 2.463 |

## Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw      |
|----------|----------|----------|
| -0.03693 | -0.03623 | -0.34450 |

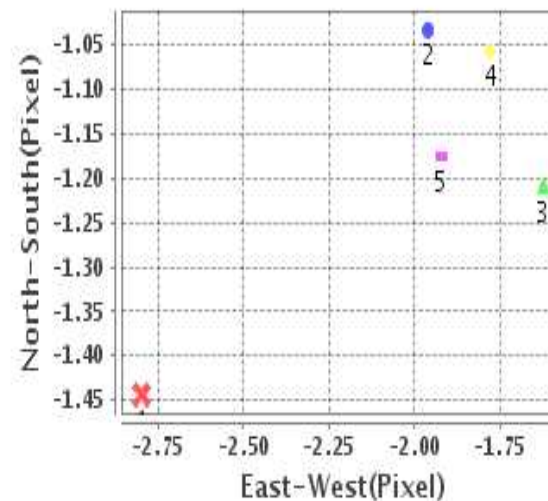
## Reference Used

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

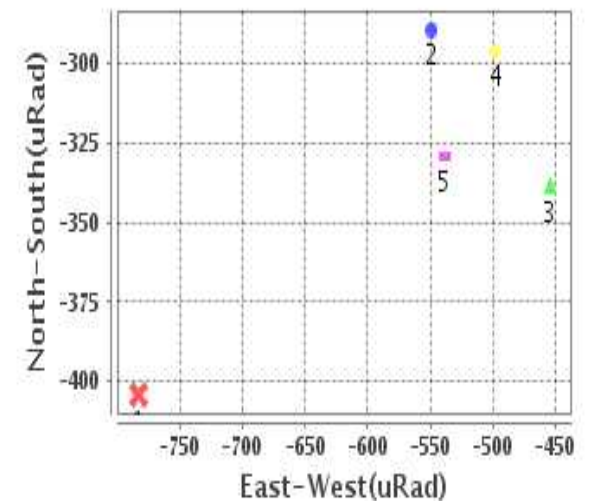
## Radial Error (in IR Pixels)

|      |       |
|------|-------|
| Mean | 6.200 |
| Min  | 5.365 |
| Max  | 8.369 |
| CE90 | 6.467 |

## Location Error For GCPs(Pixel)



## Location Error For GCPs(uRad)



## Detailed Product Information

### Ancillary Info

|                          |              |                                  |            |
|--------------------------|--------------|----------------------------------|------------|
| <b>Satellite</b>         | INSAT-3DR    | <b>Generation Date</b>           | 19-05-18   |
| <b>Sensor</b>            | SND          | <b>DQE Date</b>                  | 28-05-2018 |
| <b>PassType</b>          | NONE         | <b>Aquisition Date</b>           | 19-05-18   |
| <b>Imaging Mode</b>      | FULL_FRAME   | <b>Aquisition Time(GMT)</b>      | 03:00      |
| <b>Sat Altitude(m)</b>   | 3.6E7        | <b>Nominal Altitude(Km)</b>      | 3.6E7      |
| <b>Station</b>           | BES          | <b>Predicted Altitude(Km)</b>    | -999.99    |
| <b>Sat Location(deg)</b> | -999.99 E    | <b>Nominal Center Lat(deg)</b>   | 0.0        |
| <b>Format</b>            | hdf5-1.8.8   | <b>Nominal Center Lon(deg)</b>   | 74.0       |
| <b>LvlOfProcessing</b>   | STANDARD     | <b>Predicted Center Lat(deg)</b> | -999.99    |
| <b>DP JobId</b>          | 3RSND_19MAY2 | <b>Predicted Center Lon(deg)</b> | -999.99    |
| <b>ProductCode</b>       | NONE         |                                  |            |
| <b>Field View(deg)</b>   | 6.136        |                                  |            |

### Projection Parameters

|                                      |          |
|--------------------------------------|----------|
| <b>Projection</b>                    | None     |
| <b>Ellipsoid</b>                     | WGS_84   |
| <b>Datum</b>                         | WGS_84   |
| <b>Zone</b>                          | NotAvail |
| <b>Semi_Major_Axis(Km)</b>           | 6378.14  |
| <b>Semi_Minor_Axis(Km)</b>           | 6356.75  |
| <b>Standard_Parallel1(deg)</b>       | -999.99  |
| <b>Standard_Parallel2(deg)</b>       | -999.99  |
| <b>Projection_Origin_Lon(deg)</b>    | -999.99  |
| <b>Projection_Origin_Lat(deg)</b>    | -999.99  |
| <b>Projection_False_Easting(Km)</b>  | -999.99  |
| <b>Projection_False_Northing(Km)</b> | -999.99  |

### Scene Center Desc

|                          |         |
|--------------------------|---------|
| <b>Centre Lat(deg)</b>   | 24.428  |
| <b>Center Lon(deg)</b>   | 79.709  |
| <b>Centre Roll(deg)</b>  | -999.0  |
| <b>Centre Pitch(deg)</b> | -999.0  |
| <b>Center Yaw(deg)</b>   | -999.0  |
| <b>SunElevation(deg)</b> | -999.99 |
| <b>SunAzimuth(deg)</b>   | -999.99 |
| <b>SatElevation(deg)</b> | -999.99 |
| <b>SatAzimuth(deg)</b>   | -999.99 |

### Scene Corner Desc

|                    |         |
|--------------------|---------|
| <b>NW_Lat(deg)</b> | 41.791  |
| <b>NW_Lon(deg)</b> | 54.335  |
| <b>SW_Lat(deg)</b> | 7.065   |
| <b>SW_Lon(deg)</b> | 54.335  |
| <b>NE_Lat(deg)</b> | 41.791  |
| <b>NE_Lon(deg)</b> | 105.082 |
| <b>SE_Lat(deg)</b> | 7.065   |
| <b>SE_Lon(deg)</b> | 105.082 |

### Band Wise Details

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

## GDQE Computation Base

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

\* -999.99 : Not Applicable/Not Available

## References

**JobId : 3RSND19MAY20180300L1BSA1**

(-999.99 - Not Available/Not Computed)

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

## Location Accuracy

### GCP Distribution Statistics

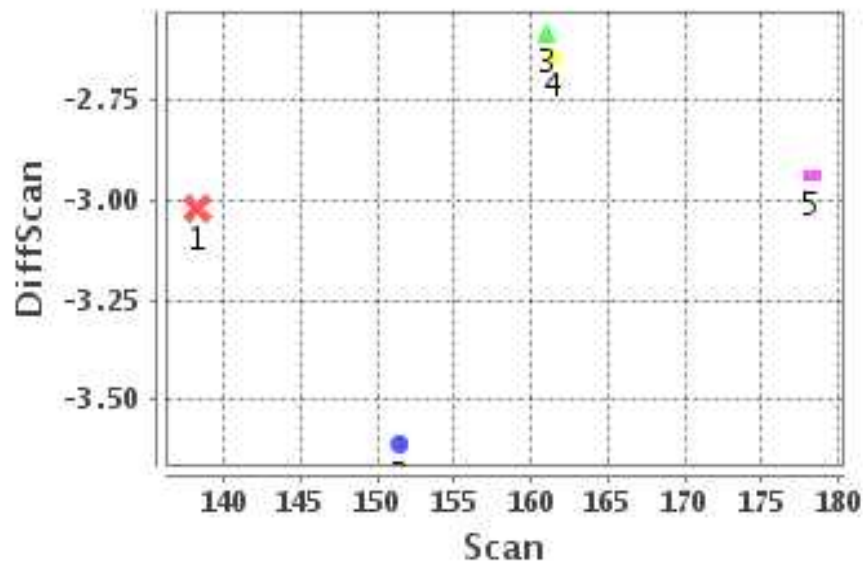
Image Width (pixels) : 384      Image Height (pixels) : 320      No of GCPs : 5

|                 | Mean  | StdDev | Min   | Max    | Coverage(in %) |
|-----------------|-------|--------|-------|--------|----------------|
| <b>GCP Scan</b> | 158.1 | 13.1   | 138.2 | 178.25 | 12.50 (N-S)    |
| <b>GCP Pix</b>  | 68.0  | 47.6   | 7.8   | 125.50 | 30.66 (E-W)    |

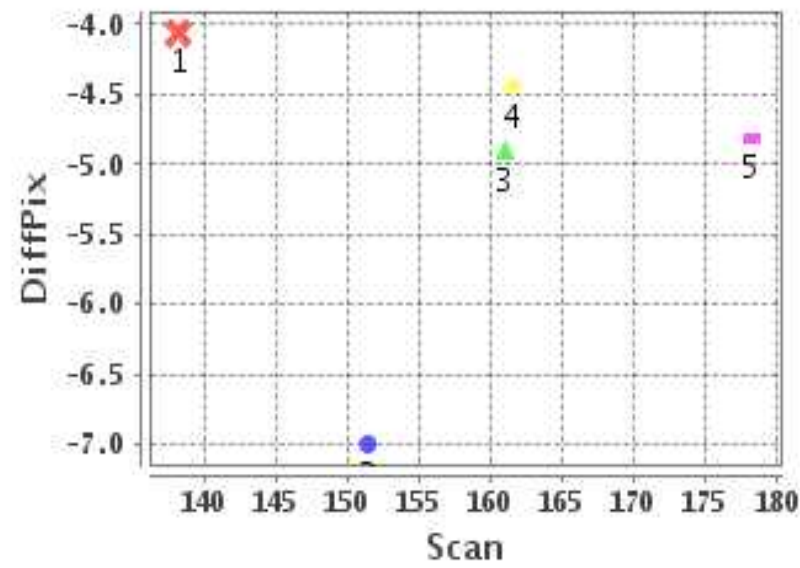
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan  | Pix   | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|-------|-------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 151.5 | 7.8   | -3.6            | -6.99           | 38.845      | N   | 74.132      | W   | Accepted |
| 2  | 161.0 | 16.2  | -2.6            | -4.90           | 31.848      | N   | 56.285      | W   | Accepted |
| 3  | 138.2 | 84.2  | -3.0            | -4.06           | 34.079      | N   | 42.228      | W   | Accepted |
| 4  | 161.5 | 106.0 | -2.6            | -4.44           | 25.144      | N   | 47.481      | W   | Accepted |
| 5  | 178.2 | 125.5 | -2.9            | -4.81           | 30.400      | N   | 44.206      | W   | Accepted |

### Error(Pixels) Vs. GCPScan



### Error(Pixels) Vs. GCPScan



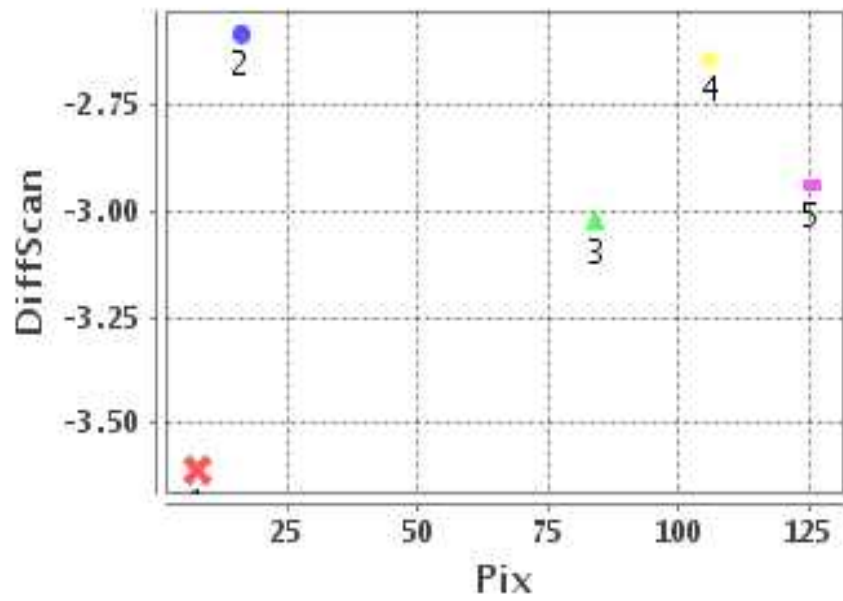
#### Number Of Points

|       |   |
|-------|---|
| North | 5 |
| South | 0 |
| East  | 0 |
| West  | 5 |

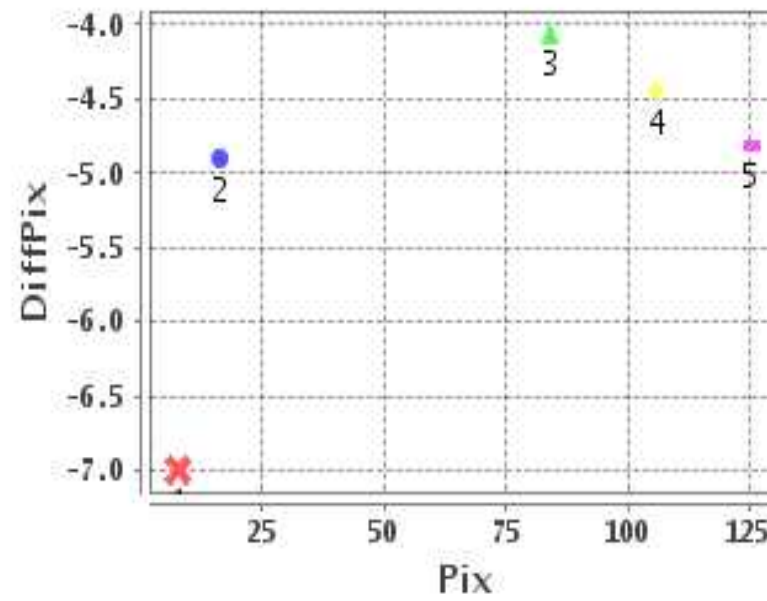
#### Radial Error ( Km )

|      |       |
|------|-------|
| Mean | 6.200 |
| Min  | 5.365 |
| Max  | 8.369 |
| CE90 | 6.467 |

### Error(Pixels) Vs. GCPPix



### Error(Pixels) Vs. GCPPix



#### Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | 3.206  | 0.449  | 3.238 | N   | 3.055    | 3.394    |
| Across ( Km ) | -5.287 | 1.167  | 5.414 | W   | 4.785    | 5.673    |

## Block-Wise Geo location Error Statistics

### Location Accuracy,Scale,ID

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

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

|  |         |          |
|--|---------|----------|
| <b>Scan Range-0-105; Pix Range-255-384</b> |         |          |
| Number of GCPs                             | -999    |          |
| <b>Location Error(Km)</b>                  |         |          |
| Along(Mean,Dir)                            | -999.99 | NotAvail |
| Across(Mean,Dir)                           | -999.99 | NotAvail |
| <b>Scale(Km)</b>                           |         |          |
| Average Scale (Mean,%Variation)            | -999.99 | -999.9   |
| <b>Internal Distortion(Pixel)</b>          |         |          |
| Along(Mean,Stddev)                         | -999.99 | -999.99  |
| Across(Mean,Stddev)                        | -999.99 | -999.99  |

|  |        |       |
|--|--------|-------|
| <b>Scan Range-105-212; Pix Range-0-127</b> |        |       |
| Number of GCPs                             | 5      |       |
| <b>Location Error(Km)</b>                  |        |       |
| Along(Mean,Dir)                            | 32.066 | N     |
| Across(Mean,Dir)                           | -52.87 | W     |
| <b>Scale(Km)</b>                           |        |       |
| Average Scale (Mean,%Variation)            | 11.46  | 14.63 |
| <b>Internal Distortion(Pixel)</b>          |        |       |
| Along(Mean,Stddev)                         | -0.08  | 0.41  |
| Across(Mean,Stddev)                        | -2.44  | 0.33  |

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

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

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

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

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

\*-999 : no gcp available

\* -999.99 : values are not computed