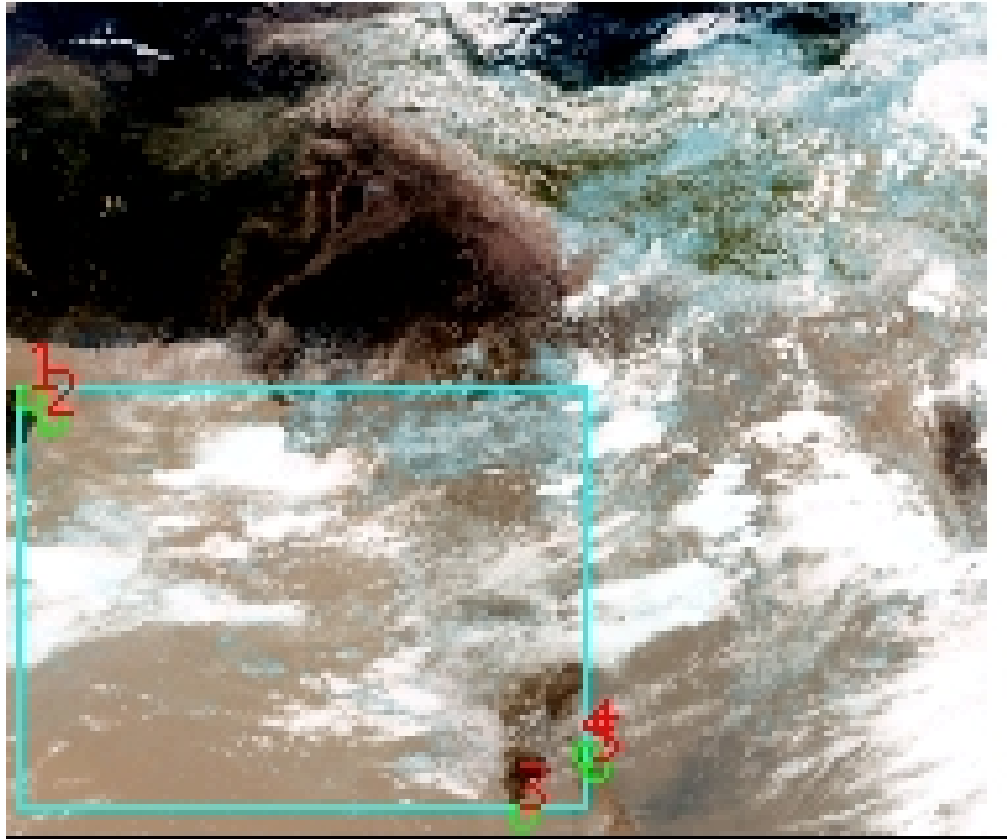


# DQE Report: Location Accuracy of INSAT-3DR-SND STANDARD Product 3RSND\_15JUN2020\_0500

|               |                |                 |               |                 |          |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| Satellite     | INSAT-3DR      | No Of Bands     | 19            | Product Type    | STANDARD |
| Sensor        | SND            | LvlOfProcess    | L1B           | Selected Band   | 2-LWIR3  |
| DOP/Time      | 15-06-20/05:00 | Station ID      | BES           | Field View(deg) | 6.136    |
| Res(Y,X) [Km] | (10.0,10.0)    | Res(Y,X) [uRad] | (280.0,280.0) |                 |          |

(41.826N,54.263W)

(41.826N,105.087E)



(6.989S,54.263W)

(6.989S,105.087E)

GCP Distribution overview for 3RSND15JUN20200500L1BSA1

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

GCP Coverage(%) 49.69 (N-S) 56.45 (E-W)

## Location Error(E)

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

## Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | 1.528  | N         | 0.403  | 1.581 |
| Across | -1.098 | W         | 1.494  | 1.854 |

## Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 10.745     | 1.324  | 7.447      |
| Along   | -1.000     | -1.000 | -999.990   |
| Across  | -1.000     | -1.000 | -999.990   |

## Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean   | Stddev | RMS   |
|--------|------------|--------|--------|-------|
| Along  | 0.885      | -0.478 | 0.36   | 0.599 |
| Across | 1.151      | -3.163 | 0.46   | 3.196 |

## Attitude Residuals (Deg)

| Pitch   | Roll     | Yaw      |
|---------|----------|----------|
| 0.00124 | -0.02198 | -0.09434 |

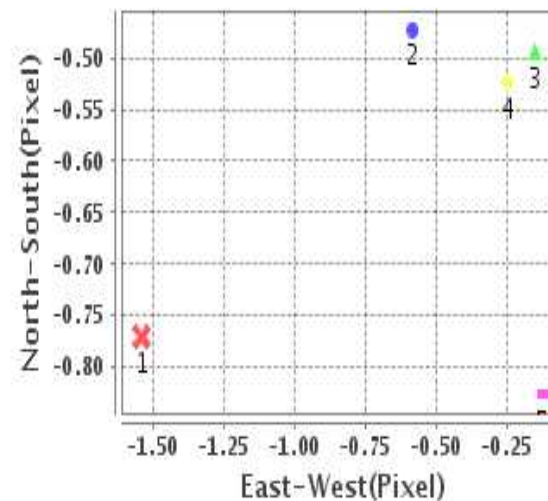
## Reference Used

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

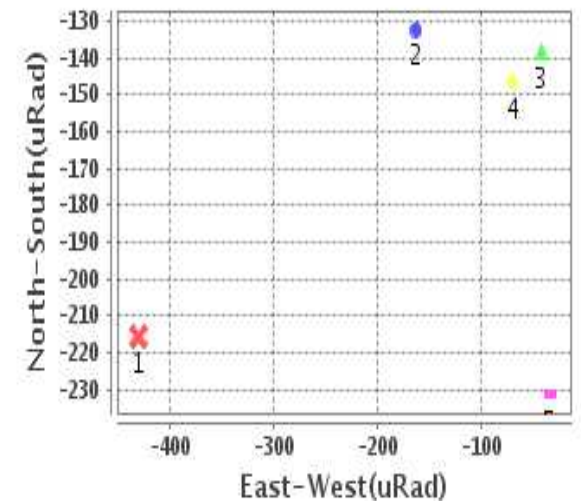
## Radial Error (in IR Pixels)

|      |       |
|------|-------|
| Mean | 2.146 |
| Min  | 1.082 |
| Max  | 4.327 |
| CE90 | 2.164 |

## Location Error For GCPs(Pixel)



## Location Error For GCPs(uRad)



## Detailed Product Information

### Ancillary Info

|                          |               |                                  |            |
|--------------------------|---------------|----------------------------------|------------|
| <b>Satellite</b>         | INSAT-3DR     | <b>Generation Date</b>           | 15-06-20   |
| <b>Sensor</b>            | SND           | <b>DQE Date</b>                  | 17-06-2020 |
| <b>PassType</b>          | NONE          | <b>Aquisition Date</b>           | 15-06-20   |
| <b>Imaging Mode</b>      | FULL_FRAME    | <b>Aquisition Time(GMT)</b>      | 05:00      |
| <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_15JUN20 | <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>   | 24.408  |
| <b>Center Lon(deg)</b>   | 79.675  |
| <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> | 41.826  |
| <b>NW_Lon(deg)</b> | 54.263  |
| <b>SW_Lat(deg)</b> | 6.989   |
| <b>SW_Lon(deg)</b> | 54.263  |
| <b>NE_Lat(deg)</b> | 41.826  |
| <b>NE_Lon(deg)</b> | 105.087 |
| <b>SE_Lat(deg)</b> | 6.989   |
| <b>SE_Lon(deg)</b> | 105.087 |

### 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 : 3RSND15JUN20200500L1BSA1**

(-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

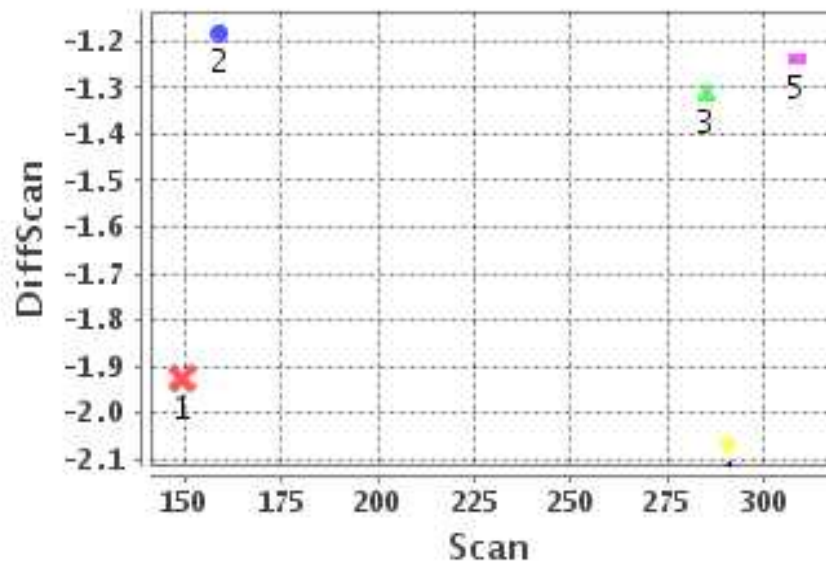
Image Width (pixels) : 384      Image Height (pixels) : 320      No of GCPs : 5

|                 | Mean  | StdDev | Min   | Max    | Coverage(in %) |
|-----------------|-------|--------|-------|--------|----------------|
| <b>GCP Scan</b> | 238.4 | 69.3   | 149.2 | 308.25 | 49.69 (N-S)    |
| <b>GCP Pix</b>  | 129.8 | 99.3   | 4.8   | 221.50 | 56.45 (E-W)    |

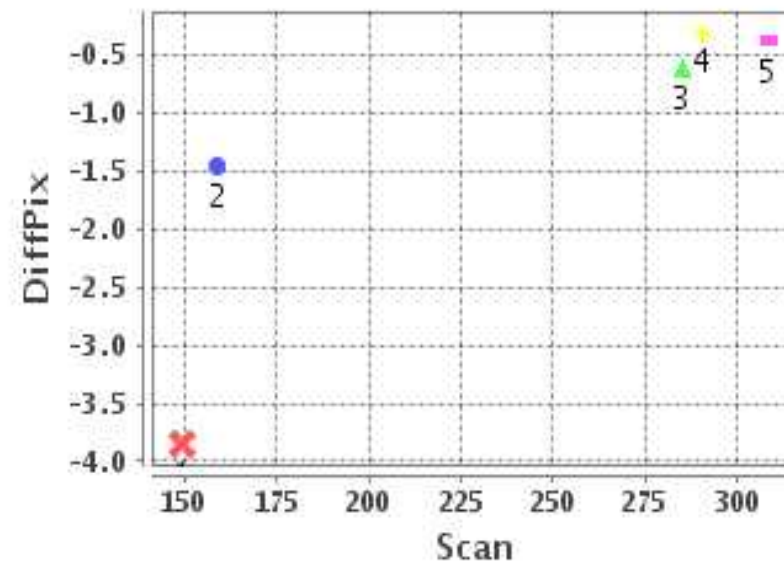
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan  | Pix   | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|-------|-------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 149.2 | 4.8   | -1.9            | -3.85           | 21.542      | N   | 37.527      | W   | Accepted |
| 2  | 159.0 | 13.0  | -1.2            | -1.45           | 13.534      | N   | 16.885      | W   | Accepted |
| 3  | 308.2 | 192.0 | -1.2            | -0.37           | 10.011      | N   | 4.099       | W   | Accepted |
| 4  | 285.0 | 217.8 | -1.3            | -0.62           | 13.353      | N   | 0.806       | E   | Accepted |
| 5  | 290.2 | 221.5 | -2.1            | -0.30           | 17.984      | N   | 2.793       | E   | Accepted |

### Error(Pixels) Vs. GCPScan



### Error(Pixels) Vs. GCPScan



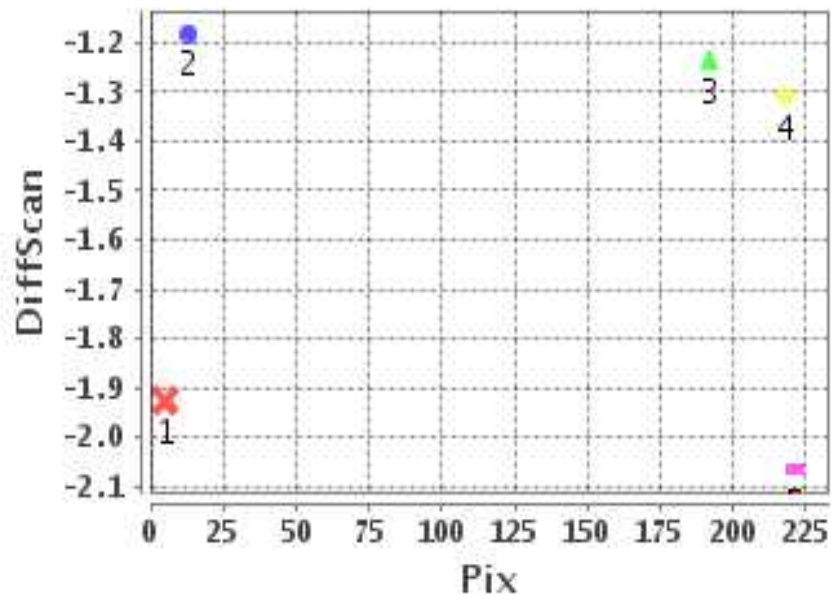
#### Number Of Points

|       |   |
|-------|---|
| North | 5 |
| South | 0 |
| East  | 2 |
| West  | 3 |

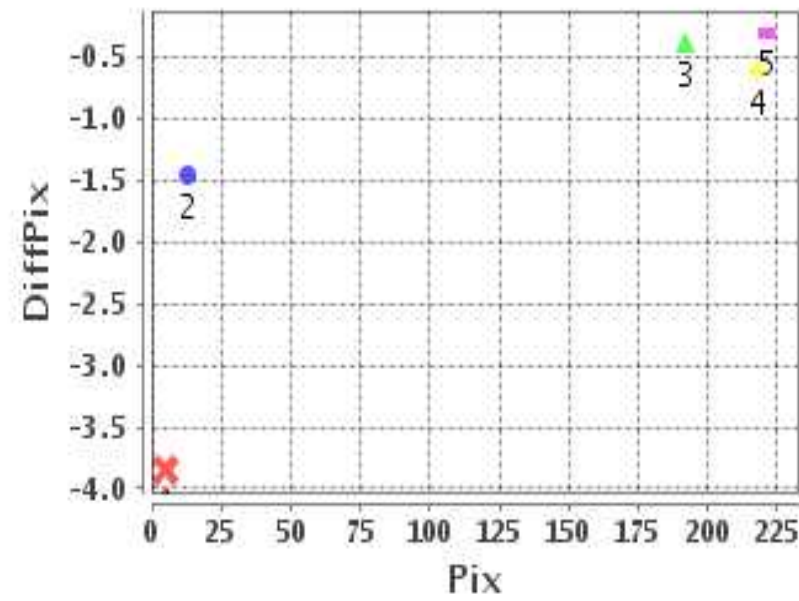
#### Radial Error ( Km )

|      |       |
|------|-------|
| Mean | 2.146 |
| Min  | 1.082 |
| Max  | 4.327 |
| CE90 | 2.164 |

### Error(Pixels) Vs. GCPPix



### Error(Pixels) Vs. GCPPix



#### Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | 1.528  | 0.403  | 1.581 | N   | 1.401    | 1.695    |
| Across ( Km ) | -1.098 | 1.494  | 1.854 | W   | 0.881    | 2.072    |

## Block-Wise Geo location Error Statistics

### Location Accuracy,Scale,ID

|  |             |          |
|--|-------------|----------|
| <b>Scan Range-0-105; Pix Range-0-127</b> |             |          |
| Number of GCPs                           | <b>-999</b> |          |
| <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                             | <b>-999</b> |          |
| <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                             | <b>-999</b> |          |
| <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                             | 2      |       |
| <b>Location Error(Km)</b>                  |        |       |
| Along(Mean,Dir)                            | 17.54  | N     |
| Across(Mean,Dir)                           | -27.20 | W     |
| <b>Scale(Km)</b>                           |        |       |
| Average Scale (Mean,%Variation)            | 14.46  | 44.59 |
| <b>Internal Distortion(Pixel)</b>          |        |       |
| Along(Mean,Stddev)                         | -0.74  | 0.00  |
| Across(Mean,Stddev)                        | -2.40  | 0.00  |

|  |             |          |
|--|-------------|----------|
| <b>Scan Range-105-212; Pix Range-127-255</b> |             |          |
| Number of GCPs                               | <b>-999</b> |          |
| <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                               | <b>-999</b> |          |
| <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                             | <b>-999</b> |          |
| <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                               | 3           |      |
| <b>Location Error(Km)</b>                    |             |      |
| Along(Mean,Dir)                              | 13.78070000 | N    |
| Across(Mean,Dir)                             | -0.17       | W    |
| <b>Scale(Km)</b>                             |             |      |
| Average Scale (Mean,%Variation)              | 9.70        | 2.99 |
| <b>Internal Distortion(Pixel)</b>            |             |      |
| Along(Mean,Stddev)                           | 0.34        | 0.42 |
| Across(Mean,Stddev)                          | 0.09        | 0.16 |

|  |             |          |
|--|-------------|----------|
| <b>Scan Range-212-320; Pix Range-255-384</b> |             |          |
| Number of GCPs                               | <b>-999</b> |          |
| <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