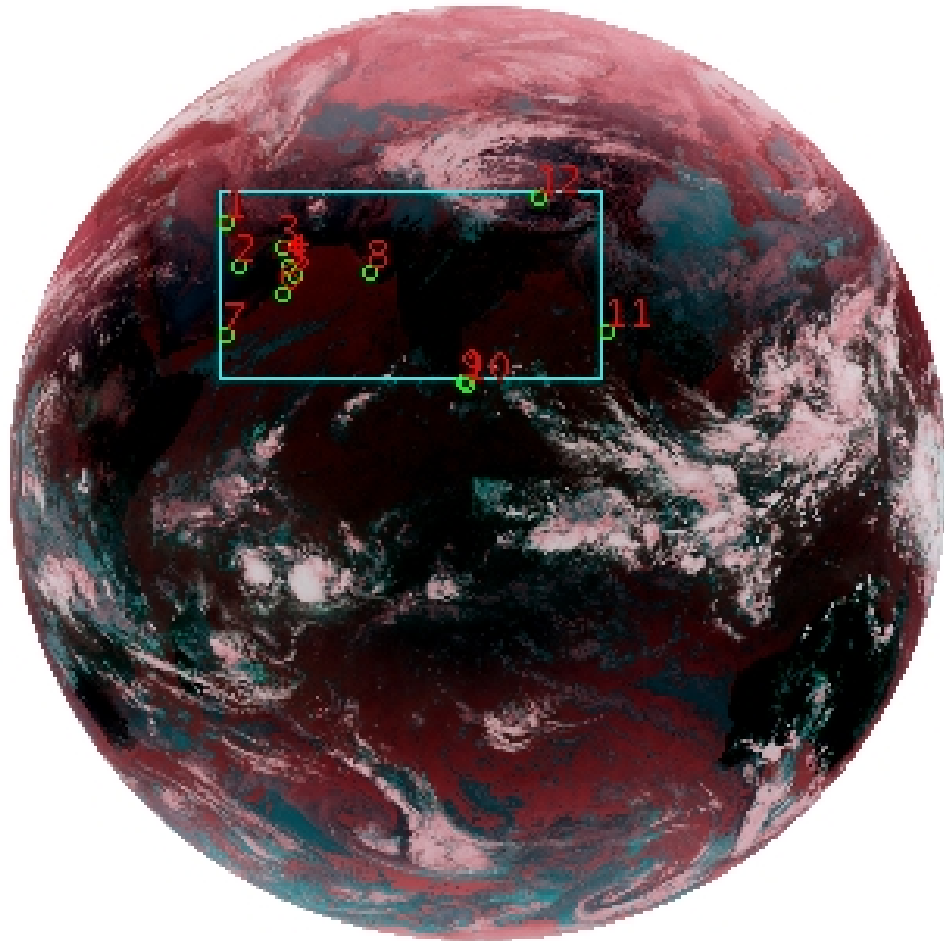


# DQE Report: Location Accuracy of INSAT-3D-IMG STANDARD(FULL DISK) Product 3DIMG\_12DEC2017\_0600

**Satellite** INSAT-3D      **No Of Bands** 6      **Product Type** STANDARD  
**Sensor** IMG      **LvlOfProcess** L1B      **Selected Band** 2-TIR1  
**DOP/Time** 12-12-17/06:00      **Station ID** BES      **Field View(deg)** 17.974  
**Res(Y,X) [Km]** (4.0,4.0)      **Res(Y,X) [uRad]** (112.0,112.0)

(81.042N,0.843W)

(81.042N,163.157E)



(-81.042S,0.843W)

(-81.042S,163.157E)

GCP Distribution overview for 3DIMG12DEC20170600L1BSTD

**Image Width:** 2805      **Image Height:** 2816      **No Of GCPs:** 12

**GCP Coverage(%)** 19.10      **(N-S)** 38.88      **(E-W)**

## Location Error(E)

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

## Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | 0.244  | N         | 1.273  | 1.296 |
| Across | -2.605 | W         | 0.982  | 2.784 |

## Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 4.657      | 0.518  | 16.432     |
| Along   | 6.749      | 16.057 | 68.721     |
| Across  | 5.351      | 6.542  | 33.773     |

## Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean  | Stddev | RMS   |
|--------|------------|-------|--------|-------|
| Along  | 4.326      | 0.205 | 1.19   | 1.203 |
| Across | 2.872      | 0.821 | 0.82   | 1.163 |

## Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw     |
|----------|----------|---------|
| -0.01814 | -0.00230 | 0.01726 |

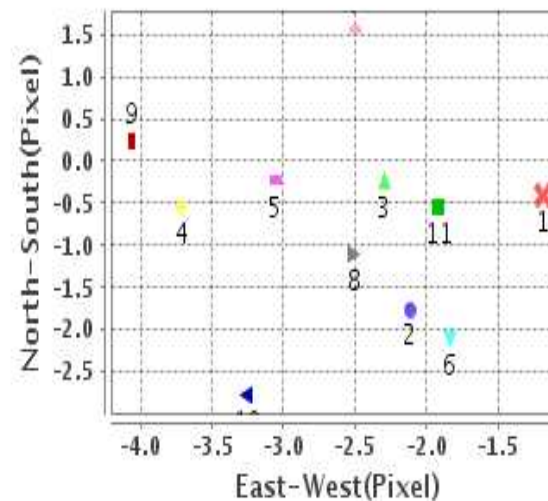
## Reference Used

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

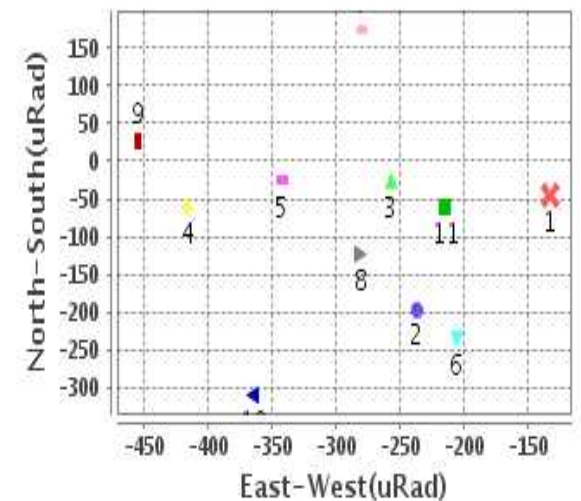
## Radial Error (in IR Pixels)

|             |       |
|-------------|-------|
| <b>Mean</b> | 2.897 |
| <b>Min</b>  | .973  |
| <b>Max</b>  | 4.306 |
| <b>CE90</b> | 3.979 |

## Location Error For GCPs(Pixel)



## Location Error For GCPs(uRad)



## Detailed Product Information

### Ancillary Info

|                          |               |                                  |            |
|--------------------------|---------------|----------------------------------|------------|
| <b>Satellite</b>         | INSAT-3D      | <b>Generation Date</b>           | 12-12-17   |
| <b>Sensor</b>            | IMG           | <b>DQE Date</b>                  | 15-12-2017 |
| <b>PassType</b>          | NONE          | <b>Aquisition Date</b>           | 12-12-17   |
| <b>Imaging Mode</b>      | FULL_FRAME    | <b>Aquisition Time(GMT)</b>      | 06:00      |
| <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>   | 82.0       |
| <b>LvlOfProcessing</b>   | STANDARD(FULL | <b>Predicted Center Lat(deg)</b> | -999.99    |
| <b>DP JobId</b>          | 3DIMG_12DEC20 | <b>Predicted Center Lon(deg)</b> | -999.99    |
| <b>ProductCode</b>       | NONE          |                                  |            |
| <b>Field View(deg)</b>   | 17.974        |                                  |            |

### 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>   | 0.0     |
| <b>Center Lon(deg)</b>   | 82.0    |
| <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> | 81.042  |
| <b>NW_Lon(deg)</b> | 0.843   |
| <b>SW_Lat(deg)</b> | -81.042 |
| <b>SW_Lon(deg)</b> | 0.843   |
| <b>NE_Lat(deg)</b> | 81.042  |
| <b>NE_Lon(deg)</b> | 163.157 |
| <b>SE_Lat(deg)</b> | -81.042 |
| <b>SE_Lon(deg)</b> | 163.157 |

### Band Wise Details

|             | Res_AL(Km) | Res_AX(Km) | Image Height | Image Width |
|-------------|------------|------------|--------------|-------------|
| <b>MIR</b>  | 4.0        | 4.0        | 2816         | 2805        |
| <b>SWIR</b> | 1.0        | 1.0        | 11264        | 11220       |
| <b>TIR1</b> | 4.0        | 4.0        | 2816         | 2805        |
| <b>TIR2</b> | 4.0        | 4.0        | 2816         | 2805        |
| <b>VIS</b>  | 1.0        | 1.0        | 11264        | 11220       |
| <b>WV</b>   | 8.0        | 8.0        | 1408         | 1402        |

## 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>                          | meters | <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 : 3DIMG12DEC20170600L1BSTD**

(-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

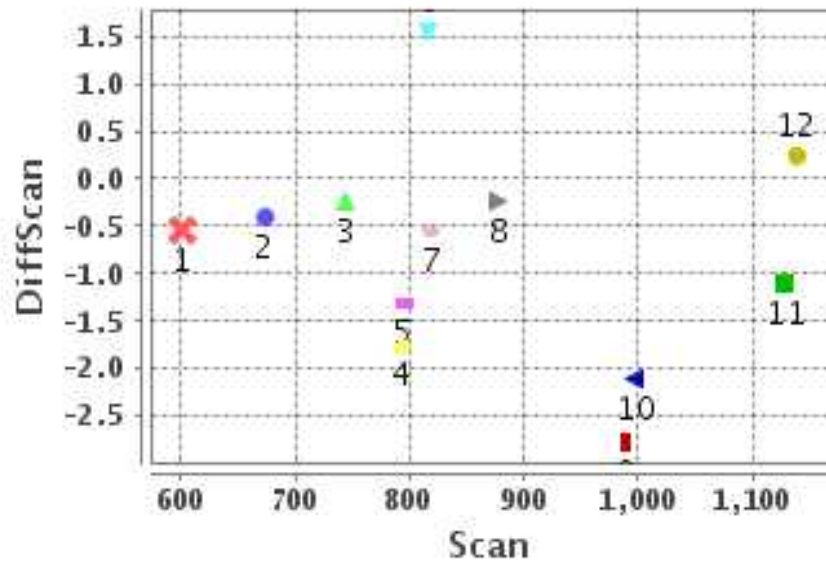
Image Width (pixels) : 2805      Image Height (pixels) : 2816      No of GCPs : 12

|                 | Mean   | StdDev | Min   | Max     | Coverage(in %) |
|-----------------|--------|--------|-------|---------|----------------|
| <b>GCP Scan</b> | 864.5  | 161.4  | 600.8 | 1138.50 | 19.10 (N-S)    |
| <b>GCP Pix</b>  | 1040.2 | 357.9  | 664.5 | 1755.00 | 38.88 (E-W)    |

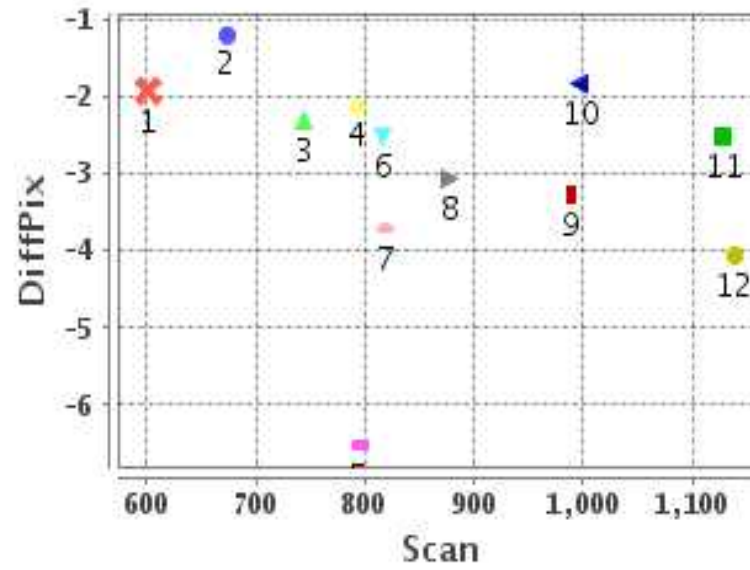
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan   | Pix    | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|--------|--------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 673.8  | 665.5  | -0.4            | -1.19           | 2.063       | S   | 3.300       | W   | Accepted |
| 2  | 792.8  | 699.8  | -1.8            | -2.12           | 5.633       | N   | 8.726       | W   | Accepted |
| 3  | 744.5  | 824.5  | -0.2            | -2.30           | 1.624       | S   | 9.009       | W   | Accepted |
| 4  | 795.2  | 844.5  | -1.3            | -6.53           | 6.914       | N   | 30.562      | W   | Rejected |
| 5  | 819.5  | 863.2  | -0.6            | -3.71           | 0.979       | N   | 17.195      | W   | Accepted |
| 6  | 878.0  | 826.0  | -0.2            | -3.06           | 1.045       | N   | 14.235      | W   | Accepted |
| 7  | 997.5  | 664.5  | -2.1            | -1.84           | 7.084       | N   | 8.604       | W   | Accepted |
| 8  | 816.2  | 1076.2 | 1.6             | -2.50           | 8.280       | S   | 9.146       | W   | Accepted |
| 9  | 1128.8 | 1345.5 | -1.1            | -2.51           | 1.529       | N   | 7.491       | W   | Accepted |
| 10 | 1138.5 | 1356.0 | 0.2             | -4.06           | 2.814       | S   | 15.664      | W   | Accepted |
| 11 | 988.2  | 1755.0 | -2.8            | -3.26           | 11.070      | N   | 13.147      | W   | Accepted |
| 12 | 600.8  | 1562.2 | -0.5            | -1.91           | 1.842       | S   | 8.092       | W   | Accepted |

### Error(Pixels) Vs. GCPScan



### Error(Pixels) Vs. GCPScan



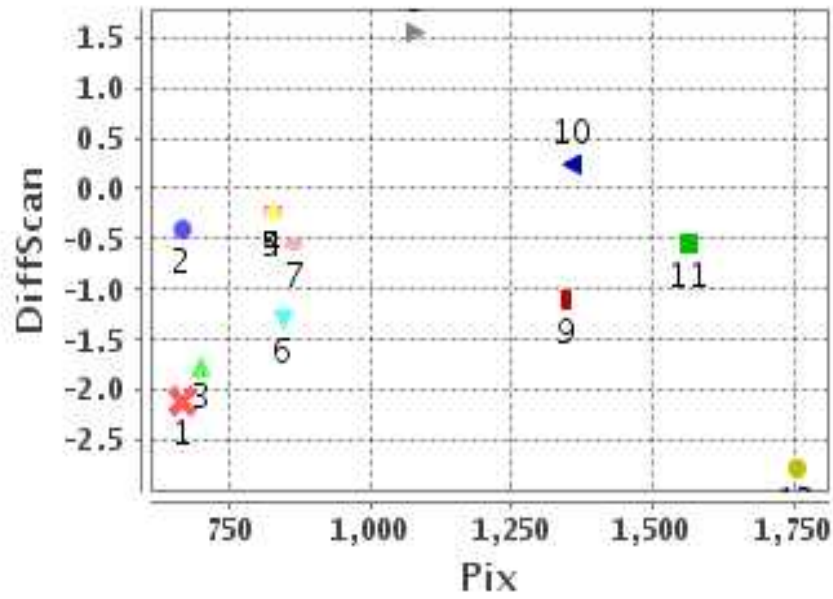
#### Number Of Points

|       |    |
|-------|----|
| North | 6  |
| South | 5  |
| East  | 0  |
| West  | 11 |

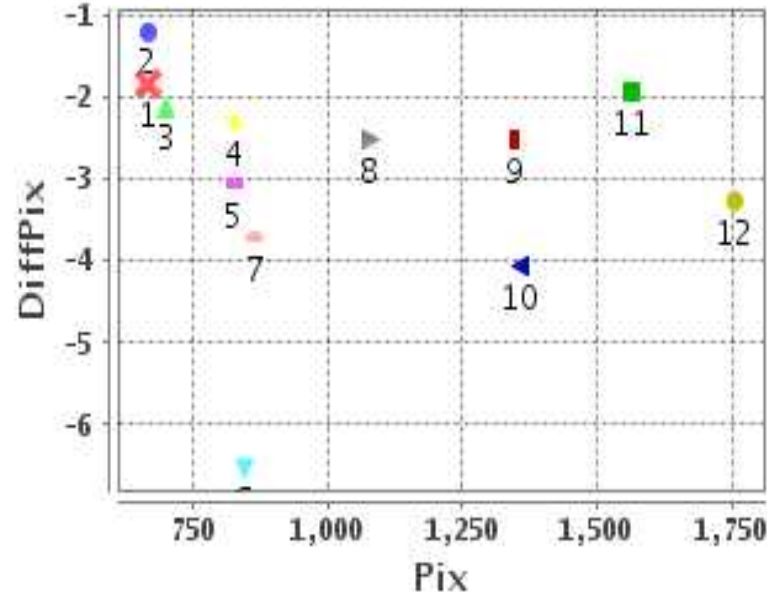
#### Radial Error ( Km )

|      |       |
|------|-------|
| Mean | 2.897 |
| Min  | .973  |
| Max  | 4.306 |
| CE90 | 3.979 |

### Error(Pixels) Vs. GCPPix



### Error(Pixels) Vs. GCPPix



#### Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | 0.244  | 1.273  | 1.296 | N   | 1.040    | 1.357    |
| Across ( Km ) | -2.605 | 0.982  | 2.784 | W   | 2.584    | 2.908    |

## Block-Wise Geo location Error Statistics

### Location Accuracy,Scale,ID

|  |        |       |
|--|--------|-------|
| <b>Scan Range-0-937; Pix Range-0-934</b> |        |       |
| Number of GCPs                           | 5      |       |
| <b>Location Error(Km)</b>                |        |       |
| Along(Mean,Dir)                          | 0.794  | N     |
| Across(Mean,Dir)                         | -10.49 | W     |
| <b>Scale(Km)</b>                         |        |       |
| Average Scale (Mean,%Variation)          | 5.43   | 35.82 |
| <b>Internal Distortion(Pixel)</b>        |        |       |
| Along(Mean,Stddev)                       | 0.29   | 0.62  |
| Across(Mean,Stddev)                      | 1.61   | 0.64  |

|   |       |       |
|---|-------|-------|
| <b>Scan Range-0-937; Pix Range-934-1869</b> |       |       |
| Number of GCPs                              | 2     |       |
| <b>Location Error(Km)</b>                   |       |       |
| Along(Mean,Dir)                             | -5.06 | S     |
| Across(Mean,Dir)                            | -8.62 | W     |
| <b>Scale(Km)</b>                            |       |       |
| Average Scale (Mean,%Variation)             | 4.53  | 13.18 |
| <b>Internal Distortion(Pixel)</b>           |       |       |
| Along(Mean,Stddev)                          | -2.09 | 0.00  |
| Across(Mean,Stddev)                         | -0.59 | 0.00  |

|  |         |          |
|--|---------|----------|
| <b>Scan Range-0-937; Pix Range-1869-2805</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-937-1876; Pix Range-0-934</b> |         |         |
| Number of GCPs                              | 1       |         |
| <b>Location Error(Km)</b>                   |         |         |
| Along(Mean,Dir)                             | 7.08    | N       |
| Across(Mean,Dir)                            | -8.61   | W       |
| <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-937-1876; Pix Range-934-1869</b> |        |      |
| Number of GCPs                                 | 3      |      |
| <b>Location Error(Km)</b>                      |        |      |
| Along(Mean,Dir)                                | 3.26   | N    |
| Across(Mean,Dir)                               | -12.10 | W    |
| <b>Scale(Km)</b>                               |        |      |
| Average Scale (Mean,%Variation)                | 4.03   | 0.67 |
| <b>Internal Distortion(Pixel)</b>              |        |      |
| Along(Mean,Stddev)                             | -2.34  | 0.68 |
| Across(Mean,Stddev)                            | 1.15   | 0.40 |

|   |         |          |
|---|---------|----------|
| <b>Scan Range-937-1876; Pix Range-1869-2805</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-1876-2816; Pix Range-0-934</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-1876-2816; Pix Range-937-1869</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-1876-2816; Pix Range-1869-2805</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