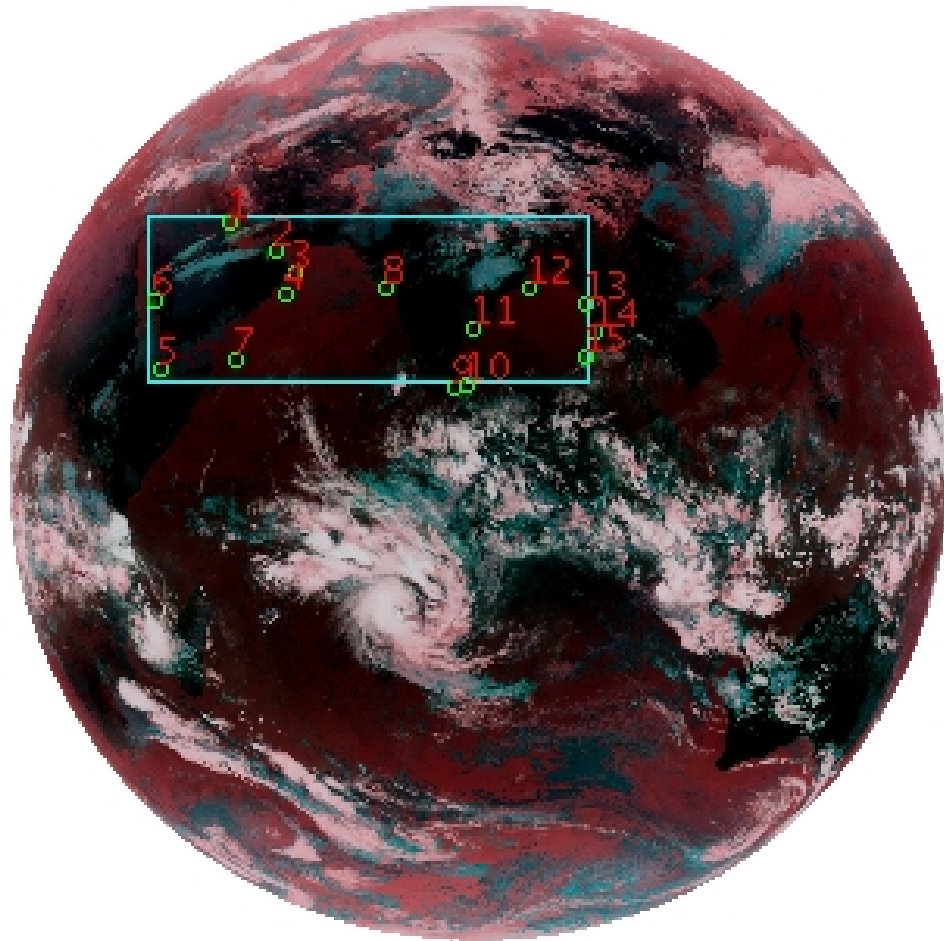


# DQE Report: Location Accuracy of INSAT-3D-IMG STANDARD(FULL DISK) Product 3DIMG\_03MAR2019\_0600

|               |                |                 |               |                 |          |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| Satellite     | INSAT-3D       | No Of Bands     | 6             | Product Type    | STANDARD |
| Sensor        | IMG            | LvlOfProcess    | L1B           | Selected Band   | 2-TIR1   |
| DOP/Time      | 03-03-19/06:00 | 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 3DIMG03MAR20190600L1BSTD

Image Width: 2805 Image Height: 2816 No Of GCPs: 15

GCP Coverage(%) 17.02 (N-S) 45.08 (E-W)

## Location Error(E)

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

## Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | -0.389 | S         | 1.469  | 1.519 |
| Across | -3.037 | W         | 1.133  | 3.241 |

## Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 4.563      | 0.488  | 14.084     |
| Along   | 7.699      | 31.901 | 92.477     |
| Across  | 5.577      | 10.202 | 39.436     |

## Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean   | Stddev | RMS   |
|--------|------------|--------|--------|-------|
| Along  | 4.322      | 2.464  | 1.23   | 2.755 |
| Across | 2.818      | -0.276 | 0.76   | 0.804 |

## Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw     |
|----------|----------|---------|
| -0.01668 | -0.00225 | 0.09913 |

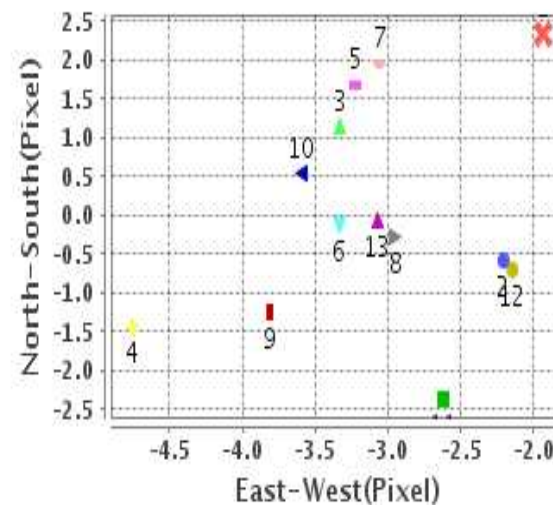
## Reference Used

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

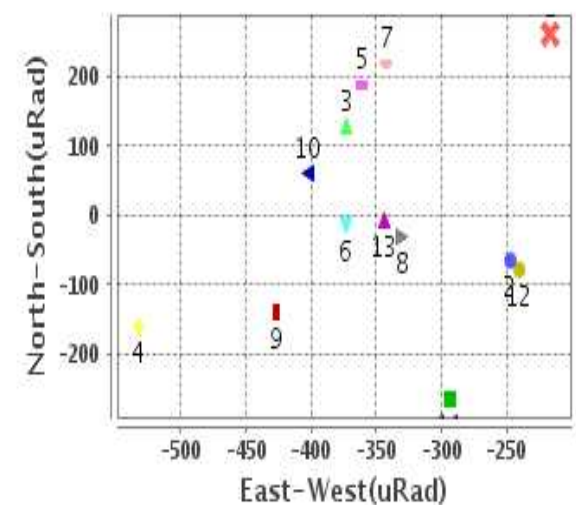
## Radial Error (in IR Pixels)

|      |       |
|------|-------|
| Mean | 3.428 |
| Min  | 1.570 |
| Max  | 5.785 |
| CE90 | 4.210 |

## Location Error For GCPs(Pixel)



## Location Error For GCPs(uRad)



## Detailed Product Information

### Ancillary Info

|                          |                |                                  |            |
|--------------------------|----------------|----------------------------------|------------|
| <b>Satellite</b>         | INSAT-3D       | <b>Generation Date</b>           | 03-03-19   |
| <b>Sensor</b>            | IMG            | <b>DQE Date</b>                  | 04-03-2019 |
| <b>PassType</b>          | NONE           | <b>Aquisition Date</b>           | 03-03-19   |
| <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_03MAR2   | <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>                          | 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 : 3DIMG03MAR20190600L1BSTD**

(-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 : 15

|                 | Mean   | StdDev | Min   | Max     | Coverage(in %) |
|-----------------|--------|--------|-------|---------|----------------|
| <b>GCP Scan</b> | 939.9  | 137.5  | 671.0 | 1150.25 | 17.02 (N-S)    |
| <b>GCP Pix</b>  | 1106.3 | 436.3  | 457.8 | 1722.25 | 45.08 (E-W)    |

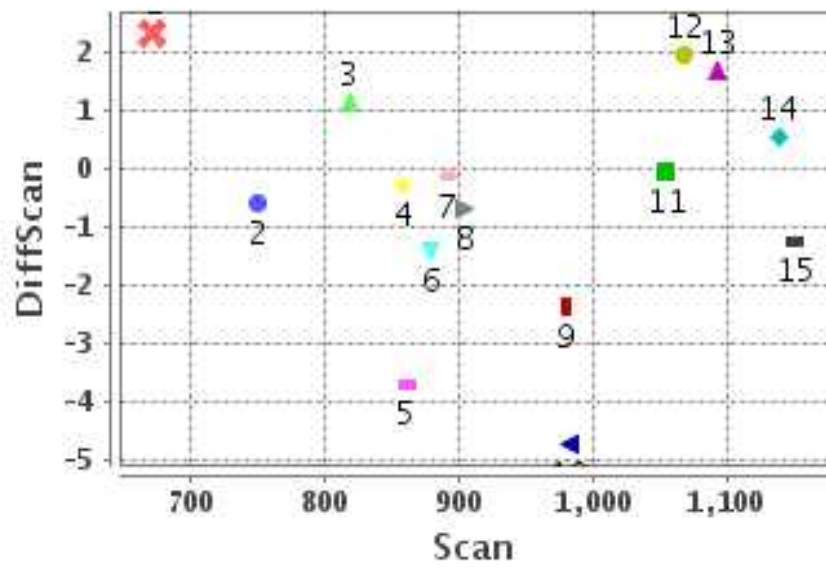
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan   | Pix    | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|--------|--------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 671.0  | 666.2  | 2.3             | -1.94           | 13.008      | S   | 5.430       | W   | Accepted |
| 2  | 749.8  | 802.5  | -0.6            | -2.21           | 1.035       | S   | 8.938       | W   | Accepted |
| 3  | 818.0  | 863.2  | 1.2             | -3.33           | 4.800       | S   | 14.134      | W   | Accepted |
| 4  | 879.2  | 828.2  | -1.4            | -4.76           | 6.447       | N   | 22.222      | W   | Accepted |
| 5  | 1093.2 | 475.0  | 1.7             | -3.22           | 8.053       | S   | 16.794      | W   | Accepted |
| 6  | 891.5  | 457.8  | -0.1            | -3.33           | 1.305       | S   | 16.788      | W   | Accepted |
| 7  | 1068.2 | 686.5  | 2.0             | -3.06           | 8.840       | S   | 11.616      | W   | Accepted |
| 8  | 858.2  | 1120.2 | -0.3            | -2.95           | 0.108       | N   | 12.038      | W   | Accepted |
| 9  | 1150.2 | 1319.5 | -1.2            | -3.81           | 3.711       | N   | 13.409      | W   | Accepted |
| 10 | 1138.5 | 1356.5 | 0.5             | -3.59           | 3.933       | S   | 12.115      | W   | Accepted |
| 11 | 980.5  | 1369.8 | -2.4            | -2.62           | 8.194       | N   | 7.514       | W   | Accepted |
| 12 | 860.5  | 1530.5 | -3.7            | -0.34           | 14.482      | N   | 1.322       | E   | Rejected |
| 13 | 904.2  | 1698.8 | -0.7            | -2.15           | 2.009       | N   | 5.952       | W   | Accepted |

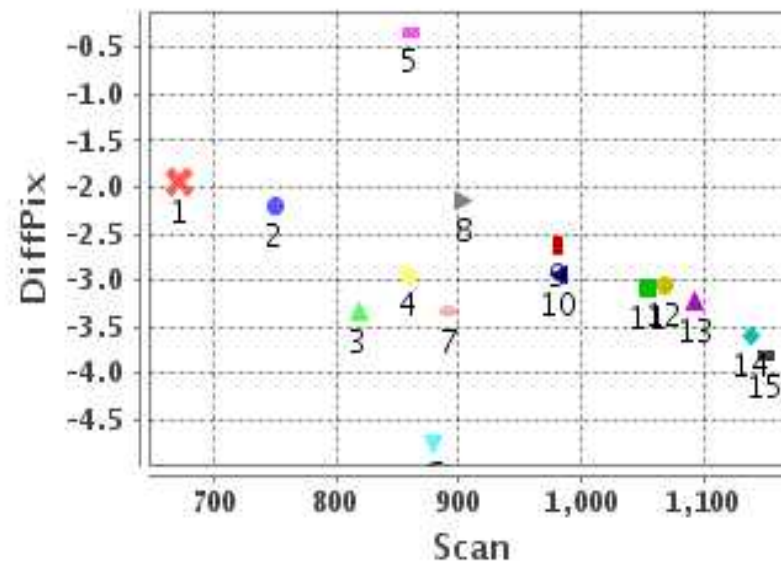
**Identified Control Point details : ( Differences are Reference - Product )**

| No | Scan   | Pix    | DiffScan<br>(line) | DiffPix<br>(pixel) | DifLat<br>(Km) | Dir | DifLon<br>(Km) | Dir | Status   |
|----|--------|--------|--------------------|--------------------|----------------|-----|----------------|-----|----------|
| 14 | 981.8  | 1722.2 | -4.7               | -2.94              | 16.406         | N   | 9.697          | W   | Rejected |
| 15 | 1054.0 | 1697.2 | -0.1               | -3.07              | 0.292          | N   | 10.952         | W   | Accepted |

### Error(Pixels) Vs. GCPScan



### Error(Pixels) Vs. GCPScan



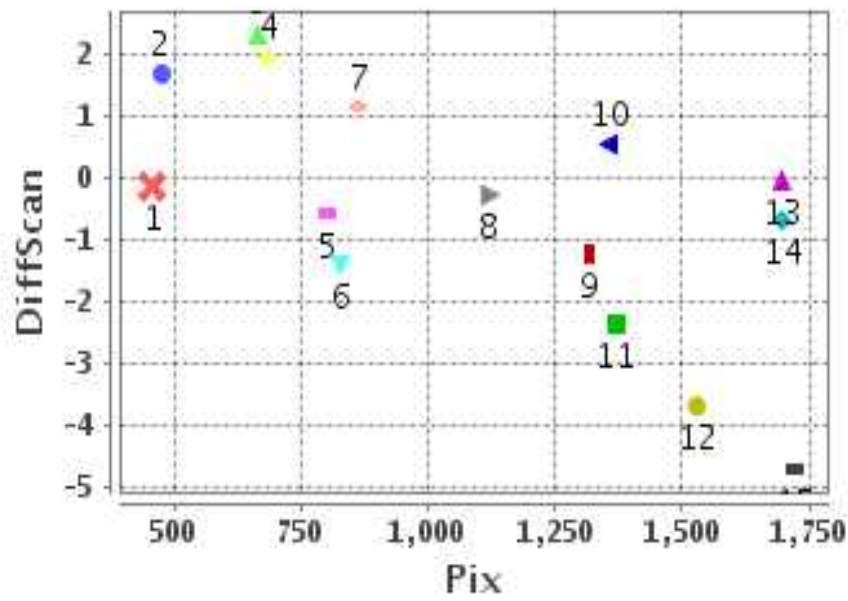
#### Number Of Points

|       |    |
|-------|----|
| North | 6  |
| South | 7  |
| East  | 0  |
| West  | 13 |

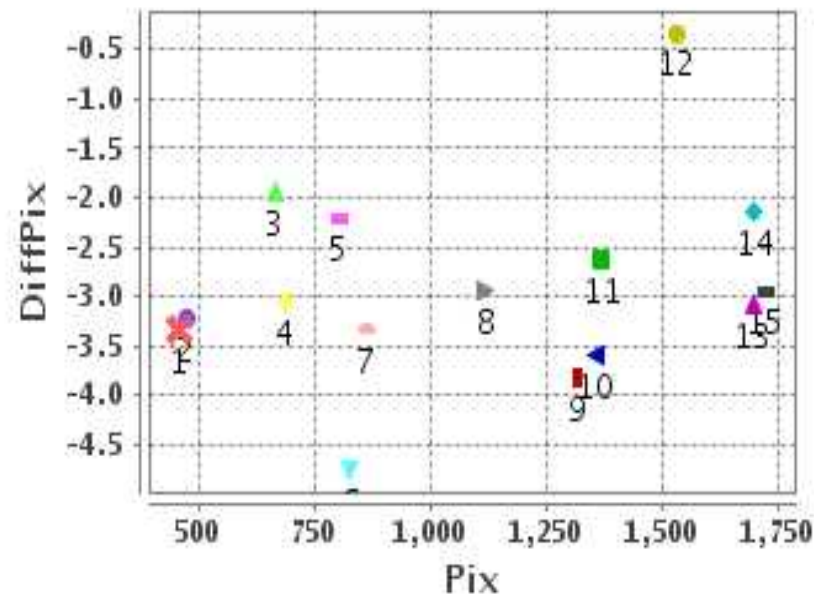
#### Radial Error ( Km )

|      |       |
|------|-------|
| Mean | 3.428 |
| Min  | 1.570 |
| Max  | 5.785 |
| CE90 | 4.210 |

### Error(Pixels) Vs. GCPPix



### Error(Pixels) Vs. GCPPix



#### Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | -0.389 | 1.469  | 1.519 | S   | 1.273    | 1.581    |
| Across ( Km ) | -3.037 | 1.133  | 3.241 | W   | 2.968    | 3.351    |

## 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)                          | -2.74  | S     |
| Across(Mean,Dir)                         | -13.50 | W     |
| <b>Scale(Km)</b>                         |        |       |
| Average Scale (Mean,%Variation)          | 5.32   | 33.02 |
| <b>Internal Distortion(Pixel)</b>        |        |       |
| Along(Mean,Stddev)                       | 2.59   | 0.93  |
| Across(Mean,Stddev)                      | -0.28  | 1.11  |

|   |       |      |
|---|-------|------|
| <b>Scan Range-0-937; Pix Range-934-1869</b> |       |      |
| Number of GCPs                              | 2     |      |
| <b>Location Error(Km)</b>                   |       |      |
| Along(Mean,Dir)                             | 1.06  | N    |
| Across(Mean,Dir)                            | -9.00 | W    |
| <b>Scale(Km)</b>                            |       |      |
| Average Scale (Mean,%Variation)             | 4.17  | 4.13 |
| <b>Internal Distortion(Pixel)</b>           |       |      |
| Along(Mean,Stddev)                          | 0.42  | 0.00 |
| Across(Mean,Stddev)                         | -0.80 | 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                              | 2      |       |
| <b>Location Error(Km)</b>                   |        |       |
| Along(Mean,Dir)                             | -8.445 | S     |
| Across(Mean,Dir)                            | -14.21 | W     |
| <b>Scale(Km)</b>                            |        |       |
| Average Scale (Mean,%Variation)             | 5.15   | 28.81 |
| <b>Internal Distortion(Pixel)</b>           |        |       |
| Along(Mean,Stddev)                          | 0.28   | 0.00  |
| Across(Mean,Stddev)                         | -0.16  | 0.00  |

|  |        |      |
|--|--------|------|
| <b>Scan Range-937-1876; Pix Range-934-1869</b> |        |      |
| Number of GCPs                                 | 4      |      |
| <b>Location Error(Km)</b>                      |        |      |
| Along(Mean,Dir)                                | 2.065  | N    |
| Across(Mean,Dir)                               | -11.00 | W    |
| <b>Scale(Km)</b>                               |        |      |
| Average Scale (Mean,%Variation)                | 4.02   | 0.50 |
| <b>Internal Distortion(Pixel)</b>              |        |      |
| Along(Mean,Stddev)                             | -2.11  | 0.74 |
| Across(Mean,Stddev)                            | -0.72  | 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