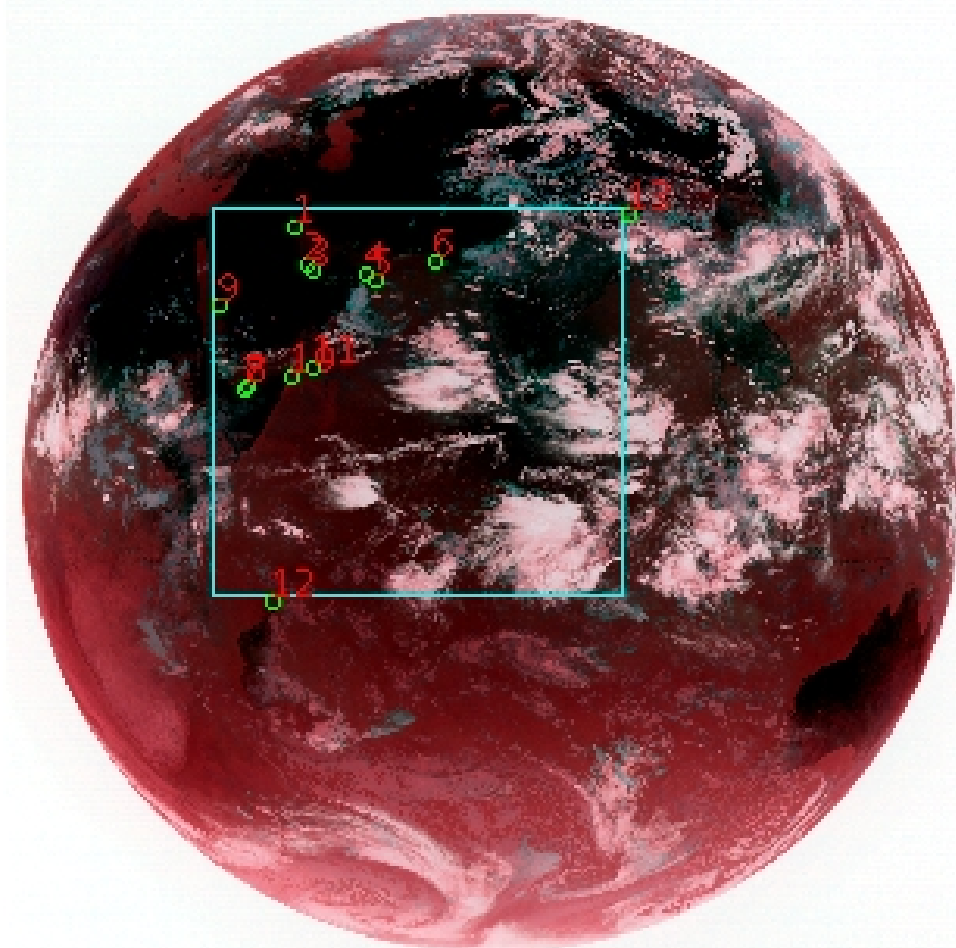


# DQE Report: Location Accuracy of INSAT-3DR-IMG STANDARD (FULL DISK) Product 3RIMG\_24JUN2020\_0615

|               |                |                 |               |                 |          |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| Satellite     | INSAT-3DR      | No Of Bands     | 6             | Product Type    | STANDARD |
| Sensor        | IMG            | LvlOfProcess    | L1B           | Selected Band   | 2-TIR1   |
| DOP/Time      | 24-06-20/06:15 | Station ID      | BES           | Field View(deg) | 18.006   |
| Res(Y,X) [Km] | (4.0,4.0)      | Res(Y,X) [uRad] | (112.0,112.0) |                 |          |

(81.085N,-6.997W)

(81.085N,155.219E)



(-80.817S,-6.997W)

(-80.817S,155.219E)

GCP Distribution overview for 3RIMG24JUN20200615L1BDQE

Image Width: 2805 Image Height: 2816 No Of GCPs: 13

GCP Coverage(%) 39.72 (N-S) 42.00 (E-W)

Location Error(E)

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

## Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | 1.346  | N         | 0.821  | 1.577 |
| Across | -3.725 | W         | 1.029  | 3.864 |

## Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 4.486      | 0.407  | 12.146     |
| Along   | 4.563      | 0.755  | 14.064     |
| Across  | 4.764      | 1.621  | 19.108     |

## Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean  | Stddev | RMS   |
|--------|------------|-------|--------|-------|
| Along  | 1.709      | 1.107 | 0.50   | 1.216 |
| Across | 3.663      | 1.292 | 1.01   | 1.642 |

## Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw      |
|----------|----------|----------|
| -0.03027 | -0.00513 | -0.05865 |

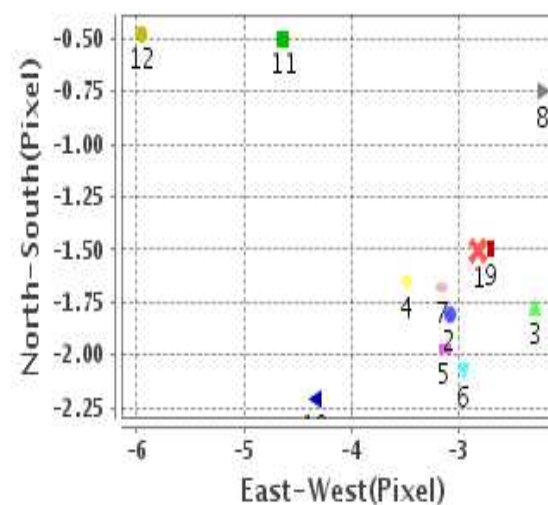
## Reference Used

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

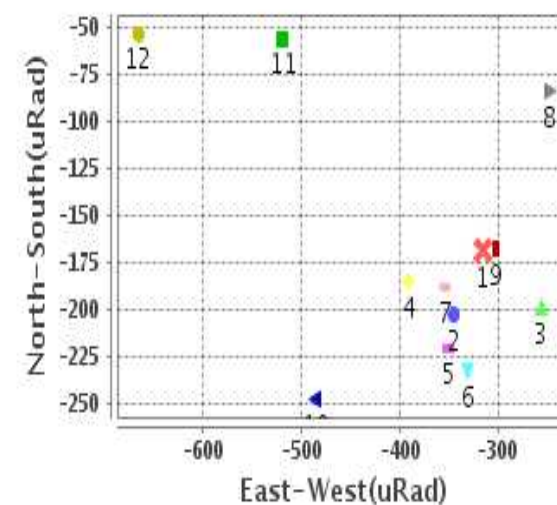
## Radial Error (in IR Pixels)

|      |       |
|------|-------|
| Mean | 4.064 |
| Min  | 2.362 |
| Max  | 6.326 |
| CE90 | 4.657 |

## Location Error For GCPs(Pixel)



## Location Error For GCPs(uRad)



Detailed Product Information

Ancillary Info

|                   |               |                           |            |
|-------------------|---------------|---------------------------|------------|
| Satellite         | INSAT-3DR     | Generation Date           | 24-06-20   |
| Sensor            | IMG           | DQE Date                  | 25-06-2020 |
| PassType          | NONE          | Aquisition Date           | 24-06-20   |
| Imaging Mode      | FULL_FRAME    | Aquisition Time(GMT)      | 06:15      |
| 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          | 3RIMG_24JUN20 | Predicted Center Lon(deg) | -999.99    |
| ProductCode       | NONE          |                           |            |
| Field View(deg)   | 18.006        |                           |            |

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)   | 0.134   |
| Center Lon(deg)   | 74.111  |
| 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) | 81.085  |
| NW_Lon(deg) | -6.997  |
| SW_Lat(deg) | -80.817 |
| SW_Lon(deg) | -6.997  |
| NE_Lat(deg) | 81.085  |
| NE_Lon(deg) | 155.219 |
| SE_Lat(deg) | -80.817 |
| SE_Lon(deg) | 155.219 |

Band Wise Details

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

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 : 3RIMG24JUN20200615L1BDQE**

(-999.99 - Not Available/Not Computed)

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

## Location Accuracy

### GCP Distribution Statistics

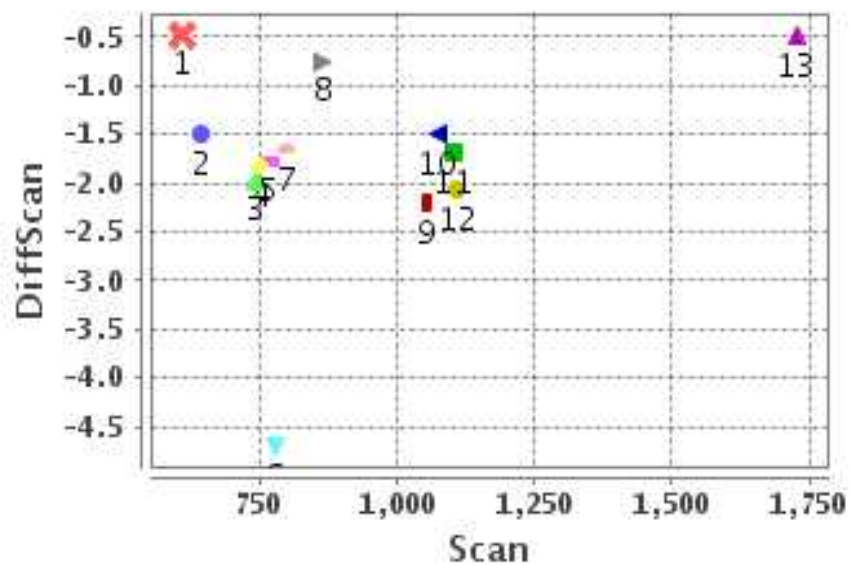
Image Width (pixels) : 2805      Image Height (pixels) : 2816      No of GCPs : 13

|          | Mean  | StdDev | Min   | Max     | Coverage(in %) |
|----------|-------|--------|-------|---------|----------------|
| GCP Scan | 924.1 | 284.9  | 607.8 | 1726.25 | 39.72 (N-S)    |
| GCP Pix  | 929.7 | 295.3  | 605.8 | 1783.75 | 42.00 (E-W)    |

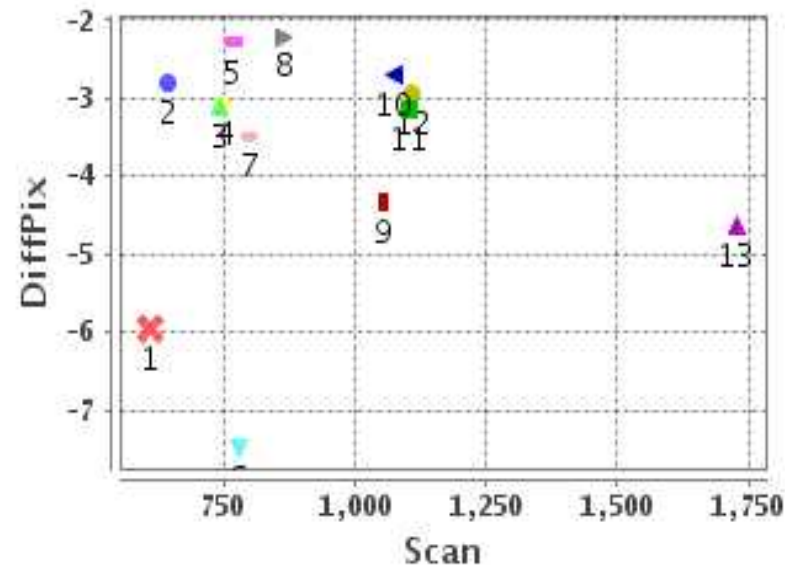
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan   | Pix    | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|--------|--------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 642.5  | 825.5  | -1.5            | -2.82           | 6.306       | N   | 13.945      | W   | Accepted |
| 2  | 750.8  | 858.5  | -1.8            | -3.08           | 5.720       | N   | 14.557      | W   | Accepted |
| 3  | 768.2  | 875.2  | -1.8            | -2.29           | 7.225       | N   | 11.921      | W   | Accepted |
| 4  | 776.5  | 1034.0 | -4.7            | -7.49           | 21.683      | N   | 36.951      | W   | Rejected |
| 5  | 799.0  | 1055.2 | -1.7            | -3.49           | 7.568       | N   | 14.134      | W   | Accepted |
| 6  | 742.2  | 1226.8 | -2.0            | -3.13           | 8.446       | N   | 11.569      | W   | Accepted |
| 7  | 1108.0 | 677.2  | -2.1            | -2.95           | 8.934       | N   | 14.584      | W   | Accepted |
| 8  | 1102.0 | 689.0  | -1.7            | -3.16           | 7.235       | N   | 16.549      | W   | Accepted |
| 9  | 864.2  | 605.8  | -0.7            | -2.21           | 2.504       | N   | 9.112       | W   | Accepted |
| 10 | 1074.2 | 817.5  | -1.5            | -2.70           | 5.644       | N   | 10.797      | W   | Accepted |
| 11 | 1051.5 | 878.5  | -2.2            | -4.34           | 7.023       | N   | 17.783      | W   | Accepted |
| 12 | 1726.2 | 759.5  | -0.5            | -4.64           | 0.164       | N   | 18.626      | W   | Accepted |
| 13 | 607.8  | 1783.8 | -0.5            | -5.95           | 2.139       | S   | 25.214      | W   | Accepted |

Error(Pixels) Vs. GCPScan



Error(Pixels) Vs. GCPScan



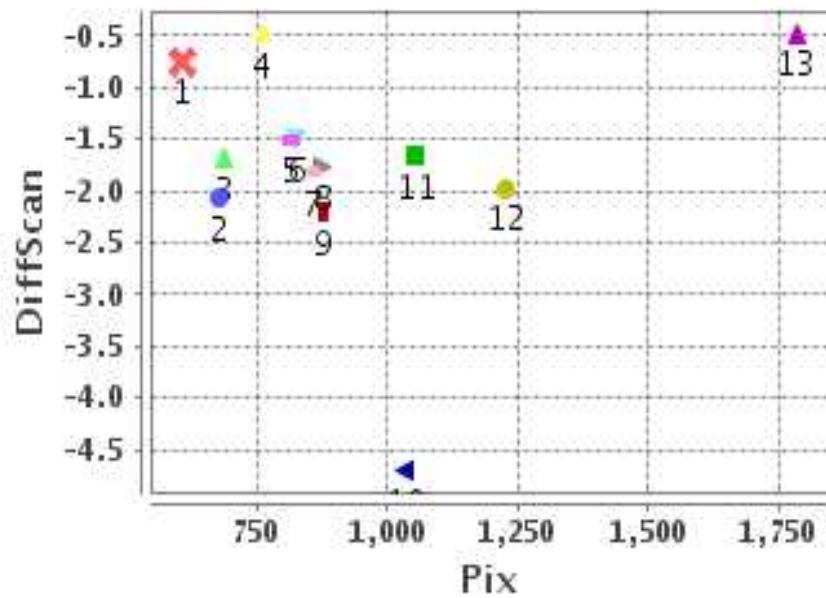
Number Of Points

|       |    |
|-------|----|
| North | 11 |
| South | 1  |
| East  | 0  |
| West  | 12 |

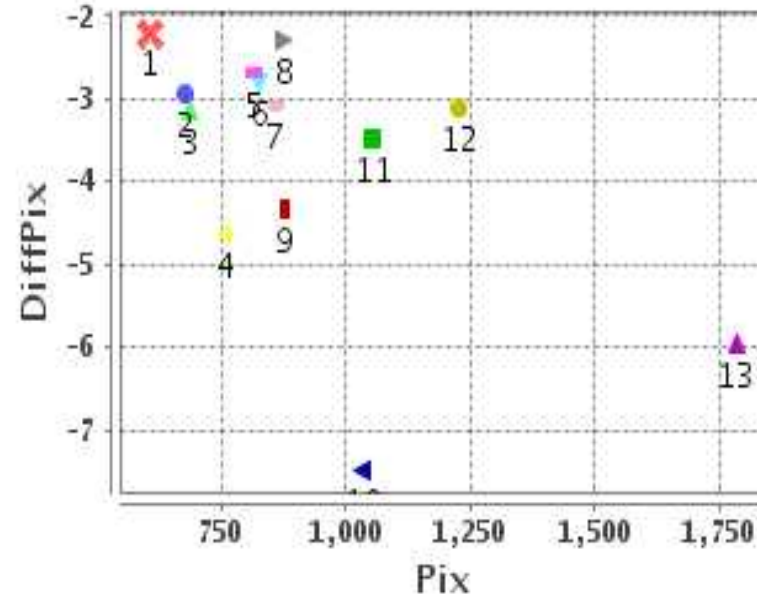
Radial Error ( Km)

|      |       |
|------|-------|
| Mean | 4.064 |
| Min  | 2.362 |
| Max  | 6.326 |
| CE90 | 4.657 |

Error(Pixels) Vs. GCPPix



Error(Pixels) Vs. GCPPix



Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | 1.346  | 0.821  | 1.577 | N   | 1.503    | 1.647    |
| Across ( Km ) | -3.725 | 1.029  | 3.864 | W   | 3.561    | 3.977    |

Block-Wise Geo location Error Statistics

Location Accuracy,Scale,ID

|                                   |        |       |  |
|-----------------------------------|--------|-------|--|
| Scan Range-0-937; Pix Range-0-934 |        |       |  |
| Number of GCPs                    | 4      |       |  |
| Location Error(Km)                |        |       |  |
| Along(Mean,Dir)                   | 5.44   | N     |  |
| Across(Mean,Dir)                  | -12.38 | W     |  |
| Scale(Km)                         |        |       |  |
| Average Scale (Mean,%Variation)   | 5.15   | 28.86 |  |
| Internal Distortion(Pixel)        |        |       |  |
| Along(Mean,Stddev)                | -0.06  | 0.49  |  |
| Across(Mean,Stddev)               | 0.52   | 0.33  |  |

|                                      |         |       |  |
|--------------------------------------|---------|-------|--|
| Scan Range-0-937; Pix Range-934-1869 |         |       |  |
| Number of GCPs                       | 3       |       |  |
| Location Error(Km)                   |         |       |  |
| Along(Mean,Dir)                      | 4.62667 | N     |  |
| Across(Mean,Dir)                     | -16.97  | W     |  |
| Scale(Km)                            |         |       |  |
| Average Scale (Mean,%Variation)      | 4.47    | 11.85 |  |
| Internal Distortion(Pixel)           |         |       |  |
| Along(Mean,Stddev)                   | 1.33    | 0.16  |  |
| Across(Mean,Stddev)                  | 1.05    | 1.41  |  |

|                                       |         |          |  |
|---------------------------------------|---------|----------|--|
| Scan Range-0-937; Pix Range-1869-2805 |         |          |  |
| 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-937-1876; Pix Range-0-934 |        |      |  |
| Number of GCPs                       | 5      |      |  |
| Location Error(Km)                   |        |      |  |
| Along(Mean,Dir)                      | 5.8    | N    |  |
| Across(Mean,Dir)                     | -15.67 | W    |  |
| Scale(Km)                            |        |      |  |
| Average Scale (Mean,%Variation)      | 4.21   | 5.33 |  |
| Internal Distortion(Pixel)           |        |      |  |
| Along(Mean,Stddev)                   | -0.77  | 0.58 |  |
| Across(Mean,Stddev)                  | 0.75   | 0.80 |  |

|                                         |         |          |  |
|-----------------------------------------|---------|----------|--|
| Scan Range-937-1876; Pix Range-934-1869 |         |          |  |
| 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-937-1876; Pix Range-1869-2805 |         |          |  |
| 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-1876-2816; Pix Range-0-934 |         |          |  |
| 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-1876-2816; Pix Range-937-1869 |         |          |  |
| 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-1876-2816; Pix Range-1869-2805 |         |          |  |
| 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