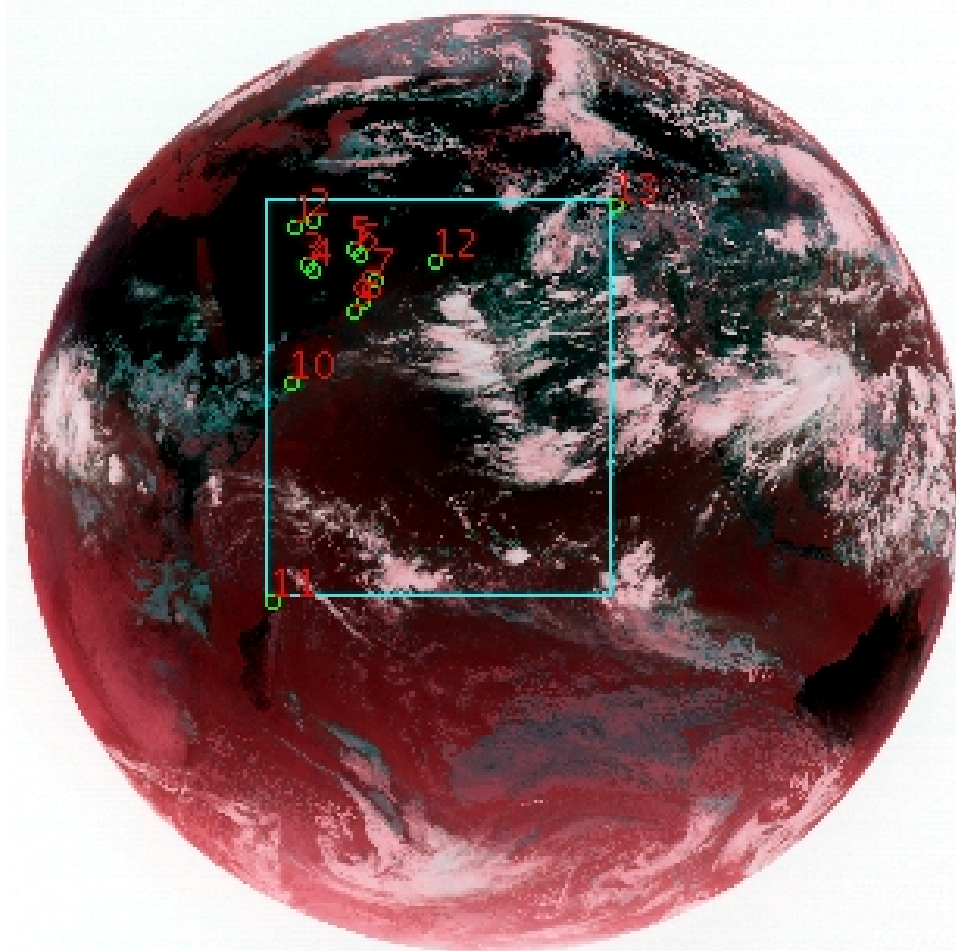


# DQE Report: Location Accuracy of INSAT-3DR-IMG STANDARD (FULL DISK) Product 3RIMG\_29JUN2020\_0615

|               |                |                 |               |                 |          |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| Satellite     | INSAT-3DR      | No Of Bands     | 6             | Product Type    | STANDARD |
| Sensor        | IMG            | LvlOfProcess    | L1B           | Selected Band   | 2-TIR1   |
| DOP/Time      | 29-06-20/06:15 | Station ID      | BES           | Field View(deg) | 17.99    |
| Res(Y,X) [Km] | (4.0,4.0)      | Res(Y,X) [uRad] | (112.0,112.0) |                 |          |

(80.814N,-7.151W)

(80.814N,155.217E)



(-81.02S,-7.151W)

(-81.02S,155.217E)

GCP Distribution overview for 3RIMG29JUN20200615L1BDQE

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

GCP Coverage(%) 40.57 (N-S) 35.25 (E-W)

Location Error(E)

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

## Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | 1.866  | N         | 1.100  | 2.166 |
| Across | -5.675 | W         | 1.191  | 5.799 |

## Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 4.745      | 0.537  | 18.624     |
| Along   | 4.783      | 0.558  | 19.571     |
| Across  | 5.158      | 2.868  | 28.959     |

## Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean  | Stddev | RMS   |
|--------|------------|-------|--------|-------|
| Along  | 2.905      | 1.002 | 0.83   | 1.299 |
| Across | 3.962      | 0.600 | 1.14   | 1.286 |

## Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw      |
|----------|----------|----------|
| -0.04107 | -0.00994 | -0.03751 |

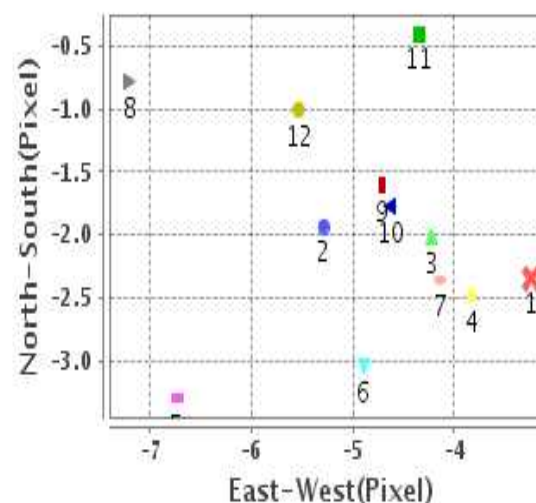
## Reference Used

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

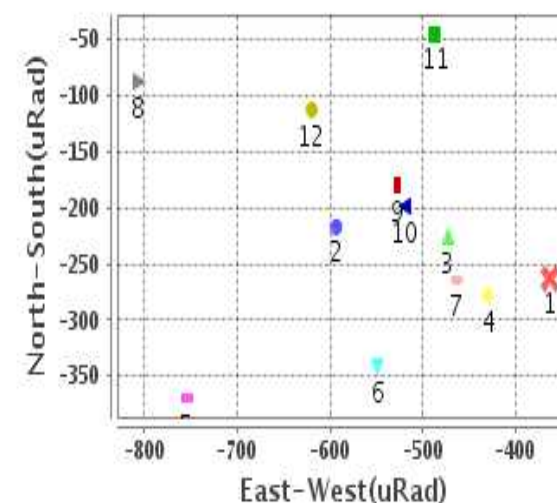
## Radial Error (in IR Pixels)

|      |       |
|------|-------|
| Mean | 6.072 |
| Min  | 4.714 |
| Max  | 8.389 |
| CE90 | 7.233 |

## Location Error For GCPs(Pixel)



## Location Error For GCPs(uRad)



Detailed Product Information

Ancillary Info

|                   |               |                           |            |
|-------------------|---------------|---------------------------|------------|
| Satellite         | INSAT-3DR     | Generation Date           | 29-06-20   |
| Sensor            | IMG           | DQE Date                  | 02-07-2020 |
| PassType          | NONE          | Aquisition Date           | 29-06-20   |
| 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_29JUN20 | Predicted Center Lon(deg) | -999.99    |
| ProductCode       | NONE          |                           |            |
| Field View(deg)   | 17.99         |                           |            |

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)   | -0.103  |
| Center Lon(deg)   | 74.033  |
| 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) | 80.814  |
| NW_Lon(deg) | -7.151  |
| SW_Lat(deg) | -81.02  |
| SW_Lon(deg) | -7.151  |
| NE_Lat(deg) | 80.814  |
| NE_Lon(deg) | 155.217 |
| SE_Lat(deg) | -81.02  |
| SE_Lon(deg) | 155.217 |

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 : 3RIMG29JUN20200615L1BDQE**

(-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

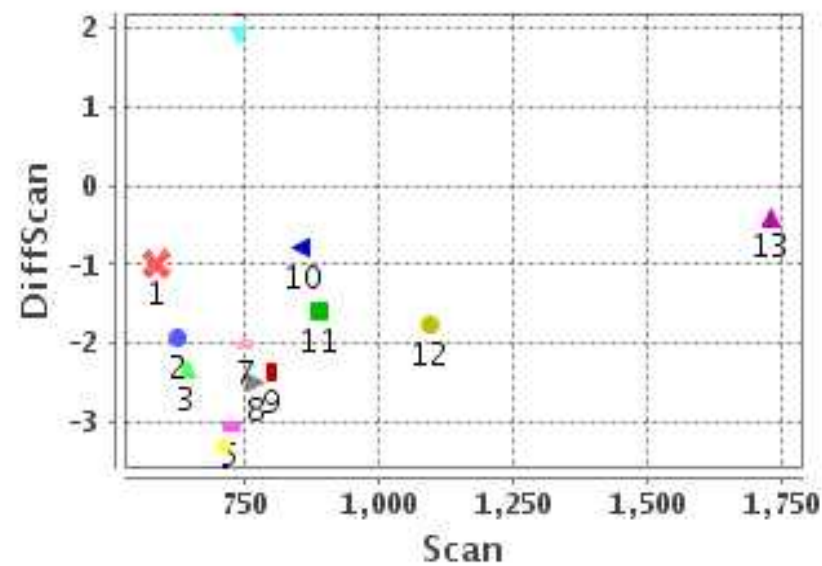
Image Width (pixels) : 2805      Image Height (pixels) : 2816      No of GCPs : 13

|                 | Mean   | StdDev | Min   | Max     | Coverage(in %) |
|-----------------|--------|--------|-------|---------|----------------|
| <b>GCP Scan</b> | 839.0  | 285.3  | 584.2 | 1726.75 | 40.57 (N-S)    |
| <b>GCP Pix</b>  | 1005.6 | 246.9  | 762.2 | 1751.00 | 35.25 (E-W)    |

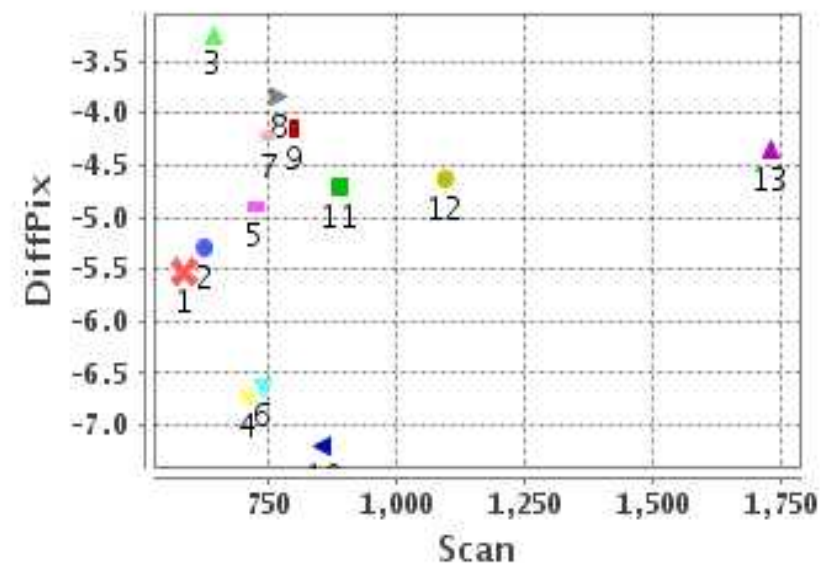
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan   | Pix    | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|--------|--------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 642.8  | 825.5  | -2.3            | -3.24           | 8.740       | N   | 17.139      | W   | Accepted |
| 2  | 626.5  | 874.2  | -1.9            | -5.29           | 9.771       | N   | 29.132      | W   | Accepted |
| 3  | 750.5  | 859.2  | -2.0            | -4.22           | 8.537       | N   | 21.168      | W   | Accepted |
| 4  | 768.5  | 876.5  | -2.5            | -3.83           | 9.784       | N   | 18.088      | W   | Accepted |
| 5  | 710.5  | 992.8  | -3.3            | -6.73           | 14.914      | N   | 30.059      | W   | Accepted |
| 6  | 723.8  | 1010.0 | -3.0            | -4.89           | 11.554      | N   | 24.139      | W   | Accepted |
| 7  | 799.2  | 1055.2 | -2.4            | -4.14           | 10.815      | N   | 17.638      | W   | Accepted |
| 8  | 856.2  | 1023.8 | -0.8            | -7.20           | 2.407       | N   | 28.833      | W   | Accepted |
| 9  | 887.2  | 998.0  | -1.6            | -4.71           | 6.067       | N   | 21.845      | W   | Accepted |
| 10 | 1092.5 | 814.8  | -1.8            | -4.64           | 5.492       | N   | 18.292      | W   | Accepted |
| 11 | 1726.8 | 762.2  | -0.4            | -4.35           | 1.868       | S   | 18.762      | W   | Accepted |
| 12 | 738.0  | 1230.2 | 1.9             | -6.63           | 9.496       | S   | 27.763      | W   | Rejected |
| 13 | 584.2  | 1751.0 | -1.0            | -5.53           | 3.358       | N   | 27.308      | W   | Accepted |

Error(Pixels) Vs. GCPScan



Error(Pixels) Vs. GCPScan



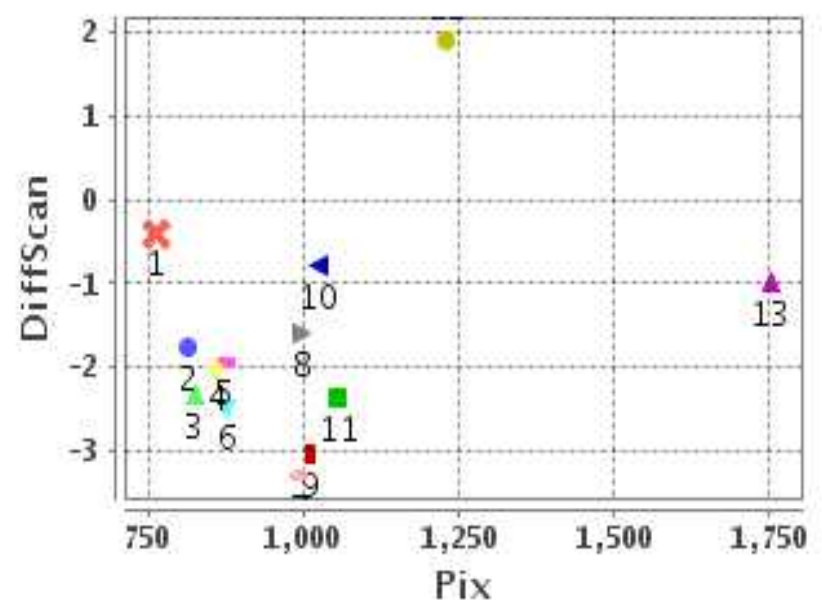
Number Of Points

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

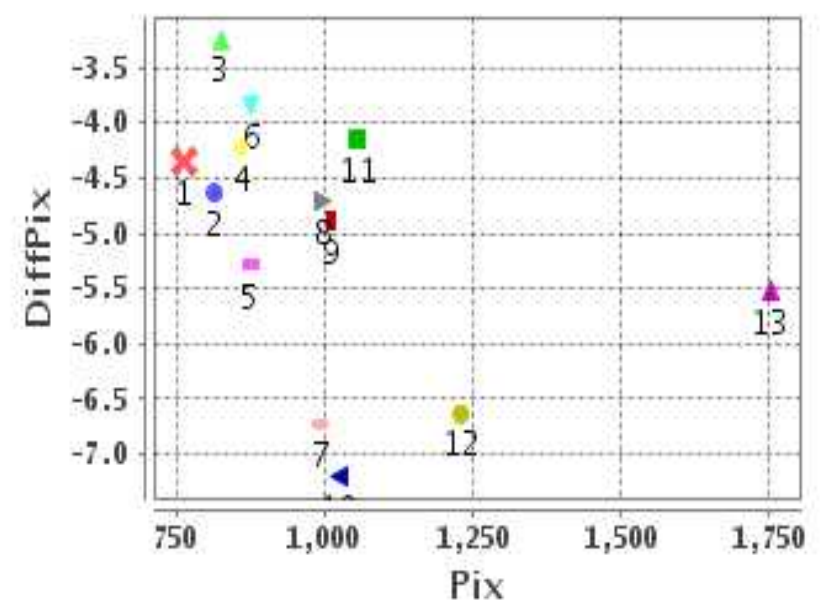
Radial Error ( Km )

|      |       |
|------|-------|
| Mean | 6.072 |
| Min  | 4.714 |
| Max  | 8.389 |
| CE90 | 7.233 |

Error(Pixels) Vs. GCPPix



Error(Pixels) Vs. GCPPix



Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | 1.866  | 1.100  | 2.166 | N   | 1.963    | 2.258    |
| Across ( Km ) | -5.675 | 1.191  | 5.799 | W   | 5.617    | 5.917    |

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)                   | 9.205  | N     |  |
| Across(Mean,Dir)                  | -21.38 | W     |  |
| Scale(Km)                         |        |       |  |
| Average Scale (Mean,%Variation)   | 5.38   | 34.62 |  |
| Internal Distortion(Pixel)        |        |       |  |
| Along(Mean,Stddev)                | 0.35   | 0.20  |  |
| Across(Mean,Stddev)               | 1.21   | 0.62  |  |

|                                      |        |       |  |
|--------------------------------------|--------|-------|--|
| Scan Range-0-937; Pix Range-934-1869 |        |       |  |
| Number of GCPs                       | 6      |       |  |
| Location Error(Km)                   |        |       |  |
| Along(Mean,Dir)                      | 8.185  | N     |  |
| Across(Mean,Dir)                     | -24.97 | W     |  |
| Scale(Km)                            |        |       |  |
| Average Scale (Mean,%Variation)      | 4.76   | 19.06 |  |
| Internal Distortion(Pixel)           |        |       |  |
| Along(Mean,Stddev)                   | 1.22   | 0.93  |  |
| Across(Mean,Stddev)                  | -1.44  | 1.05  |  |

|                                       |         |          |  |
|---------------------------------------|---------|----------|--|
| 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                       | 2      |      |  |
| Location Error(Km)                   |        |      |  |
| Along(Mean,Dir)                      | 1.81   | N    |  |
| Across(Mean,Dir)                     | -18.52 | W    |  |
| Scale(Km)                            |        |      |  |
| Average Scale (Mean,%Variation)      | 3.97   | 0.84 |  |
| Internal Distortion(Pixel)           |        |      |  |
| Along(Mean,Stddev)                   | -1.37  | 0.00 |  |
| Across(Mean,Stddev)                  | 0.29   | 0.00 |  |

|                                         |         |          |  |
|-----------------------------------------|---------|----------|--|
| 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