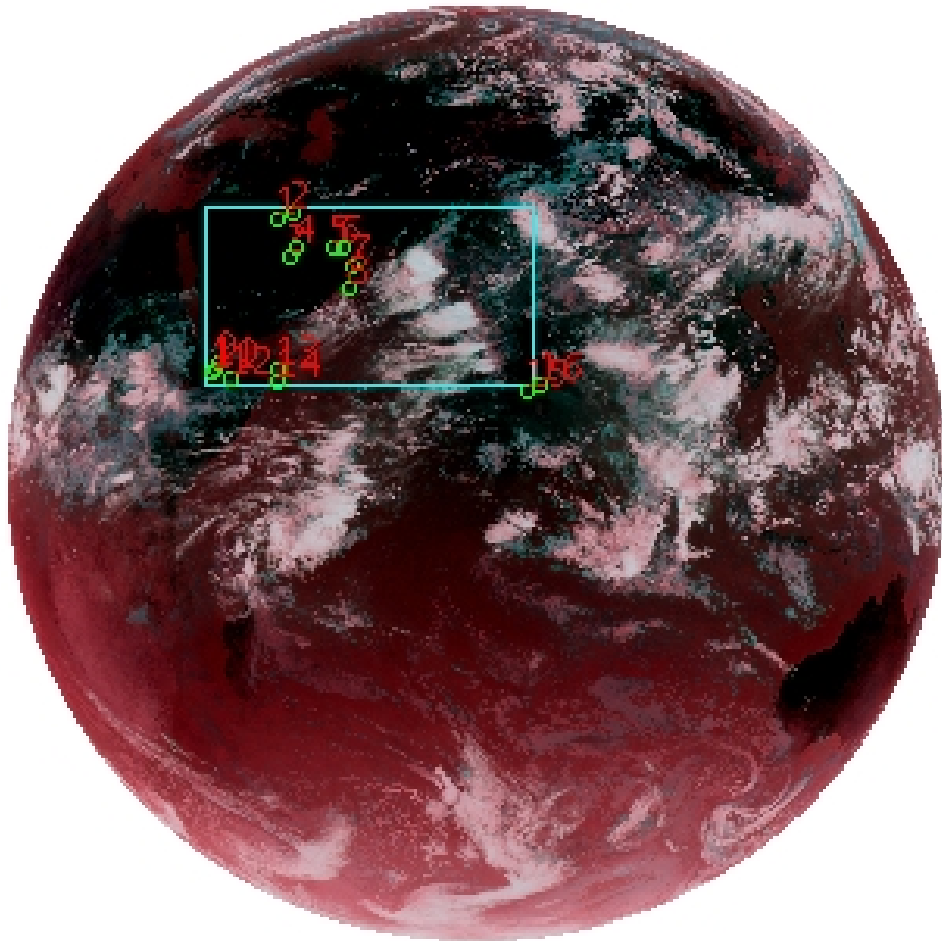


# DQE Report: Location Accuracy of INSAT-3DR-IMG STANDARD (FULL DISK) Product 3RIMG\_07JUL2020\_0615

Satellite INSAT-3DR No Of Bands 6 Product Type STANDARD  
 Sensor IMG LvlOfProcess L1B Selected Band 2-TIR1  
 DOP/Time 07-07-20/06:15 Station ID BES Field View(deg) 18.006  
 Res(Y,X) [Km] (4.0,4.0) Res(Y,X) [uRad] (112.0,112.0)

(81.042N,-7.157W)

(81.042N,155.157E)



(-81.042S,-7.157W)

(-81.042S,155.157E)

GCP Distribution overview for 3RIMG07JUL20200615L1BSTD

Image Width: 2805 Image Height: 2816 No Of GCPs: 16

GCP Coverage(%) 18.00 (N-S) 33.75 (E-W)

Location Error(E)

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

## Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | 1.878  | N         | 0.797  | 2.040 |
| Across | -1.355 | W         | 0.950  | 1.655 |

## Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 4.509      | 0.449  | 12.735     |
| Along   | 4.634      | 0.365  | 15.856     |
| Across  | 4.428      | 0.511  | 10.702     |

## Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean   | Stddev | RMS   |
|--------|------------|--------|--------|-------|
| Along  | 2.339      | 0.164  | 0.75   | 0.767 |
| Across | 4.206      | -0.295 | 1.09   | 1.133 |

## Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw     |
|----------|----------|---------|
| -0.01394 | -0.01568 | 0.06286 |

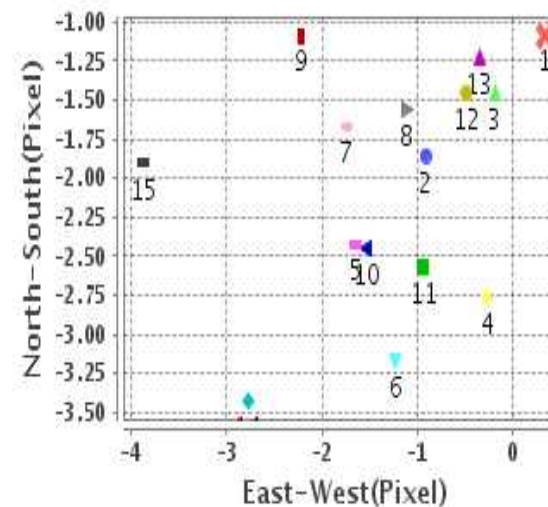
## Reference Used

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

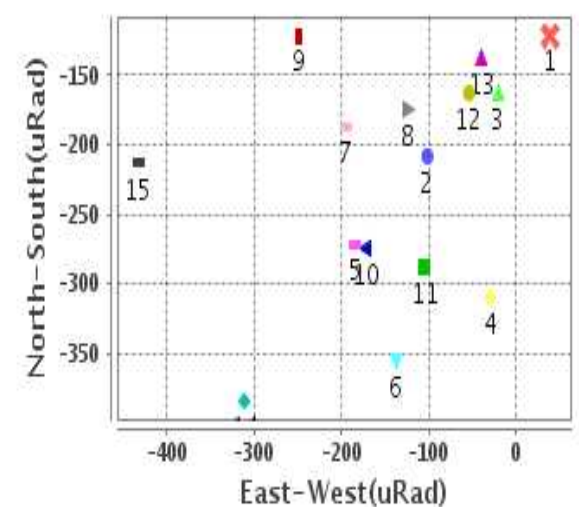
## Radial Error (in IR Pixels)

|      |       |
|------|-------|
| Mean | 2.451 |
| Min  | 1.071 |
| Max  | 3.983 |
| CE90 | 3.519 |

## Location Error For GCPs(Pixel)



## Location Error For GCPs(uRad)



Detailed Product Information

Ancillary Info

|                   |               |                           |            |
|-------------------|---------------|---------------------------|------------|
| Satellite         | INSAT-3DR     | Generation Date           | 07-07-20   |
| Sensor            | IMG           | DQE Date                  | 08-07-2020 |
| PassType          | NONE          | Aquisition Date           | 07-07-20   |
| 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_07JUL20 | 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)   | 0.0     |
| Center Lon(deg)   | 74.0    |
| 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) | 81.042  |
| NW_Lon(deg) | -7.157  |
| SW_Lat(deg) | -81.042 |
| SW_Lon(deg) | -7.157  |
| NE_Lat(deg) | 81.042  |
| NE_Lon(deg) | 155.157 |
| SE_Lat(deg) | -81.042 |
| SE_Lon(deg) | 155.157 |

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 : 3RIMG07JUL20200615L1BSTD**

(-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 : 16

|          | Mean  | StdDev | Min   | Max     | Coverage(in %) |
|----------|-------|--------|-------|---------|----------------|
| GCP Scan | 928.7 | 190.4  | 645.8 | 1152.50 | 18.00 (N-S)    |
| GCP Pix  | 921.5 | 272.1  | 627.0 | 1573.75 | 33.75 (E-W)    |

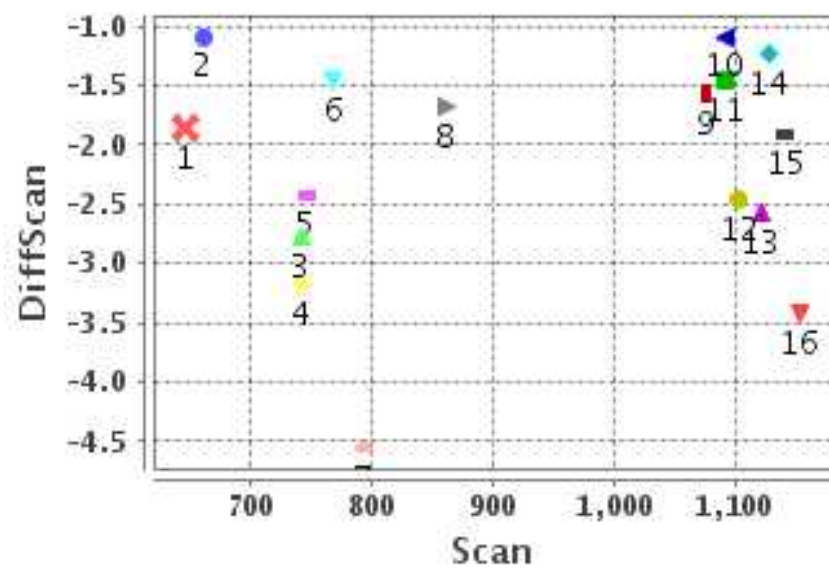
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan   | Pix    | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|--------|--------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 661.2  | 815.2  | -1.1            | 0.34            | 4.581       | N   | 1.806       | E   | Accepted |
| 2  | 645.8  | 863.5  | -1.9            | -0.91           | 6.096       | N   | 3.974       | W   | Accepted |
| 3  | 768.0  | 850.0  | -1.5            | -0.19           | 6.984       | N   | 2.977       | W   | Accepted |
| 4  | 741.2  | 868.0  | -2.8            | -0.27           | 13.337      | N   | 4.500       | W   | Accepted |
| 5  | 745.5  | 978.0  | -2.4            | -1.64           | 9.775       | N   | 9.381       | W   | Accepted |
| 6  | 741.5  | 1001.0 | -3.2            | -1.23           | 14.149      | N   | 7.323       | W   | Accepted |
| 7  | 793.2  | 1026.2 | -4.6            | -5.01           | 21.924      | N   | 24.173      | W   | Rejected |
| 8  | 861.2  | 1021.2 | -1.7            | -1.74           | 6.426       | N   | 7.099       | W   | Accepted |
| 9  | 1075.5 | 646.2  | -1.6            | -1.11           | 4.580       | N   | 4.918       | W   | Accepted |
| 10 | 1091.2 | 633.8  | -1.1            | -2.22           | 3.620       | N   | 8.275       | W   | Accepted |
| 11 | 1102.8 | 627.0  | -2.5            | -1.54           | 7.347       | N   | 8.802       | W   | Accepted |
| 12 | 1120.5 | 682.0  | -2.6            | -0.94           | 8.088       | N   | 5.058       | W   | Accepted |
| 13 | 1091.2 | 810.8  | -1.5            | -0.49           | 4.563       | N   | 0.473       | E   | Accepted |

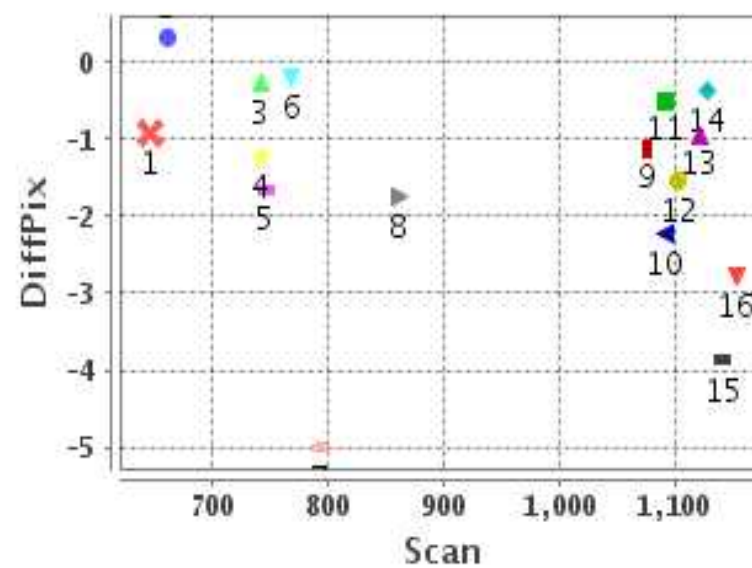
**Identified Control Point details : ( Differences are Reference - Product )**

| No | Scan   | Pix    | DiffScan<br>(line) | DiffPix<br>(pixel) | DifLat<br>(Km) | Dir | DifLon<br>(Km) | Dir | Status   |
|----|--------|--------|--------------------|--------------------|----------------|-----|----------------|-----|----------|
| 14 | 1127.2 | 810.2  | -1.2               | -0.35              | 4.221          | N   | 0.728          | W   | Accepted |
| 15 | 1152.5 | 1536.8 | -3.4               | -2.78              | 11.217         | N   | 8.085          | W   | Accepted |
| 16 | 1141.0 | 1573.8 | -1.9               | -3.87              | 7.698          | N   | 12.469         | W   | Accepted |

Error(Pixels) Vs. GCPScan



Error(Pixels) Vs. GCPScan



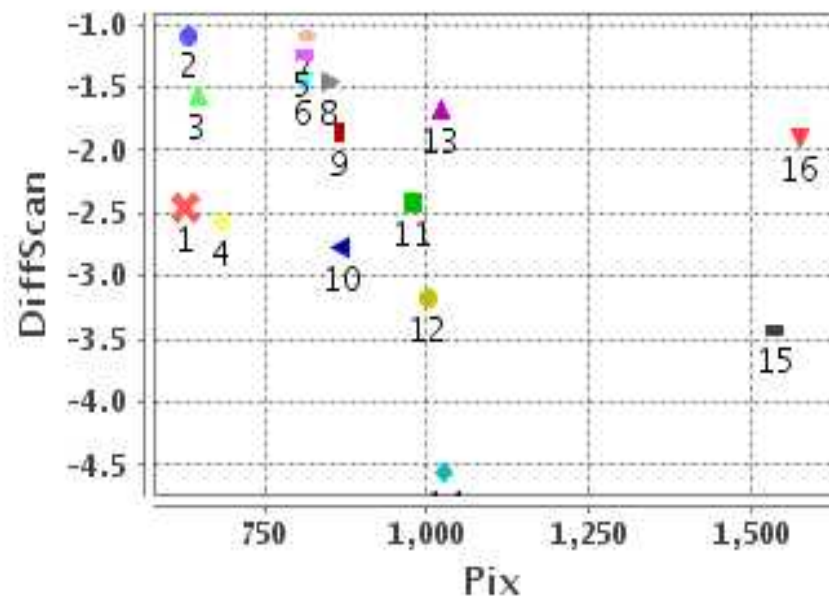
Number Of Points

|       |    |
|-------|----|
| North | 15 |
| South | 0  |
| East  | 2  |
| West  | 13 |

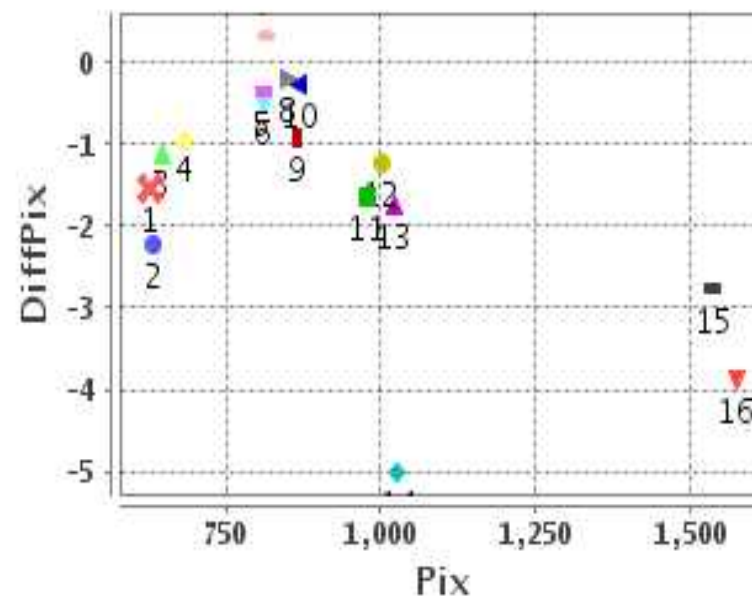
Radial Error ( Km)

|      |       |
|------|-------|
| Mean | 2.451 |
| Min  | 1.071 |
| Max  | 3.983 |
| CE90 | 3.519 |

Error(Pixels) Vs. GCPPix



Error(Pixels) Vs. GCPPix



Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | 1.878  | 0.797  | 2.040 | N   | 1.888    | 2.098    |
| Across ( Km ) | -1.355 | 0.950  | 1.655 | W   | 1.497    | 1.713    |

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)                   | 7.75  | N     |  |
| Across(Mean,Dir)                  | -2.41 | W     |  |
| Scale(Km)                         |       |       |  |
| Average Scale (Mean,%Variation)   | 5.33  | 33.33 |  |
| Internal Distortion(Pixel)        |       |       |  |
| Along(Mean,Stddev)                | -0.08 | 0.72  |  |
| Across(Mean,Stddev)               | 0.80  | 0.33  |  |

|                                      |             |       |  |
|--------------------------------------|-------------|-------|--|
| Scan Range-0-937; Pix Range-934-1869 |             |       |  |
| Number of GCPs                       | 3           |       |  |
| Location Error(Km)                   |             |       |  |
| Along(Mean,Dir)                      | 10.11329999 | N     |  |
| Across(Mean,Dir)                     | -7.93       | W     |  |
| Scale(Km)                            |             |       |  |
| Average Scale (Mean,%Variation)      | 4.90        | 22.43 |  |
| Internal Distortion(Pixel)           |             |       |  |
| Along(Mean,Stddev)                   | -1.13       | 0.38  |  |
| Across(Mean,Stddev)                  | -0.16       | 0.25  |  |

|                                       |         |          |  |
|---------------------------------------|---------|----------|--|
| 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                       | 6           |       |  |
| Location Error(Km)                   |             |       |  |
| Along(Mean,Dir)                      | 5.403329999 | N     |  |
| Across(Mean,Dir)                     | -4.55       | W     |  |
| Scale(Km)                            |             |       |  |
| Average Scale (Mean,%Variation)      | 4.59        | 14.78 |  |
| Internal Distortion(Pixel)           |             |       |  |
| Along(Mean,Stddev)                   | 0.20        | 0.62  |  |
| Across(Mean,Stddev)                  | -0.52       | 0.66  |  |

|                                         |        |      |  |
|-----------------------------------------|--------|------|--|
| Scan Range-937-1876; Pix Range-934-1869 |        |      |  |
| Number of GCPs                          | 2      |      |  |
| Location Error(Km)                      |        |      |  |
| Along(Mean,Dir)                         | 9.4575 | N    |  |
| Across(Mean,Dir)                        | -10.28 | W    |  |
| Scale(Km)                               |        |      |  |
| Average Scale (Mean,%Variation)         | 3.80   | 5.04 |  |
| Internal Distortion(Pixel)              |        |      |  |
| Along(Mean,Stddev)                      | 1.51   | 0.00 |  |
| Across(Mean,Stddev)                     | 1.09   | 0.00 |  |

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