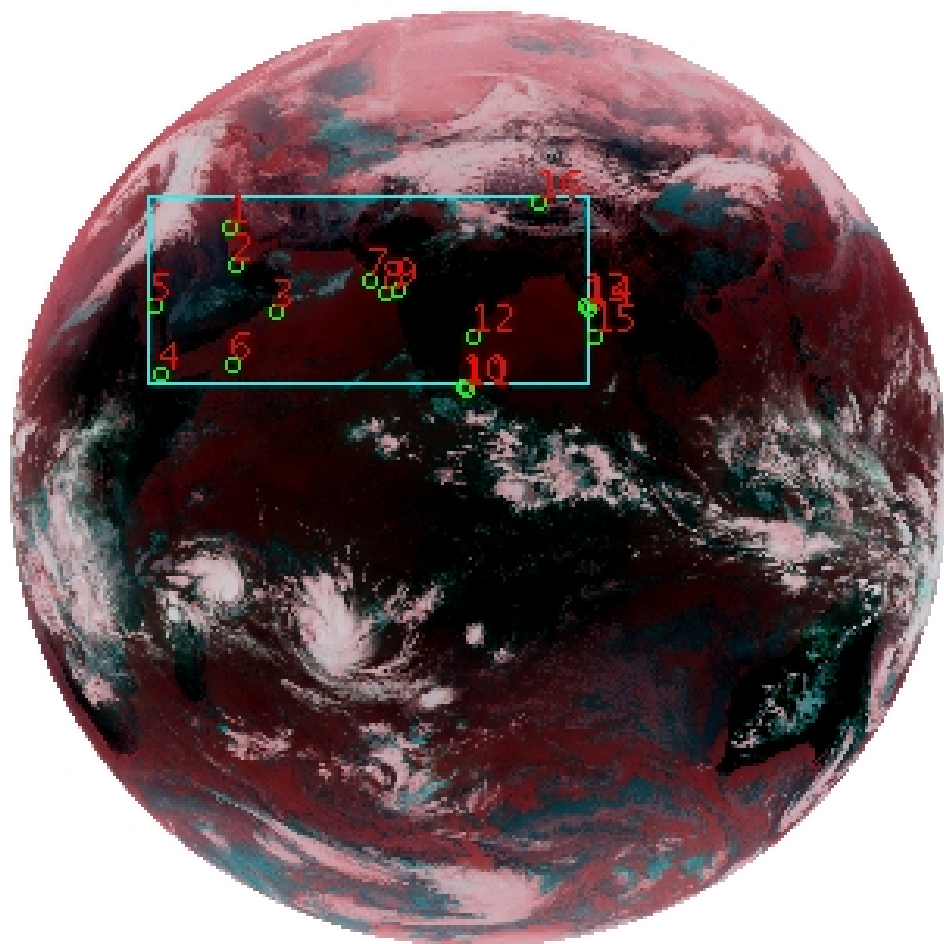


## DQE Report: Location Accuracy of INSAT-3D-IMG STANDARD(FULL DISK) Product 3DIMG\_06FEB2019\_0600

**Satellite** INSAT-3D      **No Of Bands** 6      **Product Type** STANDARD  
**Sensor** IMG      **LvlOfProcess** L1B      **Selected Band** 2-TIR1  
**DOP/Time** 06-02-19/06:00      **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 3DIMG06FEB20190600L1BSTD

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

**GCP Coverage(%)**      19.19      **(N-S)** 45.17      **(E-W)**

**Location Error(E)**

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

### Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | 1.167  | N         | 1.420  | 1.838 |
| Across | -3.575 | W         | 1.184  | 3.766 |

### Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 4.572      | 0.411  | 14.303     |
| Along   | 6.048      | 9.992  | 51.212     |
| Across  | 4.817      | 1.862  | 20.423     |

### Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean  | Stddev | RMS   |
|--------|------------|-------|--------|-------|
| Along  | 3.563      | 2.707 | 1.05   | 2.905 |
| Across | 2.622      | 0.200 | 0.80   | 0.820 |

### Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw      |
|----------|----------|----------|
| -0.01980 | -0.00721 | -0.00521 |

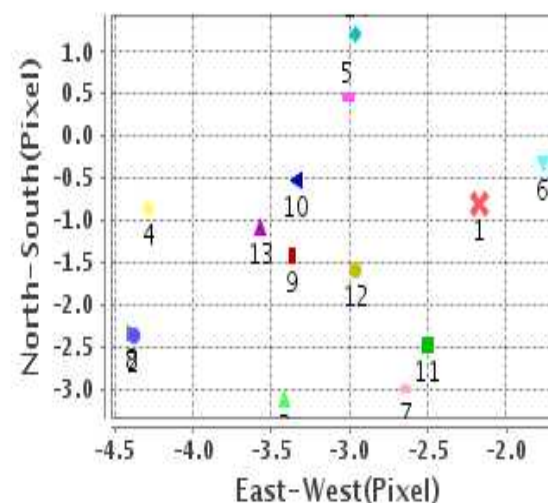
### Reference Used

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

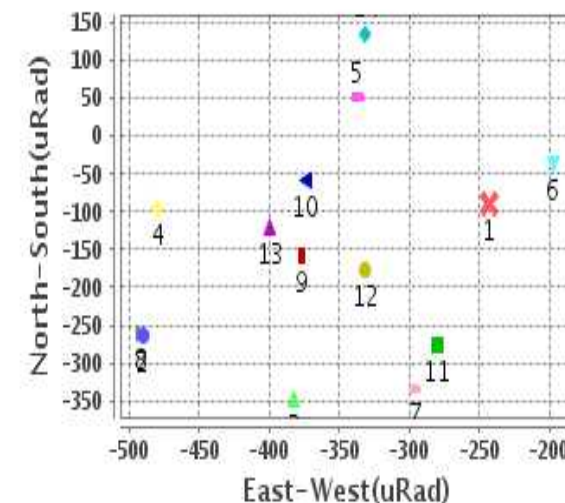
### Radial Error (in IR Pixels)

|      |       |
|------|-------|
| Mean | 4.006 |
| Min  | 2.102 |
| Max  | 6.594 |
| CE90 | 4.885 |

### Location Error For GCPs(Pixel)



### Location Error For GCPs(uRad)



Detailed Product Information

Ancillary Info

|                   |               |                           |            |
|-------------------|---------------|---------------------------|------------|
| Satellite         | INSAT-3D      | Generation Date           | 06-02-19   |
| Sensor            | IMG           | DQE Date                  | 07-02-2019 |
| PassType          | NONE          | Aquisition Date           | 06-02-19   |
| Imaging Mode      | FULL_FRAME    | Aquisition Time(GMT)      | 06:00      |
| 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)   | 82.0       |
| LvlOfProcessing   | STANDARD(FULL | Predicted Center Lat(deg) | -999.99    |
| DP JobId          | 3DIMG_06FEB20 | Predicted Center Lon(deg) | -999.99    |
| ProductCode       | NONE          |                           |            |
| Field View(deg)   | 17.974        |                           |            |

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)   | 82.0    |
| 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) | 0.843   |
| SW_Lat(deg) | -81.042 |
| SW_Lon(deg) | 0.843   |
| NE_Lat(deg) | 81.042  |
| NE_Lon(deg) | 163.157 |
| SE_Lat(deg) | -81.042 |
| SE_Lon(deg) | 163.157 |

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 : 3DIMG06FEB20190600L1BSTD**

(-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 : 16

|                 | Mean   | StdDev | Min   | Max     | Coverage(in %) |
|-----------------|--------|--------|-------|---------|----------------|
| <b>GCP Scan</b> | 911.4  | 149.3  | 599.0 | 1139.50 | 19.19 (N-S)    |
| <b>GCP Pix</b>  | 1118.0 | 429.6  | 457.5 | 1724.50 | 45.17 (E-W)    |

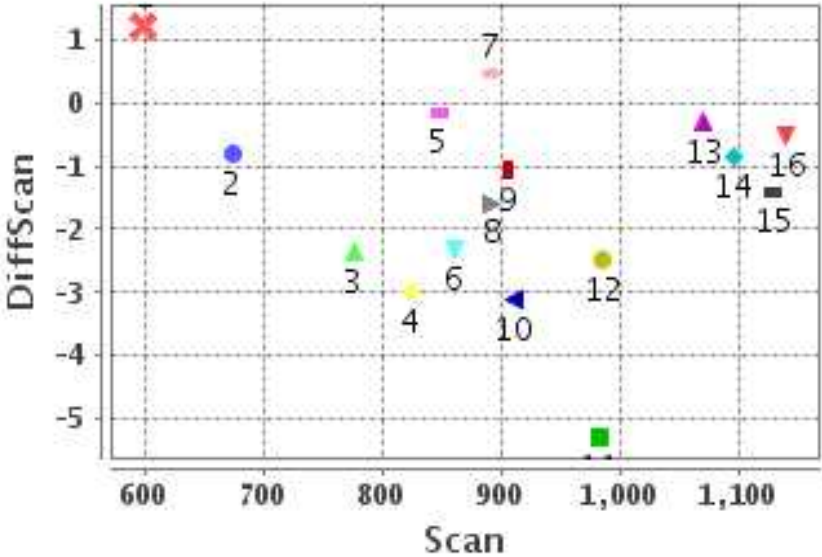
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan   | Pix    | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|--------|--------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 674.0  | 666.5  | -0.8            | -2.17           | 4.520       | N   | 12.041      | W   | Accepted |
| 2  | 776.5  | 687.5  | -2.4            | -4.38           | 10.625      | N   | 24.140      | W   | Accepted |
| 3  | 910.5  | 803.5  | -3.1            | -3.41           | 11.662      | N   | 15.678      | W   | Accepted |
| 4  | 1095.8 | 476.0  | -0.9            | -4.29           | 0.826       | N   | 24.692      | W   | Accepted |
| 5  | 891.0  | 457.5  | 0.5             | -3.01           | 1.775       | S   | 16.122      | W   | Accepted |
| 6  | 1070.5 | 681.0  | -0.3            | -1.77           | 0.795       | S   | 8.372       | W   | Accepted |
| 7  | 824.0  | 1076.2 | -3.0            | -2.64           | 14.218      | N   | 12.518      | W   | Accepted |
| 8  | 860.2  | 1121.8 | -2.3            | -4.39           | 9.395       | N   | 16.076      | W   | Accepted |
| 9  | 847.2  | 1152.2 | -0.1            | -6.69           | 0.678       | N   | 27.419      | W   | Rejected |
| 10 | 1129.0 | 1346.2 | -1.4            | -3.36           | 6.053       | N   | 12.194      | W   | Accepted |
| 11 | 1139.5 | 1356.2 | -0.5            | -3.34           | 0.586       | N   | 12.115      | W   | Accepted |
| 12 | 985.5  | 1371.5 | -2.5            | -2.51           | 8.690       | N   | 8.270       | W   | Accepted |
| 13 | 891.8  | 1698.2 | -1.6            | -2.96           | 3.748       | N   | 11.098      | W   | Accepted |

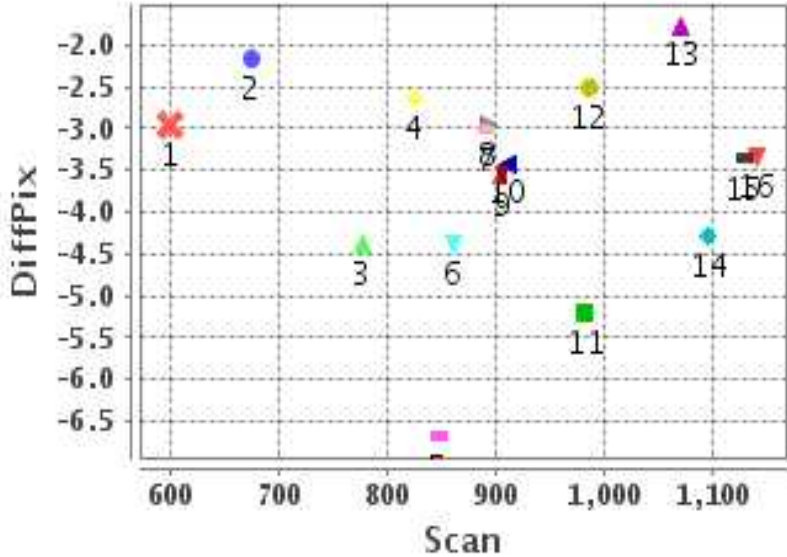
**Identified Control Point details : ( Differences are Reference - Product )**

| No | Scan  | Pix    | DiffScan<br>(line) | DiffPix<br>(pixel) | DifLat<br>(Km) | Dir | DifLon<br>(Km) | Dir | Status   |
|----|-------|--------|--------------------|--------------------|----------------|-----|----------------|-----|----------|
| 14 | 905.0 | 1706.2 | -1.1               | -3.57              | 4.432          | N   | 13.235         | W   | Accepted |
| 15 | 982.2 | 1724.5 | -5.3               | -5.20              | 21.036         | N   | 18.216         | W   | Rejected |
| 16 | 599.0 | 1563.2 | 1.2                | -2.96              | 6.828          | S   | 13.638         | W   | Accepted |

Error(Pixels) Vs. GCPScan



Error(Pixels) Vs. GCPScan



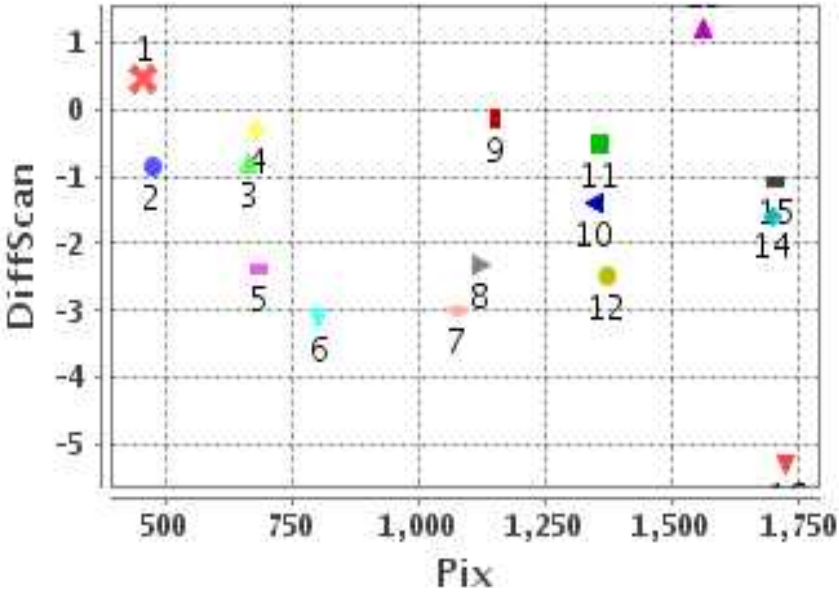
Number Of Points

|       |    |
|-------|----|
| North | 11 |
| South | 3  |
| East  | 0  |
| West  | 14 |

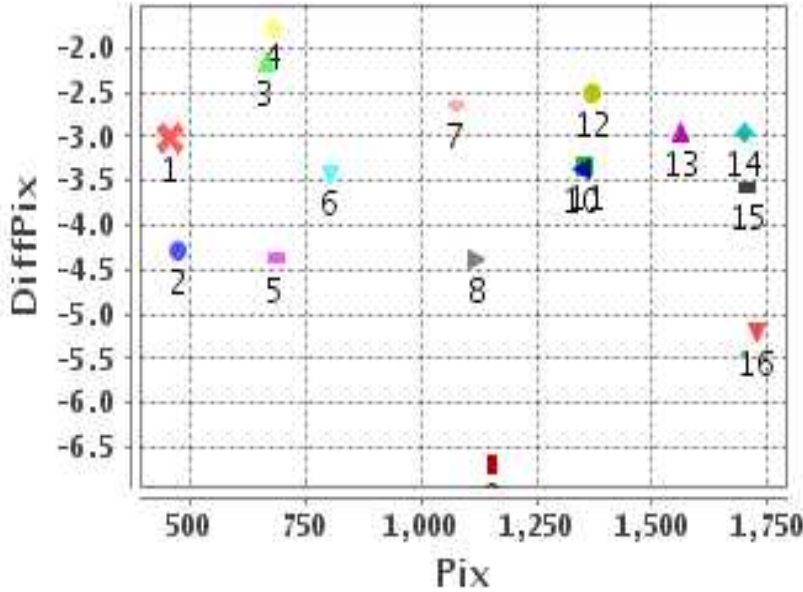
Radial Error ( Km )

|      |       |
|------|-------|
| Mean | 4.006 |
| Min  | 2.102 |
| Max  | 6.594 |
| CE90 | 4.885 |

Error(Pixels) Vs. GCPPix



Error(Pixels) Vs. GCPPix



Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | 1.167  | 1.420  | 1.838 | N   | 1.633    | 1.907    |
| Across ( Km ) | -3.575 | 1.184  | 3.766 | W   | 3.513    | 3.866    |

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)                   | 6.255  | N     |  |
| Across(Mean,Dir)                  | -17.00 | W     |  |
| Scale(Km)                         |        |       |  |
| Average Scale (Mean,%Variation)   | 5.40   | 35.12 |  |
| Internal Distortion(Pixel)        |        |       |  |
| Along(Mean,Stddev)                | 0.87   | 1.53  |  |
| Across(Mean,Stddev)               | 0.31   | 0.90  |  |

|                                      |        |       |  |
|--------------------------------------|--------|-------|--|
| Scan Range-0-937; Pix Range-934-1869 |        |       |  |
| Number of GCPs                       | 5      |       |  |
| Location Error(Km)                   |        |       |  |
| Along(Mean,Dir)                      | 4.996  | N     |  |
| Across(Mean,Dir)                     | -13.31 | W     |  |
| Scale(Km)                            |        |       |  |
| Average Scale (Mean,%Variation)      | 4.42   | 10.44 |  |
| Internal Distortion(Pixel)           |        |       |  |
| Along(Mean,Stddev)                   | 3.21   | 0.72  |  |
| Across(Mean,Stddev)                  | 0.83   | 0.59  |  |

|                                       |         |          |  |
|---------------------------------------|---------|----------|--|
| 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)                      | 0.01   | N     |  |
| Across(Mean,Dir)                     | -16.53 | W     |  |
| Scale(Km)                            |        |       |  |
| Average Scale (Mean,%Variation)      | 5.22   | 30.44 |  |
| Internal Distortion(Pixel)           |        |       |  |
| Along(Mean,Stddev)                   | 0.55   | 0.00  |  |
| Across(Mean,Stddev)                  | -2.52  | 0.00  |  |

|   |        |      |  |
|---|--------|------|--|
| Scan Range-937-1876; Pix Range-934-1869 |        |      |  |
| Number of GCPs                          | 3      |      |  |
| Location Error(Km)                      |        |      |  |
| Along(Mean,Dir)                         | 5.11   | N    |  |
| Across(Mean,Dir)                        | -10.86 | W    |  |
| Scale(Km)                               |        |      |  |
| Average Scale (Mean,%Variation)         | 4.14   | 3.44 |  |
| Internal Distortion(Pixel)              |        |      |  |
| Along(Mean,Stddev)                      | -1.52  | 0.45 |  |
| Across(Mean,Stddev)                     | -0.44  | 0.42 |  |

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