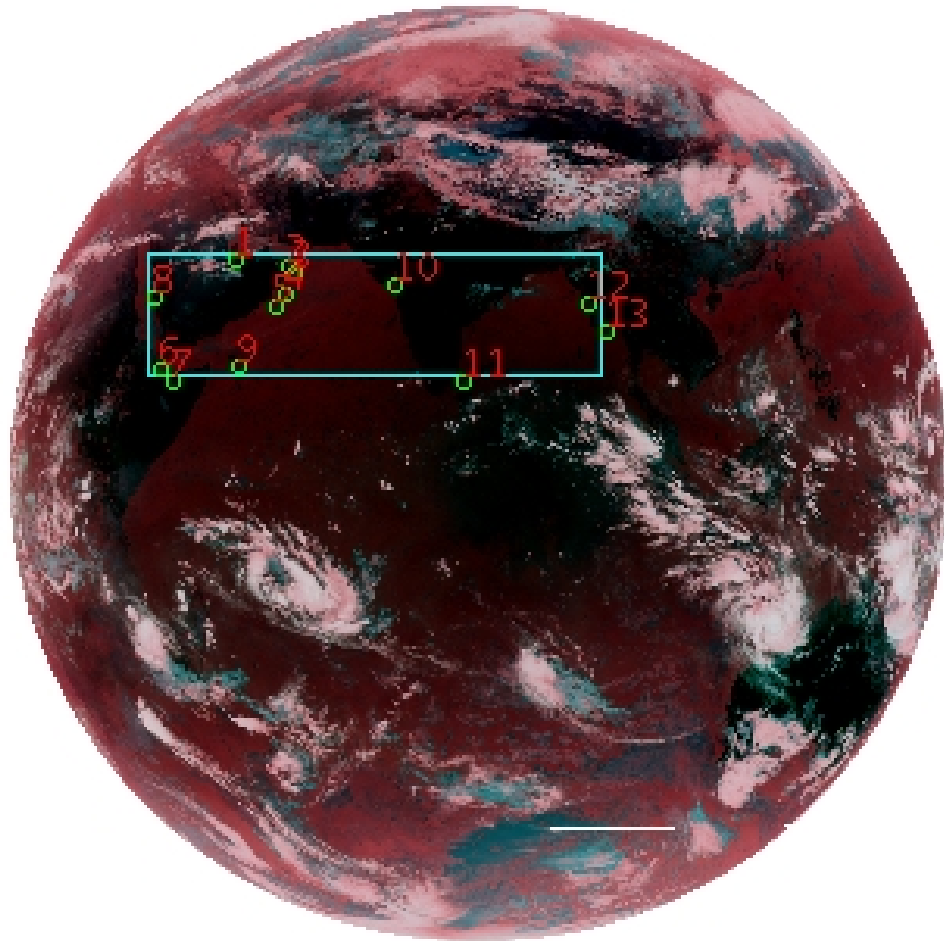


# DQE Report: Location Accuracy of INSAT-3D-IMG STANDARD(FULL DISK) Product 3DIMG\_21MAR2019\_0530

|               |                |                 |               |                 |          |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| Satellite     | INSAT-3D       | No Of Bands     | 6             | Product Type    | STANDARD |
| Sensor        | IMG            | LvlOfProcess    | L1B           | Selected Band   | 2-TIR1   |
| DOP/Time      | 21-03-19/05:30 | 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 3DIMG21MAR20190530L1BSTD

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

GCP Coverage(%) 12.54 (N-S) 46.32 (E-W)

## Location Error(E)

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

## Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | 0.274  | N         | 1.372  | 1.399 |
| Across | -3.434 | W         | 1.153  | 3.622 |

## Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 4.532      | 0.443  | 13.301     |
| Along   | 6.251      | 14.353 | 56.270     |
| Across  | 4.752      | 0.866  | 18.799     |

## Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean   | Stddev | RMS   |
|--------|------------|--------|--------|-------|
| Along  | 3.795      | -0.882 | 1.41   | 1.659 |
| Across | 3.281      | 1.044  | 0.88   | 1.368 |

## Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw     |
|----------|----------|---------|
| -0.02326 | -0.00717 | 0.09408 |

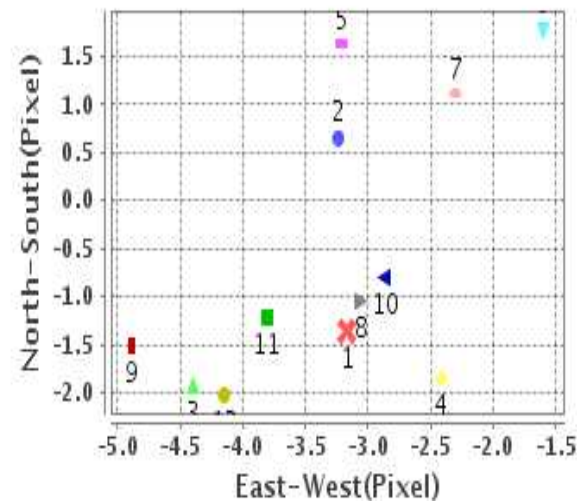
## Reference Used

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

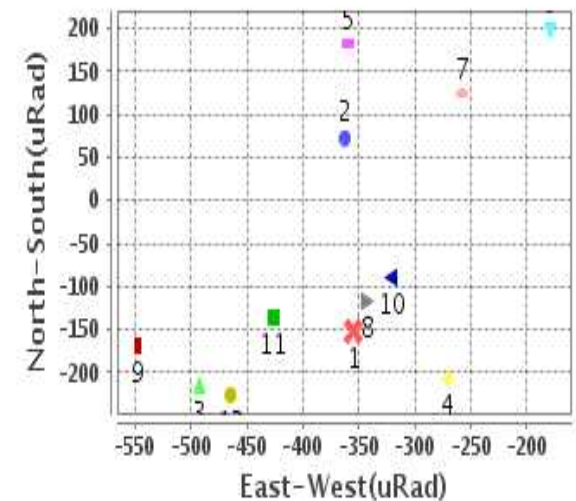
## Radial Error (in IR Pixels)

|      |       |
|------|-------|
| Mean | 3.727 |
| Min  | 2.010 |
| Max  | 5.678 |
| CE90 | 4.651 |

## Location Error For GCPs(Pixel)



## Location Error For GCPs(uRad)



## Detailed Product Information

### Ancillary Info

|                          |               |                                  |            |
|--------------------------|---------------|----------------------------------|------------|
| <b>Satellite</b>         | INSAT-3D      | <b>Generation Date</b>           | 21-03-19   |
| <b>Sensor</b>            | IMG           | <b>DQE Date</b>                  | 25-03-2019 |
| <b>PassType</b>          | NONE          | <b>Aquisition Date</b>           | 21-03-19   |
| <b>Imaging Mode</b>      | FULL_FRAME    | <b>Aquisition Time(GMT)</b>      | 05:30      |
| <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_21MAR2  | <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 : 3DIMG21MAR20190530L1BSTD**

(-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

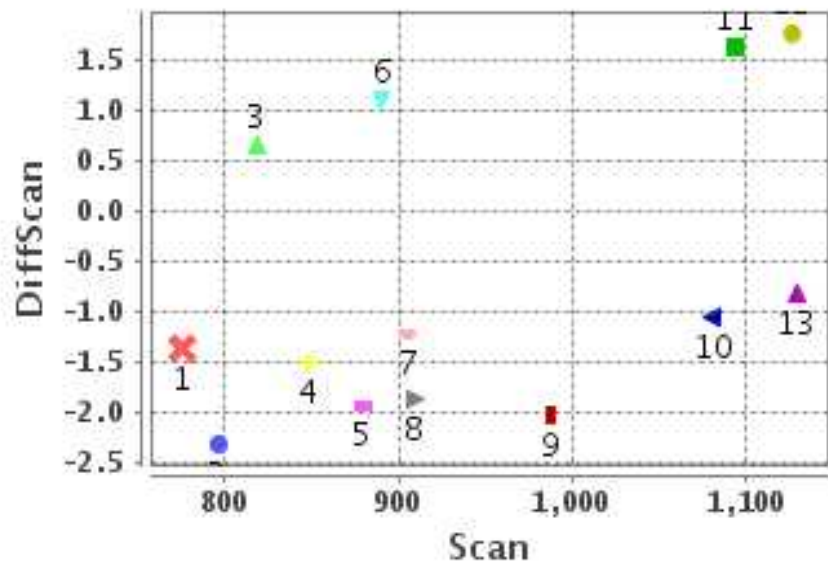
Image Width (pixels) : 2805      Image Height (pixels) : 2816      No of GCPs : 13

|                 | Mean  | StdDev | Min   | Max     | Coverage(in %) |
|-----------------|-------|--------|-------|---------|----------------|
| <b>GCP Scan</b> | 941.4 | 122.4  | 775.5 | 1128.50 | 12.54 (N-S)    |
| <b>GCP Pix</b>  | 932.0 | 417.9  | 456.8 | 1756.00 | 46.32 (E-W)    |

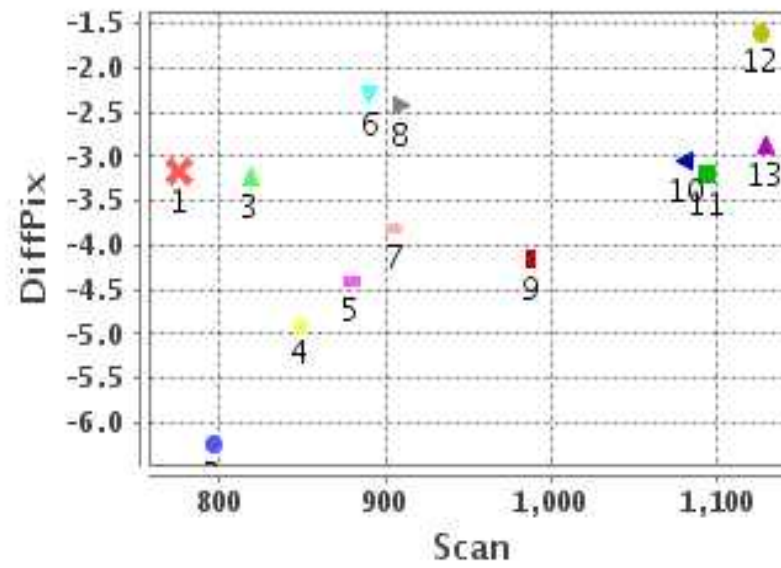
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan   | Pix    | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|--------|--------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 775.5  | 686.2  | -1.4            | -3.17           | 4.797       | N   | 17.973      | W   | Accepted |
| 2  | 796.2  | 844.2  | -2.3            | -6.24           | 11.534      | N   | 31.405      | W   | Rejected |
| 3  | 818.5  | 863.2  | 0.7             | -3.24           | 4.800       | S   | 13.690      | W   | Accepted |
| 4  | 879.8  | 828.0  | -1.9            | -4.39           | 6.447       | N   | 21.778      | W   | Accepted |
| 5  | 909.2  | 802.5  | -1.9            | -2.41           | 7.186       | N   | 10.353      | W   | Accepted |
| 6  | 1093.2 | 475.0  | 1.6             | -3.21           | 7.828       | S   | 16.794      | W   | Accepted |
| 7  | 1126.0 | 505.2  | 1.8             | -1.60           | 6.811       | S   | 6.686       | W   | Accepted |
| 8  | 890.2  | 456.8  | 1.1             | -2.30           | 5.820       | S   | 8.047       | W   | Accepted |
| 9  | 1080.2 | 696.5  | -1.1            | -3.06           | 3.491       | N   | 12.694      | W   | Accepted |
| 10 | 848.5  | 1150.5 | -1.5            | -4.89           | 4.556       | N   | 18.679      | W   | Accepted |
| 11 | 1128.5 | 1345.8 | -0.8            | -2.86           | 1.305       | N   | 7.934       | W   | Accepted |
| 12 | 905.2  | 1706.5 | -1.2            | -3.81           | 3.966       | N   | 13.235      | W   | Accepted |
| 13 | 987.5  | 1756.0 | -2.0            | -4.15           | 6.674       | N   | 16.963      | W   | Accepted |

### Error(Pixels) Vs. GCPScan



### Error(Pixels) Vs. GCPScan



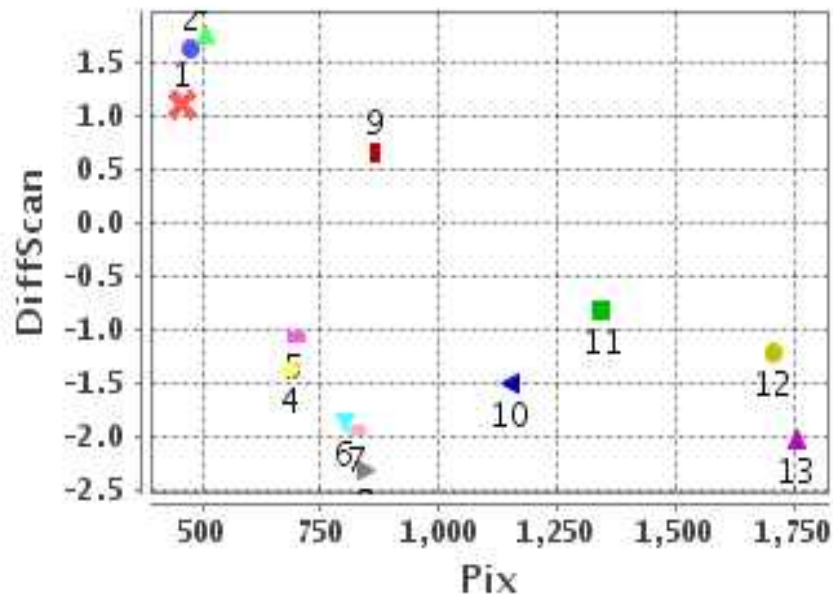
#### Number Of Points

|       |    |
|-------|----|
| North | 8  |
| South | 4  |
| East  | 0  |
| West  | 12 |

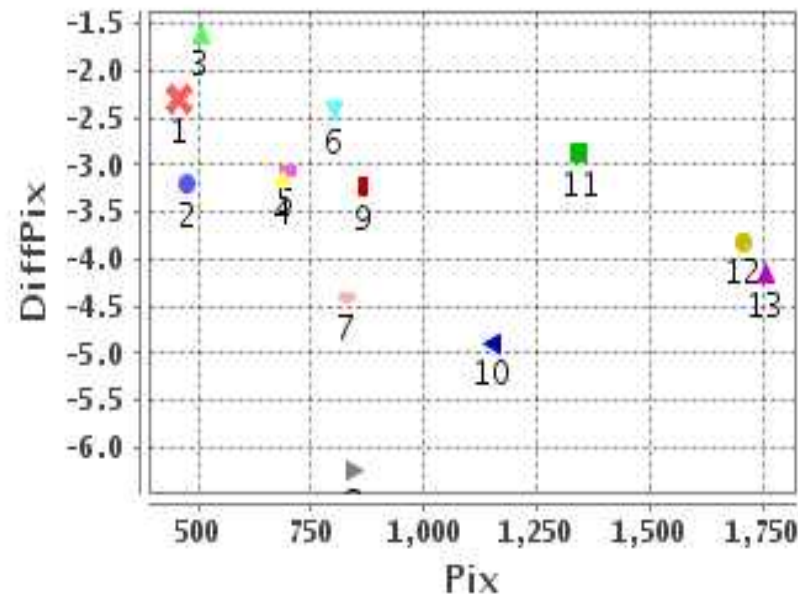
#### Radial Error ( Km )

|      |       |
|------|-------|
| Mean | 3.727 |
| Min  | 2.010 |
| Max  | 5.678 |
| CE90 | 4.651 |

### Error(Pixels) Vs. GCPPix



### Error(Pixels) Vs. GCPPix



#### Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | 0.274  | 1.372  | 1.399 | N   | 1.337    | 1.458    |
| Across ( Km ) | -3.434 | 1.153  | 3.622 | W   | 3.409    | 3.750    |

## 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)                          | 1.564  | N     |
| Across(Mean,Dir)                         | -14.37 | W     |
| <b>Scale(Km)</b>                         |        |       |
| Average Scale (Mean,%Variation)          | 5.01   | 25.27 |
| <b>Internal Distortion(Pixel)</b>        |        |       |
| Along(Mean,Stddev)                       | -0.85  | 1.40  |
| Across(Mean,Stddev)                      | 1.00   | 0.71  |

|   |        |      |
|---|--------|------|
| <b>Scan Range-0-937; Pix Range-934-1869</b> |        |      |
| Number of GCPs                              | 2      |      |
| <b>Location Error(Km)</b>                   |        |      |
| Along(Mean,Dir)                             | 4.26   | N    |
| Across(Mean,Dir)                            | -15.96 | W    |
| <b>Scale(Km)</b>                            |        |      |
| Average Scale (Mean,%Variation)             | 4.17   | 4.28 |
| <b>Internal Distortion(Pixel)</b>           |        |      |
| Along(Mean,Stddev)                          | -0.29  | 0.00 |
| Across(Mean,Stddev)                         | -1.08  | 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                              | 3        |       |
| <b>Location Error(Km)</b>                   |          |       |
| Along(Mean,Dir)                             | -3.71333 | S     |
| Across(Mean,Dir)                            | -12.06   | W     |
| <b>Scale(Km)</b>                            |          |       |
| Average Scale (Mean,%Variation)             | 5.22     | 30.61 |
| <b>Internal Distortion(Pixel)</b>           |          |       |
| Along(Mean,Stddev)                          | -2.76    | 0.08  |
| Across(Mean,Stddev)                         | -0.88    | 0.73  |

|  |        |      |
|--|--------|------|
| <b>Scan Range-937-1876; Pix Range-934-1869</b> |        |      |
| Number of GCPs                                 | 2      |      |
| <b>Location Error(Km)</b>                      |        |      |
| Along(Mean,Dir)                                | 3.995  | N    |
| Across(Mean,Dir)                               | -12.45 | W    |
| <b>Scale(Km)</b>                               |        |      |
| Average Scale (Mean,%Variation)                | 4.05   | 1.22 |
| <b>Internal Distortion(Pixel)</b>              |        |      |
| Along(Mean,Stddev)                             | -1.22  | 0.00 |
| Across(Mean,Stddev)                            | 1.29   | 0.00 |

|   |         |          |
|---|---------|----------|
| <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