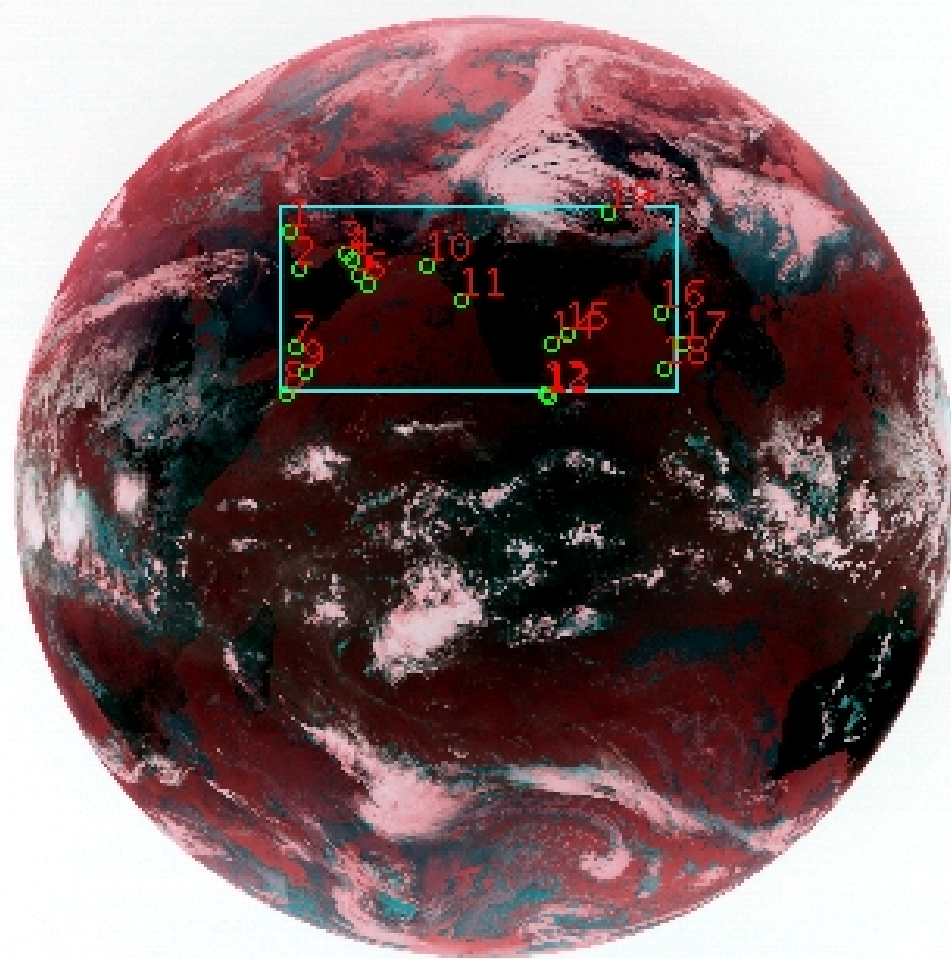


# DQE Report: Location Accuracy of INSAT-3DR-IMG STANDARD (FULL DISK) Product 3RIMG\_21FEB2019\_0615

|               |                |                 |               |                 |          |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| Satellite     | INSAT-3DR      | No Of Bands     | 6             | Product Type    | STANDARD |
| Sensor        | IMG            | LvlOfProcess    | L1B           | Selected Band   | 2-TIR1   |
| DOP/Time      | 21-02-19/06:15 | Station ID      | BES           | Field View(deg) | 17.99    |
| Res(Y,X) [Km] | (4.0,4.0)      | Res(Y,X) [uRad] | (112.0,112.0) |                 |          |

(81.013N,-7.122W)

(81.013N,155.138E)



(-80.731S,-7.122W)

(-80.731S,155.138E)

GCP Distribution overview for 3RIMG21FEB20190615L1BDQE

Image Width: 2805 Image Height: 2816 No Of GCPs: 19

GCP Coverage(%) 19.10 (N-S) 40.69 (E-W)

## Location Error(E)

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

## Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS    |
|--------|--------|-----------|--------|--------|
| Along  | -5.060 | S         | 1.273  | 5.217  |
| Across | 13.644 | E         | 1.883  | 13.774 |

## Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 4.423      | 0.356  | 10.574     |
| Along   | 5.063      | 2.887  | 26.568     |
| Across  | 4.382      | 0.671  | 9.541      |

## Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean   | Stddev | RMS   |
|--------|------------|--------|--------|-------|
| Along  | 4.653      | 0.631  | 1.12   | 1.286 |
| Across | 3.640      | -0.696 | 1.01   | 1.224 |

## Attitude Residuals (Deg)

| Pitch   | Roll    | Yaw      |
|---------|---------|----------|
| 0.08421 | 0.03257 | -0.02024 |

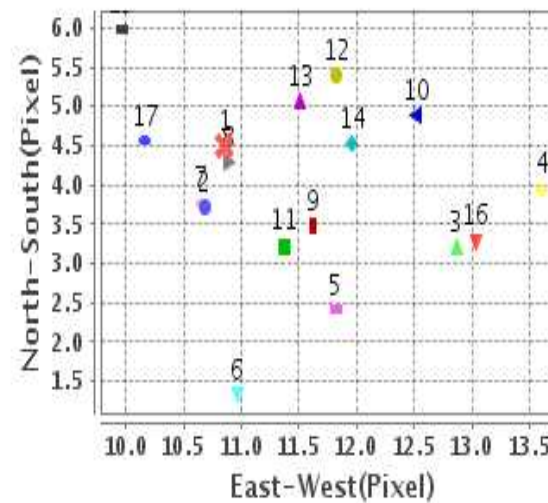
## Reference Used

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

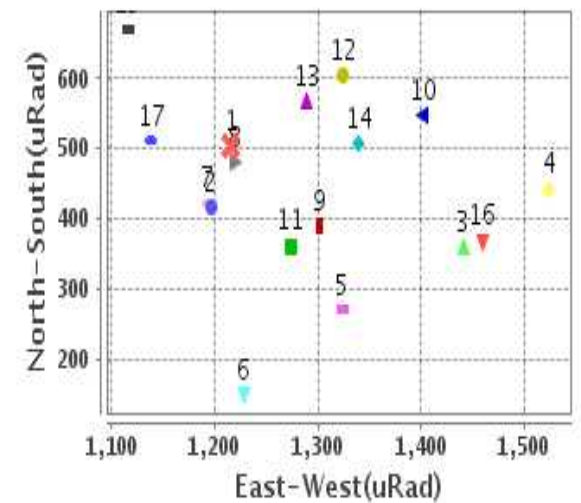
## Radial Error (in IR Pixels)

|      |        |
|------|--------|
| Mean | 14.608 |
| Min  | 12.115 |
| Max  | 18.767 |
| CE90 | 17.275 |

## Location Error For GCPs(Pixel)



## Location Error For GCPs(uRad)



## Detailed Product Information

### Ancillary Info

|                          |               |                                  |            |
|--------------------------|---------------|----------------------------------|------------|
| <b>Satellite</b>         | INSAT-3DR     | <b>Generation Date</b>           | 21-02-19   |
| <b>Sensor</b>            | IMG           | <b>DQE Date</b>                  | 22-02-2019 |
| <b>PassType</b>          | NONE          | <b>Aquisition Date</b>           | 21-02-19   |
| <b>Imaging Mode</b>      | FULL_FRAME    | <b>Aquisition Time(GMT)</b>      | 06:15      |
| <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>   | 74.0       |
| <b>LvlOfProcessing</b>   | STANDARD      | <b>Predicted Center Lat(deg)</b> | -999.99    |
| <b>DP JobId</b>          | 3RIMG_21FEB20 | <b>Predicted Center Lon(deg)</b> | -999.99    |
| <b>ProductCode</b>       | NONE          |                                  |            |
| <b>Field View(deg)</b>   | 17.99         |                                  |            |

### 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>   | 0.141   |
| <b>Center Lon(deg)</b>   | 74.008  |
| <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> | 81.013  |
| <b>NW_Lon(deg)</b> | -7.122  |
| <b>SW_Lat(deg)</b> | -80.731 |
| <b>SW_Lon(deg)</b> | -7.122  |
| <b>NE_Lat(deg)</b> | 81.013  |
| <b>NE_Lon(deg)</b> | 155.138 |
| <b>SE_Lat(deg)</b> | -80.731 |
| <b>SE_Lon(deg)</b> | 155.138 |

### 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>                          | meters | <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 : 3RIMG21FEB20190615L1BDQE**

(-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 : 19

|                 | Mean   | StdDev | Min   | Max     | Coverage(in %) |
|-----------------|--------|--------|-------|---------|----------------|
| <b>GCP Scan</b> | 906.9  | 162.9  | 612.2 | 1150.00 | 19.10 (N-S)    |
| <b>GCP Pix</b>  | 1295.9 | 401.1  | 811.8 | 1953.00 | 40.69 (E-W)    |

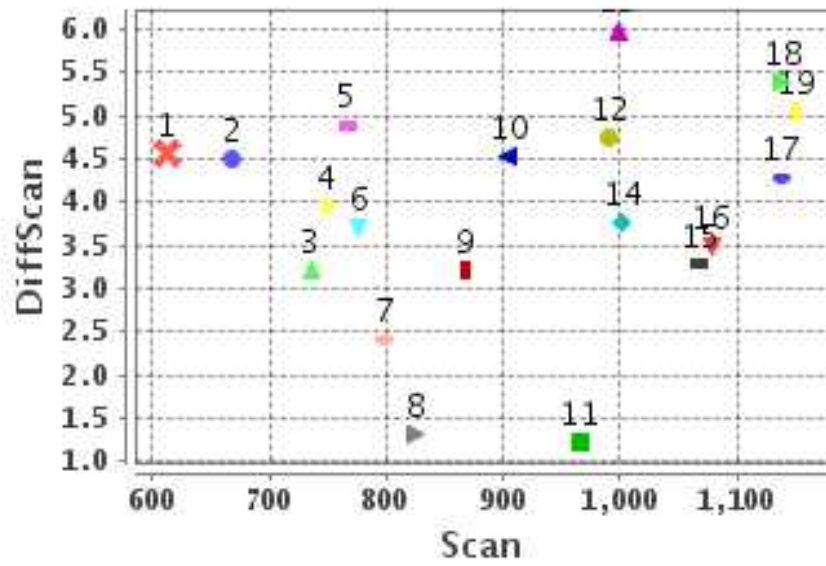
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan   | Pix    | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|--------|--------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 668.2  | 819.5  | 4.5             | 10.86           | 29.303      | S   | 69.114      | E   | Accepted |
| 2  | 776.5  | 852.5  | 3.7             | 10.68           | 23.889      | S   | 60.827      | E   | Accepted |
| 3  | 735.0  | 981.5  | 3.2             | 12.86           | 19.130      | S   | 66.400      | E   | Accepted |
| 4  | 748.2  | 1000.0 | 3.9             | 13.61           | 22.812      | S   | 67.439      | E   | Accepted |
| 5  | 798.5  | 1022.2 | 2.4             | 11.82           | 16.835      | S   | 57.467      | E   | Accepted |
| 6  | 825.2  | 1049.5 | 1.3             | 10.96           | 8.718       | S   | 51.266      | E   | Accepted |
| 7  | 1002.2 | 845.5  | 3.8             | 10.66           | 17.969      | S   | 52.315      | E   | Accepted |
| 8  | 1137.2 | 811.8  | 4.3             | 10.89           | 19.230      | S   | 53.358      | E   | Accepted |
| 9  | 1078.2 | 871.0  | 3.5             | 11.63           | 16.210      | S   | 52.276      | E   | Accepted |
| 10 | 766.0  | 1220.0 | 4.9             | 12.52           | 24.002      | S   | 56.360      | E   | Accepted |
| 11 | 868.0  | 1322.0 | 3.2             | 11.37           | 13.241      | S   | 47.372      | E   | Accepted |
| 12 | 1138.5 | 1562.2 | 5.4             | 11.82           | 23.206      | S   | 46.595      | E   | Accepted |
| 13 | 1150.0 | 1572.8 | 5.1             | 11.51           | 20.671      | S   | 47.295      | E   | Accepted |

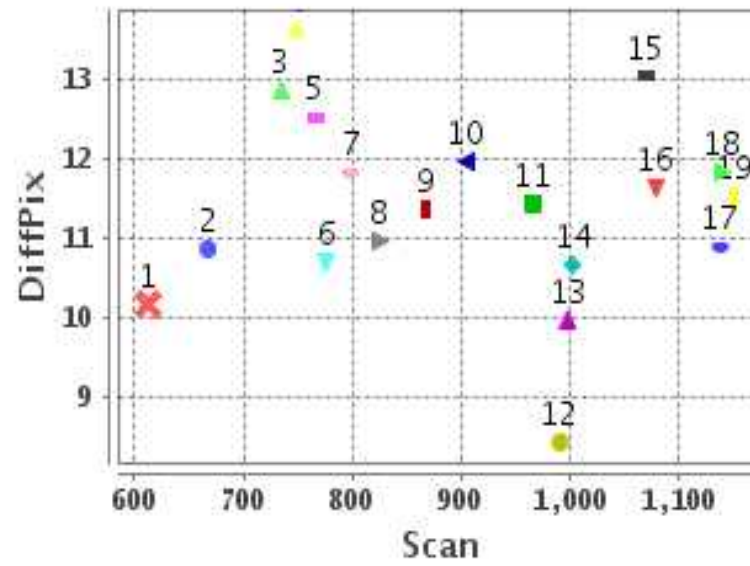
**Identified Control Point details : ( Differences are Reference - Product )**

| No | Scan   | Pix    | DiffScan<br>(line) | DiffPix<br>(pixel) | DifLat<br>(Km) | Dir | DifLon<br>(Km) | Dir | Status   |
|----|--------|--------|--------------------|--------------------|----------------|-----|----------------|-----|----------|
| 14 | 990.2  | 1583.8 | 4.7                | 8.43               | 20.881         | S   | 35.924         | E   | Rejected |
| 15 | 965.5  | 1621.2 | 1.2                | 11.43              | 7.246          | S   | 46.972         | E   | Rejected |
| 16 | 904.5  | 1892.8 | 4.5                | 11.96              | 21.422         | S   | 54.302         | E   | Accepted |
| 17 | 998.0  | 1953.0 | 6.0                | 9.97               | 25.218         | S   | 41.382         | E   | Accepted |
| 18 | 1068.5 | 1899.0 | 3.3                | 13.03              | 15.145         | S   | 55.069         | E   | Accepted |
| 19 | 612.2  | 1741.8 | 4.6                | 10.17              | 27.055         | S   | 48.967         | E   | Accepted |

### Error(Pixels) Vs. GCPScan



### Error(Pixels) Vs. GCPScan



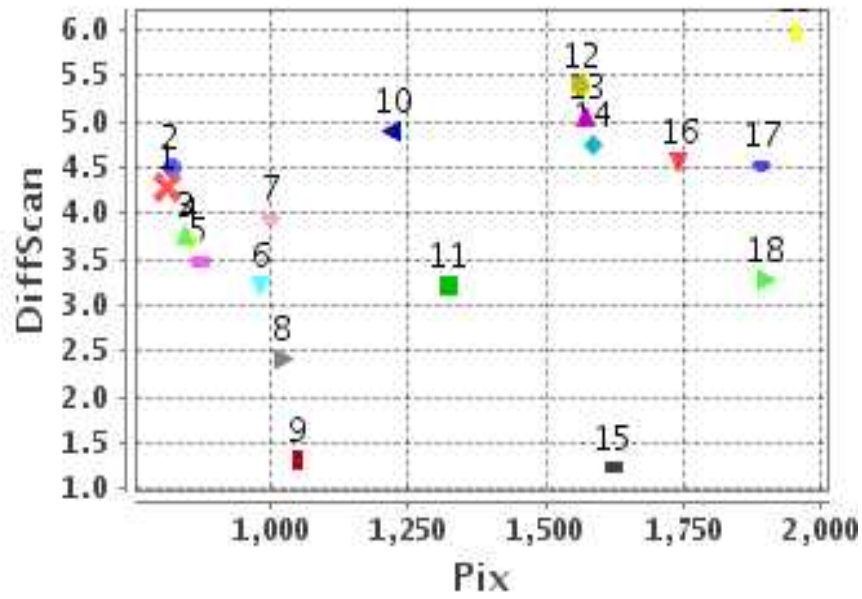
#### Number Of Points

|       |    |
|-------|----|
| North | 0  |
| South | 17 |
| East  | 17 |
| West  | 0  |

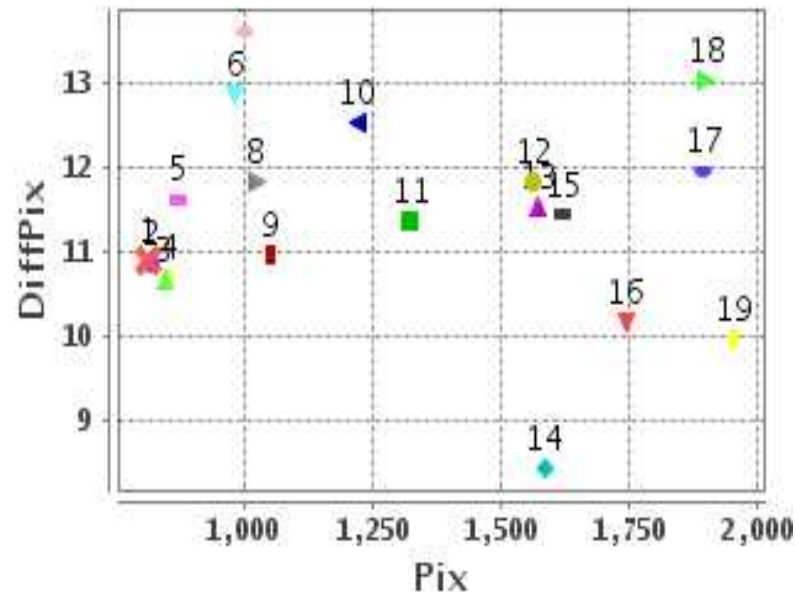
#### Radial Error ( Km )

|      |        |
|------|--------|
| Mean | 14.608 |
| Min  | 12.115 |
| Max  | 18.767 |
| CE90 | 17.275 |

### Error(Pixels) Vs. GCPPix



### Error(Pixels) Vs. GCPPix



#### Location Accuracy

|               | Mean   | StdDev | RMS    | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|--------|-----|----------|----------|
| Along( Km )   | -5.060 | 1.273  | 5.217  | S   | 5.056    | 5.350    |
| Across ( Km ) | 13.644 | 1.883  | 13.774 | E   | 13.524   | 13.960   |

## Block-Wise Geo location Error Statistics

### Location Accuracy,Scale,ID

|  |         |       |
|--|---------|-------|
| <b>Scan Range-0-937; Pix Range-0-934</b> |         |       |
| Number of GCPs                           | 2       |       |
| <b>Location Error(Km)</b>                |         |       |
| Along(Mean,Dir)                          | -26.595 | S     |
| Across(Mean,Dir)                         | 64.98   | E     |
| <b>Scale(Km)</b>                         |         |       |
| Average Scale (Mean,%Variation)          | 5.76    | 43.89 |
| <b>Internal Distortion(Pixel)</b>        |         |       |
| Along(Mean,Stddev)                       | 0.78    | 0.00  |
| Across(Mean,Stddev)                      | 0.18    | 0.00  |

|   |             |       |
|---|-------------|-------|
| <b>Scan Range-0-937; Pix Range-934-1869</b> |             |       |
| Number of GCPs                              | 7           |       |
| <b>Location Error(Km)</b>                   |             |       |
| Along(Mean,Dir)                             | -18.8270999 | S     |
| Across(Mean,Dir)                            | 56.47       | E     |
| <b>Scale(Km)</b>                            |             |       |
| Average Scale (Mean,%Variation)             | 4.69        | 17.24 |
| <b>Internal Distortion(Pixel)</b>           |             |       |
| Along(Mean,Stddev)                          | 1.40        | 1.12  |
| Across(Mean,Stddev)                         | 1.12        | 1.10  |

|  |         |         |
|--|---------|---------|
| <b>Scan Range-0-937; Pix Range-1869-2805</b> |         |         |
| Number of GCPs                               | 1       |         |
| <b>Location Error(Km)</b>                    |         |         |
| Along(Mean,Dir)                              | -21.43  | S       |
| Across(Mean,Dir)                             | 54.30   | E       |
| <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)                             | -17.8033 | S    |
| Across(Mean,Dir)                            | 52.65    | E    |
| <b>Scale(Km)</b>                            |          |      |
| Average Scale (Mean,%Variation)             | 4.20     | 5.08 |
| <b>Internal Distortion(Pixel)</b>           |          |      |
| Along(Mean,Stddev)                          | -0.12    | 0.40 |
| Across(Mean,Stddev)                         | -0.25    | 0.49 |

|  |        |      |
|--|--------|------|
| <b>Scan Range-937-1876; Pix Range-934-1869</b> |        |      |
| Number of GCPs                                 | 2      |      |
| <b>Location Error(Km)</b>                      |        |      |
| Along(Mean,Dir)                                | -21.94 | S    |
| Across(Mean,Dir)                               | 46.95  | E    |
| <b>Scale(Km)</b>                               |        |      |
| Average Scale (Mean,%Variation)                | 3.81   | 4.64 |
| <b>Internal Distortion(Pixel)</b>              |        |      |
| Along(Mean,Stddev)                             | 0.33   | 0.00 |
| Across(Mean,Stddev)                            | 0.31   | 0.00 |

|   |         |      |
|---|---------|------|
| <b>Scan Range-937-1876; Pix Range-1869-2805</b> |         |      |
| Number of GCPs                                  | 2       |      |
| <b>Location Error(Km)</b>                       |         |      |
| Along(Mean,Dir)                                 | -20.175 | S    |
| Across(Mean,Dir)                                | 48.22   | E    |
| <b>Scale(Km)</b>                                |         |      |
| Average Scale (Mean,%Variation)                 | 4.35    | 8.75 |
| <b>Internal Distortion(Pixel)</b>               |         |      |
| Along(Mean,Stddev)                              | 2.69    | 0.00 |
| Across(Mean,Stddev)                             | 3.06    | 0.00 |

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