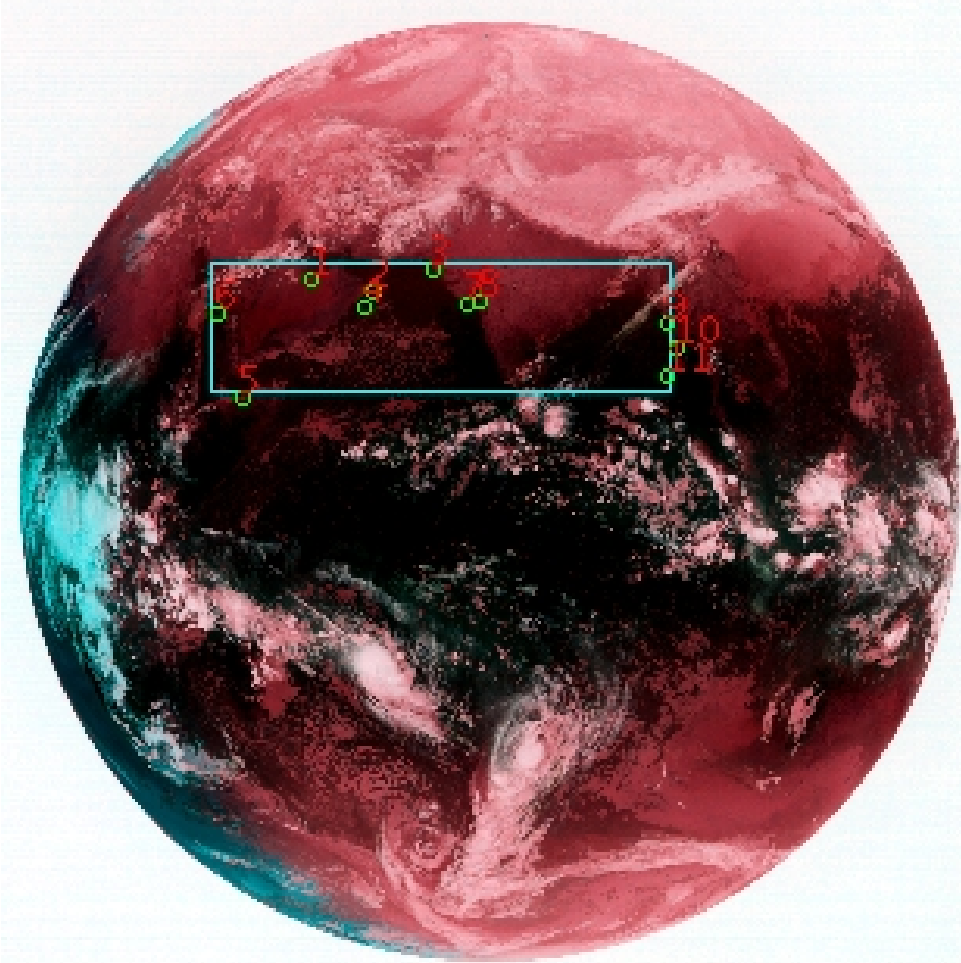


DQE Report: Location Accuracy of INSAT-3DR-IMG STANDARD (FULL DISK) Product 3RIMG\_09FEB2019\_1545

|               |                |                 |               |                 |          |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| Satellite     | INSAT-3DR      | No Of Bands     | 6             | Product Type    | STANDARD |
| Sensor        | IMG            | LvlOfProcess    | L1B           | Selected Band   | 2-TIR1   |
| DOP/Time      | 09-02-19/15:45 | Station ID      | BES           | Field View(deg) | 17.99    |
| Res(Y,X) [Km] | (4.0,4.0)      | Res(Y,X) [uRad] | (112.0,112.0) |                 |          |

(81.032N,-7.188W)

(81.032N,155.183E)



(-80.874S,-7.188W)

(-80.874S,155.183E)

GCP Distribution overview for 3RIMG09FEB20191545L1BDQE

Image Width: 2805 Image Height: 2816 No Of GCPs: 11

GCP Coverage(%) 13.01 (N-S) 47.10 (E-W)

Location Error(E)

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

Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | -3.501 | S         | 0.895  | 3.613 |
| Across | 4.291  | E         | 1.973  | 4.722 |

Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 4.324      | 0.201  | 8.094      |
| Along   | 9.062      | 32.484 | 126.538    |
| Across  | 4.364      | 0.475  | 9.110      |

Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean  | Stddev | RMS   |
|--------|------------|-------|--------|-------|
| Along  | 2.564      | 0.252 | 0.77   | 0.814 |
| Across | 2.453      | 2.131 | 0.93   | 2.326 |

Attitude Residuals (Deg)

| Pitch   | Roll    | Yaw     |
|---------|---------|---------|
| 0.02412 | 0.02193 | 0.01924 |

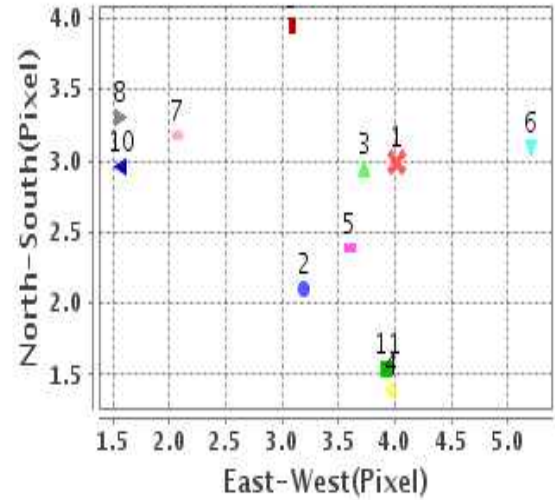
Reference Used

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

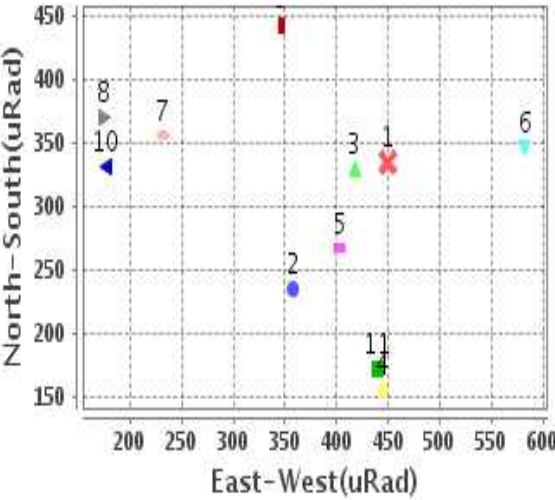
Radial Error  
(in IR Pixels)

|      |        |
|------|--------|
| Mean | 5.697  |
| Min  | 4.071  |
| Max  | 10.163 |
| CE90 | 6.436  |

Location Error For GCPs(Pixel)



Location Error For GCPs(uRad)



Detailed Product Information

Ancillary Info

|                   |               |                           |            |
|-------------------|---------------|---------------------------|------------|
| Satellite         | INSAT-3DR     | Generation Date           | 09-02-19   |
| Sensor            | IMG           | DQE Date                  | 12-02-2019 |
| PassType          | NONE          | Aquisition Date           | 09-02-19   |
| Imaging Mode      | FULL_FRAME    | Aquisition Time(GMT)      | 15:45      |
| 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_09FEB20 | 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)   | 0.079   |
| Center Lon(deg)   | 73.997  |
| 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) | 81.032  |
| NW_Lon(deg) | -7.188  |
| SW_Lat(deg) | -80.874 |
| SW_Lon(deg) | -7.188  |
| NE_Lat(deg) | 81.032  |
| NE_Lon(deg) | 155.183 |
| SE_Lat(deg) | -80.874 |
| SE_Lon(deg) | 155.183 |

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 : 3RIMG09FEB20191545L1BDQE**

(-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

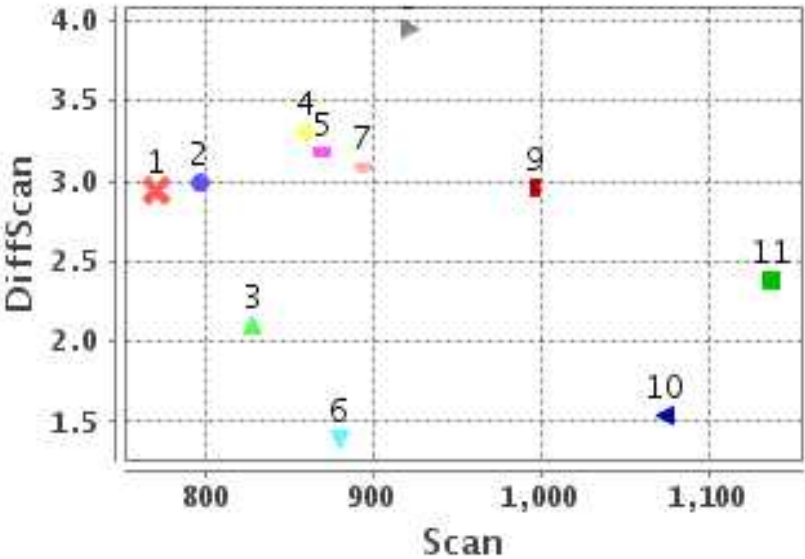
Image Width (pixels) : 2805      Image Height (pixels) : 2816      No of GCPs : 11

|                 | Mean   | StdDev | Min   | Max     | Coverage(in %) |
|-----------------|--------|--------|-------|---------|----------------|
| <b>GCP Scan</b> | 911.3  | 108.7  | 770.2 | 1136.50 | 13.01 (N-S)    |
| <b>GCP Pix</b>  | 1265.1 | 457.4  | 607.2 | 1928.50 | 47.10 (E-W)    |

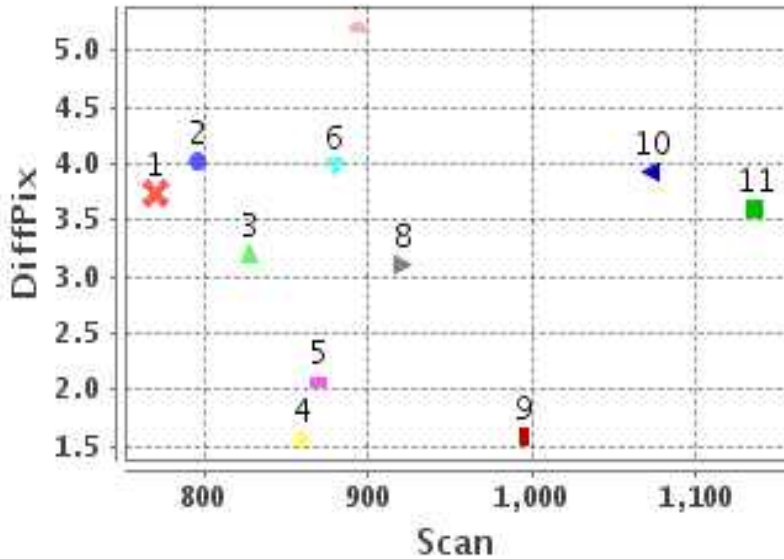
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan   | Pix    | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|--------|--------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 796.2  | 878.0  | 3.0             | 4.02            | 16.879      | S   | 23.219      | E   | Accepted |
| 2  | 828.2  | 1058.0 | 2.1             | 3.20            | 11.920      | S   | 16.348      | E   | Accepted |
| 3  | 770.2  | 1229.2 | 2.9             | 3.73            | 16.065      | S   | 18.026      | E   | Accepted |
| 4  | 879.5  | 1030.2 | 1.4             | 3.97            | 8.559       | S   | 19.078      | E   | Accepted |
| 5  | 1136.5 | 679.8  | 2.4             | 3.60            | 11.746      | S   | 22.908      | E   | Accepted |
| 6  | 893.8  | 607.2  | 3.1             | 5.20            | 19.608      | S   | 35.612      | E   | Accepted |
| 7  | 870.0  | 1331.2 | 3.2             | 2.07            | 13.241      | S   | 9.881       | E   | Accepted |
| 8  | 859.2  | 1360.0 | 3.3             | 1.56            | 16.117      | S   | 6.656       | E   | Accepted |
| 9  | 921.2  | 1907.5 | 4.0             | 3.10            | 17.715      | S   | 13.608      | E   | Accepted |
| 10 | 995.5  | 1928.5 | 3.0             | 1.57            | 14.419      | S   | 7.563       | E   | Accepted |
| 11 | 1073.5 | 1906.0 | 1.5             | 3.93            | 7.765       | S   | 15.891      | E   | Accepted |

Error(Pixels) Vs. GCPScan



Error(Pixels) Vs. GCPScan



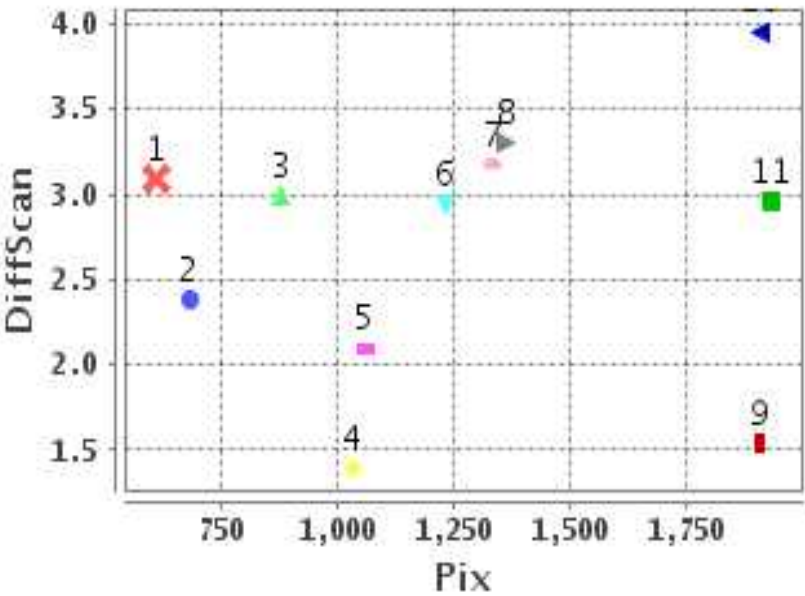
Number Of Points

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

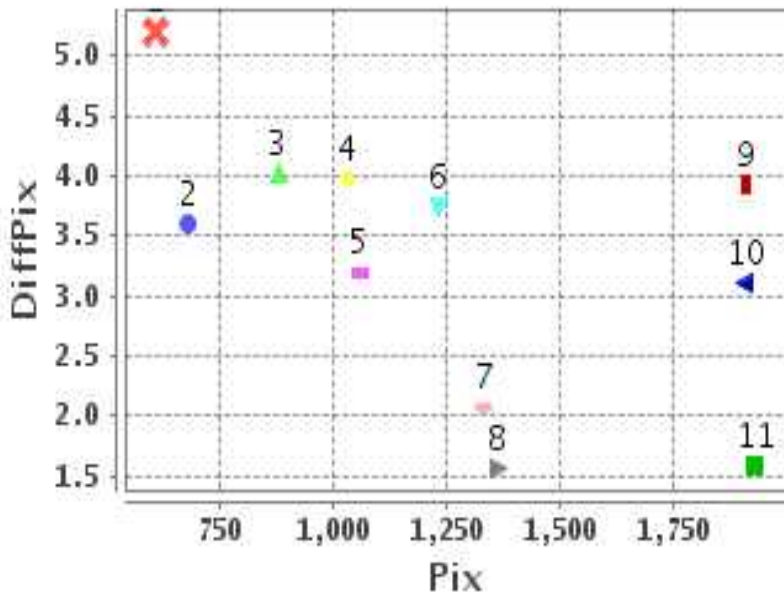
Radial Error ( Km )

|      |        |
|------|--------|
| Mean | 5.697  |
| Min  | 4.071  |
| Max  | 10.163 |
| CE90 | 6.436  |

Error(Pixels) Vs. GCPPix



Error(Pixels) Vs. GCPPix



Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | -3.501 | 0.895  | 3.613 | S   | 3.458    | 3.740    |
| Across ( Km ) | 4.291  | 1.973  | 4.722 | E   | 4.075    | 4.925    |

Block-Wise Geo location Error Statistics

Location Accuracy,Scale,ID

|                                   |         |       |  |
|-----------------------------------|---------|-------|--|
| Scan Range-0-937; Pix Range-0-934 |         |       |  |
| Number of GCPs                    | 2       |       |  |
| Location Error(Km)                |         |       |  |
| Along(Mean,Dir)                   | -18.245 | S     |  |
| Across(Mean,Dir)                  | 29.42   | E     |  |
| Scale(Km)                         |         |       |  |
| Average Scale (Mean,%Variation)   | 4.66    | 16.61 |  |
| Internal Distortion(Pixel)        |         |       |  |
| Along(Mean,Stddev)                | -0.11   | 0.00  |  |
| Across(Mean,Stddev)               | 1.19    | 0.00  |  |

|                                      |         |      |  |
|--------------------------------------|---------|------|--|
| Scan Range-0-937; Pix Range-934-1869 |         |      |  |
| Number of GCPs                       | 5       |      |  |
| Location Error(Km)                   |         |      |  |
| Along(Mean,Dir)                      | -13.178 | S    |  |
| Across(Mean,Dir)                     | 14.00   | E    |  |
| Scale(Km)                            |         |      |  |
| Average Scale (Mean,%Variation)      | 4.30    | 7.53 |  |
| Internal Distortion(Pixel)           |         |      |  |
| Along(Mean,Stddev)                   | 0.45    | 0.79 |  |
| Across(Mean,Stddev)                  | 1.33    | 0.87 |  |

|                                       |         |         |  |
|---------------------------------------|---------|---------|--|
| Scan Range-0-937; Pix Range-1869-2805 |         |         |  |
| Number of GCPs                        | 1       |         |  |
| Location Error(Km)                    |         |         |  |
| Along(Mean,Dir)                       | -17.71  | S       |  |
| Across(Mean,Dir)                      | 13.61   | E       |  |
| 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                       | 1       |         |  |
| Location Error(Km)                   |         |         |  |
| Along(Mean,Dir)                      | -11.74  | S       |  |
| Across(Mean,Dir)                     | 22.91   | E       |  |
| 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-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                           | 2      |      |  |
| Location Error(Km)                       |        |      |  |
| Along(Mean,Dir)                          | -11.09 | S    |  |
| Across(Mean,Dir)                         | 11.72  | E    |  |
| Scale(Km)                                |        |      |  |
| Average Scale (Mean,%Variation)          | 4.26   | 6.59 |  |
| Internal Distortion(Pixel)               |        |      |  |
| Along(Mean,Stddev)                       | 1.42   | 0.00 |  |
| Across(Mean,Stddev)                      | 2.36   | 0.00 |  |

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