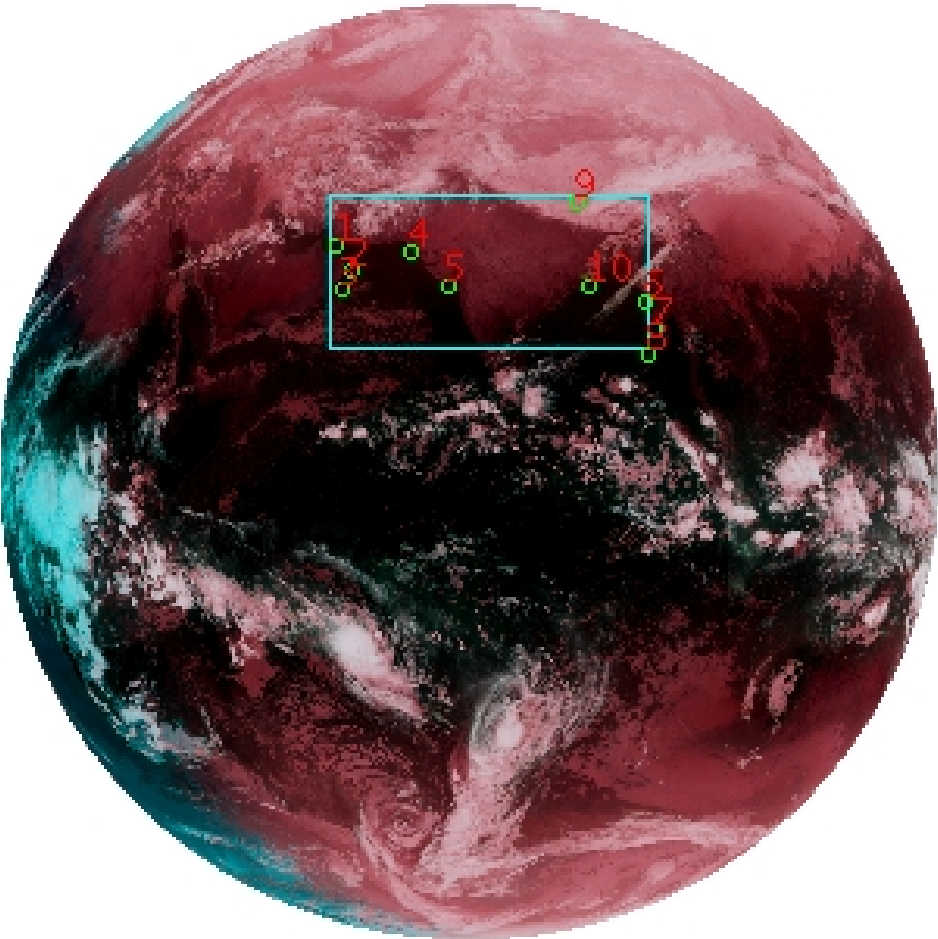


DQE Report: Location Accuracy of INSAT-3DR-IMG STANDARD (FULL DISK) Product 3RIMG\_09FEB2019\_1545

|               |                |                 |               |                 |          |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| 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) |                 |          |

(81.042N,-7.157W)

(81.042N,155.157E)



(-81.042S,-7.157W)

(-81.042S,155.157E)

GCP Distribution overview for 3RIMG09FEB20191545L1BSTD

Image Width: 2805 Image Height: 2816 No Of GCPs: 10

GCP Coverage(%) 15.69 (N-S) 32.86 (E-W)

Location Error(E)

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

Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | 1.420  | N         | 0.819  | 1.640 |
| Across | -3.710 | W         | 1.206  | 3.901 |

Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 4.347      | 0.232  | 8.669      |
| Along   | 5.972      | 6.895  | 49.302     |
| Across  | 4.508      | 1.358  | 12.702     |

Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean  | Stddev | RMS   |
|--------|------------|-------|--------|-------|
| Along  | 2.705      | 0.188 | 0.73   | 0.756 |
| Across | 2.665      | 1.964 | 0.93   | 2.175 |

Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw      |
|----------|----------|----------|
| -0.02331 | -0.00942 | -0.04657 |

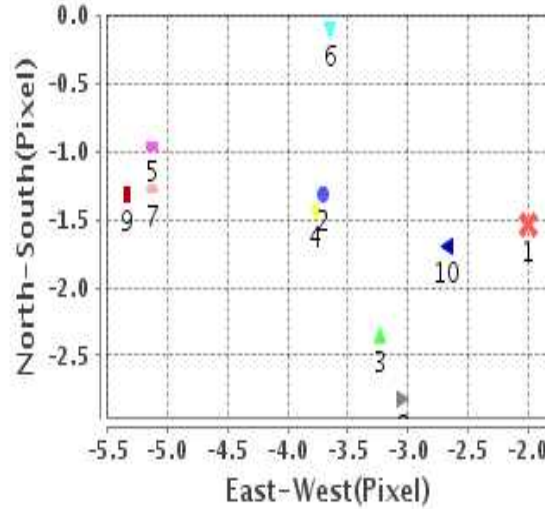
Reference Used

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

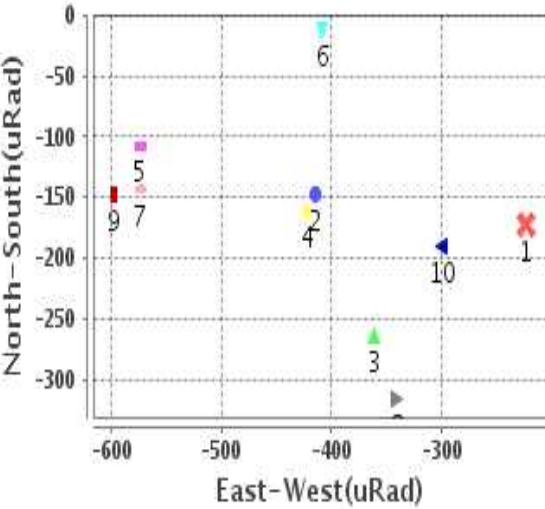
Radial Error (in IR Pixels)

|      |       |
|------|-------|
| Mean | 4.121 |
| Min  | 2.627 |
| Max  | 5.678 |
| CE90 | 5.335 |

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)   | 0.0     |
| 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 : 3RIMG09FEB20191545L1BSTD**

(-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

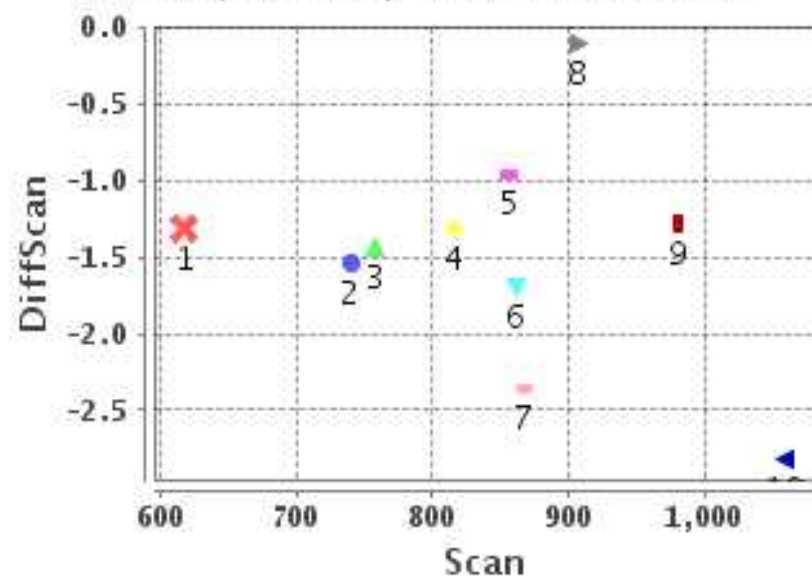
Image Width (pixels) : 2805      Image Height (pixels) : 2816      No of GCPs : 10

|                 | Mean   | StdDev | Min    | Max     | Coverage(in %) |
|-----------------|--------|--------|--------|---------|----------------|
| <b>GCP Scan</b> | 846.4  | 118.5  | 617.5  | 1059.25 | 15.69 (N-S)    |
| <b>GCP Pix</b>  | 1477.9 | 370.5  | 1001.8 | 1923.50 | 32.86 (E-W)    |

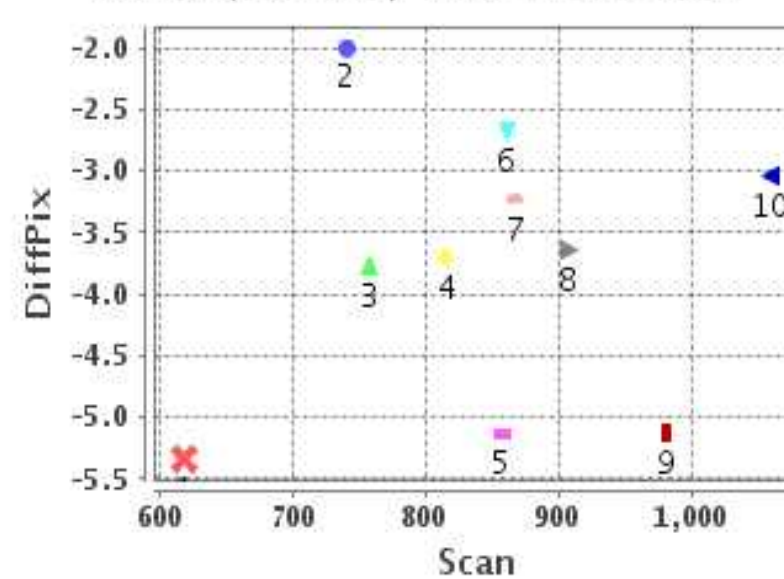
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan   | Pix    | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|--------|--------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 740.0  | 1001.8 | -1.5            | -2.00           | 7.538       | N   | 7.323       | W   | Accepted |
| 2  | 815.5  | 1050.0 | -1.3            | -3.70           | 4.179       | N   | 16.574      | W   | Accepted |
| 3  | 867.2  | 1023.5 | -2.4            | -3.23           | 9.522       | N   | 13.268      | W   | Accepted |
| 4  | 758.0  | 1222.8 | -1.4            | -3.77           | 7.522       | N   | 13.920      | W   | Accepted |
| 5  | 857.0  | 1325.2 | -1.0            | -5.13           | 4.870       | N   | 20.779      | W   | Accepted |
| 6  | 907.2  | 1896.8 | -0.1            | -3.64           | 1.114       | S   | 13.406      | W   | Accepted |
| 7  | 981.5  | 1923.5 | -1.3            | -5.12           | 2.329       | N   | 20.346      | W   | Accepted |
| 8  | 1059.2 | 1901.2 | -2.8            | -3.04           | 10.065      | N   | 11.574      | W   | Accepted |
| 9  | 617.5  | 1699.5 | -1.3            | -5.34           | 4.200       | N   | 22.320      | W   | Accepted |
| 10 | 861.0  | 1734.5 | -1.7            | -2.67           | 7.697       | N   | 8.883       | W   | Accepted |

### Error(Pixels) Vs. GCPScan



### Error(Pixels) Vs. GCPScan



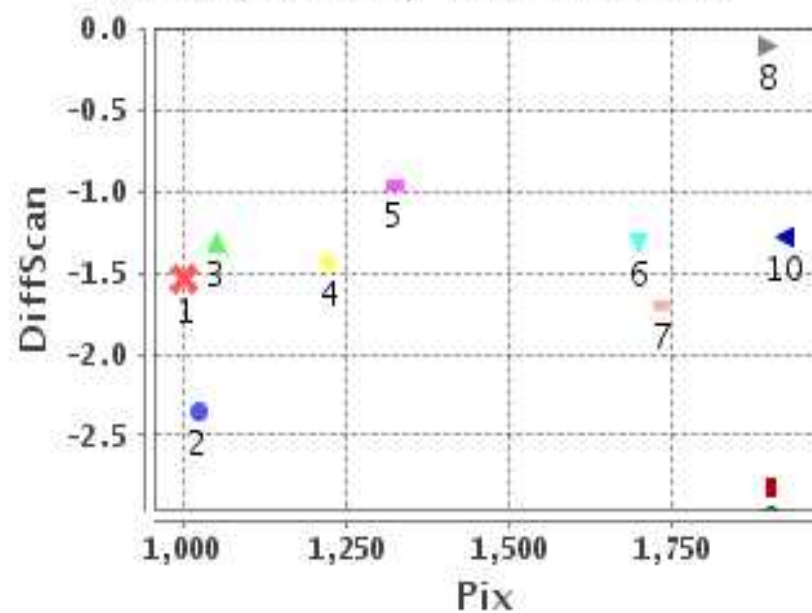
#### Number Of Points

|       |    |
|-------|----|
| North | 9  |
| South | 1  |
| East  | 0  |
| West  | 10 |

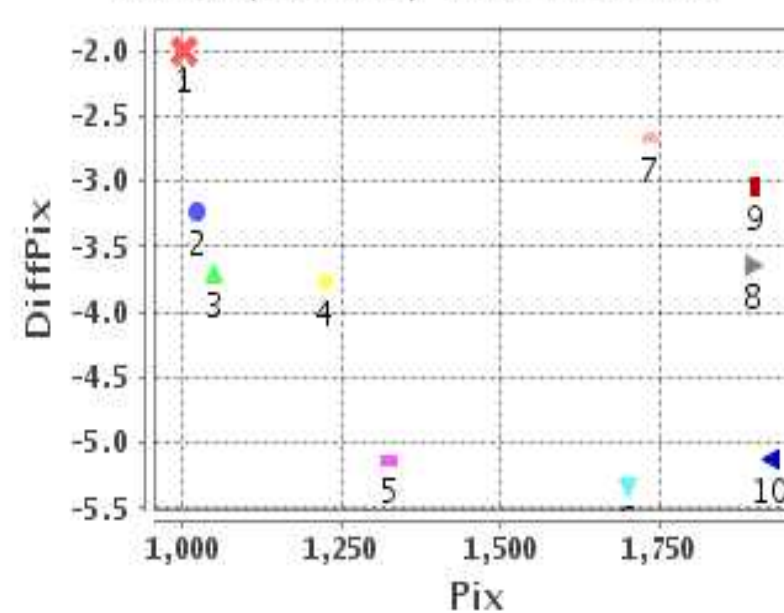
#### Radial Error ( Km )

|      |       |
|------|-------|
| Mean | 4.121 |
| Min  | 2.627 |
| Max  | 5.678 |
| CE90 | 5.335 |

### Error(Pixels) Vs. GCPPix



### Error(Pixels) Vs. GCPPix



#### Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | 1.420  | 0.819  | 1.640 | N   | 1.511    | 1.726    |
| Across ( Km ) | -3.710 | 1.206  | 3.901 | W   | 3.667    | 4.066    |

Block-Wise Geo location Error Statistics

Location Accuracy,Scale,ID

| Scan Range-0-937; 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-0-937; Pix Range-934-1869 |         |       |
| Number of GCPs                       | 7       |       |
| Location Error(Km)                   |         |       |
| Along(Mean,Dir)                      | 6.50429 | N     |
| Across(Mean,Dir)                     | -14.72  | W     |
| Scale(Km)                            |         |       |
| Average Scale (Mean,%Variation)      | 4.47    | 11.83 |
| Internal Distortion(Pixel)           |         |       |
| Along(Mean,Stddev)                   | 0.24    | 0.43  |
| Across(Mean,Stddev)                  | 1.98    | 0.96  |

|                                       |         |         |
|---------------------------------------|---------|---------|
| Scan Range-0-937; Pix Range-1869-2805 |         |         |
| Number of GCPs                        | 1       |         |
| Location Error(Km)                    |         |         |
| Along(Mean,Dir)                       | -1.11   | S       |
| Across(Mean,Dir)                      | -13.41  | W       |
| 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                       | -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-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)                          | 6.195  | N    |
| Across(Mean,Dir)                         | -15.96 | W    |
| Scale(Km)                                |        |      |
| Average Scale (Mean,%Variation)          | 4.28   | 6.89 |
| Internal Distortion(Pixel)               |        |      |
| Along(Mean,Stddev)                       | 1.54   | 0.00 |
| Across(Mean,Stddev)                      | 2.08   | 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