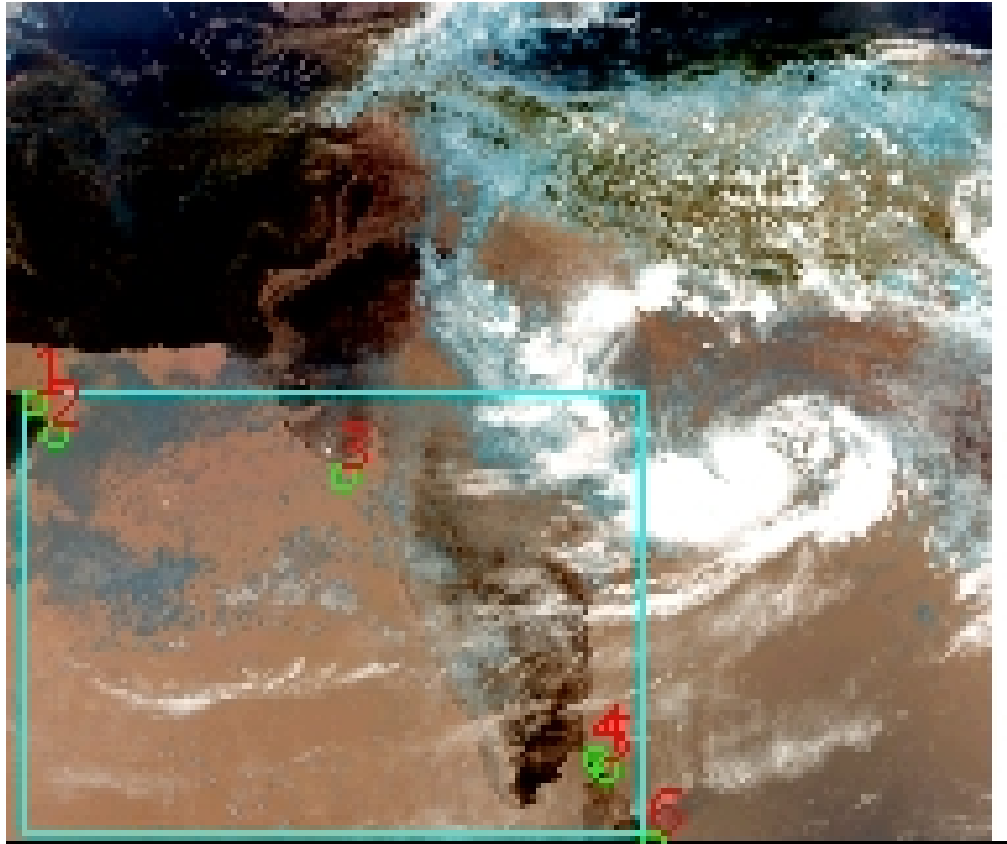


## DQE Report: Location Accuracy of INSAT-3DR-SND STANDARD Product 3RSND\_06SEP2018\_0500

**Satellite** INSAT-3DR    **No Of Bands** 19    **Product Type** STANDARD  
**Sensor** SND    **LvlOfProcess** L1B    **Selected Band** 2-LWIR3  
**DOP/Time** 06-09-18/05:00    **Station ID** BES    **Field View(deg)** 6.136  
**Res(Y,X) [Km]** (10.0,10.0)    **Res(Y,X) [uRad]** (280.0,280.0)

(41.802N,54.127W)

(41.802N,104.897E)



(7.024S,54.127W)

(7.024S,104.897E)

GCP Distribution overview for 3RSND06SEP20180500L1BSA1

**Image Width:** 384    **Image Height:** 320    **No Of GCPs:** 6

**GCP Coverage(%)** 52.34    **(N-S)** 61.39    **(E-W)**

**Location Error(E)**

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

### Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | 1.159  | N         | 0.775  | 1.394 |
| Across | -1.957 | W         | 0.620  | 2.053 |

### Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 10.082     | 0.530  | 0.822      |
| Along   | 10.362     | 0.150  | 3.622      |
| Across  | 10.810     | 0.009  | 8.095      |

### Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean   | Stddev | RMS   |
|--------|------------|--------|--------|-------|
| Along  | 2.104      | 0.957  | 0.78   | 1.236 |
| Across | 1.354      | -0.533 | 0.49   | 0.722 |

### Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw     |
|----------|----------|---------|
| -0.02789 | -0.02200 | 0.23947 |

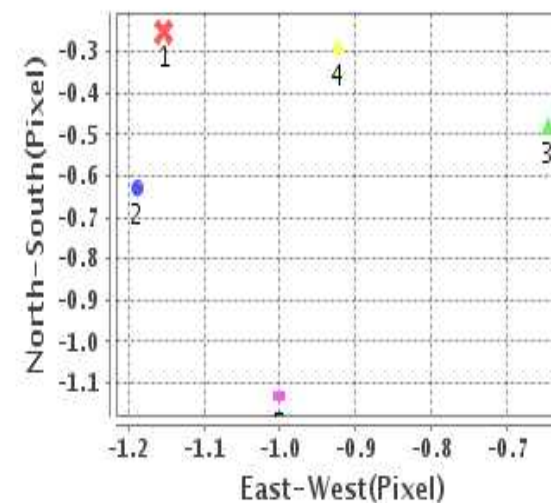
### Reference Used

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

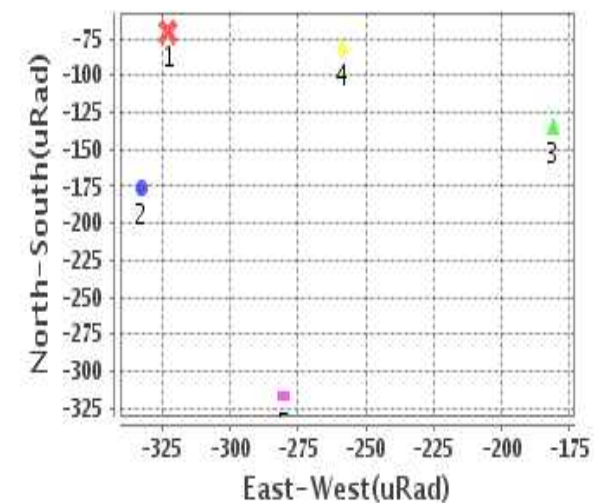
### Radial Error (in IR Pixels)

|      |       |
|------|-------|
| Mean | 2.366 |
| Min  | 1.292 |
| Max  | 3.390 |
| CE90 | 2.907 |

### Location Error For GCPs(Pixel)



### Location Error For GCPs(uRad)



Detailed Product Information

Ancillary Info

|                   |               |                           |            |
|-------------------|---------------|---------------------------|------------|
| Satellite         | INSAT-3DR     | Generation Date           | 06-09-18   |
| Sensor            | SND           | DQE Date                  | 10-09-2018 |
| PassType          | NONE          | Aquisition Date           | 06-09-18   |
| Imaging Mode      | FULL_FRAME    | Aquisition Time(GMT)      | 05:00      |
| 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)   | 74.0       |
| LvlOfProcessing   | STANDARD      | Predicted Center Lat(deg) | -999.99    |
| DP JobId          | 3RSND_06SEP20 | Predicted Center Lon(deg) | -999.99    |
| ProductCode       | NONE          |                           |            |
| Field View(deg)   | 6.136         |                           |            |

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)   | 24.413  |
| Center Lon(deg)   | 79.512  |
| 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) | 41.802  |
| NW_Lon(deg) | 54.127  |
| SW_Lat(deg) | 7.024   |
| SW_Lon(deg) | 54.127  |
| NE_Lat(deg) | 41.802  |
| NE_Lon(deg) | 104.897 |
| SE_Lat(deg) | 7.024   |
| SE_Lon(deg) | 104.897 |

Band Wise Details

|       | Res_AL(Km) | Res_AX(Km) | Image Height | Image Width |
|-------|------------|------------|--------------|-------------|
| LWIR1 | 10.0       | 10.0       | 320          | 384         |
| LWIR2 | 10.0       | 10.0       | 320          | 384         |
| LWIR3 | 10.0       | 10.0       | 320          | 384         |
| LWIR4 | 10.0       | 10.0       | 320          | 384         |
| LWIR5 | 10.0       | 10.0       | 320          | 384         |
| LWIR6 | 10.0       | 10.0       | 320          | 384         |

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 : 3RSND06SEP20180500L1BSA1**

(-999.99 - Not Available/Not Computed)

| Ref.No | Source | File Name       | Resolution ( m ) | Projection |
|--------|--------|-----------------|------------------|------------|
| 1      | ETM    | world_Band1.img | 500.0            | GCP        |

## Location Accuracy

### GCP Distribution Statistics

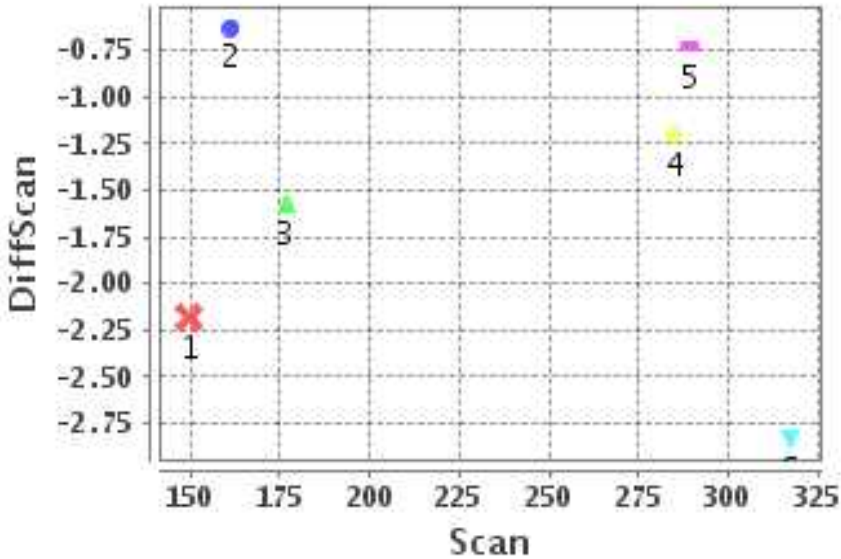
Image Width (pixels) : 384      Image Height (pixels) : 320      No of GCPs : 6

|          | Mean  | StdDev | Min   | Max    | Coverage(in %) |
|----------|-------|--------|-------|--------|----------------|
| GCP Scan | 229.9 | 68.6   | 149.8 | 317.25 | 52.34 (N-S)    |
| GCP Pix  | 139.7 | 98.1   | 7.5   | 243.25 | 61.39 (E-W)    |

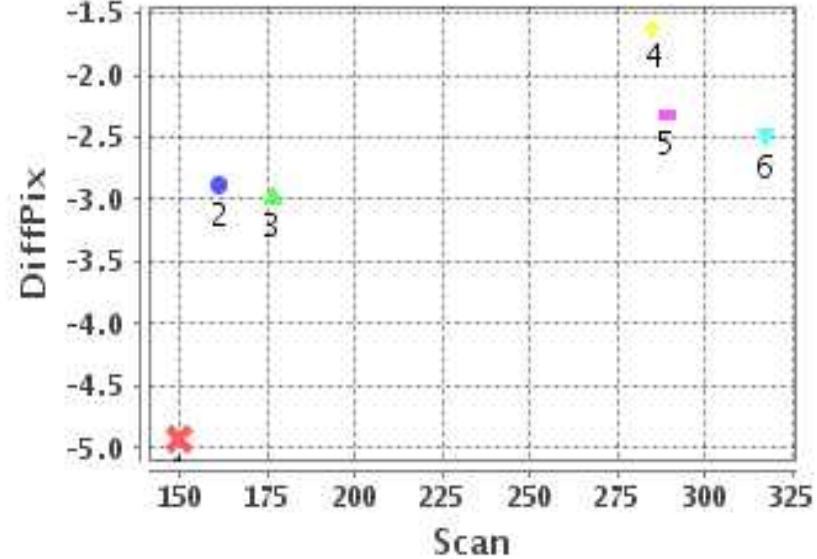
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan  | Pix   | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|-------|-------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 149.8 | 7.5   | -2.2            | -4.92           | 18.752      | N   | 53.278      | W   | Rejected |
| 2  | 161.2 | 15.8  | -0.6            | -2.88           | 4.741       | N   | 23.851      | W   | Accepted |
| 3  | 176.5 | 125.5 | -1.6            | -2.97           | 12.788      | N   | 26.103      | W   | Accepted |
| 4  | 285.2 | 220.8 | -1.2            | -1.62           | 9.680       | N   | 8.556       | W   | Accepted |
| 5  | 289.2 | 225.5 | -0.7            | -2.31           | 4.880       | N   | 17.439      | W   | Accepted |
| 6  | 317.2 | 243.2 | -2.8            | -2.50           | 25.857      | N   | 21.919      | W   | Accepted |

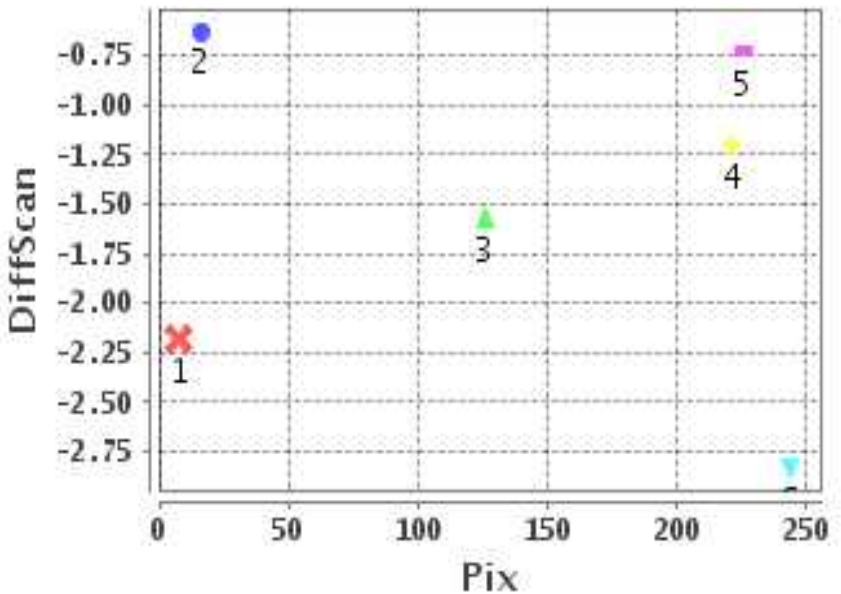
Error(Pixels) Vs. GCPScan



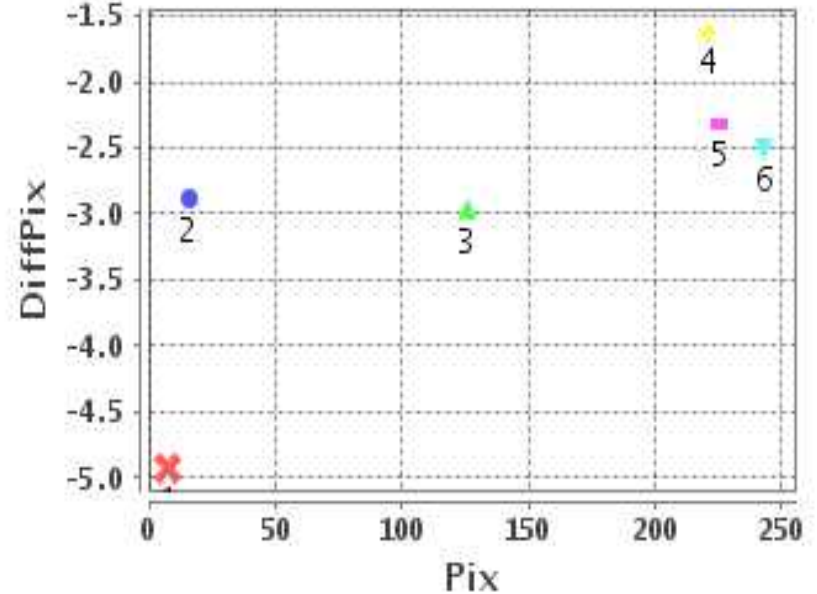
Error(Pixels) Vs. GCPScan



Error(Pixels) Vs. GCPPix



Error(Pixels) Vs. GCPPix



Number Of Points

|       |   |
|-------|---|
| North | 5 |
| South | 0 |
| East  | 0 |
| West  | 5 |

Radial Error ( Km )

|      |       |
|------|-------|
| Mean | 2.366 |
| Min  | 1.292 |
| Max  | 3.390 |
| CE90 | 2.907 |

Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | 1.159  | 0.775  | 1.394 | N   | 0.871    | 1.541    |
| Across ( Km ) | -1.957 | 0.620  | 2.053 | W   | 1.889    | 2.255    |

Block-Wise Geo location Error Statistics

Location Accuracy,Scale,ID

|                                   |         |          |
|-----------------------------------|---------|----------|
| Scan Range-0-105; Pix Range-0-127 |         |          |
| 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-0-105; Pix Range-127-255 |         |          |
| 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-0-105; Pix Range-255-384 |         |          |
| 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-105-212; Pix Range-0-127 |        |      |
| Number of GCPs                      | 2      |      |
| Location Error(Km)                  |        |      |
| Along(Mean,Dir)                     | 8.765  | N    |
| Across(Mean,Dir)                    | -24.98 | W    |
| Scale(Km)                           |        |      |
| Average Scale (Mean,%Variation)     | 10.73  | 7.29 |
| Internal Distortion(Pixel)          |        |      |
| Along(Mean,Stddev)                  | 0.95   | 0.00 |
| Across(Mean,Stddev)                 | 0.09   | 0.00 |

|                                       |         |          |
|---------------------------------------|---------|----------|
| Scan Range-105-212; Pix Range-127-255 |         |          |
| 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-105-212; Pix Range-255-384 |         |          |
| 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-212-320; Pix Range-0-127 |         |          |
| 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-212-320; Pix Range-105-255 |        |      |
| Number of GCPs                        | 3      |      |
| Location Error(Km)                    |        |      |
| Along(Mean,Dir)                       | 13.472 | N    |
| Across(Mean,Dir)                      | -15.97 | W    |
| Scale(Km)                             |        |      |
| Average Scale (Mean,%Variation)       | 9.31   | 6.86 |
| Internal Distortion(Pixel)            |        |      |
| Along(Mean,Stddev)                    | 0.58   | 1.05 |
| Across(Mean,Stddev)                   | 0.79   | 0.09 |

|                                       |         |          |
|---------------------------------------|---------|----------|
| Scan Range-212-320; Pix Range-255-384 |         |          |
| 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