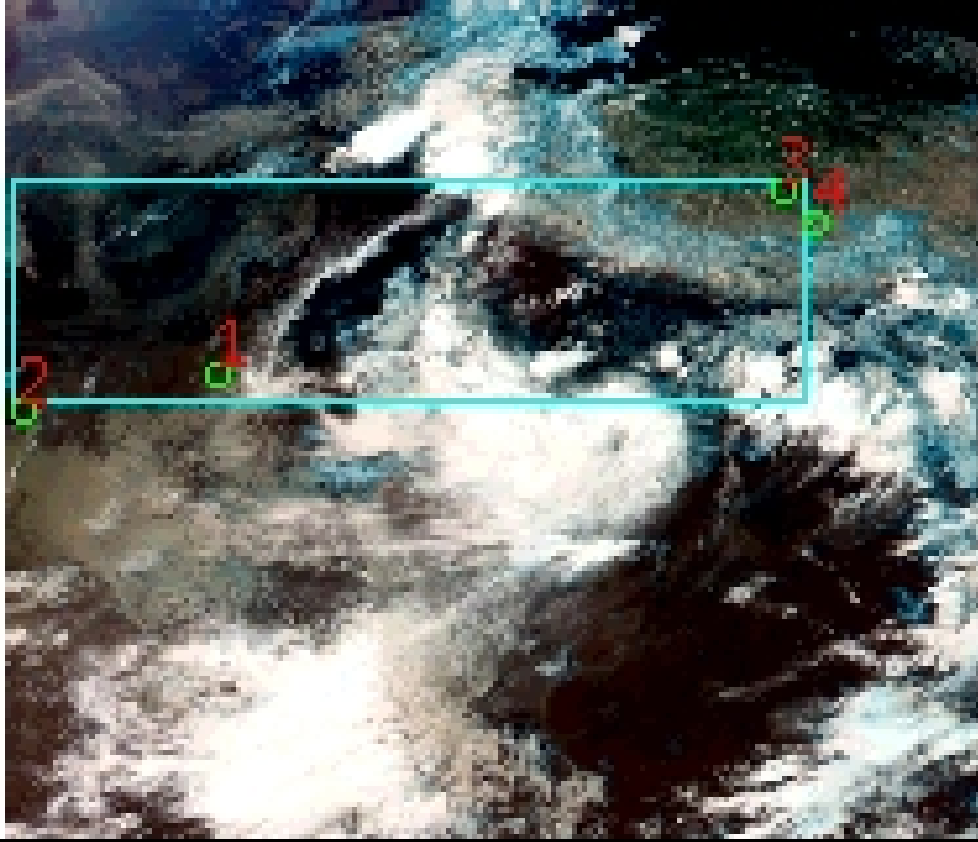


## DQE Report: Location Accuracy of INSAT-3D-SND STANDARD Product 3DSND\_14AUG2019\_0200

|                      |                |                        |               |                        |          |
|----------------------|----------------|------------------------|---------------|------------------------|----------|
| <b>Satellite</b>     | INSAT-3D       | <b>No Of Bands</b>     | 19            | <b>Product Type</b>    | STANDARD |
| <b>Sensor</b>        | SND            | <b>LvlOfProcess</b>    | L1B           | <b>Selected Band</b>   | 2-LWIR3  |
| <b>DOP/Time</b>      | 14-08-19/02:00 | <b>Station ID</b>      | BES           | <b>Field View(deg)</b> | 6.136    |
| <b>Res(Y,X) [Km]</b> | (10.0,10.0)    | <b>Res(Y,X) [uRad]</b> | (280.0,280.0) |                        |          |

(41.429N,49.925W)

(41.429N,100.623E)



(6.848S,49.925W)

(6.848S,100.623E)

GCP Distribution overview for 3DSND14AUG20190200L1BSA1

**Image Width:** 384 **Image Height:** 320 **No Of GCPs:** 4

**GCP Coverage(%)** 25.94 **(N-S)** 78.32 **(E-W)**

### Location Error(E)

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

### Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | 2.549  | N         | 3.481  | 4.315 |
| Across | -4.418 | W         | 1.775  | 4.761 |

### Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 11.375     | 0.233  | 13.749     |
| Along   | -1.000     | -1.000 | -999.990   |
| Across  | -1.000     | -1.000 | -999.990   |

### Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean   | Stddev | RMS   |
|--------|------------|--------|--------|-------|
| Along  | 5.132      | 4.663  | 2.26   | 5.182 |
| Across | 1.129      | -2.282 | 0.48   | 2.331 |

### Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw      |
|----------|----------|----------|
| -0.07126 | -0.04370 | -1.34272 |

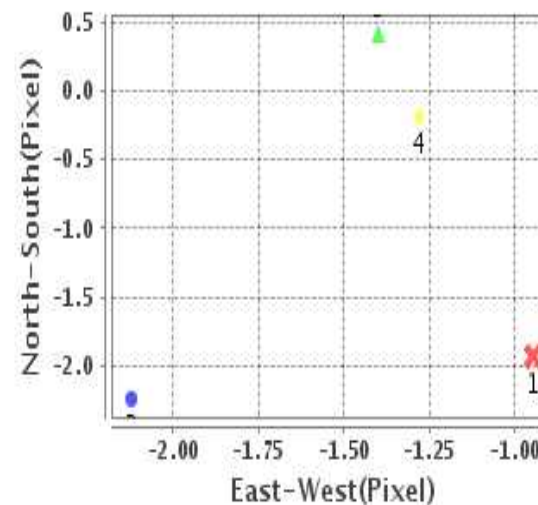
### Reference Used

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

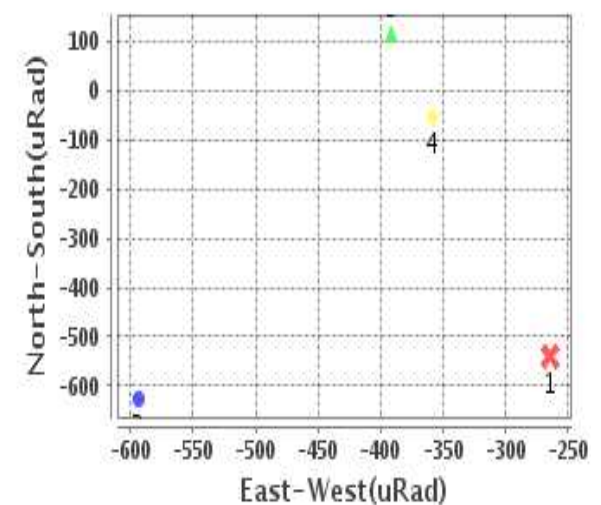
### Radial Error (in IR Pixels)

|      |        |
|------|--------|
| Mean | 5.894  |
| Min  | 3.623  |
| Max  | 10.097 |
| CE90 | 5.792  |

### Location Error For GCPs(Pixel)



### Location Error For GCPs(uRad)



Detailed Product Information

Ancillary Info

|                   |              |                           |            |
|-------------------|--------------|---------------------------|------------|
| Satellite         | INSAT-3D     | Generation Date           | 14-08-19   |
| Sensor            | SND          | DQE Date                  | 19-08-2019 |
| PassType          | NONE         | Aquisition Date           | 14-08-19   |
| Imaging Mode      | FULL_FRAME   | Aquisition Time(GMT)      | 02:00      |
| 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)   | 82.0       |
| LvlOfProcessing   | STANDARD     | Predicted Center Lat(deg) | -999.99    |
| DP JobId          | 3DSND_14AUG2 | 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)   | 24.139  |
| Center Lon(deg)   | 75.274  |
| 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) | 41.429  |
| NW_Lon(deg) | 49.925  |
| SW_Lat(deg) | 6.848   |
| SW_Lon(deg) | 49.925  |
| NE_Lat(deg) | 41.429  |
| NE_Lon(deg) | 100.623 |
| SE_Lat(deg) | 6.848   |
| SE_Lon(deg) | 100.623 |

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 :** 3DSND14AUG20190200L1BSA1

(-999.99 - Not Available/Not Computed)

| Ref.No | Source | File Name       | Resolution<br>( m ) | Projection |
|--------|--------|-----------------|---------------------|------------|
| 1      | ETM    | world_Band1.img | 500.0               | GGP        |

## Location Accuracy

### GCP Distribution Statistics

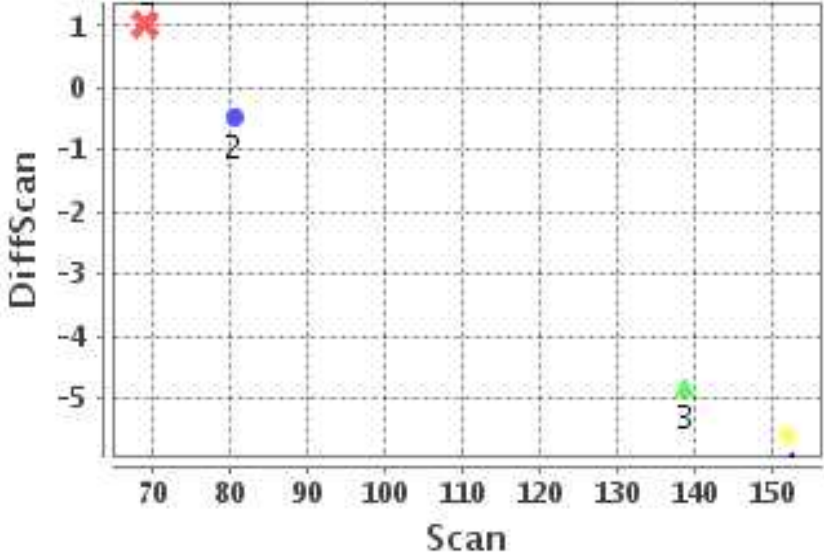
Image Width (pixels) : 384      Image Height (pixels) : 320      No of GCPs : 4

|          | Mean  | StdDev | Min  | Max    | Coverage(in %) |
|----------|-------|--------|------|--------|----------------|
| GCP Scan | 110.1 | 35.9   | 69.0 | 152.00 | 25.94 (N-S)    |
| GCP Pix  | 181.2 | 131.8  | 15.5 | 316.25 | 78.32 (E-W)    |

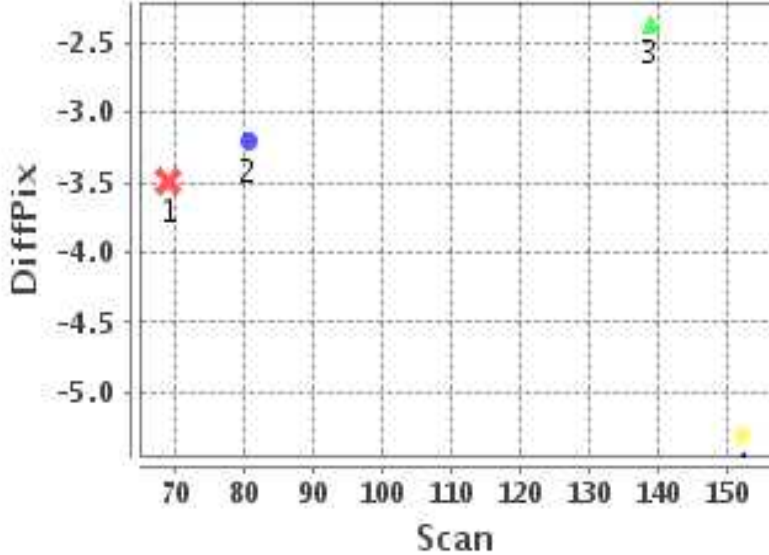
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan  | Pix   | DiffScan<br>(line) | DiffPix<br>(pixel) | DifLat<br>(Km) | Dir | DifLon<br>(Km) | Dir | Status   |
|----|-------|-------|--------------------|--------------------|----------------|-----|----------------|-----|----------|
| 1  | 138.8 | 88.5  | -4.8               | -2.37              | 50.367         | N   | 28.606         | W   | Accepted |
| 2  | 152.0 | 15.5  | -5.6               | -5.30              | 68.308         | N   | 74.353         | W   | Accepted |
| 3  | 69.0  | 304.5 | 1.0                | -3.50              | 15.551         | S   | 37.555         | W   | Accepted |
| 4  | 80.5  | 316.2 | -0.5               | -3.20              | 1.161          | S   | 36.213         | W   | Accepted |

Error(Pixels) Vs. GCPScan



Error(Pixels) Vs. GCPScan



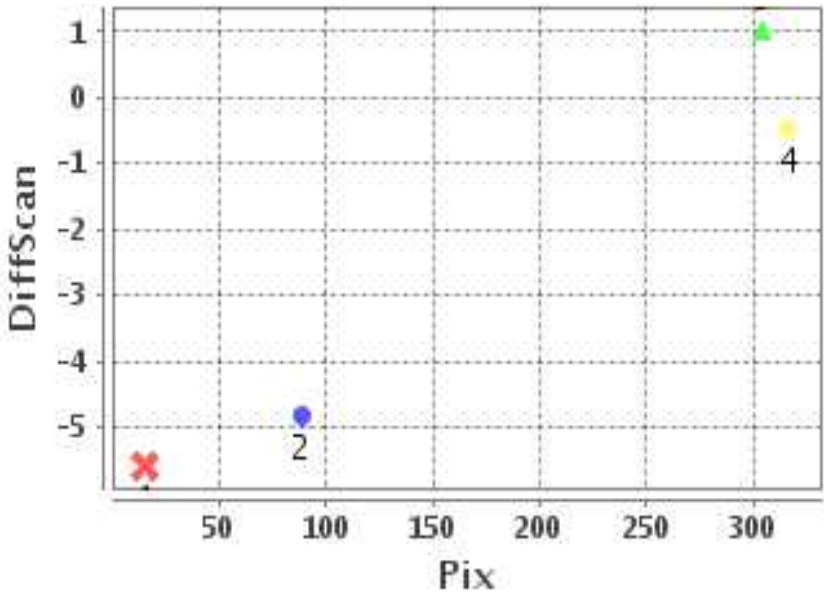
Number Of Points

|       |   |
|-------|---|
| North | 2 |
| South | 2 |
| East  | 0 |
| West  | 4 |

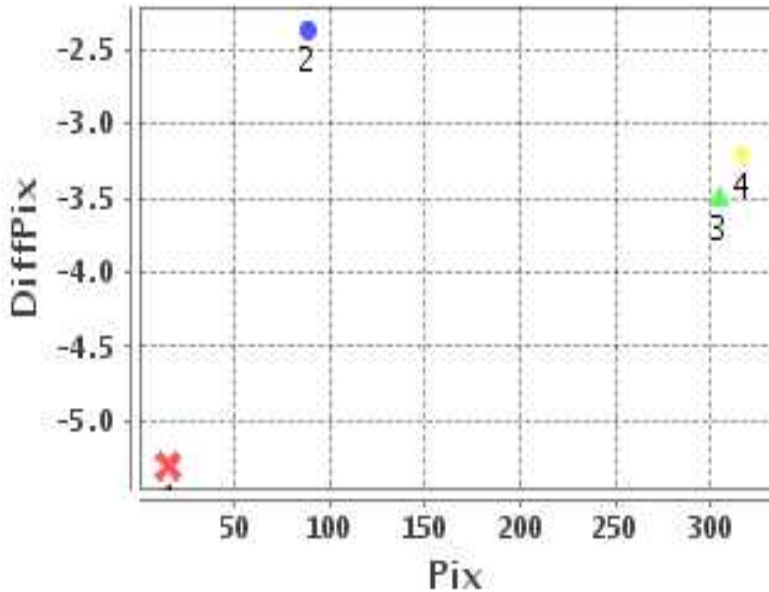
Radial Error ( Km )

|      |        |
|------|--------|
| Mean | 5.894  |
| Min  | 3.623  |
| Max  | 10.097 |
| CE90 | 5.792  |

Error(Pixels) Vs. GCPPix



Error(Pixels) Vs. GCPPix



Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | 2.549  | 3.481  | 4.315 | N   | 3.044    | 4.982    |
| Across ( Km ) | -4.418 | 1.775  | 4.761 | W   | 3.435    | 5.244    |

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                      | 2      |       |
| Location Error(Km)                  |        |       |
| Along(Mean,Dir)                     | -8.355 | S     |
| Across(Mean,Dir)                    | -36.88 | W     |
| Scale(Km)                           |        |       |
| Average Scale (Mean,%Variation)     | 11.62  | 16.16 |
| Internal Distortion(Pixel)          |        |       |
| Along(Mean,Stddev)                  | 1.50   | 0.00  |
| Across(Mean,Stddev)                 | -0.29  | 0.00  |

|                                     |        |       |
|-------------------------------------|--------|-------|
| Scan Range-105-212; Pix Range-0-127 |        |       |
| Number of GCPs                      | 2      |       |
| Location Error(Km)                  |        |       |
| Along(Mean,Dir)                     | 59.34  | N     |
| Across(Mean,Dir)                    | -51.48 | W     |
| Scale(Km)                           |        |       |
| Average Scale (Mean,%Variation)     | 11.76  | 17.62 |
| Internal Distortion(Pixel)          |        |       |
| Along(Mean,Stddev)                  | 0.77   | 0.00  |
| Across(Mean,Stddev)                 | -2.94  | 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                        | -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-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