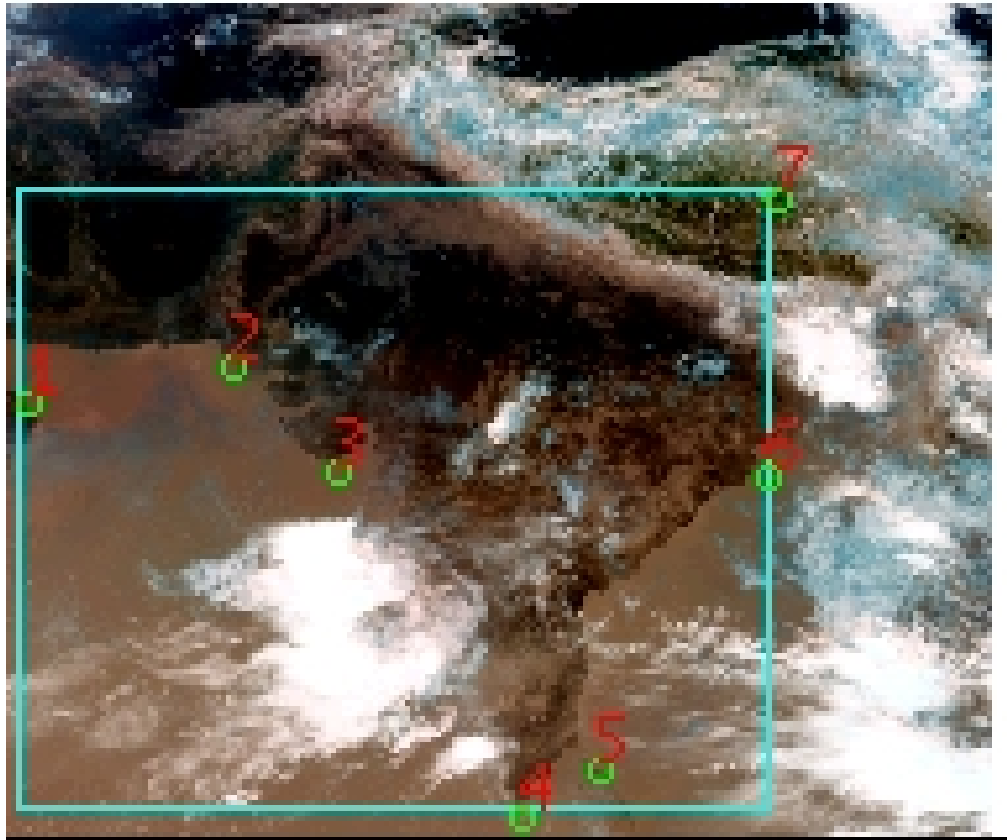


# DQE Report: Location Accuracy of INSAT-3DR-SND STANDARD Product 3RSND\_19JUN2018\_0300

|               |                |                 |               |                 |          |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| Satellite     | INSAT-3DR      | No Of Bands     | 19            | Product Type    | STANDARD |
| Sensor        | SND            | LvlOfProcess    | L1B           | Selected Band   | 2-LWIR3  |
| DOP/Time      | 19-06-18/03:00 | Station ID      | BES           | Field View(deg) | 6.136    |
| Res(Y,X) [Km] | (10.0,10.0)    | Res(Y,X) [uRad] | (280.0,280.0) |                 |          |

(41.765N,54.31W)

(41.765N,105.046E)



(6.99S,54.31W)

(6.99S,105.046E)

GCP Distribution overview for 3RSND19JUN20180300L1BSA1

Image Width: 384 Image Height: 320 No Of GCPs: 7

GCP Coverage(%) 73.52 (N-S) 74.87 (E-W)

## Location Error(E)

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

## Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | 1.971  | N         | 0.673  | 2.083 |
| Across | -1.778 | W         | 0.944  | 2.014 |

## Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 11.033     | 0.645  | 10.333     |
| Along   | 11.574     | 1.087  | 15.740     |
| Across  | 10.700     | 0.648  | 7.004      |

## Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean   | Stddev | RMS   |
|--------|------------|--------|--------|-------|
| Along  | 2.322      | 0.388  | 0.76   | 0.857 |
| Across | 2.068      | -1.366 | 0.68   | 1.527 |

## Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw      |
|----------|----------|----------|
| -0.02541 | -0.02996 | -0.11906 |

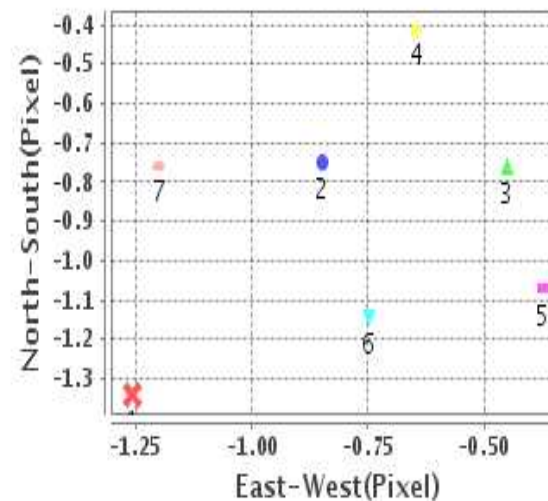
## Reference Used

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

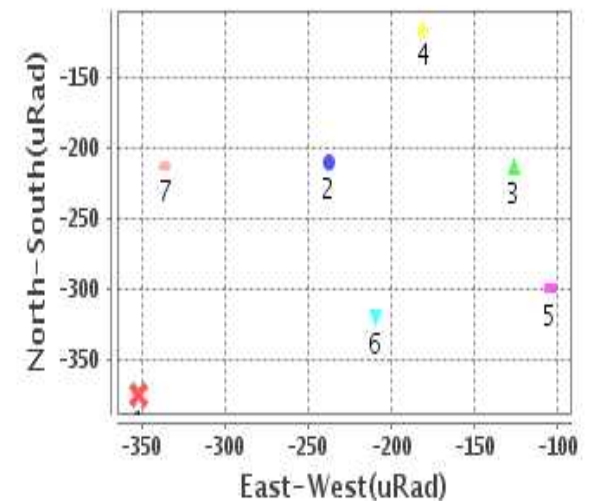
## Radial Error (in IR Pixels)

|      |       |
|------|-------|
| Mean | 2.719 |
| Min  | 1.497 |
| Max  | 4.829 |
| CE90 | 3.099 |

## Location Error For GCPs(Pixel)



## Location Error For GCPs(uRad)



## Detailed Product Information

### Ancillary Info

|                          |               |                                  |            |
|--------------------------|---------------|----------------------------------|------------|
| <b>Satellite</b>         | INSAT-3DR     | <b>Generation Date</b>           | 19-06-18   |
| <b>Sensor</b>            | SND           | <b>DQE Date</b>                  | 25-06-2018 |
| <b>PassType</b>          | NONE          | <b>Aquisition Date</b>           | 19-06-18   |
| <b>Imaging Mode</b>      | FULL_FRAME    | <b>Aquisition Time(GMT)</b>      | 03:00      |
| <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>          | 3RSND_19JUN20 | <b>Predicted Center Lon(deg)</b> | -999.99    |
| <b>ProductCode</b>       | NONE          |                                  |            |
| <b>Field View(deg)</b>   | 6.136         |                                  |            |

### 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>   | 24.377  |
| <b>Center Lon(deg)</b>   | 79.678  |
| <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> | 41.765  |
| <b>NW_Lon(deg)</b> | 54.31   |
| <b>SW_Lat(deg)</b> | 6.99    |
| <b>SW_Lon(deg)</b> | 54.31   |
| <b>NE_Lat(deg)</b> | 41.765  |
| <b>NE_Lon(deg)</b> | 105.046 |
| <b>SE_Lat(deg)</b> | 6.99    |
| <b>SE_Lon(deg)</b> | 105.046 |

### Band Wise Details

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

## 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>                          | pixels | <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 : 3RSND19JUN20180300L1BSA1**

(-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

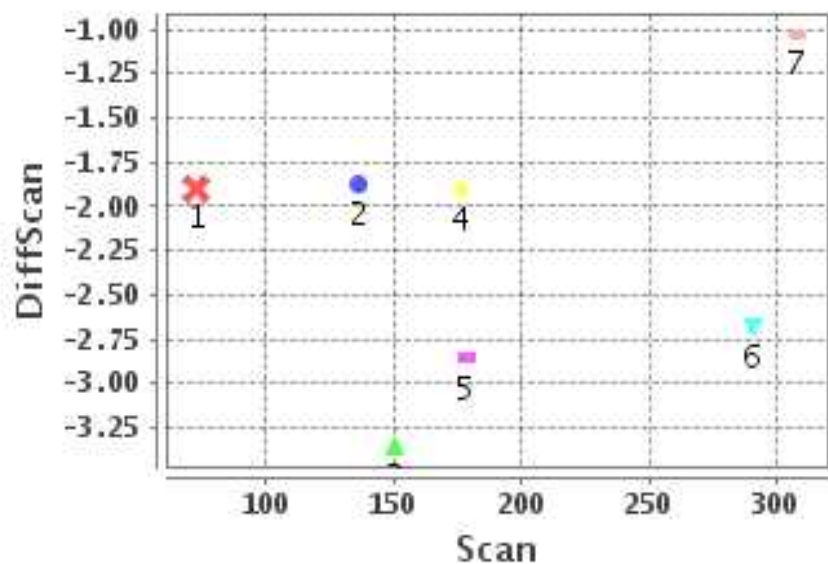
Image Width (pixels) : 384      Image Height (pixels) : 320      No of GCPs : 7

|                 | Mean  | StdDev | Min  | Max    | Coverage(in %) |
|-----------------|-------|--------|------|--------|----------------|
| <b>GCP Scan</b> | 187.7 | 77.9   | 72.8 | 308.00 | 73.52 (N-S)    |
| <b>GCP Pix</b>  | 172.0 | 99.5   | 4.2  | 291.75 | 74.87 (E-W)    |

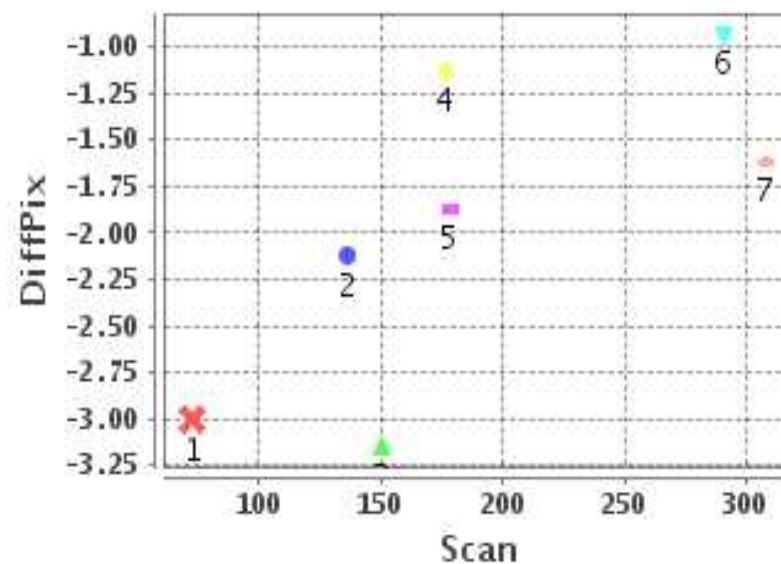
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan  | Pix   | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|-------|-------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 150.8 | 4.2   | -3.4            | -3.15           | 32.066      | N   | 36.108      | W   | Accepted |
| 2  | 136.5 | 82.5  | -1.9            | -2.12           | 17.772      | N   | 19.466      | W   | Accepted |
| 3  | 176.5 | 122.0 | -1.9            | -1.13           | 15.944      | N   | 13.103      | W   | Accepted |
| 4  | 308.0 | 193.5 | -1.0            | -1.62           | 10.457      | N   | 10.710      | W   | Accepted |
| 5  | 290.8 | 222.0 | -2.7            | -0.93           | 18.655      | N   | 8.653       | W   | Accepted |
| 6  | 178.5 | 287.8 | -2.9            | -1.87           | 26.677      | N   | 10.170      | W   | Accepted |
| 7  | 72.8  | 291.8 | -1.9            | -3.00           | 16.418      | N   | 26.285      | W   | Accepted |

### Error(Pixels) Vs. GCPScan



### Error(Pixels) Vs. GCPScan



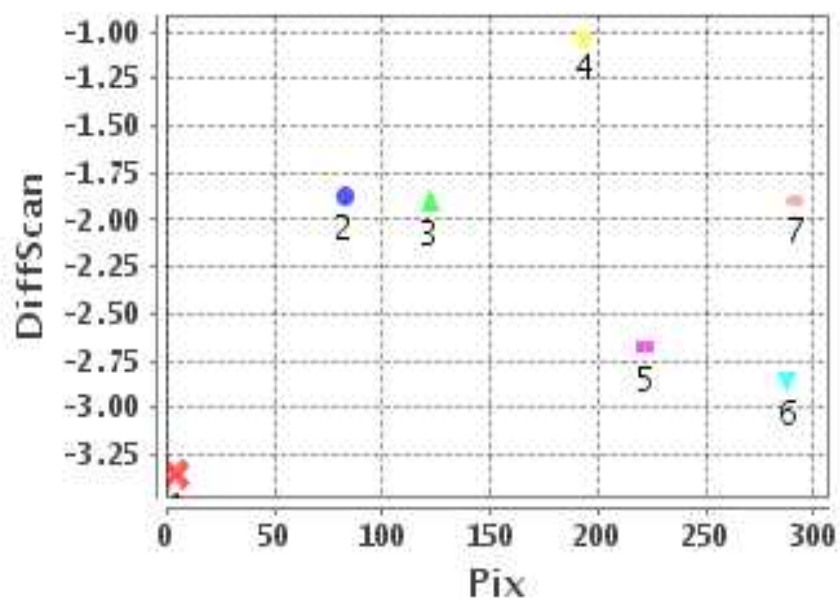
#### Number Of Points

|       |   |
|-------|---|
| North | 7 |
| South | 0 |
| East  | 0 |
| West  | 7 |

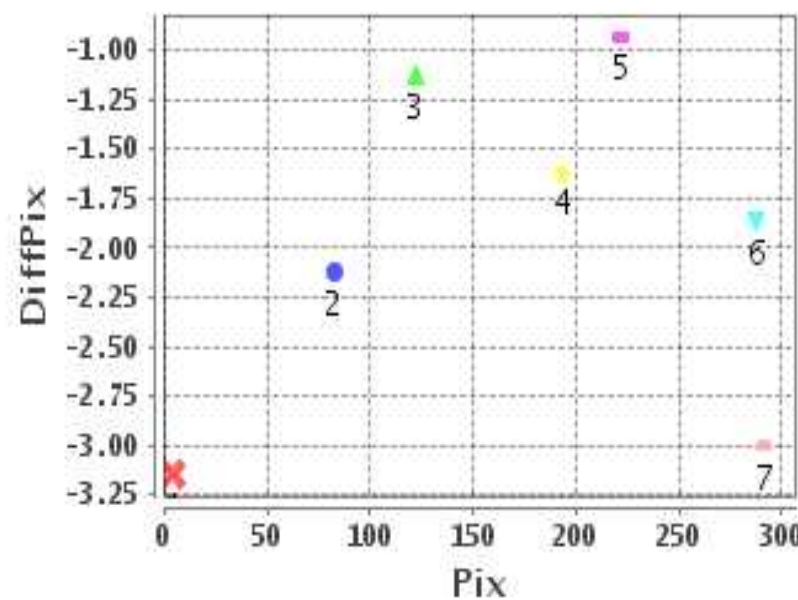
#### Radial Error ( Km )

|      |       |
|------|-------|
| Mean | 2.719 |
| Min  | 1.497 |
| Max  | 4.829 |
| CE90 | 3.099 |

### Error(Pixels) Vs. GCPPix



### Error(Pixels) Vs. GCPPix



#### Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | 1.971  | 0.673  | 2.083 | N   | 1.830    | 2.209    |
| Across ( Km ) | -1.778 | 0.944  | 2.014 | W   | 1.599    | 2.146    |

## Block-Wise Geo location Error Statistics

### Location Accuracy,Scale,ID

|  |         |          |
|--|---------|----------|
| <b>Scan Range-0-105; Pix Range-0-127</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-0-105; Pix Range-127-255</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-0-105; Pix Range-255-384</b> |         |         |
| Number of GCPs                             | 1       |         |
| <b>Location Error(Km)</b>                  |         |         |
| Along(Mean,Dir)                            | 16.42   | N       |
| Across(Mean,Dir)                           | -26.29  | W       |
| <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-105-212; Pix Range-0-127</b> |             |       |
| Number of GCPs                             | 3           |       |
| <b>Location Error(Km)</b>                  |             |       |
| Along(Mean,Dir)                            | 21.92329999 | N     |
| Across(Mean,Dir)                           | -22.89      | W     |
| <b>Scale(Km)</b>                           |             |       |
| Average Scale (Mean,%Variation)            | 11.25       | 12.50 |
| <b>Internal Distortion(Pixel)</b>          |             |       |
| Along(Mean,Stddev)                         | 0.75        | 0.72  |
| Across(Mean,Stddev)                        | -1.52       | 0.50  |

|  |         |          |
|--|---------|----------|
| <b>Scan Range-105-212; Pix Range-127-255</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-105-212; Pix Range-255-384</b> |         |         |
| Number of GCPs                               | 1       |         |
| <b>Location Error(Km)</b>                    |         |         |
| Along(Mean,Dir)                              | 26.67   | N       |
| Across(Mean,Dir)                             | -10.17  | W       |
| <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-212-320; Pix Range-0-127</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-212-320; Pix Range-105-255</b> |         |      |
| Number of GCPs                               | 2       |      |
| <b>Location Error(Km)</b>                    |         |      |
| Along(Mean,Dir)                              | 14.5535 | N    |
| Across(Mean,Dir)                             | -9.68   | W    |
| <b>Scale(Km)</b>                             |         |      |
| Average Scale (Mean,%Variation)              | 10.29   | 2.93 |
| <b>Internal Distortion(Pixel)</b>            |         |      |
| Along(Mean,Stddev)                           | -1.65   | 0.00 |
| Across(Mean,Stddev)                          | -0.68   | 0.00 |

|  |         |          |
|--|---------|----------|
| <b>Scan Range-212-320; Pix Range-255-384</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