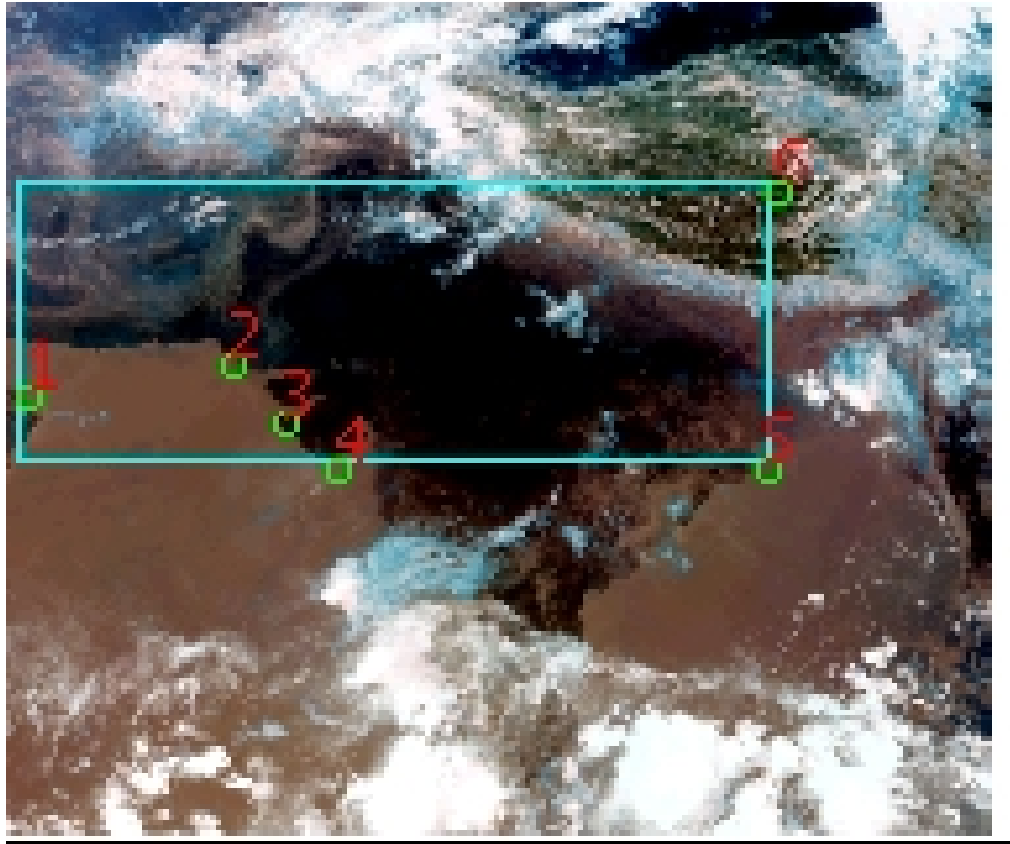


# DQE Report: Location Accuracy of INSAT-3DR-SND STANDARD Product 3RSND\_18MAY2018\_0300

**Satellite** INSAT-3DR      **No Of Bands** 19      **Product Type** STANDARD  
**Sensor** SND              **LvlOfProcess** L1B      **Selected Band** 2-LWIR3  
**DOP/Time** 18-05-18/03:00      **Station ID** BES      **Field View(deg)** 6.136  
**Res(Y,X) [Km]** (10.0,10.0)      **Res(Y,X) [uRad]** (280.0,280.0)

(41.796N,54.329W)

(41.796N,105.078E)



(7.069S,54.329W)

(7.069S,105.078E)

GCP Distribution overview for 3RSND18MAY20180300L1BSA1

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

**GCP Coverage(%)** 33.20      **(N-S)** 74.74      **(E-W)**

### Location Error(E)

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

### Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | -1.880 | S         | 0.785  | 2.038 |
| Across | -2.084 | W         | 1.133  | 2.372 |

### Scale (Km)

|         | Pixel Size | Stddev  | %variation |
|---------|------------|---------|------------|
| Average | 11.306     | 0.591   | 13.056     |
| Along   | 78.241     | 171.523 | 682.411    |
| Across  | 17.022     | 17.262  | 70.217     |

### Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean   | Stddev | RMS   |
|--------|------------|--------|--------|-------|
| Along  | 1.210      | 1.104  | 0.42   | 1.183 |
| Across | 2.407      | -1.917 | 0.83   | 2.087 |

### Attitude Residuals (Deg)

| Pitch    | Roll    | Yaw      |
|----------|---------|----------|
| -0.03062 | 0.03458 | -0.25247 |

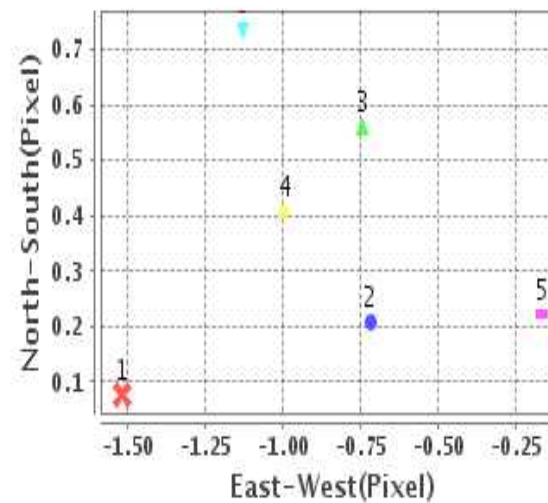
### Reference Used

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

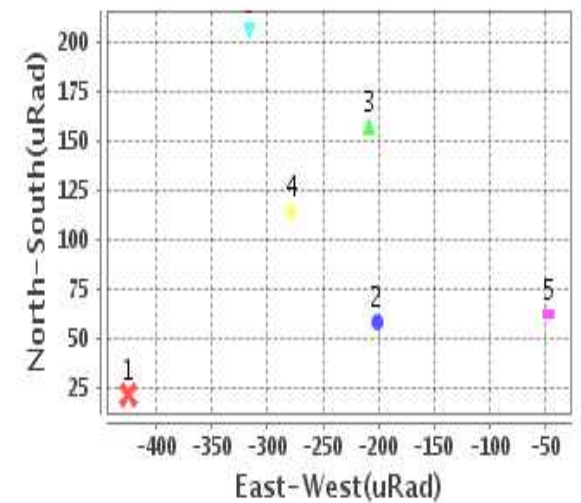
### Radial Error (in IR Pixels)

|             |       |
|-------------|-------|
| <b>Mean</b> | 2.941 |
| <b>Min</b>  | 1.538 |
| <b>Max</b>  | 4.895 |
| <b>CE90</b> | 3.607 |

### Location Error For GCPs(Pixel)



### Location Error For GCPs(uRad)



## Detailed Product Information

### Ancillary Info

|                          |              |                                  |            |
|--------------------------|--------------|----------------------------------|------------|
| <b>Satellite</b>         | INSAT-3DR    | <b>Generation Date</b>           | 18-05-18   |
| <b>Sensor</b>            | SND          | <b>DQE Date</b>                  | 23-05-2018 |
| <b>PassType</b>          | NONE         | <b>Aquisition Date</b>           | 18-05-18   |
| <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_18MAY2 | <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>   | 24.433  |
| <b>Center Lon(deg)</b>   | 79.703  |
| <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> | 41.796  |
| <b>NW_Lon(deg)</b> | 54.329  |
| <b>SW_Lat(deg)</b> | 7.069   |
| <b>SW_Lon(deg)</b> | 54.329  |
| <b>NE_Lat(deg)</b> | 41.796  |
| <b>NE_Lon(deg)</b> | 105.078 |
| <b>SE_Lat(deg)</b> | 7.069   |
| <b>SE_Lon(deg)</b> | 105.078 |

### 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 : 3RSND18MAY20180300L1BSA1**

(-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

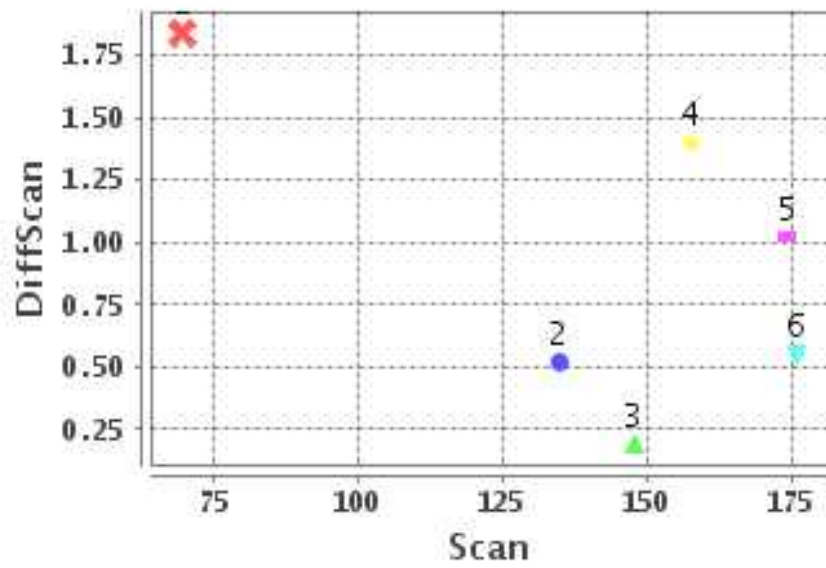
Image Width (pixels) : 384      Image Height (pixels) : 320      No of GCPs : 6

|                 | Mean  | StdDev | Min  | Max    | Coverage(in %) |
|-----------------|-------|--------|------|--------|----------------|
| <b>GCP Scan</b> | 143.2 | 35.9   | 69.5 | 175.75 | 33.20 (N-S)    |
| <b>GCP Pix</b>  | 148.5 | 105.9  | 4.5  | 291.50 | 74.74 (E-W)    |

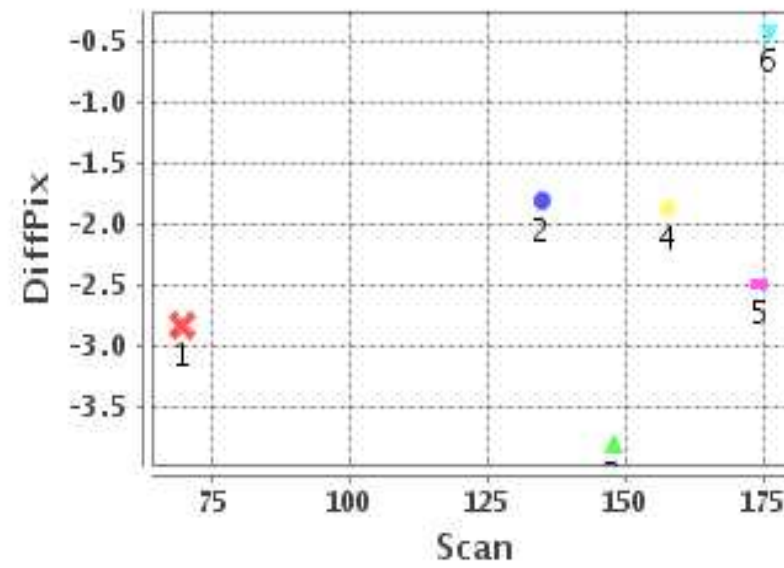
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan  | Pix   | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|-------|-------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 147.8 | 4.5   | 0.2             | -3.79           | 11.050      | S   | 34.332      | W   | Accepted |
| 2  | 134.8 | 82.0  | 0.5             | -1.80           | 15.579      | S   | 18.180      | W   | Accepted |
| 3  | 157.5 | 103.5 | 1.4             | -1.86           | 21.793      | S   | 13.184      | W   | Accepted |
| 4  | 174.2 | 123.2 | 1.0             | -2.48           | 14.374      | S   | 22.465      | W   | Accepted |
| 5  | 175.8 | 286.2 | 0.6             | -0.42           | 15.174      | S   | 2.494       | W   | Accepted |
| 6  | 69.5  | 291.5 | 1.8             | -2.83           | 34.858      | S   | 34.360      | W   | Accepted |

### Error(Pixels) Vs. GCPScan



### Error(Pixels) Vs. GCPScan



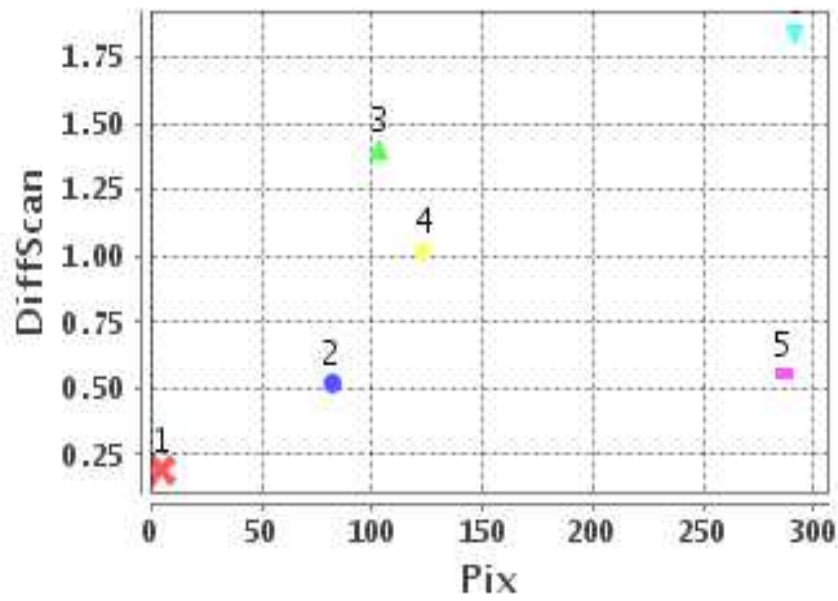
#### Number Of Points

|       |   |
|-------|---|
| North | 0 |
| South | 6 |
| East  | 0 |
| West  | 6 |

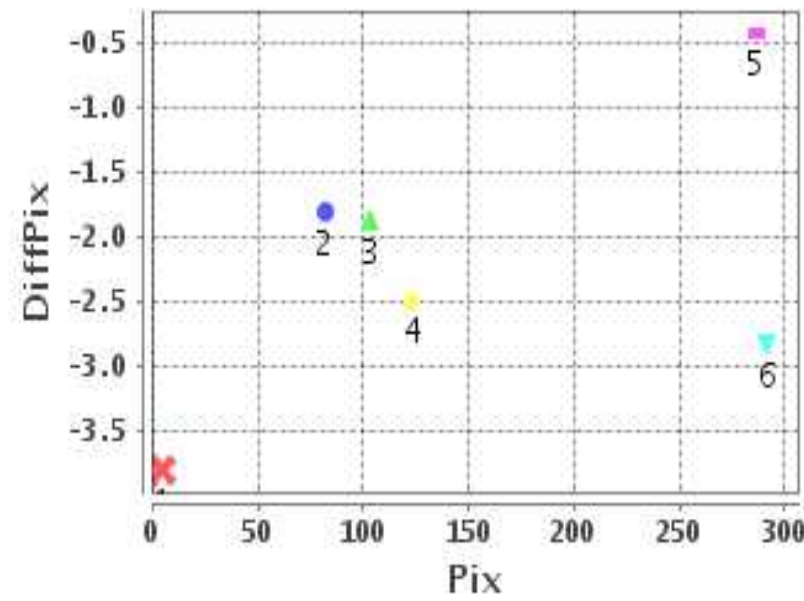
#### Radial Error ( Km )

|      |       |
|------|-------|
| Mean | 2.941 |
| Min  | 1.538 |
| Max  | 4.895 |
| CE90 | 3.607 |

### Error(Pixels) Vs. GCPPix



### Error(Pixels) Vs. GCPPix



#### Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | -1.880 | 0.785  | 2.038 | S   | 1.598    | 2.177    |
| Across ( Km ) | -2.084 | 1.133  | 2.372 | W   | 2.095    | 2.596    |

## 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)                            | -34.86  | S       |
| Across(Mean,Dir)                           | -34.36  | 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                             | 4        |       |
| <b>Location Error(Km)</b>                  |          |       |
| Along(Mean,Dir)                            | -15.6975 | S     |
| Across(Mean,Dir)                           | -22.04   | W     |
| <b>Scale(Km)</b>                           |          |       |
| Average Scale (Mean,%Variation)            | 11.28    | 12.78 |
| <b>Internal Distortion(Pixel)</b>          |          |       |
| Along(Mean,Stddev)                         | -0.35    | 0.51  |
| Across(Mean,Stddev)                        | -1.75    | 0.31  |

|  |         |          |
|--|---------|----------|
| <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)                              | -15.18  | S       |
| Across(Mean,Dir)                             | -2.49   | 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                               | -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-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