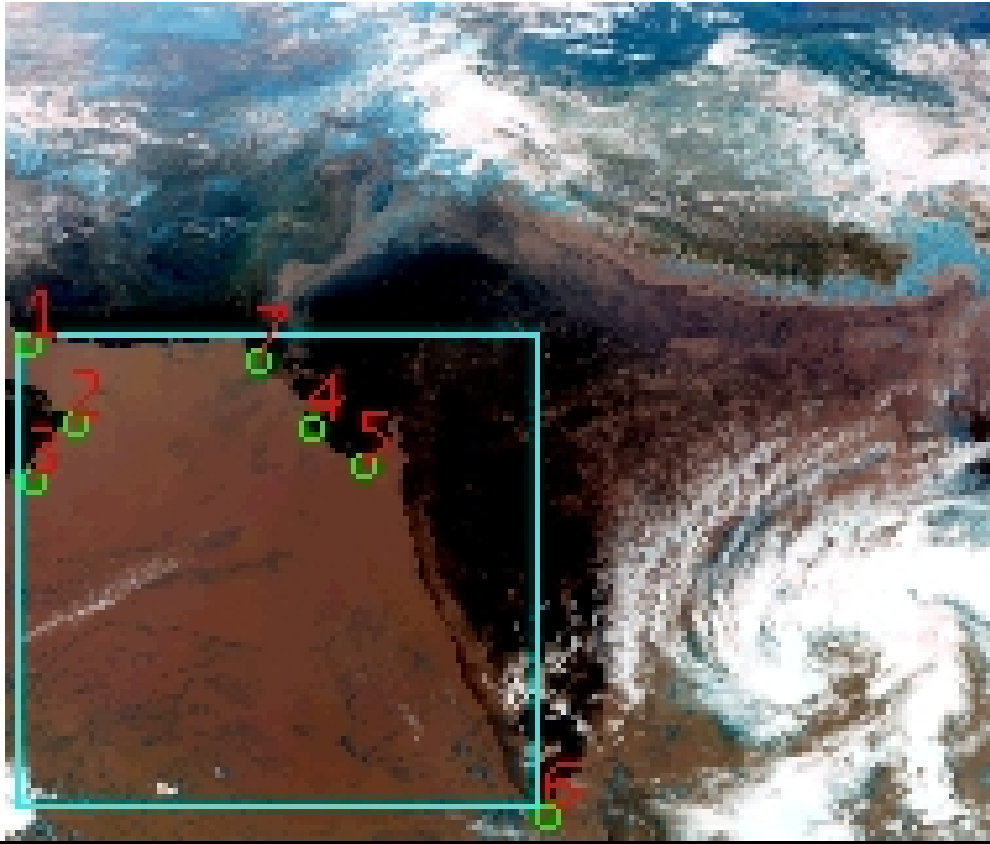


# DQE Report: Location Accuracy of INSAT-3DR-SND STANDARD Product 3RSND\_12NOV2018\_0500

|               |                |                 |               |                 |          |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| Satellite     | INSAT-3DR      | No Of Bands     | 19            | Product Type    | STANDARD |
| Sensor        | SND            | LvlOfProcess    | L1B           | Selected Band   | 2-LWIR3  |
| DOP/Time      | 12-11-18/05:00 | Station ID      | BES           | Field View(deg) | 6.136    |
| Res(Y,X) [Km] | (10.0,10.0)    | Res(Y,X) [uRad] | (280.0,280.0) |                 |          |

(41.333N,51.965W)

(41.333N,102.053E)



(6.886S,51.965W)

(6.886S,102.053E)

GCP Distribution overview for 3RSND12NOV20180500L1BSA1

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

GCP Coverage(%) 56.41 (N-S) 51.63 (E-W)

## Location Error(E)

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

## Location Error (In IR Pixels)

|        | Mean   | Direction | Stddev | RMS   |
|--------|--------|-----------|--------|-------|
| Along  | -0.058 | S         | 0.468  | 0.471 |
| Across | -1.805 | W         | 0.222  | 1.819 |

## Scale (Km)

|         | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 11.186     | 0.671  | 11.856     |
| Along   | 11.698     | 0.329  | 16.976     |
| Across  | 10.561     | 1.123  | 5.610      |

## Internal Distortion (in IR Pixels)

|        | PeakToPeak | Mean   | Stddev | RMS   |
|--------|------------|--------|--------|-------|
| Along  | 1.038      | -0.088 | 0.40   | 0.409 |
| Across | 0.781      | -0.375 | 0.27   | 0.463 |

## Attitude Residuals (Deg)

| Pitch    | Roll     | Yaw     |
|----------|----------|---------|
| -0.02906 | -0.00376 | 0.11840 |

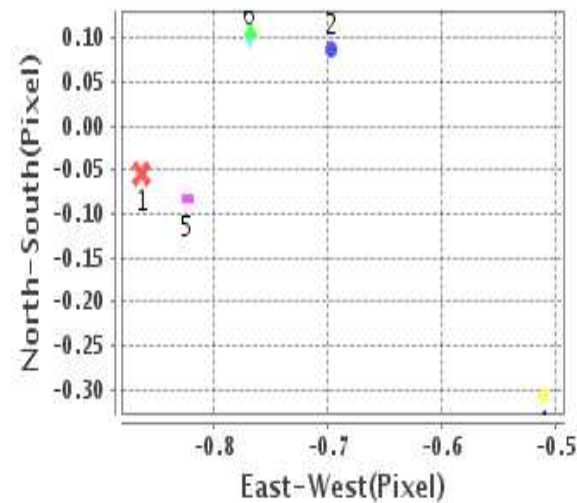
## Reference Used

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

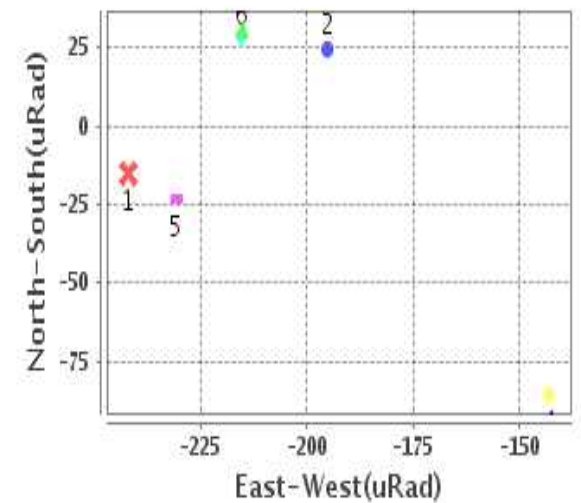
## Radial Error (in IR Pixels)

|      |       |
|------|-------|
| Mean | 1.872 |
| Min  | 1.687 |
| Max  | 2.187 |
| CE90 | 1.975 |

## Location Error For GCPs(Pixel)



## Location Error For GCPs(uRad)



## Detailed Product Information

### Ancillary Info

|                          |              |                                  |            |
|--------------------------|--------------|----------------------------------|------------|
| <b>Satellite</b>         | INSAT-3DR    | <b>Generation Date</b>           | 12-11-18   |
| <b>Sensor</b>            | SND          | <b>DQE Date</b>                  | 13-11-2018 |
| <b>PassType</b>          | NONE         | <b>Aquisition Date</b>           | 12-11-18   |
| <b>Imaging Mode</b>      | FULL_FRAME   | <b>Aquisition Time(GMT)</b>      | 05:00      |
| <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_12NOV2 | <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>   | 24.11   |
| <b>Center Lon(deg)</b>   | 77.009  |
| <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> | 41.333  |
| <b>NW_Lon(deg)</b> | 51.965  |
| <b>SW_Lat(deg)</b> | 6.886   |
| <b>SW_Lon(deg)</b> | 51.965  |
| <b>NE_Lat(deg)</b> | 41.333  |
| <b>NE_Lon(deg)</b> | 102.053 |
| <b>SE_Lat(deg)</b> | 6.886   |
| <b>SE_Lon(deg)</b> | 102.053 |

### 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 : 3RSND12NOV20180500L1BSA1**

(-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

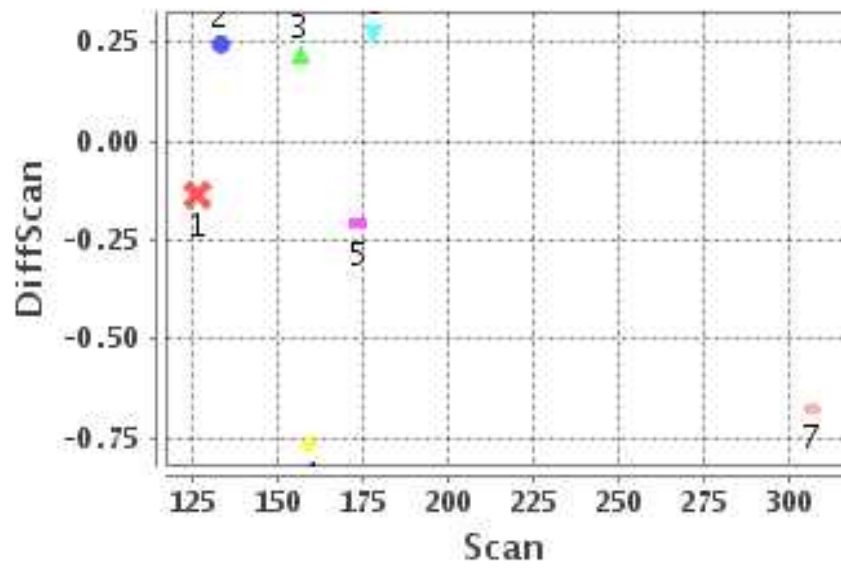
Image Width (pixels) : 384      Image Height (pixels) : 320      No of GCPs : 7

|                 | Mean  | StdDev | Min   | Max    | Coverage(in %) |
|-----------------|-------|--------|-------|--------|----------------|
| <b>GCP Scan</b> | 176.0 | 56.1   | 126.0 | 306.50 | 56.41 (N-S)    |
| <b>GCP Pix</b>  | 90.2  | 69.0   | 12.5  | 210.75 | 51.63 (E-W)    |

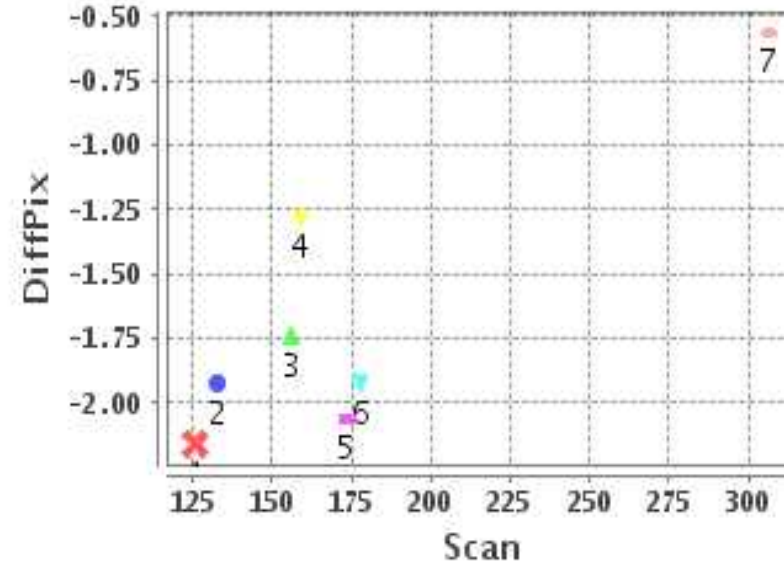
### Identified Control Point details : ( Differences are Reference - Product )

| No | Scan  | Pix   | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status   |
|----|-------|-------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1  | 126.0 | 12.5  | -0.1            | -2.16           | 1.904       | N   | 19.658      | W   | Accepted |
| 2  | 156.2 | 31.0  | 0.2             | -1.74           | 5.039       | S   | 17.107      | W   | Accepted |
| 3  | 178.0 | 15.2  | 0.3             | -1.92           | 3.093       | S   | 17.558      | W   | Accepted |
| 4  | 159.0 | 121.0 | -0.8            | -1.28           | 8.742       | N   | 14.426      | W   | Accepted |
| 5  | 173.5 | 141.0 | -0.2            | -2.06           | 3.287       | S   | 21.622      | W   | Accepted |
| 6  | 306.5 | 210.8 | -0.7            | -0.56           | 1.687       | N   | 2.068       | E   | Rejected |
| 7  | 133.0 | 100.2 | 0.2             | -1.92           | 2.735       | S   | 17.958      | W   | Accepted |

### Error(Pixels) Vs. GCPScan



### Error(Pixels) Vs. GCPScan



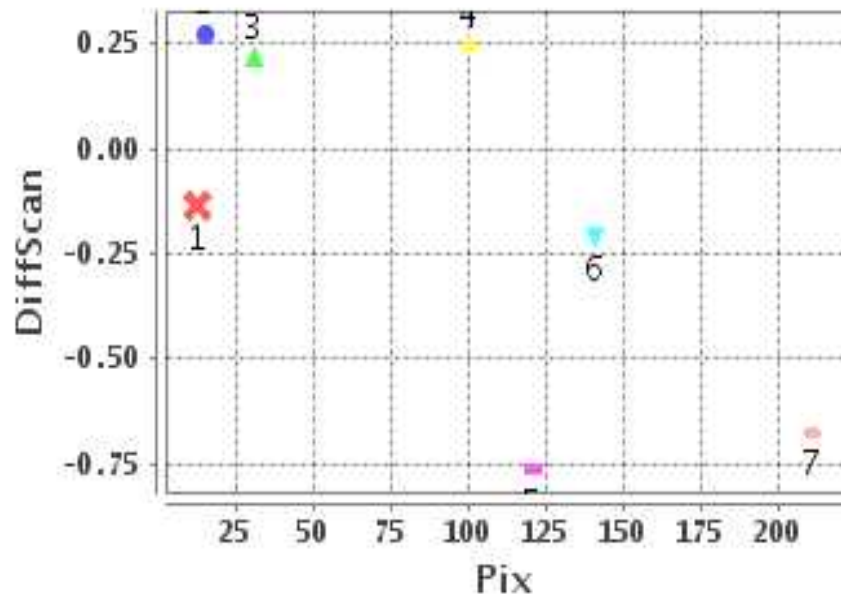
#### Number Of Points

|       |   |
|-------|---|
| North | 2 |
| South | 4 |
| East  | 0 |
| West  | 6 |

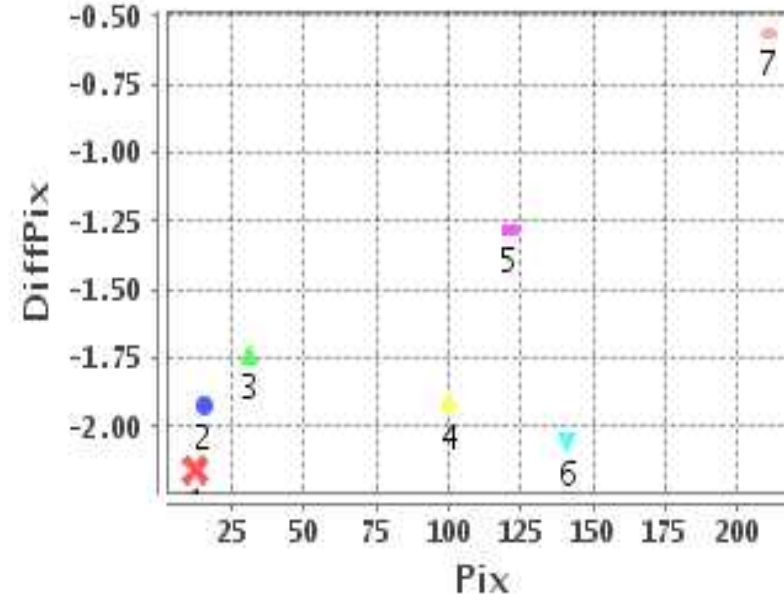
#### Radial Error ( Km )

|      |       |
|------|-------|
| Mean | 1.872 |
| Min  | 1.687 |
| Max  | 2.187 |
| CE90 | 1.975 |

### Error(Pixels) Vs. GCPPix



### Error(Pixels) Vs. GCPPix



#### Location Accuracy

|               | Mean   | StdDev | RMS   | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along( Km )   | -0.058 | 0.468  | 0.471 | S   | 0.337    | 0.509    |
| Across ( Km ) | -1.805 | 0.222  | 1.819 | W   | 1.742    | 1.885    |

## 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                             | -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-0-127</b> |        |       |
| Number of GCPs                             | 5      |       |
| <b>Location Error(Km)</b>                  |        |       |
| Along(Mean,Dir)                            | -0.044 | S     |
| Across(Mean,Dir)                           | -17.34 | W     |
| <b>Scale(Km)</b>                           |        |       |
| Average Scale (Mean,%Variation)            | 11.29  | 12.91 |
| <b>Internal Distortion(Pixel)</b>          |        |       |
| Along(Mean,Stddev)                         | -0.13  | 0.44  |
| Across(Mean,Stddev)                        | -0.44  | 0.26  |

|  |         |         |
|--|---------|---------|
| <b>Scan Range-105-212; Pix Range-127-255</b> |         |         |
| Number of GCPs                               | 1       |         |
| <b>Location Error(Km)</b>                    |         |         |
| Along(Mean,Dir)                              | -3.29   | S       |
| Across(Mean,Dir)                             | -21.62  | 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-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  |

|  |         |          |
|--|---------|----------|
| <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