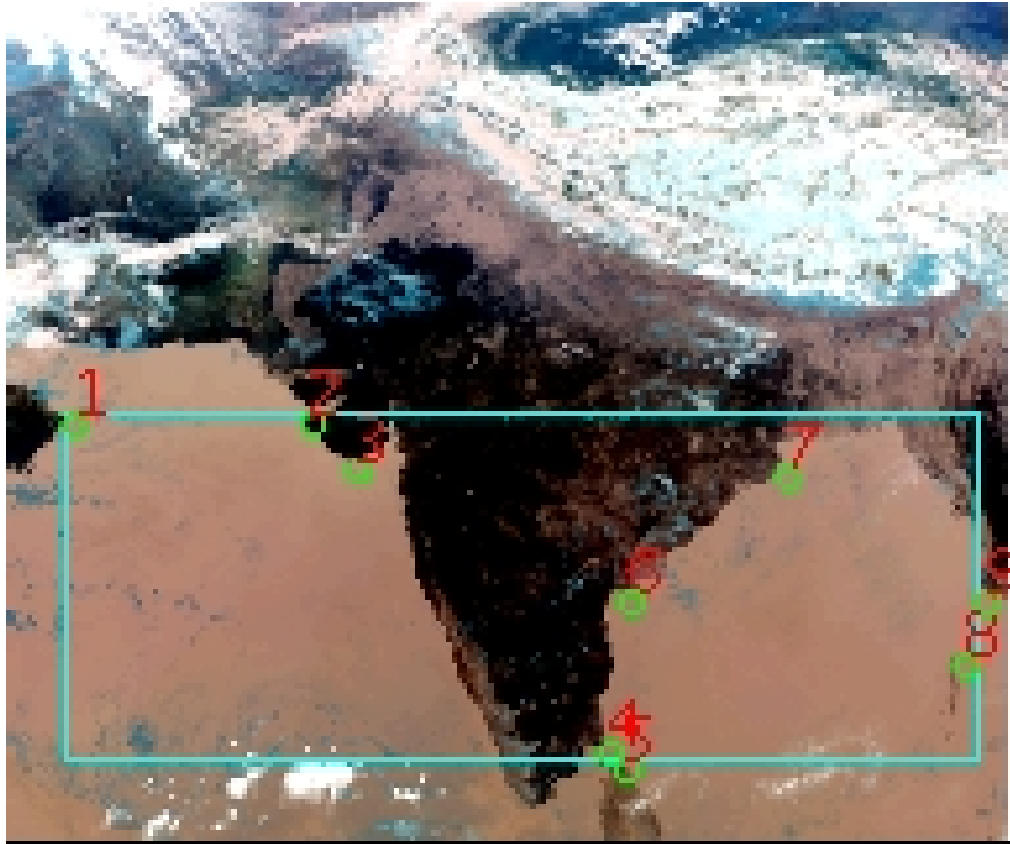


DQE Report: Location Accuracy of INSAT-3DR-SND STANDARD Product 3RSND_17MAR2017_0630

| | | | | | |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| Satellite | INSAT-3DR | No Of Bands | 19 | Product Type | STANDARD |
| Sensor | SND | LvlOfProcess | L1B | Selected Band | 2-LWIR3 |
| DOP/Time | 17-03-17/06:30 | Station ID | BES | Field View(deg) | 6.136 |
| Res(Y,X) [Km] | (10.0,10.0) | Res(Y,X) [uRad] | (280.0,280.0) | | |

(41.394N,53.174W)

(41.394N,103.384E)



(6.877S,53.174W)

(6.877S,103.384E)

GCP Distribution overview for 3RSND17MAR20170630L1BSA1

Image Width: 384 Image Height: 320 No Of GCPs: 9

GCP Coverage(%) 41.17 (N-S) 90.89 (E-W)

Location Error(E)

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

Location Error (In IR Pixels)

| | Mean | Direction | Stddev | RMS |
|--------|--------|-----------|--------|-------|
| Along | 1.148 | N | 0.587 | 1.289 |
| Across | -1.207 | W | 0.656 | 1.374 |

Scale (Km)

| | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 10.431 | 0.428 | 4.313 |
| Along | 10.752 | 0.619 | 7.518 |
| Across | 10.537 | 0.255 | 5.369 |

Internal Distortion (in IR Pixels)

| | PeakToPeak | Mean | Stddev | RMS |
|--------|------------|--------|--------|-------|
| Along | 1.219 | 1.579 | 0.48 | 1.650 |
| Across | 1.574 | -1.032 | 0.53 | 1.158 |

Attitude Residuals (Deg)

| Pitch | Roll | Yaw |
|----------|----------|---------|
| -0.02004 | -0.01761 | 0.20953 |

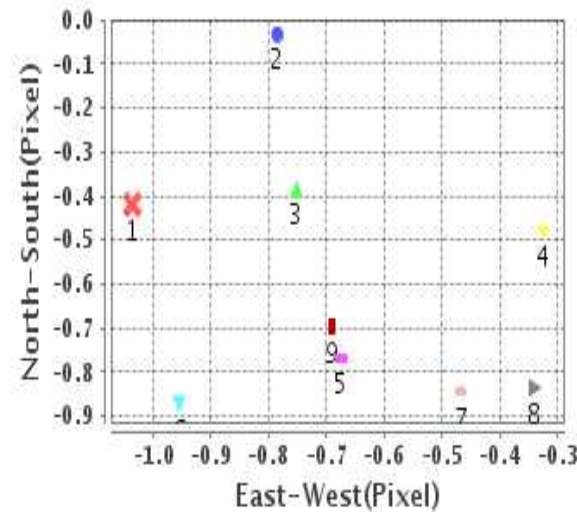
Reference Used

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

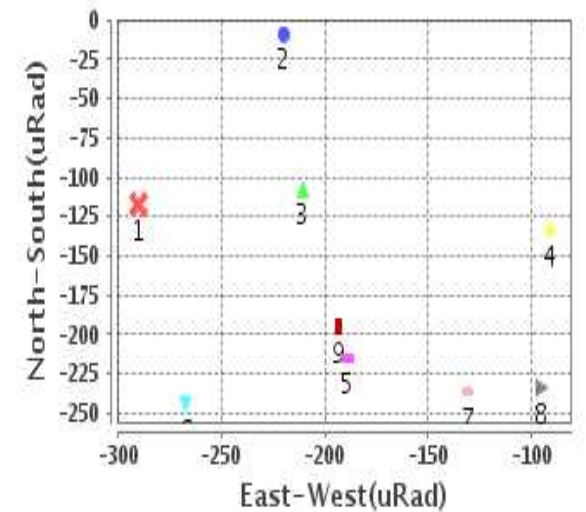
Radial Error (in IR Pixels)

| | |
|------|-------|
| Mean | 1.837 |
| Min | 1.067 |
| Max | 2.499 |
| CE90 | 2.264 |

Location Error For GCPs(Pixel)



Location Error For GCPs(uRad)



Detailed Product Information

Ancillary Info

| | | | |
|--------------------------|--------------|----------------------------------|------------|
| Satellite | INSAT-3DR | Generation Date | 17-03-17 |
| Sensor | SND | DQE Date | 20-03-2017 |
| PassType | NONE | Aquisition Date | 17-03-17 |
| Imaging Mode | FULL_FRAME | Aquisition Time(GMT) | 06:30 |
| 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_17MAR2 | 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) | 24.135 |
| Center Lon(deg) | 78.279 |
| 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) | 41.394 |
| NW_Lon(deg) | 53.174 |
| SW_Lat(deg) | 6.877 |
| SW_Lon(deg) | 53.174 |
| NE_Lat(deg) | 41.394 |
| NE_Lon(deg) | 103.384 |
| SE_Lat(deg) | 6.877 |
| SE_Lon(deg) | 103.384 |

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 | meters | Standardparallel1(deg) | 17.0 | | |
| Zone | Not Applicable | | | Standardparallel2(deg) | 17.0 | | |

* -999.99 : Not Applicable/Not Available

References

JobId : 3RSND17MAR20170630L1BSA1

(-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

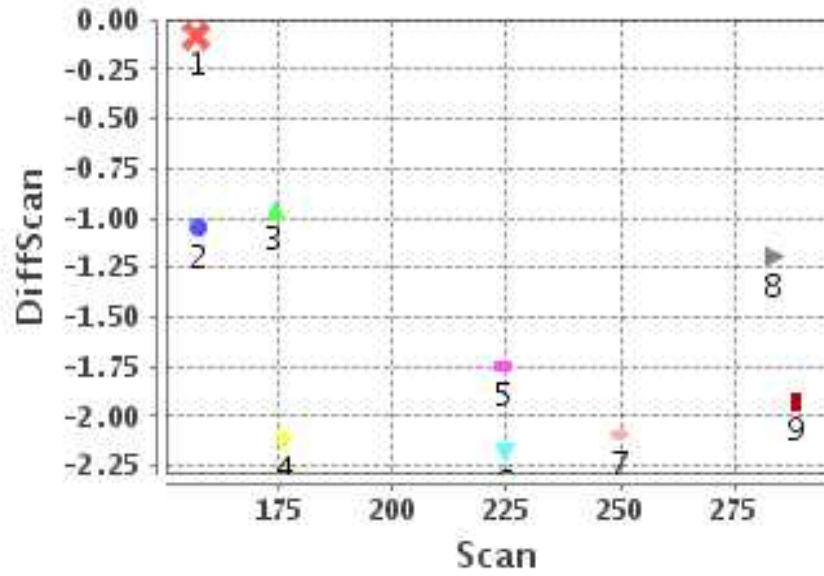
Image Width (pixels) : 384 Image Height (pixels) : 320 No of GCPs : 9

| | Mean | StdDev | Min | Max | Coverage(in %) |
|-----------------|-------|--------|-------|--------|----------------|
| GCP Scan | 215.1 | 48.7 | 157.0 | 288.75 | 41.17 (N-S) |
| GCP Pix | 221.2 | 109.4 | 22.5 | 371.50 | 90.89 (E-W) |

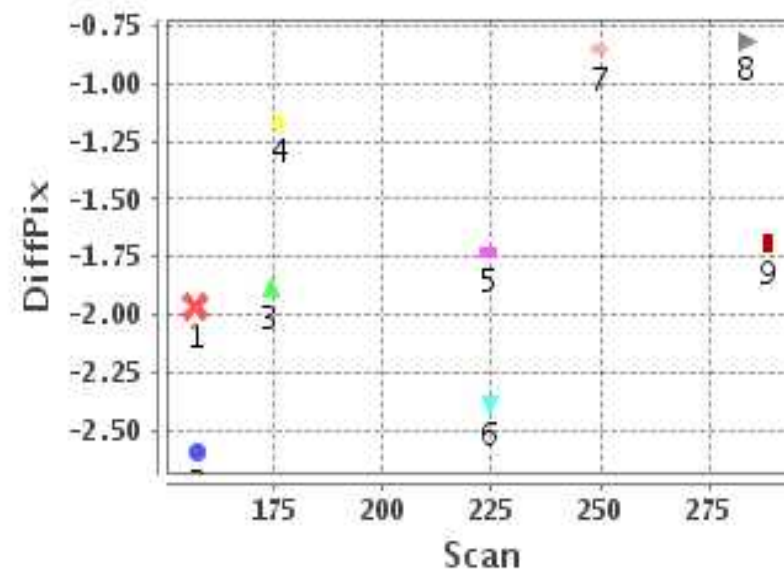
Identified Control Point details : (Differences are Reference - Product)

| No | Scan | Pix | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status |
|----|-------|-------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1 | 157.5 | 22.5 | -1.0 | -2.59 | 7.617 | N | 23.806 | W | Accepted |
| 2 | 157.0 | 112.5 | -0.1 | -1.96 | 0.882 | N | 15.313 | W | Accepted |
| 3 | 174.2 | 131.5 | -1.0 | -1.88 | 8.028 | N | 15.454 | W | Accepted |
| 4 | 283.5 | 227.0 | -1.2 | -0.81 | 7.128 | N | 7.934 | W | Accepted |
| 5 | 288.8 | 232.0 | -1.9 | -1.69 | 11.321 | N | 15.532 | W | Accepted |
| 6 | 224.5 | 235.8 | -2.2 | -2.39 | 16.992 | N | 14.968 | W | Accepted |
| 7 | 176.2 | 295.8 | -2.1 | -1.17 | 21.028 | N | 0.808 | W | Accepted |
| 8 | 249.8 | 362.2 | -2.1 | -0.85 | 13.898 | N | 4.253 | W | Accepted |
| 9 | 224.2 | 371.5 | -1.7 | -1.73 | 16.406 | N | 10.540 | W | Accepted |

Error(Pixels) Vs. GCPScan



Error(Pixels) Vs. GCPScan



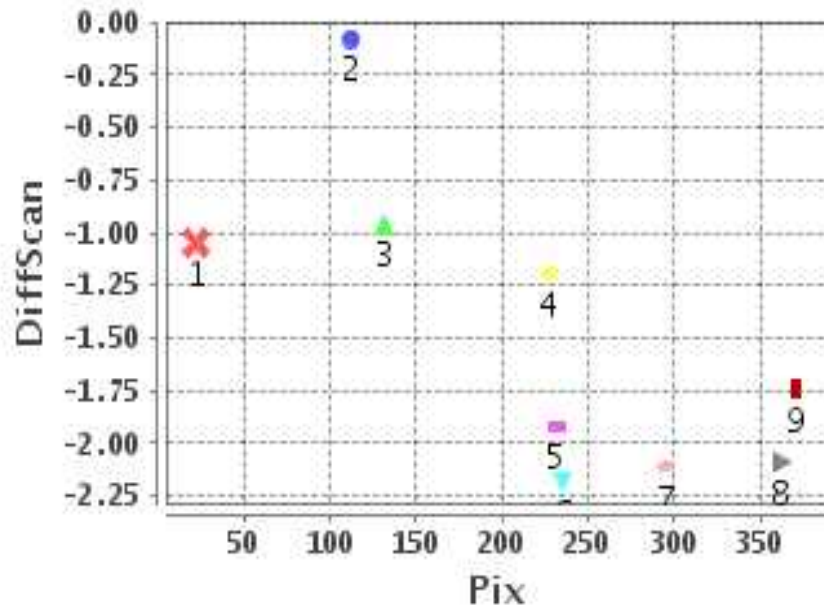
Number Of Points

| | |
|-------|---|
| North | 9 |
| South | 0 |
| East | 0 |
| West | 9 |

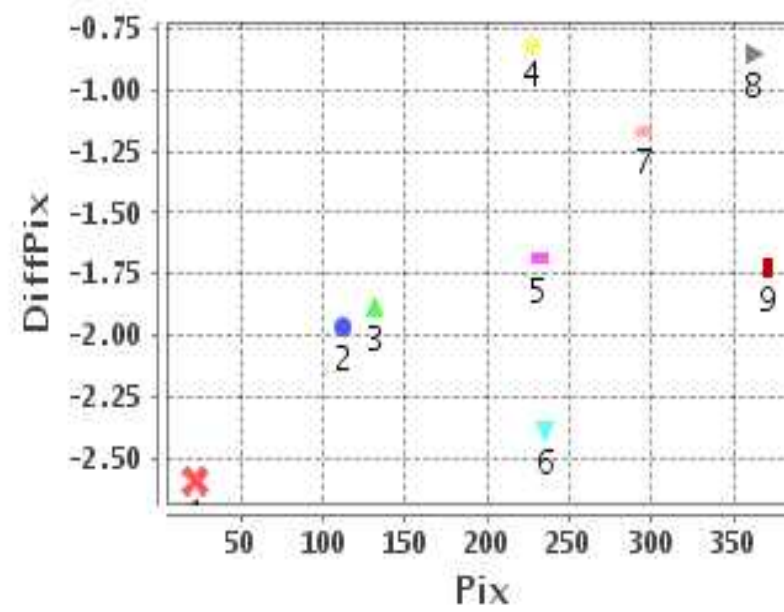
Radial Error (Km)

| | |
|------|-------|
| Mean | 1.837 |
| Min | 1.067 |
| Max | 2.499 |
| CE90 | 2.264 |

Error(Pixels) Vs. GCPPix



Error(Pixels) Vs. GCPPix



Location Accuracy

| | Mean | StdDev | RMS | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along(Km) | 1.148 | 0.587 | 1.289 | N | 1.147 | 1.367 |
| Across (Km) | -1.207 | 0.656 | 1.374 | W | 1.189 | 1.457 |

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) | 4.25 | N |
| Across(Mean,Dir) | -19.56 | W |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | 10.83 | 8.28 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | 0.97 | 0.00 |
| Across(Mean,Stddev) | -0.63 | 0.00 |

| | | |
|--|---------|---------|
| Scan Range-105-212; Pix Range-127-255 | | |
| Number of GCPs | 1 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | 8.03 | N |
| Across(Mean,Dir) | -15.45 | W |
| 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 | 1 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | 21.02 | N |
| Across(Mean,Dir) | -0.81 | W |
| 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) | 11.8133 | N |
| Across(Mean,Dir) | -12.81 | W |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | 9.64 | 3.56 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | -0.62 | 0.36 |
| Across(Mean,Stddev) | 1.22 | 0.35 |

| | | |
|--|--------|------|
| Scan Range-212-320; Pix Range-255-384 | | |
| Number of GCPs | 2 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | 15.155 | N |
| Across(Mean,Dir) | -7.40 | W |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | 10.77 | 7.69 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | 0.35 | 0.00 |
| Across(Mean,Stddev) | 0.88 | 0.00 |

*-999 : no gcp available

* -999.99 : values are not computed