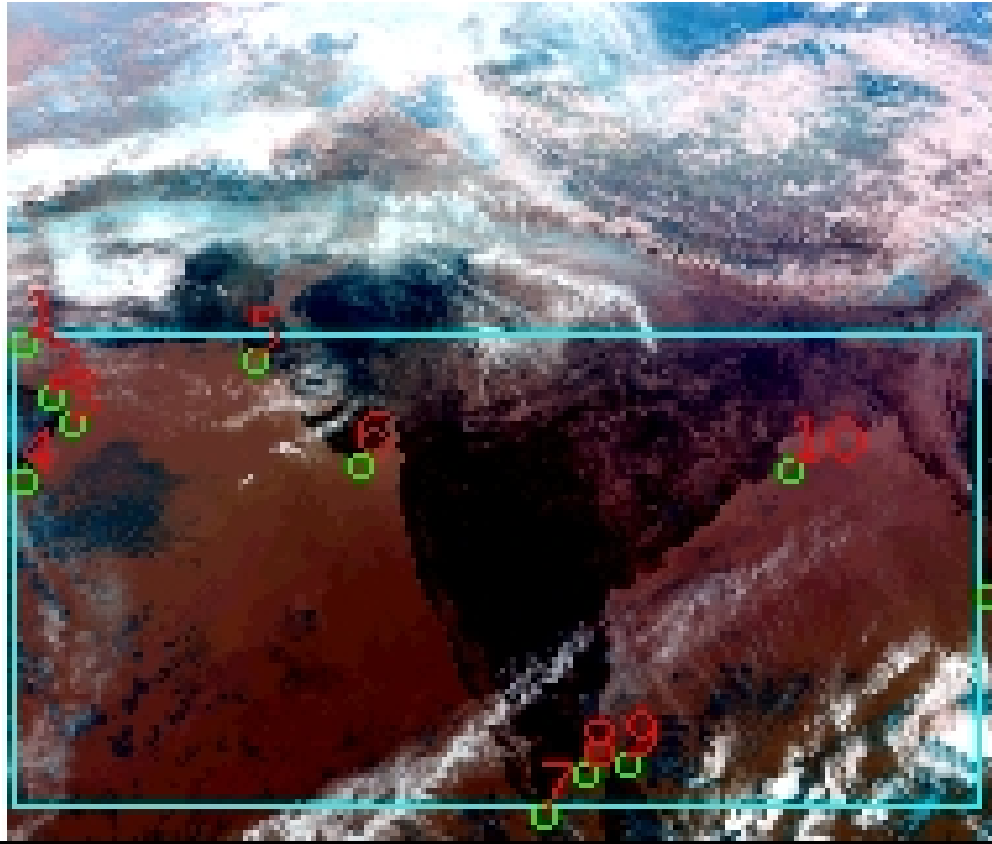


DQE Report: Location Accuracy of INSAT-3DR-SND STANDARD Product 3RSND_15JAN2019_0500

| | | | | | |
|----------------------|----------------|------------------------|---------------|------------------------|----------|
| Satellite | INSAT-3DR | No Of Bands | 19 | Product Type | STANDARD |
| Sensor | SND | LvlOfProcess | L1B | Selected Band | 2-LWIR3 |
| DOP/Time | 15-01-19/05:00 | Station ID | BES | Field View(deg) | 6.136 |
| Res(Y,X) [Km] | (10.0,10.0) | Res(Y,X) [uRad] | (280.0,280.0) | | |

(41.197N,52.218W)

(41.197N,102.179E)



(6.816S,52.218W)

(6.816S,102.179E)

GCP Distribution overview for 3RSND15JAN20190500L1BSA1

Image Width: 384 **Image Height:** 320 **No Of GCPs:** 11

GCP Coverage(%) 56.17 **(N-S)** 96.09 **(E-W)**

Location Error(E)

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

Location Error (In IR Pixels)

| | Mean | Direction | Stddev | RMS |
|--------|--------|-----------|--------|-------|
| Along | 0.745 | N | 0.562 | 0.933 |
| Across | -1.277 | W | 0.598 | 1.410 |

Scale (Km)

| | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 10.621 | 0.567 | 6.208 |
| Along | 10.747 | 1.224 | 7.472 |
| Across | 10.588 | 0.463 | 5.875 |

Internal Distortion (in IR Pixels)

| | PeakToPeak | Mean | Stddev | RMS |
|--------|------------|--------|--------|-------|
| Along | 1.450 | 0.401 | 0.48 | 0.627 |
| Across | 1.986 | -0.467 | 0.70 | 0.845 |

Attitude Residuals (Deg)

| Pitch | Roll | Yaw |
|----------|----------|---------|
| -0.01844 | -0.01434 | 0.20150 |

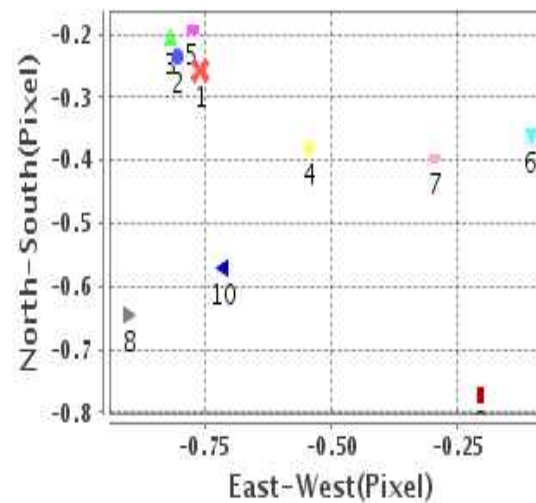
Reference Used

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

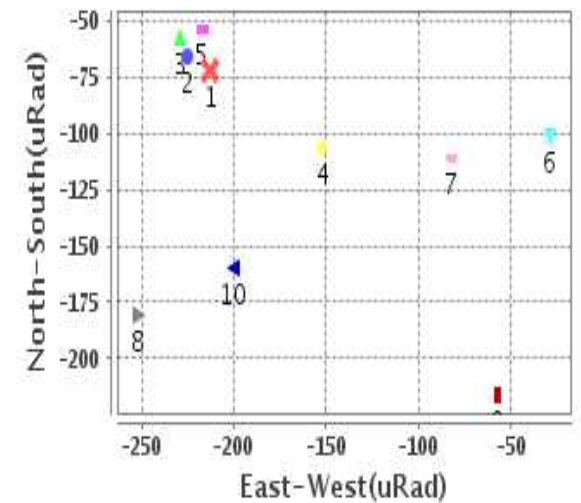
Radial Error (in IR Pixels)

| | |
|-------------|-------|
| Mean | 1.641 |
| Min | .888 |
| Max | 2.157 |
| CE90 | 1.967 |

Location Error For GCPs(Pixel)



Location Error For GCPs(uRad)



Detailed Product Information

Ancillary Info

| | | | |
|--------------------------|---------------|----------------------------------|------------|
| Satellite | INSAT-3DR | Generation Date | 15-01-19 |
| Sensor | SND | DQE Date | 01-02-2019 |
| PassType | NONE | Aquisition Date | 15-01-19 |
| Imaging Mode | FULL_FRAME | Aquisition Time(GMT) | 05:00 |
| 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) | 74.0 |
| LvlOfProcessing | STANDARD | Predicted Center Lat(deg) | -999.99 |
| DP JobId | 3RSND_15JAN20 | 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) | 24.007 |
| Center Lon(deg) | 77.198 |
| 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) | 41.197 |
| NW_Lon(deg) | 52.218 |
| SW_Lat(deg) | 6.816 |
| SW_Lon(deg) | 52.218 |
| NE_Lat(deg) | 41.197 |
| NE_Lon(deg) | 102.179 |
| SE_Lat(deg) | 6.816 |
| SE_Lon(deg) | 102.179 |

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 : 3RSND15JAN20190500L1BSA1

(-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

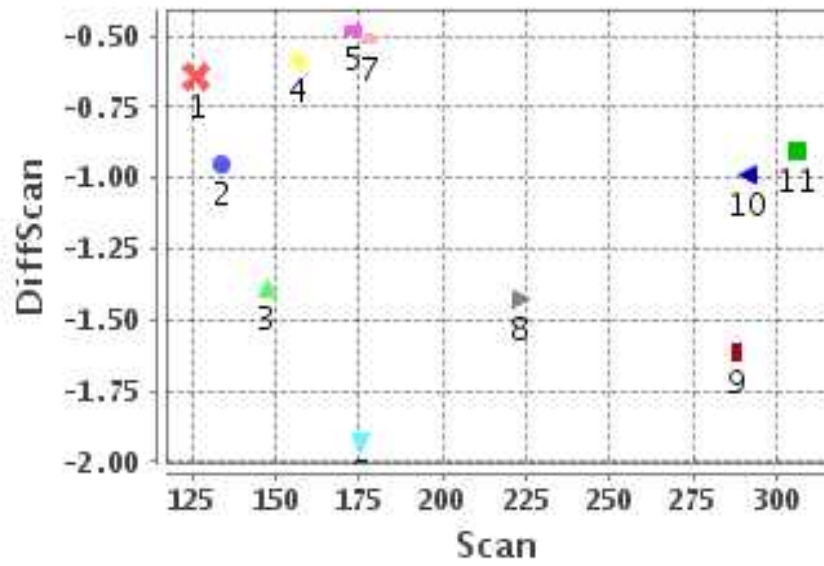
Image Width (pixels) : 384 Image Height (pixels) : 320 No of GCPs : 11

| | Mean | StdDev | Min | Max | Coverage(in %) |
|-----------------|-------|--------|-------|--------|----------------|
| GCP Scan | 199.9 | 63.3 | 126.2 | 306.00 | 56.17 (N-S) |
| GCP Pix | 151.4 | 122.8 | 10.5 | 379.50 | 96.09 (E-W) |

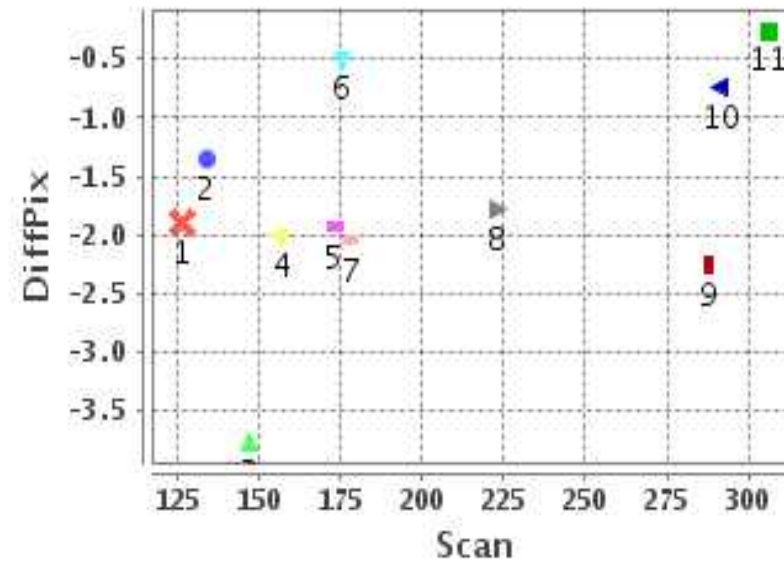
Identified Control Point details : (Differences are Reference - Product)

| No | Scan | Pix | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status |
|----|-------|-------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1 | 126.2 | 10.5 | -0.6 | -1.90 | 5.677 | N | 16.907 | W | Accepted |
| 2 | 147.2 | 21.0 | -1.4 | -3.76 | 14.998 | N | 45.026 | W | Rejected |
| 3 | 156.8 | 29.5 | -0.6 | -2.01 | 1.361 | S | 15.199 | W | Accepted |
| 4 | 178.0 | 11.2 | -0.5 | -2.04 | 5.753 | N | 20.790 | W | Accepted |
| 5 | 133.8 | 98.0 | -1.0 | -1.36 | 3.100 | N | 14.985 | W | Accepted |
| 6 | 173.2 | 139.2 | -0.5 | -1.94 | 2.607 | N | 17.140 | W | Accepted |
| 7 | 306.0 | 209.0 | -0.9 | -0.26 | 9.166 | N | 2.812 | W | Accepted |
| 8 | 291.2 | 224.2 | -1.0 | -0.74 | 7.553 | N | 4.669 | W | Accepted |
| 9 | 287.8 | 240.5 | -1.6 | -2.25 | 8.324 | N | 17.439 | W | Accepted |
| 10 | 175.2 | 303.0 | -1.9 | -0.51 | 19.003 | N | 5.067 | W | Accepted |
| 11 | 223.0 | 379.5 | -1.4 | -1.79 | 14.665 | N | 12.670 | W | Accepted |

Error(Pixels) Vs. GCPScan



Error(Pixels) Vs. GCPScan



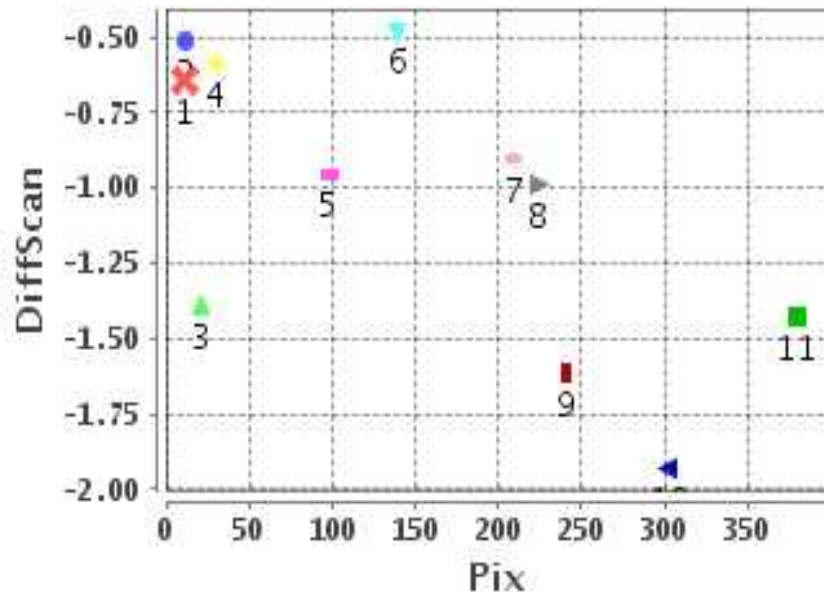
Number Of Points

| | |
|-------|----|
| North | 9 |
| South | 1 |
| East | 0 |
| West | 10 |

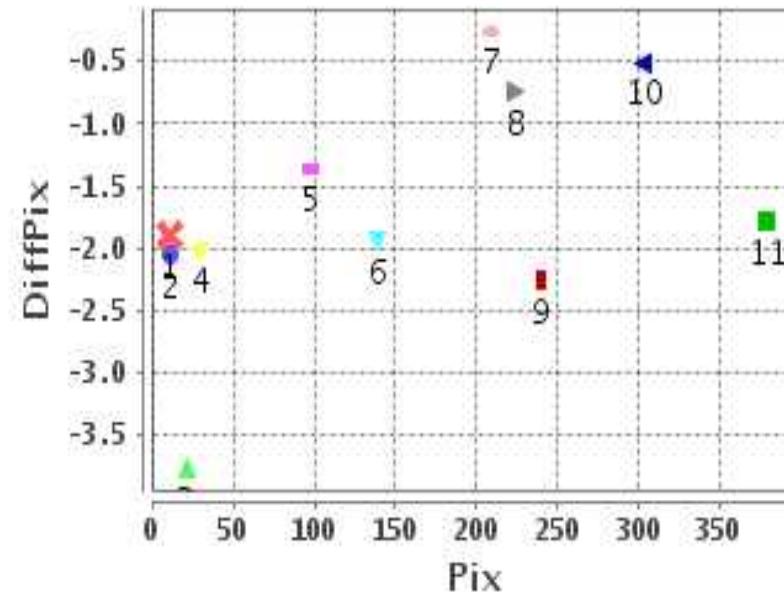
Radial Error (Km)

| | |
|------|-------|
| Mean | 1.641 |
| Min | .888 |
| Max | 2.157 |
| CE90 | 1.967 |

Error(Pixels) Vs. GCPPix



Error(Pixels) Vs. GCPPix



Location Accuracy

| | Mean | StdDev | RMS | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along(Km) | 0.745 | 0.562 | 0.933 | N | 0.752 | 0.982 |
| Across (Km) | -1.277 | 0.598 | 1.410 | W | 1.315 | 1.483 |

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 | 4 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | 3.29 | N |
| Across(Mean,Dir) | -16.97 | W |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | 11.37 | 13.70 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | 0.04 | 0.19 |
| Across(Mean,Stddev) | -0.10 | 0.32 |

| | | |
|--|---------|---------|
| Scan Range-105-212; Pix Range-127-255 | | |
| Number of GCPs | 1 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | 2.61 | N |
| Across(Mean,Dir) | -17.14 | 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) | 19.0 | N |
| Across(Mean,Dir) | -5.07 | 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) | 8.34767 | N |
| Across(Mean,Dir) | -8.31 | W |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | 9.43 | 5.73 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | -0.66 | 0.04 |
| Across(Mean,Stddev) | 1.23 | 0.76 |

| | | |
|--|---------|---------|
| Scan Range-212-320; Pix Range-255-384 | | |
| Number of GCPs | 1 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | 14.67 | N |
| Across(Mean,Dir) | -12.67 | 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 |

*-999 : no gcp available

* -999.99 : values are not computed