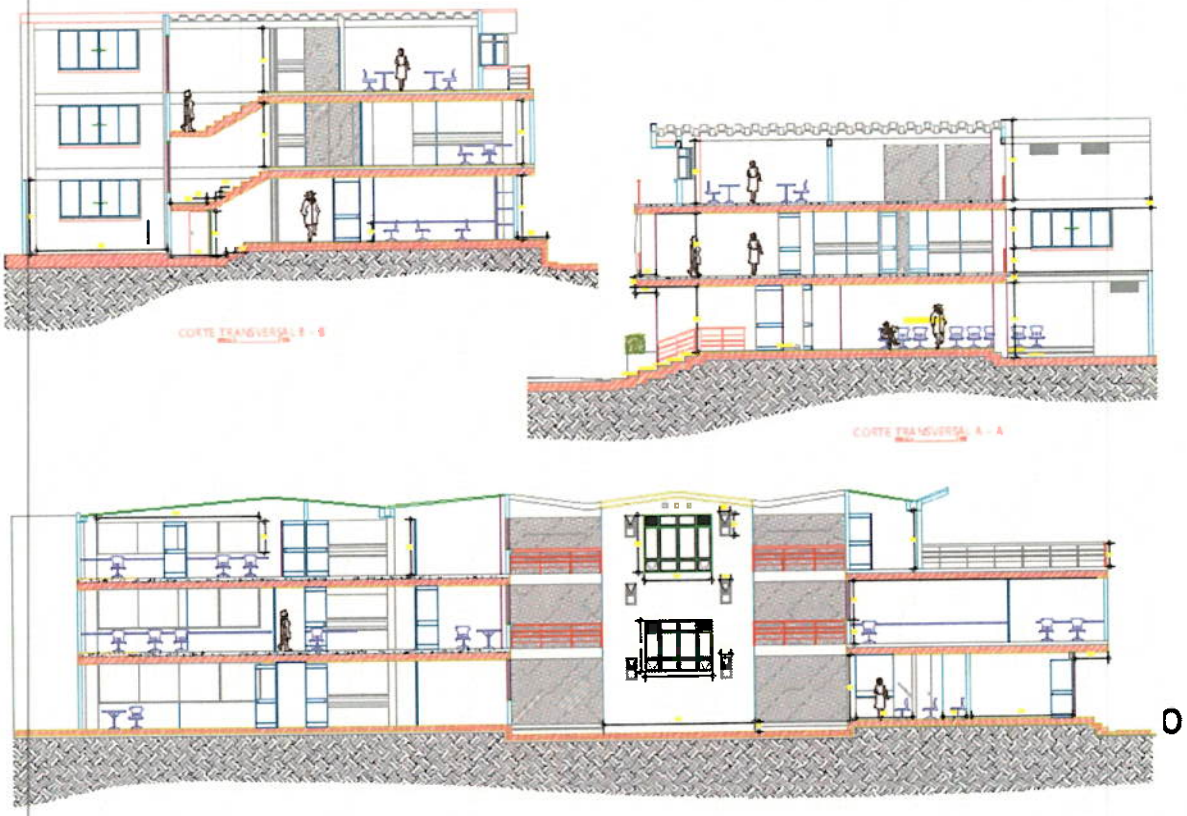
JOHAN JAVIER OÑATE NÚÑEZ
Ingeniero Civil
TP. 70202 222387 TLM

# INFORME CONTRATISTA

JOHAN JAVIER OÑATE NÚÑEZ
Ingeniero Civil
TP. 70202 222387 TLM

# DEPARTAMENTO DEL HUILA
# MUNICIPIO DE GARZON
# JOHAN JAVIER OÑATE NUÑEZ



**Informe 1**

**CONTRATISTA:** JOHAN JAVIER OÑATE NUÑEZ
**DIRECCIÓN:** calle 24 # 5 bis -37
**Email:** johanjaviero@gmail.com

# TABLA DE CONTENIDO

TABLA DE CONTENIDO ..... 2
INTRODUCCIÓN ..... 3
1. FICHA TÉCNICA ..... 3
1.1 Pólizas Contrato De Obra ..... 4
2. ACTIVIDADES DE SEGUIMIENTO ..... 4
2.1 ASPECTOS TÉCNICOS: ..... 4
2.1.1 Control De Personal: ..... 4
3. ACTIVIDADES EJECUTADAS ..... 5
3.1 Actividades De Obra ..... 5
4. ESTADO FINANCIERO ..... 7
4.1 Estado Financiero del Contrato. ..... 7
5 AVANCE DEL PROYECTO. ..... 7

JOHAN JAVIER OÑATE NÚÑEZ
Ingeniero Civil
TP. 70202 222387 TLM

## INTRODUCCIÓN

El Municipio de Garzón suscribió contrato de Consultoría con el Ing. **JOHAN JAVIER OÑATENUÑEZ**, como consultor Externo para la realización **"ESTUDIO DE VULNERABILIDAD ESTRUCTURAL DEL EDIFICIO MUNICIPAL DEL MUNICIPIO DE GARZON - HUILA"**

En el presente informe se precisan las acciones desarrolladas para el Acta Parcial # 1 estudios y diseños en el periodo del 24 de mayo al 08 de julio del 2024 el cual fue el tiempo en el que ejecuto la etapa de la consultoría.

## 1. FICHA TÉCNICA

| | | | | |
|---|---|---|---|---|
| TIPO DE CONTRATO: | **CONTRATO DE CONSULTORIA** | | | |
| No. CONTRATO: | **000256 DE 2024** | | | |
| CONTRATANTE: | MUNICIPIO DE GARZON | | | |
| CONTRATISTA: | **NOMBRE:** | **JOHAN JAVIER OÑATE NUÑEZ** | | |
| | **C.C. No.:** | 7.722.019 de Neiva (H)- Huila | | |
| | **DIRECCIÒN:** | CALLE 22 #44-07 | | |
| | **CORREO ELECTRONICO:** | johanjaviero@gmail.com | **TEL** | 3204961847 |
| | **CIUDAD:** | GARZON HUILA | | |
| OBJETO: | **"ESTUDIO DE VULNERABILIDAD ESTRUCTURAL DEL EDIFICIO MUNICIPAL DEL MUNICIPIO DE GARZON - HUILA"** | | | |
| VALOR: | TREINTA Y SEIS MILLONES TRESCIENTOS DOS MIL NOVECIENTOS SETENTA Y SEIS PESOS M/CTE ($ 36,302,977,00) MCTE | | | |
| FORMA DE PAGO: | El Municipio pagara el contrato celebrado de la siguiente manera en pesos colombianos así: **pago final:** en un 100% del valor total del contrato se pagara mediante acta de recibo final, de acuerdo con la entrega de los productos contratados, previo visto bueno y recibo a satisfacción del supervisor, para efectos de los desembolsos. | | | |
| PLAZO DE EJECUCIÓN: | CUARENTA Y CINCO (45) DIAS CALEDARIOS. | | | |
| FECHA SUSCRIPCION DEL CONTRATO | MAYO 22 DEL 2024 | | | |
| INTERVENTOR O SUPERVISOR: | **CARLOS FELIPE TOVAR VARGAS** | | | |
| FECHA DE LA PRESENTE ACTA | 2 DE SEPTIEMBRE DE 2024 | | | |
| POLIZA | **APLICA** | **No póliza** | 560-47-994000178946 | |
| | **SI:** X | **NO:** | **Aseguradora** | ASEGURADORA SOLIDARIA |
| | | | Fecha **expedición** | 23 DE MAYO DEL 2024 |

**1.1 Pólizas Contrato De Obra**

| | |
|---|---|
| *COMPAÑÍA ASEGURADORA* | ASEGURADORA SOLIDARIA |
| *Póliza Inicial* | |
| *POLIZA No.* | 560-47-994000178946 **Expedida:** 23/05/2024 |
| *FECHA DE LA POLIZA* | Cumplimiento: 22/05/2024 – 11/01/2025 - $ 7.260.595,40 |
| | Prestaciones sociales: 22/05/2024 – 11/07/2027 - $ 7.260.595,40 |
| | Calidad del Servicio: 22/05/2024 – 11/07/2025 - $ 7.260.595,40 |

## 2. ACTIVIDADES DE SEGUIMIENTO

La consultoría realiza las actividades provenientes de la ejecución del contrato de consultoría la cual tiene por objeto, **"ESTUDIO DE VULNERABILIDAD ESTRUCTURAL DEL EDIFICIO MUNICIPAL DEL MUNICIPIO DE GARZON - HUILA"**; cabe resaltar que el inicio de las actividades contractuales ha contado con la respectiva socialización con todos los actores involucrados en la ejecución del contrato y han sido acompañadas por el Municipio de Garzón - Huila.

Dentro de esta ejecución y teniendo en cuenta las obligaciones contractuales con el Municipio de Garzon se realiza el informe del acta parcial No 1 de los Estudios de vulnerabilidad por parte de la consultoría con el objetivo de plasmar el control de las actividades en la ejecución de los de vulnerabilidad.

### 2.1 ASPECTOS TÉCNICOS:

#### 2.1.1 Control De Personal:

**Personal de consultoría:**

A la fecha, el personal promedio utilizado por el contratista se encontró compuesto básicamente por:

| CARGO | NOMBRE | IDENTIFICACION |
|---|---|---|
| Coordinador de Consultoria | JOHAN JAVIER OÑATE NUÑEZ | C.C 7.722.019 |
| Topógrafo | SANDOR TRUJILLO | C.C 7.693.614 |
| Estudios de Suelos | ESDILAB S.A.S | NIT 900932861-9 |
| Especialista Estructural | ANDRES FELIPE MUÑOZ | C.C 1.075.254.094 |

## 3. ACTIVIDADES EJECUTADAS

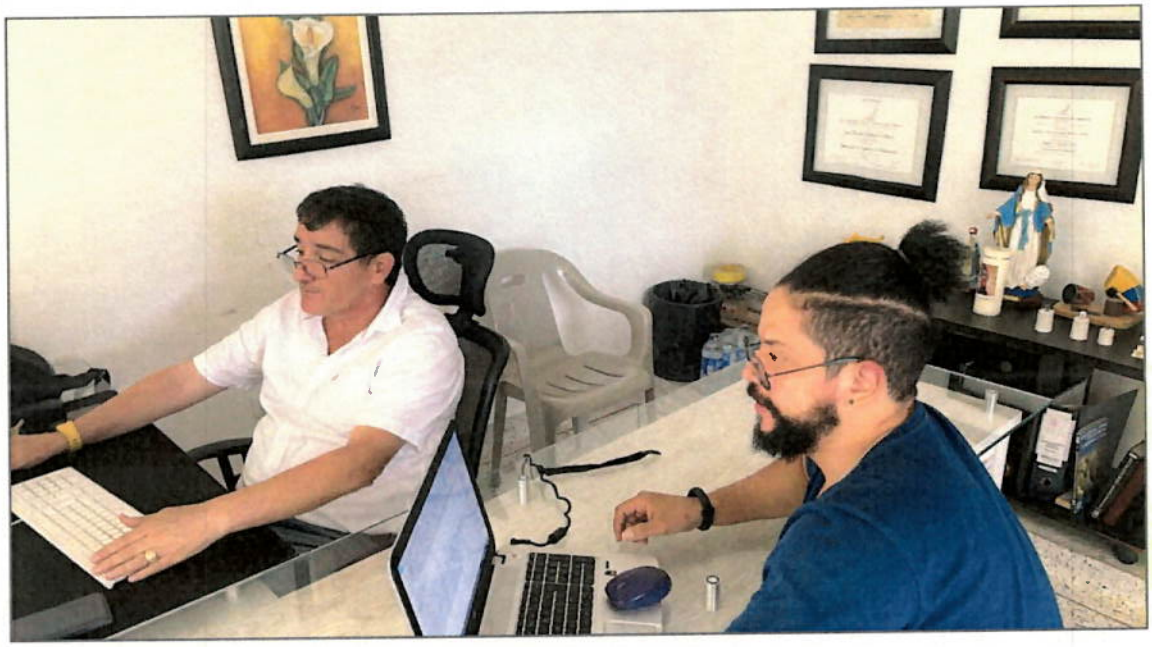
### 3.1 Actividades De Obra

Las actividades realizadas en los estudios de vulnerabilidad estructural del edificio municipal tienen acompañamiento continuo por parte de la supervisión, donde se han realizados controles a los diseños.

Las actividades realizadas en son:

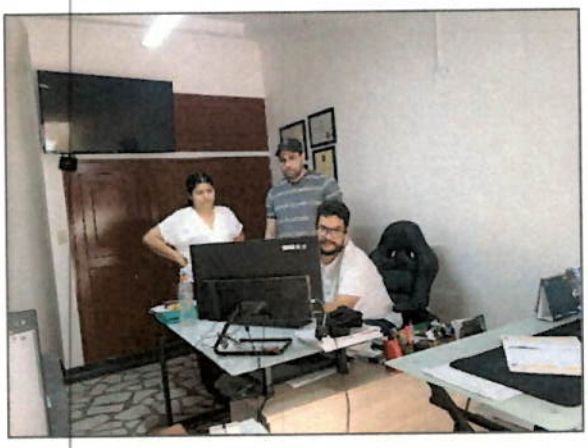
| | |
|---|---|
| **1** | **Levantamiento arquitectónico y estructural del edificio.** |
| **2** | **ESTUDIO DE SUELOS** |
| 2.1 | Ensayo de núcleos de concreto. |
| 2.2 | Ferros can para aceros |
| 2.3 | Resultados de los ensayos de laboratorio. |
| **3** | **DISEÑO ESTRUCTURAL** |
| 3.1 | Modelamiento Estructural |
| 3.2 | Análisis Estructural de la edificación |
| 3.3 | Informe de Vulnerabilidad Estructural del Edificio. |

**Registro fotográfico**



JOHAN JAVIER OÑATE NÚÑEZ
Ingeniero Civil
TP. 70202 222387 TLM







157

## 4. ESTADO FINANCIERO

### 4.1 Estado Financiero del Contrato.

A la fecha el contrato presenta el siguiente estado financiero:

| DESCRIPCION | VALOR CONTRATADO | VALOR FACTURADO | SALDO |
|---|---|---|---|
| Estudios | $ 36.302.977,00 | $ 36.302.977,00 | |
| Total obra | $ 36.302.977,00 | $ 36.302.977,00 | $ 00 |

## 5 AVANCE DEL PROYECTO.

los estudios del proyecto ya fueron entregados a la administración municipal.

## CONCLUSIONES

- El proyecto de **""ESTUDIO DE VULNERABILIDAD ESTRUCTURAL DEL EDIFICIO MUNICIPAL DEL MUNICIPIO DE GARZON - HUILA"** los estudios se encuentra en un 100.00% .

Agradezco de antemano la atención a la presente,

**JOHAN JAVIER OÑATE NUÑEZ**
Contratista.

JOHAN JAVIER OÑATE NÚÑEZ
Ingeniero Civil
TP. 70202 222387 TLM

# INFORME DE VULNERABILIDAD

INFORME DE VULNERABILIDAD

ESDILAB S.A.S.
ESTUDIOS, DIEÑOS Y SERVICIOS DE LABORATORIO.

**ESTUDIO DE VULNERABILIDAD ESTRUCTURAL DEL EDIFICIO MUNICIPAL DE PALERMO DEPARTAMENTO DEL HUILA.**

**ESTUDIO DE VULNERABILIDAD ESTRUCTURAL**
**EDIFICIO MUNICIPAL**
**GARZON – HUILA.**

**NEIVA, AGOSTO DE 2024.**

*Carrera 8w # 25n – 11 Barrio villa del rio. Celular 3123808237.*
Jomarcal66@gmail.com

# 1. ESTUDIO DE VULNERABILIDAD.

## 2. INTRODUCCIÓN.

La norma sismo resistente NSR-10, presenta los requisitos mínimos que, en alguna medida, garantizan que se cumpla el fin primordial de salvaguardar las vidas humanas ante la ocurrencia de un sismo fuerte. No obstante, la defensa de la propiedad es un resultado indirecto de la aplicación de las normas, pues al defender las vidas humanas, se obtiene una protección de la propiedad, como un subproducto de la defensa de la vida.

Las víctimas humanas que se presentan durante los sismos, en su gran mayoría están asociadas con problemas en las construcciones y teniendo en cuenta que el 87% por ciento de la población colombiana habita en zonas de amenaza sísmica alta e intermedia, se hace necesario que las edificaciones existentes, diseñadas y construidas antes de la vigencia de la norma sismo resistente NSR-10 sean actualizadas.

Reconociendo la importancia que tiene el **Edificio Municipal De GARZON**, es primordial seguir los criterios y procedimientos que establece el título **A.10 de la NSR-10 "EVALUACIÓN E INTERVENCIÓN DE EDIFICACIONES CONSTRUIDAS ANTES DE LA VIGENCIA DE LA PRESENTE VERSIÓN DEL REGLAMENTO"** con el fin de obtener una edificación capaz de resistir temblores pequeños sin daño, temblores moderados sin daño estructural, pero con algún daño en elementos no estructurales, y temblores fuertes sin colapso.

## 3. JUSTIFICACIÓN LEGAL

El título A.10 de la NSR-10 "evaluación e intervención de edificaciones construidas antes de la vigencia de la presente versión del reglamento", establece los requisitos que se deben llevar a cabo para le evaluación del comportamiento sísmico y el diseño de la intervención o refuerzo de la estructura de edificaciones existentes antes de la vigencia de la presente versión del Reglamento Colombiano de Construcciones Sismo Resistentes que se modifiquen o rehabiliten en el territorio nacional.

### 1. OBJETIVO GENERAL.

Evaluar la vulnerabilidad sísmica y estructural de la infraestructura del **Edificio municipal de Garzón Huila,** y proponer la remodelación o reforzamiento del sistema estructural y/o demolición, de la edificación existente.

OBJETIVOS ESPECIFICOS.

1. Establecer el sistema estructural y de cimentación existente, así como su comportamiento frente a las fuerzas de sismo correspondientes.

2. Determinar la resistencia existente de los elementos y su resistencia efectiva.

3. Evaluar los índices de sobreesfuerzo y de flexibilidad con el fin de evaluar el comportamiento general de la estructura.

4. Establecer el diseño de la intervención, en caso de que esta se pueda reforzar dentro de los términos técnicos para que la estructura alcance el nivel de seguridad que tendría una estructura construida siguiendo las recomendaciones de la norma sismo resistente NSR-10.

## PROCEDIMIENTO DE EVALUACION

Para la realización del estudio de vulnerabilidad y de reforzamiento estructural, se siguió el procedimiento recomendado en la norma sismo resistente NSR-10 para la evaluación e intervención del sistema estructural, dado en 12 etapas así:

### INFORMACIÓN PRELIMINAR

**Etapa 1** Debe verificarse que la intervención esté cubierta por el alcance dado en A.10.1.3.

**Etapa 2** Debe recopilarse y estudiarse la información existente acerca del diseño geotécnico y estructural, así como del proceso de construcción de la edificación original y sus posteriores modificaciones y deben hacerse exploraciones en la edificación, todo esto de acuerdo con A.10.2.

**Etapa 3** El estado del sistema estructural debe calificarse con respecto a: **(a)** la calidad del diseño de la estructura original y su sistema de cimentación y de la construcción de esta y **(b)** el estado de mantenimiento y conservación. Esta calificación debe hacerse de acuerdo con los requisitos de A.10.2.

### EVALUACIÓN DE LA ESTRUCTURA EXISTENTE

**Etapa 4** Deben determinarse unas solicitaciones equivalentes de acuerdo con los requisitos de A.10.4.2.

**Etapa 5** Debe llevarse a cabo un análisis elástico de la estructura y de su sistema de cimentación para las solicitaciones equivalentes definidas en la Etapa 4.

**Etapa 6** La resistencia existente de la estructura debe determinarse utilizando los requisitos de A.10.4.3.3.

**Etapa 7** Se debe obtener una resistencia efectiva de la estructura, a partir de la resistencia existente, afectándola por dos coeficientes de reducción de resistencia obtenidos de los resultados de la calificación llevada a cabo en la Etapa 3.

**Etapa 8** Debe determinarse un índice de sobreesfuerzo como el máximo cociente obtenido para cualquier elemento o sección de éste, entre las fuerzas internas solicitadas obtenidas del análisis estructural realizado en la Etapa 5 para las solicitaciones equivalentes definidas en la Etapa 4 y la resistencia efectiva obtenida en la Etapa 7.

**Etapa 9** Utilizando los desplazamientos horizontales obtenidos en el análisis de la Etapa 5 deben obtenerse las derivas de la estructura.

**Etapa 10** Debe determinarse un índice de flexibilidad por efectos horizontales como el máximo cociente entre las derivas obtenidas en la Etapa 9 y las derivas permitidas por el Reglamento en el Capítulo A.6. Igualmente debe determinarse un índice de flexibilidad por efectos verticales como el máximo cociente entre las deflexiones verticales medidas en la edificación y las deflexiones permitidas por la norma sismo resistente NSR-10, titulo A.6.3 – Evaluación De La Deriva Máxima.

**INTERVENCIÓN DEL SISTEMA ESTRUCTURAL**

**Etapa 11** La intervención estructural debe definirse de acuerdo con el tipo de modificación establecida en A.10.6 dentro de una de tres categorías: **(a)** Ampliaciones adosadas, **(b)** Ampliaciones en altura y **(c)** Actualización al Reglamento.

**Etapa 12** El conjunto debe analizarse nuevamente incluyendo la intervención propuesta, la cual debe diseñarse para las fuerzas y esfuerzos obtenidos de este nuevo análisis. El diseño geotécnico y estructural y la construcción deben llevarse a cabo de acuerdo con los requisitos que para cada tipo de modificación se establecen.

# ESTUDIO DE VULNERABILIDAD ESTRUCTURAL DEL EDIFICIO MUNICIPAL DE GARZÓN DEPARTAMENTO DEL HUILA.

## INFORMACIÓN PRELIMINAR.

### Etapa 1. VERIFICACION DEL ALCANCE.

No se tiene una fecha exacta de la construcción del edificio municipal de Garzón Huila. La información que se tiene es que fue construido hace aproximadamente 54 años, a inicios de la década del 70.

Esta edificación por ser considerada en el grupo de uso II, estructuras de ocupación especial, literal (f) edificios gubernamentales, se encuentra dentro del alcance establecido en A.10.1.3 y por lo tanto debe cumplir con los requisitos establecidos para llevar a cabo la evaluación del comportamiento sísmico y el diseño de la intervención o refuerzo de la estructura de edificaciones existentes antes de la vigencia de la presente versión del Reglamento Colombiano de Construcciones Sismo Resistentes que se modifiquen o rehabiliten en el territorio nacional.

### Etapa 2 INFORMACION EXISTENTE.

No se tiene información de planos o memorias de cálculo originales, pero si se encontró un levantamiento estructural con despiece de refuerzo, por lo cual se realizó un levantamiento detallado de la edificación para determinar la estructura y su geometría, y se realizaron exploraciones de tipo no destructivo con el quipo FERROSCAN PS 200 DE HILTI, para determinar la armadura existente.

La edificación es de dos pisos con alturas libres promedio de 3.70m y 2.80m con losas de entrepiso de 0.35m altura total.

En el primer piso se encuentran las oficinas de riesgos, comisaria de familia, trabajo social, planeación y urbanismo, hacienda, tesorería, almacén, archivo de tesorería y lactancia.

# ESDILAB S.A.S.

ESTUDIOS, DIEÑOS Y SERVICIOS DE LABORATORIO.




En el segundo piso se encuentra la oficina del alcalde, sala de juntas oficina jurídica, contabilidad, secretaria de salud, planeación secretaria general y jefe de vivienda.




*Carrera 8w # 25n – 11 Barrio villa del rio. Celular 3123808237.*
*Jomarcal66@gmail.com*

En el tercer piso (terraza) se encuentran las oficinas de salud, saneamiento personería y la sala del concejo.






***Imagen 1 Fachada principal edificio municipal.***

## Etapa 3. EVALUACION DEL ESTADO DEL SISTEMA ESTRUCTURAL EN CUANTO A LA CALIDAD DEL DISEÑO, SU CONSTRUCCION Y ESTADO ACTUAL POR MANTENIMIENTO Y CONSERVACION

### 3.1 CALIDAD DEL DISEÑO Y LA CONSTRUCCIÓN DE LA ESTRUCTURA ORIGINAL.

Esta calificación se define en términos de la mejor tecnología existente en la época en que se construyó la edificación. Dentro de la calificación se tiene en cuenta el potencial de mal comportamiento de la edificación debido a distribución irregular de la masa o la rigidez, ausencia de diafragmas, anclajes, amarres y otros elementos necesarios para garantizar un buen comportamiento de ella ante las distintas solicitaciones.

El edificio municipal de Garzón se recorrió con el scanner FERROSCAN PS 200 DE HILTI y con la ayuda de un taladro en busca de los elementos estructurales, verificando lo encontrado en planos existentes. La losa de entrepiso es una losa aligerada, armada en una dirección.

**Se resalta que la estructura encontrada es de solo dos pisos y no de tres**.

La cubierta actual es de asbesto – cemento en muy mal estado soportada sobre cerchas metálicas.

**La calidad del diseño y la construcción de la estructura original SE CALIFICA COMO BUENA.**

**EL ESTADO DE MANTENIMIENTO Y CONSERVACIÓN.**

Se hace una calificación del estado actual de la estructura de la edificación, basada en aspectos tales como: sismos que la puedan haber afectado, fisuras por cambios de temperatura, corrosión de las armaduras, asentamientos diferenciales, reformas, deflexiones excesivas, estado de elementos de unión y otros aspectos que permitan determinar su estado actual.

Una vez revisada la edificación, se encuentra que esta no presenta fisuras ni asentamientos evidentes. Lo que sí se puede evidenciar son las reformas y

adecuaciones posteriores como la construcción sobre la terraza, formando un tercer piso.

**El estado de la estructura existente SE CALIFICA COMO REGULAR.**

### 3.3 ESTADO DE LA ESTRUCTURA A TRAVÉS DE EVIDENCIAS

Mediante la revisión visual de la estructura no hay evidencia de fallas locales, ni deflexiones excesivas, se encontró corrosión de las armaduras a flexión de las losas en algunos puntos donde quedo expuesta.

Los niveles tanto del suelo como del resto de la estructura no muestran la ocurrencia de asentamientos diferenciales que puedan dañar la estructura.

Revisando la historia, no se encuentran evidencias de eventos extraordinarios que puedan haber afectado la integridad estructural. El registro sísmico muestra un evento importante después de construido el bloque, que fue el sismo de febrero de 1967.

**Tabla A.10.4-1**
**Valores de $\phi_c$ y $\phi_e$**

| | Calidad del diseño y la construcción, o del estado de la edificación | | |
|---|---|---|---|
| | Buena | Regular | Mala |
| $\phi_c$ o $\phi_e$ | 1.0 | 0.8 | 0.6 |

- **CALIDAD DEL DISEÑO Y CONSTRUCCION: BUENA**
- **ESTADO ACTUAL DE LA ESTRUCTURA: REGULAR**
- **SISTEMA ESTRUCTURAL EXISTENTE:**
  **Sistema estructural de portico resistente a momentos de concreto.** En el tercer piso no hay estructura.

**EVALUACION DE LA ESTRUCTURA EXISTENTE.**

**Etapa 4. SOLICITACIONES EQUIVALENTES.** Se determinaron las solicitaciones equivalentes de acuerdo con los requisitos de A.10.4.2 con el criterio de movimientos sísmicos para un nivel de seguridad equivalente al de una edificación nueva.

## 4. MOVIMIENTOS SISMICOS DE DISEÑO.

- Ciudad — Garzon
- Zona de amenaza sísmica: — ALTA.
- Tipo de perfil del suelo: — D
- Grupo de uso: — II
- Coeficiente de importancia: — I =1.10

Por la ubicación del proyecto en zona de amenaza sísmica ALTA, solo se permite pórticos en concreto con capacidad de disipación de energía ESPECIA (DES).

**Coeficiente de capacidad de disipación de energía, R** — De acuerdo con el sistema estructural a que corresponda la edificación y a los requisitos constructivos y de diseño que se hayan seguido en la ejecución de la estructura original debe asignarse un valor del coeficiente de capacidad de disipación de energía, R ($R=R_o \times \Phi_a \times \Phi_p \times \Phi_r$), el cual se denominará **R'**. La asignación debe hacerse de acuerdo con la información disponible sobre la estructura.

**(a)** Cuando se disponga de buena información sobre el diseño original, tal como planos y memorias, se permite, de acuerdo con el mejor criterio del ingeniero que lleva a cabo la evaluación, determinar un valor de coeficiente de capacidad de disipación de energía, **R**, por comparación. con los requisitos que para el material y el sistema estructural fija el Reglamento. La selección del coeficiente de capacidad de disipación de energía, **R**, cuando haya cumplimiento parcial de los requisitos puede aproximarse interpolando entre los valores de **R** que da el Capítulo A.3.

**(b)** Cuando no se disponga de buena información sobre el diseño original, o ésta sea incompleta o fragmentaria, el ingeniero que lleve a cabo la evaluación debe

definir un valor de **R** de acuerdo con su mejor criterio. Este valor no puede ser mayor que el valor que el Capítulo A.3 establezca para mismo sistema estructural y el mismo material.

**(c)** Cuando no exista ningún tipo de información, se permite utilizar un valor de **R** correspondiente a tres cuartos del valor que fija el Capítulo A.3 para el mismo sistema estructural y el mismo material. El valor así obtenido no hay necesidad de que sea menor que la unidad.

El sistema estructural se puede clasificar como pórticos en concreto con capacidad de disipación de energía ESPECIA (DES).

- Coeficiente de capacidad de disipación de energía: 7.0
- Configuración en planta regular $\varphi_p = 0.9$
- Configuración en altura irregular $\varphi_a = 1.0$
- Factor por reducción de resistencia $\varphi_r = 0.8$

**Etapa 5. ANALISIS ELASTICO DE LA ESTRUCTURA.** Se realiza un análisis elástico de la estructura con el fin de obtener los índices de flexibilidad y de sobre esfuerzo.

**Etapa 6. RESISTENCIA EXISTENTE DE LA ESTRUCTURA.** Para evaluar la resistencia existente en los elementos se realizaron ensayos de detección de los aceros de refuerzo con el equipo FERROSCAN PS 200 DE HILTI, y se tomaron núcleos de concreto que se fallaron en laboratorio. Ver anexo.

ESDILAB S.A.S.
ESTUDIOS, DIEÑOS Y SERVICIOS DE LABORATORIO.

## CONCLUSIONES Y RECOMENDACIONES.

1. Del análisis elástico de la estructura se obtienen las derivas de la estructura y se determina un índice de flexibilidad por efectos horizontales como máximo cociente entre las derivas obtenidas y las derivas máximas permitidas por la norma sismo resistente NSR-10.

Como resultado del procedimiento anterior se obtuvo que la estructura presenta un índice de flexibilidad superior a la unidad, lo cual indica que esta estructura no cumple con los requisitos de flexibilidad.

Índice de flexibilidad en X 2.2
Índice de flexibilidad en Y 1.9

2. Del análisis elástico de la estructura se obtienen los índices de sobre esfuerzo como el máximo cociente obtenido para cualquier elemento o sección de éste, entre las fuerzas internas solicitadas obtenidas del análisis estructural para las solicitaciones equivalentes definidas y la resistencia efectiva.

En la memoria de calculo se puede ver los índices de sobre esfuerzo en vigas y columnas en el capítulo 10 COMPROBACIONES E.L.U, paginas 539 a 600.

3. Del análisis de los resultados y considerando que la estructura ha sido diseñada para dos pisos y hoy presenta 3, y por la cantidad de elementos que se deberían reforzar, lo mas recomendable es la demolición total de la estructura y construcción nueva.

ING. ANDRES FELIPE MUÑOZ
Mat. Prof. No. 25202-261771CND
Ing. Civil Diseñador Estructural

## 5. REGISTRO FOTOGRAFICO.



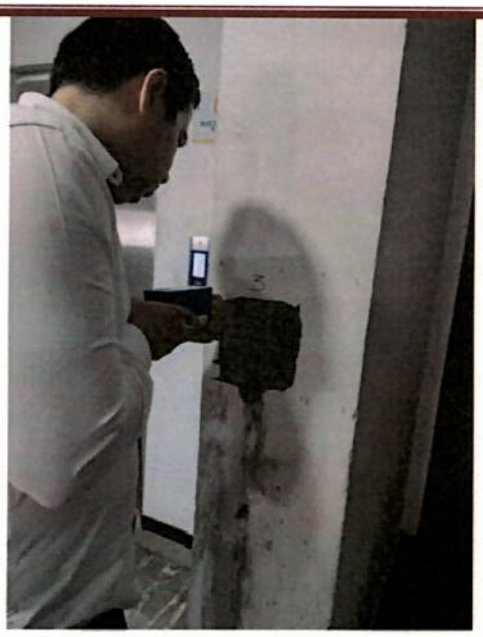



Carrera 8w # 25n – 11 Barrio villa del rio. Celular 3123808237.
Jomarcal66@gmail.com

# ESDILAB S.A.S.

ESTUDIOS, DIEÑOS Y SERVICIOS DE LABORATORIO.









Carrera 8w # 25n – 11 Barrio villa del rio. Celular 3123808237.
Jomarcal66@gmail.com

# ESDILAB S.A.S.

ESTUDIOS, DIEÑOS Y SERVICIOS DE LABORATORIO.











Carrera 8w # 25n – 11 Barrio villa del rio. Celular 3123808237.
Jomarcal66@gmail.com

# ESDILAB S.A.S.

ESTUDIOS, DIEÑOS Y SERVICIOS DE LABORATORIO.



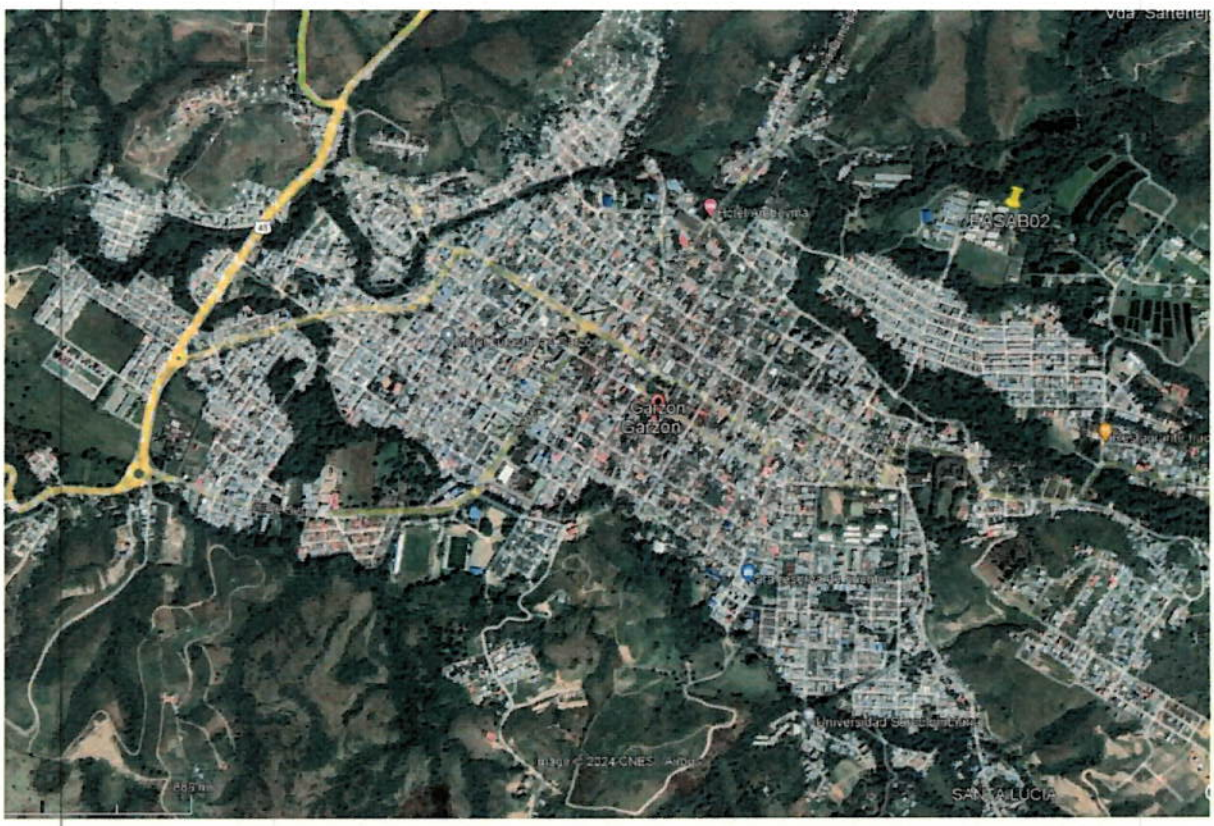
Carrera 8w # 25n – 11 Barrio villa del rio. Celular 3123808237.
Jomarcal66@gmail.com

JOHAN JAVIER OÑATE NÚÑEZ
Ingeniero Civil
TP. 70202 222387 TLM

# TOPOGRAFIA

# INFORME DE TOPOGRAFIA

## EDIFICIO MUNICIPAL - MUNICIPIO DE GARZON DEPARTAMENTO DEL HUILA




Topógrafo: **SANDOR HERNAN TRUJILLO**
M.P. 01-3751 C.P.N.T
Neiva, Junio de 2024

## TABLA DE CONTENIDO


| | Página |
|---|---|
| **1. INTRODUCCIÓN** | **3** |
| **2. OBJETO DEL LEVANTAMIENTO** | **3** |
| **3. DESCRIPCIÓN DE TRABAJOS PLANIMETRÍA Y ALTIMETRÍA** | **3** |
| **4. GEORREFERENCIACIÓN** | **4** |
| **5. LEVANTAMIENTO DE DETALLES** | **4** |
| **6. DESCRIPCIÓN DEL EQUIPO UTILIZADO EN LA FASE DE LEVANTAMIENTO** | **5** |
| **7. INFORMACIÓN REGISTRADA** | **6** |
| **8. FASE DE DIBUJO** | **7** |
| **9. REGISTRO FOTOGRÁFICO** | **8** |

**ANEXO No. 1 CARTERA DE PUNTOS LEVANTADOS**

**ANEXO No. 2 PLANOS (2)**

## 1. INTRODUCCIÓN

Este proceso se realizó siguiendo las directrices establecidas en la literatura técnica del área de topografía y la práctica adquirida durante 25 años de experiencia en el área de la aplicación topográfica en la ingeniería.

Con base en la información cartográfica adquirida se determinaron los puntos de arranque, así como los puntos de amarre del sistema que se desee levantar.

Posteriormente, ubicados en la zona se procedió a la armada del equipo de topografía, al cual se le introdujeron las coordenadas suministradas tanto del punto de armada como el punto de mira. GNSS01 y GNSS02 ubicados en el predio a levantar topográficamente.

## 2. OBJETO DEL LEVANTAMIENTO

El presente informe tiene por objeto determinar las características físicas del terreno donde se encuentra ubicado el predio escogido, y describir de manera detallada el estudio topográfico de las áreas y todo lo relacionado al respecto, como parte de las actividades requeridas para los estudios y diseños del proyecto construcción edificio municipal en el Municipio de Garzon - Huila.

## 3. DESCRIPCIÓN DE TRABAJOS PLANIMETRÍA Y ALTIMETRÍA

Chequear en campo con coordenadas y planos suministrados, los principales elementos que constituyen el paisaje, relieve y parte física, de todos los detalles de construcciones y áreas requeridas, para que sirvan como base en el desarrollo de los trabajos necesarios para realizar los estudios y diseños del proyecto construcción edificio municipal municipio de garzon - Huila.

Luego de este proceso, se dio inicio a la toma de topografía, detallando cada una de las áreas establecidas que hacen parte del predio y todo aquel detalle que se requiera para el proceso de consultoría; realizando chequeos permanentes con el fin de evitar errores involuntarios.

Una vez terminados los trabajos topográficos, fue necesario realizar una verificación de los datos tomados en campo.

Almacenada la información, se procedió a su análisis mediante software especializado para este tipo de labores como el Topcon Link y AutoCAD.

Terminado el proceso de análisis de la información se procedió a la fase de dibujo y elaboración de planos definitivos, dependiendo de las directrices establecidas por los Arquitectos diseñadores.

## 4. GEORREFERENCIACIÓN

Las coordenadas asignadas fueron las siguientes.

| | | |
|---|---|---|
| **GNSS01=N** 734681.974 | **E**=827605.408 | ELEV.= 826.688 |
| **SZ01=N** 734865.064 | **E**=827371.336 | ELEV.= 811.576 |

## 5. LEVANTAMIENTO DE DETALLES

Las actividades de levantamiento de detalles, se realizaron durante 02 días tratando de tomar la mayor cantidad de detalles e información posibles.

La metodología utilizada fue de radiación mediante estación total, eliminando los errores de lectura, anotación, trascripción y cálculo; ya que con estos equipos la toma de datos es automática en forma digital) y los cálculos de coordenadas se realizan por medio de programas de computación incorporados en dichos equipos.

Nivelación con nivel de precisión, en los casos requeridos, para minimizar errores de lecturas, y tramos de pendientes muy mínimas.

La comisión de topografía que desarrollo el proyecto en campo estuvo conformada por un topógrafo, y dos auxiliares.

El coordinador de esta actividad fue el topógrafo Sandor Hernán Trujillo, con Matricula Profesional M.P No. **01-3751 C.P.N.T,** y con una experiencia de 25 años en el campo de la topografía.

## 6. DESCRIPCIÓN DEL EQUIPO UTILIZADO EN LA FASE DE LEVANTAMIENTO

Los equipos empleados fueron debidamente calibrados para trabajar en las condiciones propias del área en estudio.

Para el levantamiento de detalles se utilizó una estación marca TRIMBLE M3. Y Equipo GNSS Efix F7+.En cuanto al manejo y administración de la información capturada se utilizó el programa Topcon Link, con descargas diarias de los puntos capturados en terreno.

Las características del equipo se muestran a continuación:






**ESTACIÓN TOTAL**

Trimble M3 a los 2"
Alcance Distancias: 4000 metros con 1 prisma.
Alcance Distancias: 400 metros sin prisma.
Memoria Interna 40.000 puntos.

## 7. INFORMACIÓN REGISTRADA

Como se informó en ítems anteriores, se levantaron los detalles más relevantes y necesarios que permitan identificar los puntos importantes en el levantamiento topográfico.

Para cumplir con el objetivo trazado, se levantaron:

- **Pozos de inspección de la red de Alcantarillado**

  Punto tomado en el centro de cada tapa y con la identificación correspondiente a la red de alcantarillado

- **Árboles**

  Se levantaron los árboles con diámetros de follaje significativo, localizados en las principales zonas verdes del barrio.

- **Cajas de energía**

  Punto tomado en el centro de las cajas que contienen elementos propios de la empresa de energía.

- **Canales**

  Puntos tomados en los fondos y orillas.

- **Cerramientos**

  Puntos tomados a lo largo de los diferentes paramentos que se encuentran conformados por cerramientos y discriminados por clase (cerramientos en malla eslabonada, alambre de púas, mampostería, lámina de aluminio, madera etc.)

- **Construcciones y/o paramentos**

  Puntos tomados a lo largo de las construcciones y/o paramentos del barrio.

- **Hidrantes**
- **Muros**

Estructuras con aletas en concreto tomando la información correspondiente a las claves, bateas y fondo de las tuberías de entrega de aguas lluvias.

- **Postes de alta tensión**
- **Postes de alumbrado**
- **Postes baja tensión**
- **Postes de media tensión**
- **Postes de teléfono**
- **Postes con transformador**
- **Sumideros de rejilla**

Puntos capturados sobre el centro de la rejilla de cada sumidero, localizado principalmente en las esquinas de las vías vehiculares.

En el **ANEXO No. 1 – COMPENDIO DE PUNTOS LEVANTADOS** se presenta una tabla con la información de detalles colectada en campo, donde se ilustra el número de puntos capturados, las coordenadas Norte, Este y cota de los mismos.

En el **ANEXO No. 2 – PLANOS DEL AREA A DESARROLLAR EL PROYECTO** se adjuntan en medio físico 2 planos relacionados a continuación:

- ✓ Levantamiento topográfico / Localización del proyecto.
- ✓ Plano de perfiles y secciones

## 8. FASE DE DIBUJO

Concluidas las labores de campo se procedió a la etapa de dibujo, donde resultaron dos (02) planos de detalles a escalas 1:500 de planta del área del proyecto y 1:500 de perfiles y secciones.



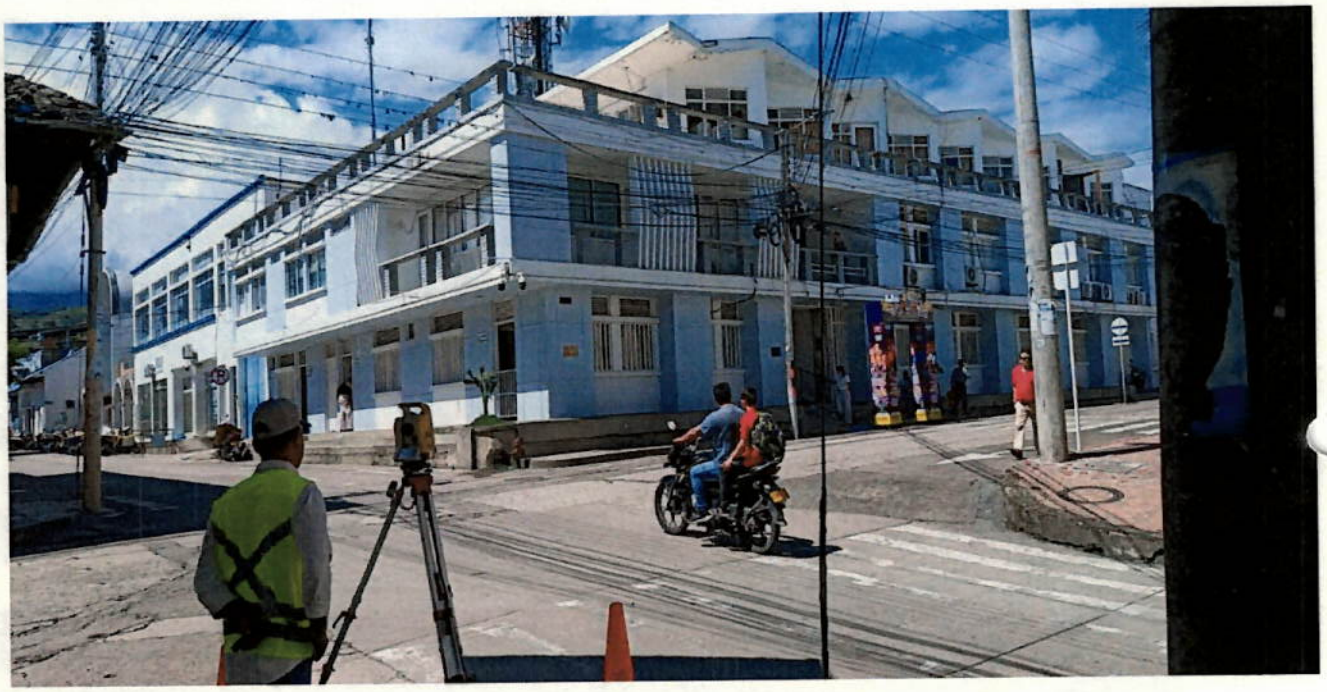



GNSS01
PROCESO DE GEOREFERENCIACION





GNSS AZ 01
PROCESO DE GEOREFERENCIACION



TRABAJO DE CAMPO





GPS FASAB02





TRABAJO DE CAMPO





TRABAJO DE CAMPO



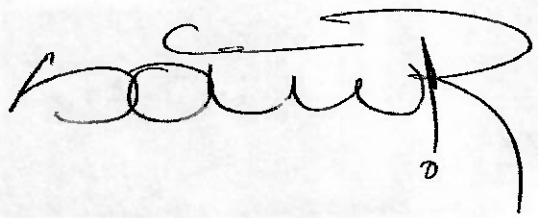
# 7 CONCLUCIONES

Se puede concluir que, según el levantamiento topográfico, las condiciones del terreno son aptas para las labores de construcción que se pretenden realizar en el sitio, y que no presenta inconvenientes relevantes que afecten este proceso.

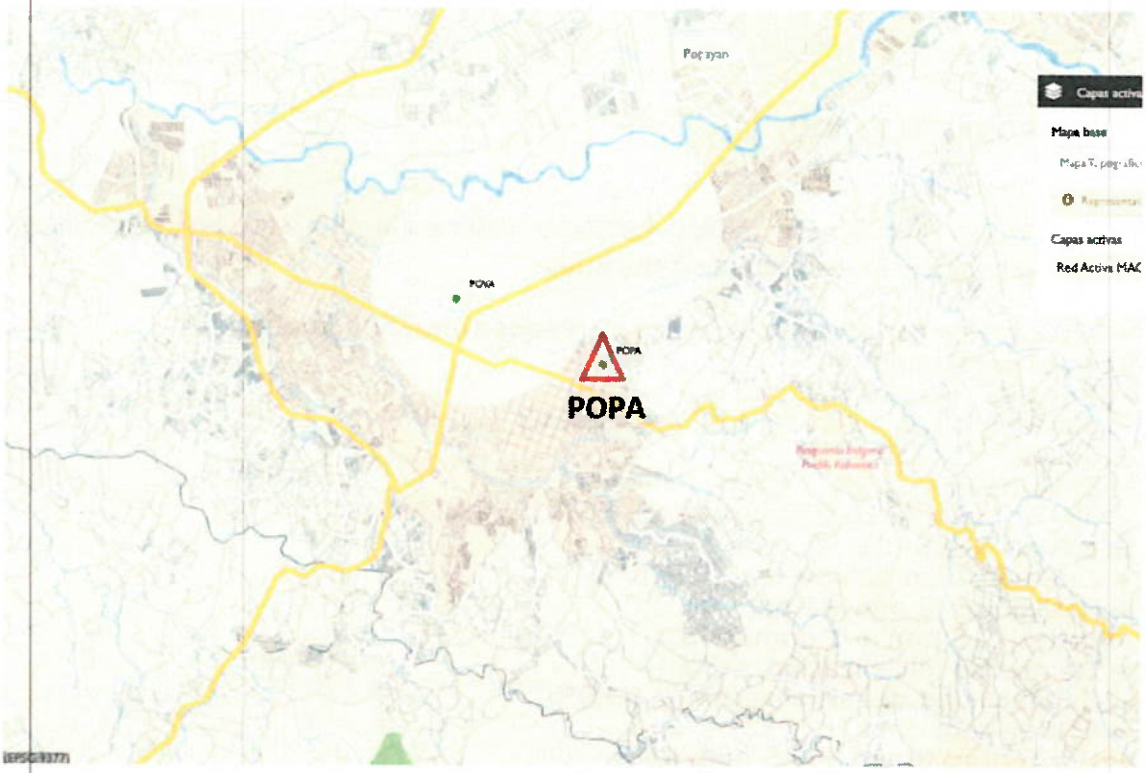
El sitio se encuentra ubicado, en un entorno tranquilo,

Este sector cuenta con red de servicios públicos, hidráulicos y sanitarios, cuenta también con redes eléctricas dentro del sector que facilitarían su conexión.

Las condiciones topográficas son favorables, ya que no exterioriza desniveles representativos en su entorno.



SANDOR HERNAN TRUJILLO
Topógrafo MP. 01-3751 C.P.N.T







Localización POPA vértice del IGAC

**EQUIPOS UTILIZADO**

1. GNSS tipo Smart marca CHCNAV referencia i80 con las siguientes especificaciones técnicas principales:

• 220 canales con todos a la vista rastreados simultáneamente
señales satelitales
-GPS: L1C / A, L2C, L2E, L5
– GLONASS: L1C / A, L1P, L2C / A, L2P, L3
– Galileo: E1, E5A, E5B
– BDS: B1, B2
– SBAS: L1C / A, L5 (QZSS, WAAS, EGNOS, GAGAN)
Precisión GNSS (1)
• Cinemática en tiempo real (RTK):
– Horizontal: 8 mm +1 ppm RMS
-Vertical: 15 mm + 1 ppm RMS
– Tiempo de inicialización: <5 s
– Confiabilidad de inicialización:> 99.9%
• RTK de red:
– Horizontal: 8 mm + 0.5 ppm RMS
-Vertical: 15 mm + 0.5 ppm RMS
– Tiempo de inicialización: <10 s
– Confiabilidad de inicialización:> 99.9%
• Cinemática postprocesada (PPK):
– Horizontal: 8 mm +1 ppm RMS
-Vertical: 15 mm + 1 ppm RMS
• Estática de alta precisión:
– Horizontal: 2.5 mm + 0.1 ppm RMS
– Vertical: 3.5 mm + 0.4 ppm RMS
– Longitud de línea de base: <300 km
• SBAS: 0.5 m RMS
Comunicaciones y grabación de datos
• Serie: puerto LEMO de 2 x 7 pines (alimentación externa, datos USB)
descarga, actualización USB, RS-232)
• Modem NetWork: módem 3.75G integrado internamente
– HSPA + 21 Mbps (descarga), 5,76 Mbps (carga)
– WCDMA 850/900/1700/1900/2100
– EDGE / GPRS / GSM 850/900/1800/1900
• Bluetooth®: sistema multimodo integrado internamente
compatible con Android, Windows Mobile y Windows
sistemas operativos de escritorio
• Wi-Fi: 802.11 b / g / n, modo de punto de



acceso
• UHF Radios131: TNC protegida para mujeres
– Rx / Tx interno estándar: 410 MFIz a 470 MFIz
Potencia de transmisión: 0.5 W a 2 W
Protocolo: CFIC, Trimble, Pacific Crest
Alcance: condiciones óptimas de 5 km
– Rx / Tx certificado por la FCC: 403 MFIz a 473 MFIz
Potencia de transmisión: 0.1 W a 1W
Protocolos Trimble, Satel, Pacific Crest
Alcance: condiciones óptimas de 5 km
• Protocolos:
– Entrada y salida CMR, CMR +, SCMRX
– RTCM 2.1,2.3, 3.0, 3.1.3.2 entrada y salida
-NMEA 0183 salida
– Formatos estáticos de FICN, FIRC y RINEX
-NTRIP Client, NTRIPCaster
• Almacenamiento de datos
-32 GB de memoria de alta velocidad
– Tasas de posicionamiento: hasta 20 Hz
Hardware
• Tamaño (alto x ancho): 14 cm x 12,4 cm (5,5 x 4,9 pulgadas)
• Peso: 1.02 kg (2.2 lb), 1.22 kg (2.7 Ib) con baterías
• Pantalla LCD: 128 x 64 dpi con luz solar legible con función / aceptar botones
• Ambiente:
– Funcionamiento: -40 ° C a + 75 ° C (-40T a + 167 ° F)
– Almacenamiento: -55 ° C a +85 ° C (-67 ° F a + 185 ° F)
• Fiumidity: 100% de condensación
• Prueba de polvo y agua: IP68
• Choque y vibración: 2 m (6.56 ft) caen sobre el concreto
• Sensor de inclinación:
– Nivelación de EBubble
– Compensador de inclinación121

## COORDENADAS DE LOS PUNTOS GNSS EN WGS84

La siguiente tabla muestra las coordenadas geográficas por procesamiento realizado mediante el software CGO, fijando coordenadas geodésicas en sistema WGS84 para los puntos CALI Y POPA. Las coordenadas calculadas en la época actual, se le hizo el traslado a la época de referencia 2018.0 solicitada por el IGAC

| ORGEN OESTE ÉPOCA 2023-08-09 | | | |
|---|---|---|---|
| **ESTACIÓN** | **LATITUD** | **LONGITUD** | **ALTURA** |
| 41298001 | 02°11'37.34134"N | 075°38'28.65486"W | 806.889 |
| GNSS-02 | 02°12'14.06822"N | 075°38'10.19454"W | 816.214 |
| GNSS-01 | 02°11'45.69083"N | 075°37'37.54492"W | 852.481 |
| SAZ-01 | 02°11'51.64156"N | 075°37'45.12352"W | 837.350 |
| SAZ-02 | 02°12'11.07541"N | 075°38'10.55551"W | 812.130 |
| SAZ-03 | 02°11'35.91184"N | 075°38'23.06991"W | 812.563 |

| ORGEN OESTE ÉPOCA 2018-01-01 | | | |
|---|---|---|---|
| **ESTACIÓN** | **LATITUD** | **LONGITUD** | **ALTURA** |
| 41298001 | 02°11'37.33909"N | 075°38'28.65515"W | 806.889 |
| GNSS-02 | 02°12'14.06597"N | 075°38'10.19484"W | 816.214 |
| GNSS-01 | 02°11'45.68858"N | 075°37'37.54521"W | 852.481 |
| SAZ-01 | 02°11'51.63931"N | 075°37'45.12381"W | 837.150 |
| SAZ-02 | 02°12'11.07316"N | 075°38'10.55580"W | 811.930 |
| SAZ-03 | 02°11'35.90959"N | 075°38'23.07021"W | 812.363 |

Coordenadas en WGS84 de la red GNSS Primaria.

## COORDENADAS DE PUNTOS GNSS EN ORIGEN OESTE - MAGNA

La siguiente tabla muestra las coordenadas origen oeste magna por procesamiento realizado mediante el software CHCNAV CGO, fijando coordenadas geodésicas en sistema WGS84 para los puntos CALI Y POPA. Estos puntos hacen parte de la Red Primaria.

| ORGEN OESTE ÉPOCA 2023-08-09 | | | |
|---|---|---|---|
| **ESTACIÓN** | **NORTE** | **ESTE** | **ELEVACIÓN** |
| 41298001 | 734427.064 | 826025.282 | 781.171 |
| GNSS-02 | 735554.973 | 826597.088 | 790.502 |
| GNSS-01 | 734681.974 | 827605.408 | 826.688 |
| SAZ-01 | 734865.064 | 827371.336 | 811.576 |
| SAZ-02 | 735463.025 | 826585.834 | 786.415 |
| SAZ-03 | 734382.960 | 826197.873 | 786.834 |

| ORGEN OESTE ÉPOCA 2018-01-01 | | | |
|---|---|---|---|
| ESTACIÓN | NORTE | ESTE | ELEVACIÓN |
| 41298001 | 734412.766 | 1159779.112 | 781.171 |
| GNSS-02 | 735541.758 | 1160348.619 | 790.502 |
| GNSS-01 | 734670.831 | 1161358.642 | 826.688 |
| SAZ-01 | 734853.442 | 1161124.214 | 811.576 |
| SAZ-02 | 735449.793 | 1160337.551 | 786.415 |
| SAZ-03 | 734369.010 | 1159951.781 | 786.834 |

Coordenadas planas Gauss de la red GNSS en origen oeste - Magna.

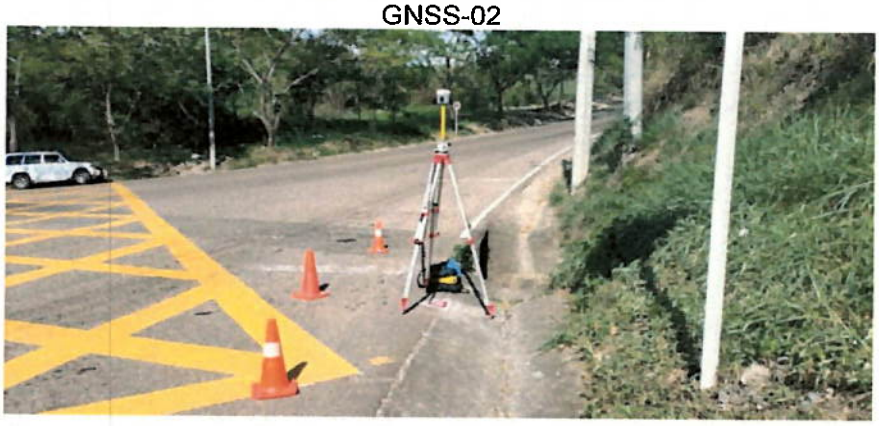
REGISTRO FOTOGRAFICO
GNSS-01








REGISTRO FOTOGRAFICO
GNSS-02







REGISTRO FOTOGRAFICO
IGAC 41298001







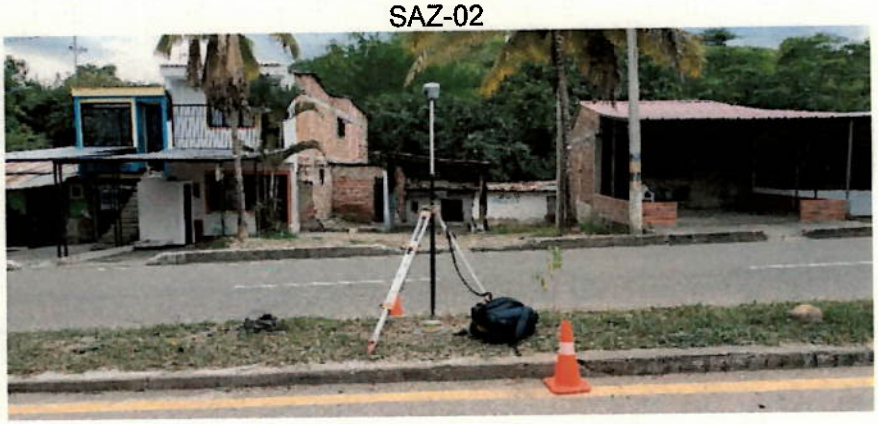
REGISTRO FOTOGRAFICO
SAZ-01







REGISTRO FOTOGRAFICO
SAZ-02







REGISTRO FOTOGRAFICO
SAZ-03







# INFORME AJUSTE DE RED

# Network Adjustment Report

## Basic Information

| Name | Value |
|---|---|
| Username | LAPTOP-5NOLCMTK |
| Project Datum | Magna_Colombia_Bogota |
| Project Name | 20240115-EMPUGAR |
| Distance Units | Meter |
| Height Units | Meter |

## 1 Adjustment Settings

### Basic Parameters

| Name | Value |
|---|---|
| Ellipsoid Name | GRS80 |
| Major Axis(m) | 6378137.0000 |
| Flattening Reciprocal(1/f) | 298.2572221 |

### Projection Parameters

| Name | Value |
|---|---|
| Projection Method | Transverse Mercator Projection |
| Scale Factor | 1 |
| Projection Height | 0.0000 |
| Original Latitude | 04°35'46.32150"N |
| Central Meridian(L0) | 074°04'39.02850"W |
| North Additive Constant(m) | 1000000.0000 |
| East Additive Constant(m) | 1000000.0000 |

## 2 Adjustment Statistics

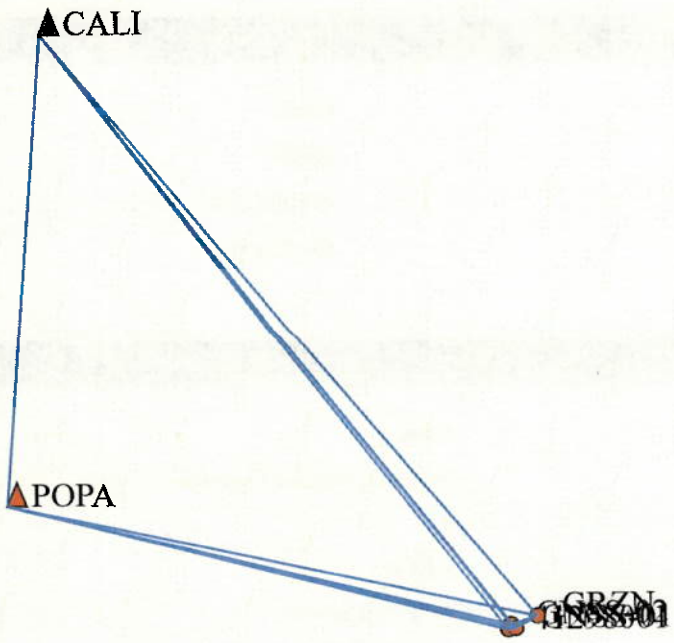
### Statistical Summary

| Name | Value |
|---|---|
| Network Reference Factor | 12.5482271813039 |
| Chi Square Test | Pass |
| Chi Square Value | 31.97771 |
| Range of Chi Square Test | 16.60654~47.34889 |
| Ratio of Unit Weight Standard Error | 1.03244 |
| Precision Confidence Level | 2 sigma |

## 3 Control Point

| | |
|---|---|
| Number Of Points | 06 |
| Control Point Sum | 02 |

Control Points



# 4 Free Adjusted Coordinates

**4.1 Baselines Input in WGS84**

| Observation ID | Baseline ID | DX(m) | Std.DX (mm) | DY (m) | Std.DY (mm) | DZ(m) | Std.DZ (mm) |
|---|---|---|---|---|---|---|---|
| B01 | 41298001->GNSS-02 | 544.2352 | 0.9 | 174.3984 | 2.3 | 1127.7555 | 0.7 |
| B02 | 41298001->GNSS-01 | 1538.9599 | 1.0 | 357.2554 | 1.8 | 258.0514 | 0.6 |
| B03 | GNSS-02->GNSS-01 | 994.7464 | 4.5 | 182.8217 | 8.8 | -869.7105 | 2.5 |
| B04 | POPA->41298001 | 10370 6.4990 | 2.6 | 25478.3304 | 2.8 | -27601.2609 | 1.2 |
| B05 | POPA->GNSS-02 | 10425 0.7261 | 2.7 | 25652.7359 | 3.6 | -26473.4955 | 1.4 |
| B06 | POPA->GNSS-01 | 10524 5.4219 | 2.1 | 25835.6639 | 2.9 | -27343.2020 | 1.0 |
| B16 | 41298001->GRZN | 6080.5864 | 0.8 | 1356.9372 | 1.1 | 2980.6835 | 0.5 |
| B17 | GNSS-02->GRZN | 5536.3426 | 3.1 | 1182.5259 | 3.5 | 1852.9211 | 1.3 |
| B18 | GNSS-01->GRZN | 4541.5994 | 3.2 | 999.7044 | 3.9 | 2722.6351 | 1.2 |
| B19 | POPA->GRZN | 10978 7.0657 | 0.4 | 26835.2403 | 0.6 | -24620.5695 | 0.2 |
| B22 | CALI->41298001 | 97674.0651 | 2.4 | 17879.3089 | 3.4 | -13058 4.0081 | 0.9 |
| B23 | CALI->GNSS-02 | 98218.2089 | 2.9 | 18053.8542 | 4.2 | -12945 6.2678 | 2.0 |
| B24 | CALI->GNSS-01 | 99212.9388 | 4.2 | 18236.6673 | 5.7 | -13032 5.9781 | 1.9 |
| B25 | CALI->POPA | -6032.5332 | 0.5 | -7598.8513 | 0.7 | -10298 2.7799 | 0.3 |
| B28 | CALI->GRZN | 10375 4.5331 | 0.5 | 19236.4053 | 0.8 | -12760 3.3554 | 0.3 |

**4.2 Adjusted Baselines in WGS84**

**Style One:**

| Observation ID | Baseline ID | | Observation | Residual | Horizontal Precision(Ratio) | 3D Precision(Ratio) |
|---|---|---|---|---|---|---|
| B01 | 41298001->GNSS-02 | **Azimuth** | 26°49'23.62840" | 0°3'15.10280" | 1:113633 | 1:54849 |
| | | **ΔEllipsoid Height** | 9.3254 | -0.0090 | | |
| | | **Ellipsoid Dist.** | 1264.2961 | 0.0022 | | |
| B02 | 41298001->GNSS-01 | **Azimuth** | 80°46'33.33526" | 0°0'46.25219" | 1:152137 | 1:75886 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | **ΔEllipsoid Height** | 45.5912 | -0.0151 | | |
| | | **Ellipsoid Dist.** | 1600.8186 | 0.0002 | | |
| B03 | GNSS-02->GNSS-01 | **Azimuth** | 130°49'33.88641" | 0°35'2.33900" | 1:94289 | 1:45501 |
| | | **ΔEllipsoid Height** | 36.2658 | -0.0454 | | |
| | | **Ellipsoid Dist.** | 1333.9041 | -0.0151 | | |
| B04 | POPA->41298001 | **Azimuth** | 104°27'47.59496" | 0°0'43.18047" | 1:12302599 | 1:7061654 |
| | | **ΔEllipsoid Height** | -975.2781 | 0.0163 | | |
| | | **Ellipsoid Dist.** | 110299.6368 | -0.0135 | | |
| B05 | POPA->GNSS-02 | **Azimuth** | 103°49'23.21089" | 0°0'1.09467" | 1:8737702 | 1:4524110 |
| | | **ΔEllipsoid Height** | -965.9527 | 0.0157 | | |
| | | **Ellipsoid Dist.** | 110576.3165 | -0.0043 | | |
| B06 | POPA->GNSS-01 | **Azimuth** | 104°7'59.18333" | 0°0'2.71439" | 1:9603620 | 1:4944468 |
| | | **ΔEllipsoid Height** | -929.6869 | 0.0854 | | |
| | | **Ellipsoid Dist.** | 111766.4186 | 0.0057 | | |
| B16 | 41298001->GRZN | **Azimuth** | 64°29'35.71984" | 0°3'10.54678" | 1:821138 | 1:470692 |
| | | **ΔEllipsoid Height** | 311.0746 | -0.0002 | | |
| | | **Ellipsoid Dist.** | 6906.4554 | -0.0114 | | |
| B17 | GNSS-02->GRZN | **Azimuth** | 71°57'20.50497" | 0°4'48.60153" | 1:484804 | 1:247909 |
| | | **ΔEllipsoid Height** | 301.7492 | -0.0013 | | |
| | | **Ellipsoid Dist.** | 5956.7417 | -0.0002 | | |
| B18 | GNSS-01->GRZN | **Azimuth** | 59°42'43.39474" | 0°25'25.20404" | 1:473169 | 1:241117 |
| | | **ΔEllipsoid Height** | 265.4834 | 0.0434 | | |
| | | **Ellipsoid Dist.** | 5388.7235 | 0.0060 | | |
| B19 | POPA->GRZN | **Azimuth** | 102°15'54.79279" | 0°0'0.20296" | 1:24305231 | 1:14380391 |

# 4 Free Adjusted Coordinates

**4.1 Baselines Input in WGS84**

| Observation ID | Baseline ID | DX(m) | Std.DX (mm) | DY (m) | Std.DY (mm) | DZ(m) | Std.DZ (mm) |
|---|---|---|---|---|---|---|---|
| B01 | 41298001->GNSS-02 | 544.2352 | 0.9 | 174.3984 | 2.3 | 1127.7555 | 0.7 |
| B02 | 41298001->GNSS-01 | 1538.9599 | 1.0 | 357.2554 | 1.8 | 258.0514 | 0.6 |
| B03 | GNSS-02->GNSS-01 | 994.7464 | 4.5 | 182.8217 | 8.8 | -869.7105 | 2.5 |
| B04 | POPA->41298001 | 103706.4990 | 2.6 | 25478.3304 | 2.8 | -27601.2609 | 1.2 |
| B05 | POPA->GNSS-02 | 10425 0.7261 | 2.7 | 25652.7359 | 3.6 | -26473.4955 | 1.4 |
| B06 | POPA->GNSS-01 | 10524 5.4219 | 2.1 | 25835.6639 | 2.9 | -27343.2020 | 1.0 |
| B16 | 41298001->GRZN | 6080.5864 | 0.8 | 1356.9372 | 1.1 | 2980.6835 | 0.5 |
| B17 | GNSS-02->GRZN | 5536.3426 | 3.1 | 1182.5259 | 3.5 | 1852.9211 | 1.3 |
| B18 | GNSS-01->GRZN | 4541.5994 | 3.2 | 999.7044 | 3.9 | 2722.6351 | 1.2 |
| B19 | POPA->GRZN | 109787.0657 | 0.4 | 26835.2403 | 0.6 | -24620.5695 | 0.2 |
| B22 | CALI->41298001 | 97674.0651 | 2.4 | 17879.3089 | 3.4 | -13058 4.0081 | 0.9 |
| B23 | CALI->GNSS-02 | 98218.2089 | 2.9 | 18053.8542 | 4.2 | -12945 6.2678 | 2.0 |
| B24 | CALI->GNSS-01 | 99212.9388 | 4.2 | 18236.6673 | 5.7 | -13032 5.9781 | 1.9 |
| B25 | CALI->POPA | -6032.5332 | 0.5 | -7598.8513 | 0.7 | -10298 2.7799 | 0.3 |
| B28 | CALI->GRZN | 10375 4.5331 | 0.5 | 19236.4053 | 0.8 | -12760 3.3554 | 0.3 |

**4.2 Adjusted Baselines in WGS84**

**Style One:**

| Observation ID | Baseline ID | | Observation | Residual | Horizontal Precision(Ratio) | 3D Precision(Ratio) |
|---|---|---|---|---|---|---|
| B01 | 41298001->GNSS-02 | **Azimuth** | 26°49'23.62840" | 0°3'15.10280" | 1:113633 | 1:54849 |
| | | **ΔEllipsoid Height** | 9.3254 | -0.0090 | | |
| | | **Ellipsoid Dist.** | 1264.2961 | 0.0022 | | |
| B02 | 41298001->GNSS-01 | **Azimuth** | 80°46'33.33526" | 0°0'46.25219" | 1:152137 | 1:75886 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | **ΔEllipsoid Height** | 45.5912 | -0.0151 | | |
| | | **Ellipsoid Dist.** | 1600.8186 | 0.0002 | | |
| B03 | GNSS-02->GNSS-01 | **Azimuth** | 130°49'33.88641" | 0°35'2.33900" | 1:94289 | 1:45501 |
| | | **ΔEllipsoid Height** | 36.2658 | -0.0454 | | |
| | | **Ellipsoid Dist.** | 1333.9041 | -0.0151 | | |
| B04 | POPA->41298001 | **Azimuth** | 104°27'47.59496" | 0°0'43.18047" | 1:12302599 | 1:7061654 |
| | | **ΔEllipsoid Height** | -975.2781 | 0.0163 | | |
| | | **Ellipsoid Dist.** | 110299.6368 | -0.0135 | | |
| B05 | POPA->GNSS-02 | **Azimuth** | 103°49'23.21089" | 0°0'1.09467" | 1:8737702 | 1:4524110 |
| | | **ΔEllipsoid Height** | -965.9527 | 0.0157 | | |
| | | **Ellipsoid Dist.** | 110576.3165 | -0.0043 | | |
| B06 | POPA->GNSS-01 | **Azimuth** | 104°7'59.18333" | 0°0'2.71439" | 1:9603620 | 1:4944468 |
| | | **ΔEllipsoid Height** | -929.6869 | 0.0854 | | |
| | | **Ellipsoid Dist.** | 111766.4186 | 0.0057 | | |
| B16 | 41298001->GRZN | **Azimuth** | 64°29'35.71984" | 0°3'10.54678" | 1:821138 | 1:470692 |
| | | **ΔEllipsoid Height** | 311.0746 | -0.0002 | | |
| | | **Ellipsoid Dist.** | 6906.4554 | -0.0114 | | |
| B17 | GNSS-02->GRZN | **Azimuth** | 71°57'20.50497" | 0°4'48.60153" | 1:484804 | 1:247909 |
| | | **ΔEllipsoid Height** | 301.7492 | -0.0013 | | |
| | | **Ellipsoid Dist.** | 5956.7417 | -0.0002 | | |
| B18 | GNSS-01->GRZN | **Azimuth** | 59°42'43.39474" | 0°25'25.20404" | 1:473169 | 1:241117 |
| | | **ΔEllipsoid Height** | 265.4834 | 0.0434 | | |
| | | **Ellipsoid Dist.** | 5388.7235 | 0.0060 | | |
| B19 | POPA->GRZN | **Azimuth** | 102°15'54.79279" | 0°0'0.20296" | 1:24305231 | 1:14380391 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | **ΔEllipsoid Height** | -664.2035 | -0.0060 | | |
| | | **Ellipsoid Dist.** | 115669.8022 | 0.0034 | | |
| B22 | CALI->41298001 | **Azimuth** | 142°48'34.13655" | 0°4'38.75509" | 1:18054972 | 1:10073739 |
| | | **ΔEllipsoid Height** | -220.6024 | -0.1739 | | |
| | | **Ellipsoid Dist.** | 164048.9777 | -0.0266 | | |
| B23 | CALI->GNSS-02 | **Azimuth** | 142°24'40.80501" | 0°0'57.02169" | 1:12732400 | 1:6574677 |
| | | **ΔEllipsoid Height** | -211.2770 | -0.0181 | | |
| | | **Ellipsoid Dist.** | 163498.2663 | -0.0013 | | |
| B24 | CALI->GNSS-01 | **Azimuth** | 142°19'4.37826" | 0°0'20.90085" | 1:13901457 | 1:7098818 |
| | | **ΔEllipsoid Height** | -175.0112 | -0.0677 | | |
| | | **Ellipsoid Dist.** | 164804.8623 | -0.0036 | | |
| B25 | CALI->POPA | **Azimuth** | 184°14'1.36814" | 0°0'11.34445" | 1:999999 | 1:999999 |
| | | **ΔEllipsoid Height** | 754.6757 | -0.0001 | | |
| | | **Eltipsoid Dist.** | 103438.8093 | 0.0015 | | |
| B28 | CALI->GRZN | **Azimuth** | 140°28'13.16114" | 0°0'8.76593" | 1:31681593 | 1:17420307 |
| | | **ΔEllipsoid Height** | 90.4722 | 0.0099 | | |
| | | **Ellipsoid Dist.** | 165582.7831 | -0.0020 | | |

**Style Two:**

| Observation ID | Baseline ID | DX (m) | V.DX (mm) | StdDX (mm) | DY (m) | V.DY (mm) | StdDY (mm) | DZ (m) | V.DZ (mm) | StdDZ (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| B01 | 41298001->GNSS-02 | 544.2342 | -1.0 | 10.3 | 174.4075 | 9.1 | 19.3 | 1127.7570 | 1.5 | 7.2 |
| B02 | 41298001->GNSS-01 | 1538.9567 | -3.1 | 10.8 | 357.2701 | 14.8 | 17.1 | 258.0510 | -0.4 | 6.0 |
| B03 | GNSS-0 | 99 | -2 | 14. | 18 | 4 | 24. | -86 | 4. | 8.7 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2->GNSS-01 | 4.7225 | 3.9 | 2 | 2.8627 | 0.9 | 1 | 9.7060 | 5 | |
| B04 | POPA->4129800 1 | 10370 6.4918 | -7.2 | 8.8 | 2547 8.3123 | -18.1 | 12.0 | -27601.2507 | 10.2 | 4.9 |
| B05 | POPA->GNSS-02 | 10425 0.7260 | -0.1 | 12.3 | 2565 2.7198 | -16.1 | 19.7 | -26473.4937 | 1.8 | 7.6 |
| B06 | POPA->GNSS-01 | 10524 5.4485 | 26.6 | 12.3 | 2583 5.5825 | -81.4 | 17.9 | -27343.1997 | 2.3 | 6.3 |
| B16 | 4129800 1->GRZN | 6080.5756 | -10.7 | 8.2 | 135 6.9345 | -2.7 | 11.2 | 2980.6802 | -3.3 | 4.6 |
| B17 | GNSS-02->GRZN | 5536.3414 | -1.1 | 12.0 | 118 2.5270 | 1.2 | 19.4 | 1852.9232 | 2.1 | 7.5 |
| B18 | GNSS-01->GRZN | 4541.6189 | 19.5 | 12.1 | 999 9.6644 | -40.0 | 17.7 | 2722.6292 | -5.9 | 6.3 |
| B19 | POPA->GRZN | 10978 7.0674 | 1.8 | 4.4 | 2683 5.2468 | 6.6 | 6.3 | -24620.5705 | -1.0 | 2.5 |
| B22 | CALI->4129800 1 | 97673.9600 | -105.1 | 8.9 | 1787 9.4614 | 152.5 | 12.7 | -13058 4.0323 | -24.2 | 5.0 |
| B23 | CALI->GNSS-02 | 98218.1942 | -14.7 | 12.4 | 1805 3.8689 | 14.7 | 20.1 | -12945 6.2753 | -7.5 | 7.8 |
| B24 | CALI->GNSS-01 | 99212.9168 | -22.0 | 12.5 | 1823 6.7315 | 64.3 | 18.4 | -13032 5.9813 | -3.2 | 6.5 |
| B25 | CALI->POPA | -6032 5318 | 1.4 | 5.0 | -759 8.8509 | 0.4 | 7.4 | -10298 2.7816 | -1.7 | 2.9 |
| B28 | CALI->GRZN | 10375 | 2.6 | 4.8 | 1923 | -9.3 | 7.7 | -12760 | 3.2 | 2.9 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 4.5<br>357 | | | 6.<br>39<br>59 | | | 3.35<br>21 | | |

**4.3 Adjusted Geodetic Coordinates in WGS84**

| Point ID | Latitude | Latitude Err.(s) | Longitude | Longitude Err.(s) | Ellipsoid Height(m) | H. Err.(m) |
|---|---|---|---|---|---|---|
| 4129<br>8001 | 02°11'37.34<br>163"N | 0.000107 | 075°38'28.65<br>458"W | 0.000152 | 806.9173 | 0.0089 |
| GNS<br>S-02 | 02°12'14.06<br>851"N | 0.000200 | 075°38'10.19<br>426"W | 0.000228 | 816.2427 | 0.0166 |
| GNS<br>S-01 | 02°11'45.69<br>114"N | 0.000155 | 075°37'37.54<br>467"W | 0.000231 | 852.5085 | 0.0152 |
| POP<br>A | 02°26'35.21<br>698"N | 0.000088 | 076°36'04.33<br>985"W | 0.000139 | 1782.1954 | 0.0074 |
| GRZ<br>N | 02°13'14.05<br>012"N | 0.000084 | 075°35'07.15<br>788"W | 0.000127 | 1117.9919 | 0.0070 |
| CALI | 03°22'32.83<br>945"N | 0.000096 | 076°31'57.23<br>046"W | 0.000144 | 1027.5197 | 0.0082 |

**4.4 Adjusted ECEF Coordinates in WGS84**

| Point ID (m) | X(m) | X Err. (m) | Y(m) | Y Err. (m) | Z(m) | Z Err. (m) | 3D Err. (m) |
|---|---|---|---|---|---|---|---|
| 4129800<br>1 | 1580773.9<br>749 | 0.0055 | -6175180.<br>7222 | 0.0085 | 242540.2<br>699 | 0.0033 | 0.0106 |
| GNSS-0<br>2 | 1581318.2<br>091 | 0.0090 | -6175006.<br>3147 | 0.0156 | 243668.0<br>269 | 0.0059 | 0.0190 |
| GNSS-0<br>1 | 1582312.9<br>316 | 0.0092 | -6174823.<br>4521 | 0.0141 | 242798.3<br>210 | 0.0048 | 0.0175 |
| POPA | 1477067.4<br>831 | 0.0050 | -6200659.<br>0346 | 0.0069 | 270141.5<br>207 | 0.0027 | 0.0089 |
| GRZN | 1586854.5<br>505 | 0.0047 | -6173823.<br>7877 | 0.0065 | 245520.9<br>501 | 0.0026 | 0.0084 |
| CALI | 1483100.0<br>149 | 0.0053 | -6193060.<br>1836 | 0.0077 | 373124.3<br>023 | 0.0030 | 0.0098 |

**4.5 Adjusted Grid Coordinates and Height in Local System**

| Point ID | North(m) | North Err. (m) | East(m) | East Err. (m) | Elev.(m) | Elev. Err. (m) |
|---|---|---|---|---|---|---|
| 4129800<br>1 | 734427.073<br>0 | 0.0033 | 826025.290<br>0 | 0.0047 | 781.1990 | 0.0089 |
| GNSS-0<br>2 | 735554.982<br>2 | 0.0061 | 826597.096<br>8 | 0.0070 | 790.5303 | 0.0166 |
| GNSS-0<br>1 | 734681.983<br>3 | 0.0048 | 827605.415<br>5 | 0.0071 | 826.7154 | 0.0152 |
| POPA | 762178.662<br>8 | 0.0027 | 719225.839<br>0 | 0.0043 | 1749.850<br>4 | 0.0074 |

| | | | | | | |
|---|---|---|---|---|---|---|
| GRZN | 737392.1665 | 0.0026 | 832256.7100 | 0.0039 | 1091.9632 | 0.0070 |
| CALI | 865391.7155 | 0.0030 | 727091.9578 | 0.0044 | 998.5291 | 0.0082 |

**4.6 Lat-Lon-Height(Local)**

| Point ID | Latitude | Latitude Err.(s) | Longitude | Longitude Err.(s) | Ellipsoid Height(m) | H. Err.(m) |
|---|---|---|---|---|---|---|
| 41298001 | 02°11'37.34163"N | 0.000107 | 075°38'28.65458"W | 0.000152 | 806.9173 | 0.0089 |
| GNSS-02 | 02°12'14.06851"N | 0.000200 | 075°38'10.19426"W | 0.000228 | 816.2427 | 0.0166 |
| GNSS-01 | 02°11'45.69114"N | 0.000155 | 075°37'37.54467"W | 0.000231 | 852.5085 | 0.0152 |
| POPA | 02°26'35.21698"N | 0.000088 | 076°36'04.33985"W | 0.000139 | 1782.1954 | 0.0074 |
| GRZN | 02°13'14.05012"N | 0.000084 | 075°35'07.15788"W | 0.000127 | 1117.9919 | 0.0070 |
| CALI | 03°22'32.83945"N | 0.000096 | 076°31'57.23046"W | 0.000144 | 1027.5197 | 0.0082 |

**4.7 Worst baseline and station statistics**

| Worst baseline | Baseline ID | DX (m) | Std. DX (mm) | DY (m) | Std. DY (mm) | DZ (m) | Std. DZ (mm) | Distance (m) | Mean Error (m) | Relative error |
|---|---|---|---|---|---|---|---|---|---|---|
| B03(GNSS-02->GNSS-01) | GNSS-02->GNSS-01 | 994.72225 | 14.2 | 182.86227 | 24.1 | -869.70600 | 8.7 | 1333.9041 | 0.0293 | 1/45501.0000 |

| Worst local station | North (m) | North Err.(m) | East (m) | East Err.(m) | Elev. (m) | Elev. Err.(m) | Standard Deviation(m) |
|---|---|---|---|---|---|---|---|
| GNSS-02 | 735554.9822 | 0.0061 | 826597.0968 | 0.0070 | 790.5303 | 0.0166 | 0.0190 |

**4.8 Coordinate Change**

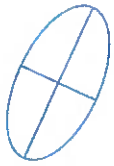
| Point ID | ΔNorth(m) | ΔEast(m) | ΔEllipsoid Height(m) |
|---|---|---|---|
| 41298001 | -0.0136 | -0.0509 | -0.1327 |
| GNSS-02 | -0.0029 | 0.0024 | 0.0237 |

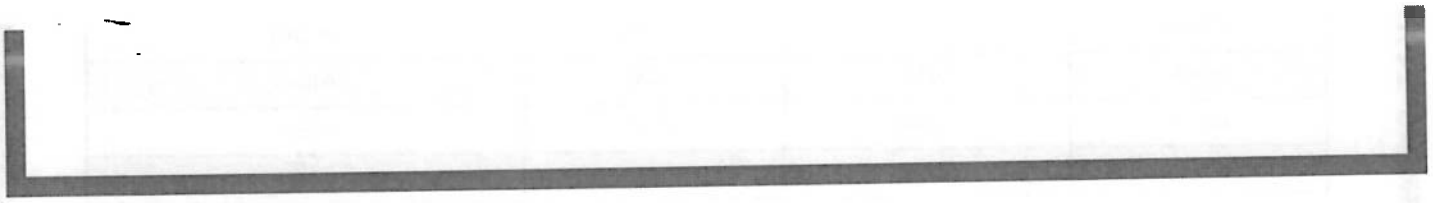
| | | | |
|---|---|---|---|
| GNSS-01 | 0.0034 | 0.0076 | -0.0260 |
| POPA | 0.0021 | 0.0152 | 0.0415 |
| GRZN | 0.0068 | 0.0132 | 0.0516 |
| CALI | 0.0031 | 0.0137 | 0.0417 |

**4.9 Error Ellipse**

| Point ID | Major Axis(m) | Short Axis(m) | Azimuth(m) |
|---|---|---|---|
| 41298001 | 0.0047 | 0.0033 | 99°31'34.20550" |
| GNSS-02 | 0.0072 | 0.0059 | 114°22'20.09382" |
| GNSS-01 | 0.0072 | 0.0047 | 94°27'0.33260" |
| POPA | 0.0043 | 0.0027 | 95°28'23.26110" |
| GRZN | 0.0039 | 0.0025 | 96°14'26.26414" |
| CALI | 0.0045 | 0.0029 | 97°40'44.86974" |

Error Ellipse

| | | | |
|---|---|---|---|
| 41298001 |  | GNSS-02 |  |
| GNSS-01 |  | POPA |  |
| GRZN |  | CALI |  |



# PROCESAMIENTO

# REPORTE AJUSTE DE RED

CHCNAV

# Baseline Summary Report

## Basic Information

| Name | Value |
|---|---|
| Username | LAPTOP-5NOLCMTK |
| Project Datum | Magna_Colombia_Bogota |
| Project Name | 20240115-EMPUGAR |
| Distance Units | Meter |
| Height Units | Meter |

## Baseline List

### Baseline Information

| Name | Value |
|---|---|
| Number of baselines | 15 |
| The longest baseline(m) | B28 ( cali0080.hcs->grzn0080.hcs ): 165582.7851 |
| The shortest baseline(m) | B01 ( GNSS01-1103349008M.hcs->GNSS02-3382008M2.hcs ): 1264.2939 |
| Worst baseline(m) | B03 ( GNSS02-3382008M2.hcs->IGAC-1103349008M.hcs ) |
| Relative error of worst baseline | 1 / 130543 |

### Baseline Summary List

| Baseline ID（Start->End） | Start Point | End Point | Solution Type | Data Utilization Rate (%) | HDOP | VDOP | PDOP | NS Fwd Azimuth | | Ellipsoid Dist. (m) | ΔEllipsoid Height (m) | Horizontal Dist. (m) | Slant Dist. (m) | Vertical Dist.(m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B01(GNSS01-1103349008M.hcs->GNSS02-3382008M2.hcs) | 41298001 | GNSS-02 | Lc Fix | 80.75 | 20.821 | 11 9.633 | 12 1.432 | 026°49′23.64545″ | 206°49′24.35372″ | 1264.2939 | 9.3345 | 1264.5678 | 1264.6023 | 9.3404 |
| B02(GNSS01-1103349008M.hcs->IGAC-1103349008M.hcs) | 41298001 | GNSS-01 | Lc Fix | 100 | 4.140 | 10.920 | 11.679 | 080°46′33.37754″ | 260°46′35.33497″ | 1600.8184 | 45.6060 | 1600.5520 | 1601.1994 | 45.5313 |
| B03(GNSS02-3382008M2.hcs->IGAC-1103349008M.hcs) | GNSS-02 | GNSS-01 | Lc Fix | 34.62 | 3.219 | 8.274 | 8.878 | 130°49′33.20937″ | 310°49′34.46273″ | 1333.9193 | 36.3106 | 1333.7411 | 1334.2331 | 36.2300 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B04(popa0080.hcs->GNSS01-1103349008M.hcs) | POPA | 41298001 | Lc Fix | 45.47 | 1.156 | 2.187 | 2.473 | 104°27'47.58118" | 284°30'07.37717" | 110299.6503 | -975.2942 | 110346.1669 | 110350.4185 | -968.6675 |
| B05(popa0080.hcs->GNSS02-3382008M2.hcs) | POPA | GNSS-02 | Lc Fix | 38.91 | 2.142 | 5.072 | 5.506 | 103°49'23.18607" | 283°51'44.03790" | 110576.3208 | -965.9683 | 110622.8204 | 110626.9801 | -959.3358 |
| B06(popa0080.hcs->IGAC-1103349008M.hcs) | POPA | GNSS-01 | Lc Fix | 96.15 | 1.478 | 3.010 | 3.354 | 104°07'59.15694" | 284°10'21.09152" | 111766.4129 | -929.7724 | 111813.2319 | 111817.0433 | -923.2205 |
| B16(GNSS01-1103349008M.hcs->grzn0080.hcs) | 41298001 | GRZN | Lc Fix | 100 | 1.107 | 1.977 | 2.265 | 064°29'35.86875" | 244°29'43.62889" | 6906.4668 | 311.0742 | 6900.8982 | 6907.8918 | 310.7638 |
| B17(GNSS02-3382008M2.hcs->grzn0080.hcs) | GNSS-02 | GRZN | Lc Fix | 51.82 | 2.103 | 4.838 | 5.275 | 071°57'20.66102" | 251°57'27.72652" | 5956.7418 | 301.7503 | 5950.3238 | 5957.9540 | 301.4341 |
| B18(IGAC-1103349008M.hcs->grzn0080.hcs) | GNSS-01 | GRZN | Lc Fix | 48.88 | 1.343 | 2.470 | 2.812 | 059°42'43.07742" | 239°42'48.87219" | 5388.7175 | 265.4386 | 5383.2609 | 5389.7895 | 265.2030 |
| B19(popa0080.hcs->grzn0080.hcs) | POPA | GRZN | Lc Fix | 80.07 | 1.024 | 1.987 | 2.235 | 102°15'54.75796" | 282°18'23.56227" | 115669.7988 | -664.1976 | 115716.6690 | 115718.5391 | -657.8813 |
| B22(cali0080.hcs->GNSS01-1103349008M.hcs) | CALI | 41298001 | Lc Fix | 40.75 | 1.136 | 2.047 | 2.341 | 142°48'34.04850" | 322°51'09.94515" | 164049.0044 | -220.4280 | 164132.7214 | 164132.8651 | -217.1557 |
| B23(cali0080.hcs->GNSS02-3382008M2.hcs) | CALI | GNSS-02 | Lc Fix | 36.36 | 1.537 | 3.105 | 3.465 | 142°24'40.77705" | 322°27'17.85743" | 163498.2675 | -211.2590 | 163581.3275 | 163581.4597 | -207.9809 |
| B24(cali0080.hcs->IGAC-1103349008M.hcs) | CALI | GNSS-01 | Lc Fix | 45.84 | 1.343 | 2.469 | 2.811 | 142°19'04.35768" | 322°21'42.80351" | 164804.8659 | -174.9435 | 164887.8121 | 164887.9015 | -171.7461 |
| B25(cali0080.hcs->popa0080.hcs) | CALI | POPA | Lc Fix | 79.24 | 1.142 | 2.274 | 2.545 | 184°14'01.39527" | 004°13'48.85214" | 103438.8078 | 754.6759 | 103512.3659 | 103515.0925 | 751.3214 |
| B28(cali0080.hcs->grzn0080.hcs) | CALI | GRZN | Lc Fix | 75 | 1.059 | 2.166 | 2.411 | 140°28'13.12097" | 320°30'59.60629" | 165582.7851 | 90.4623 | 165660.8304 | 165660.8567 | 93.4241 |

# B01 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B01(GNSS01-1103349008M.hcs->GNSS02-3382008M2.hcs) |
| Solution Type | Lc Fix |

| | |
|---|---|
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 1264.2939 |
| Elevation Mask | 15° |
| RMS(m) | 0.0202 |
| HDOP | 20.821 |
| VDOP | 119.633 |
| PDOP | 121.432 |
| Total number of satellites | 17 |
| Start Time (GPST) | 2024-01-08 12.38.04( week : 2296 , second : 131884 ) |
| Stop Time (GPST) | 2024-01-08 21.27.53( week : 2296 , second : 163673 ) |
| Observation Time | 08:49:49 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\GNSS01-1103349008M.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\GNSS02-3382008M2.24o |
| Receiver Type | CHC I80 | CHC I80 |
| Receiver Serial | 1103373 | 1103382 |
| Antanna Type | CHCI80 | CHCI80 |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height(m) | 1.8000 | 1.8220 |

## 3 Baseline Components

**Start Point41298001**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 734428.2161 | Latitude | 02°11'37.37879"N | Latitude | 02°11'37.37879"N | X (m) | 1580775.1027 |
| East(m) | 826024.1295 | Longitude | 075°38'28.69216"W | Longitude | 075°38'28.69216"W | Y (m) | -6175189.8112 |
| Height (m) | 790.3342 | Ellipsoid Height(m) | 816.0524 | Ellipsoid Height(m) | 816.0524 | Z (m) | 242541.7604 |

**End PointGNSS-02**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 735556.1218 | Latitude | 02°12'14.10555"N | Latitude | 02°12'14.10555"N | X (m) | 1581319.3379 |
| East(m) | 826595.9 | Longitude | 075°38'10.2319 | Longitude | 075°38'10.2319 | Y (m) | -6175015.4 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 342 | | 1"W | | 1"W | | 128 |
| Height (m) | 799.6746 | Ellipsoid Height(m) | 825.3870 | Ellipsoid Height(m) | 825.3870 | Z (m) | 243669.5159 |

**BaselineB01**

| | | | | | |
|---|---|---|---|---|---|
| ΔNorth(m) | 1127.9057 | NS Fwd Azimuth | 026°49'23.57313" | Δ X（m）(m) | 544.2352 |
| ΔEast(m) | 571.8046 | Ellipsoid Dist.(m) | 1264.2939 | Δ Y（m）(m) | 174.3984 |
| ΔHeight(m) | 9.3404 | ΔEllipsoid Height(m) | 9.3345 | Δ Z（m）(m) | 1127.7555 |

**Standard Errors**

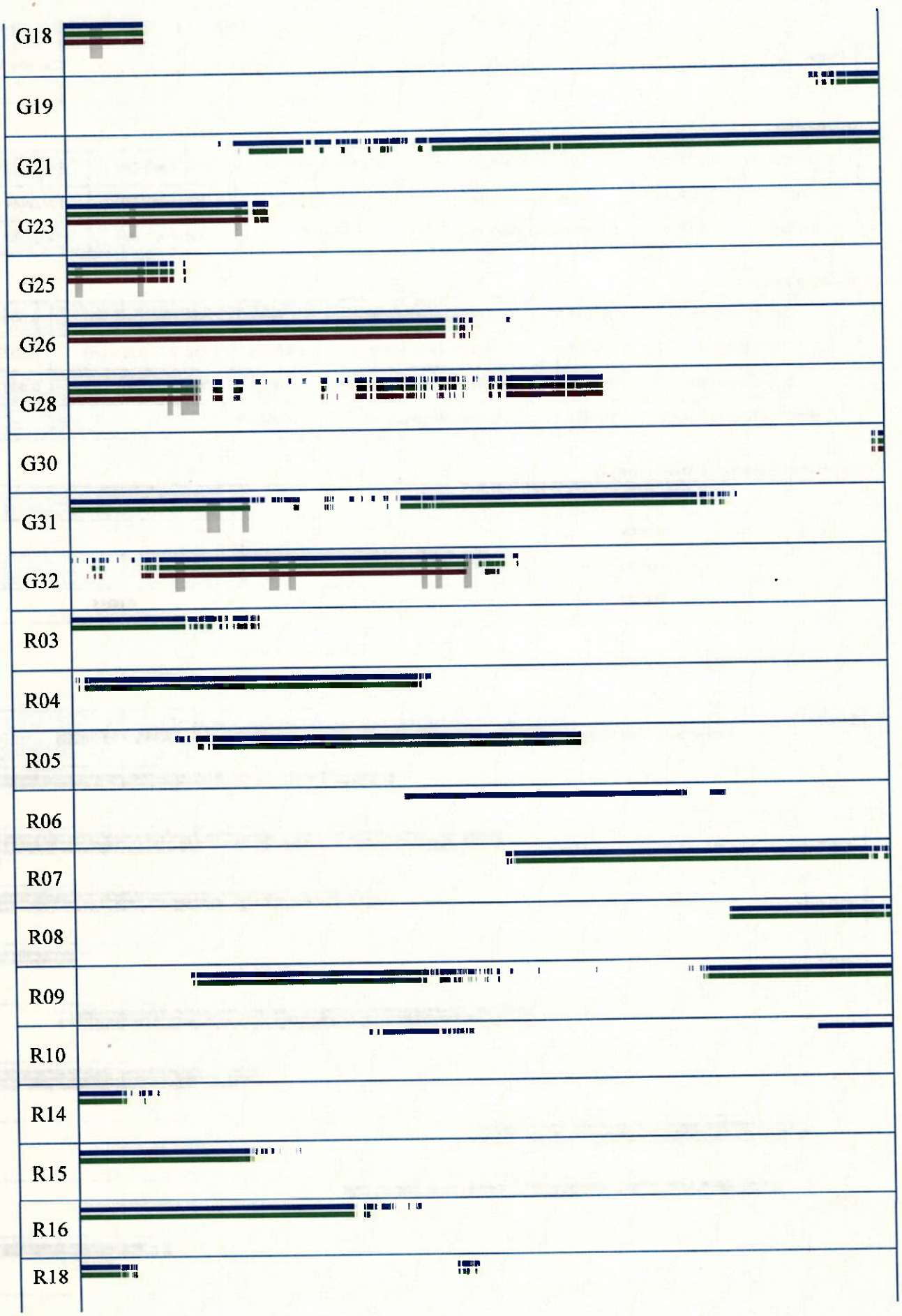
| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0008 | Std. NS Fwd Azimuth(s) | 0.0557 | Std. Δ X（m）(m) | 0.0009 |
| Std.ΔEast(m) | 0.0008 | Std.Ellipsoid Distance(m) | 0.0000 | Std. Δ Y（m）(m) | 0.0023 |
| Std.ΔHeight(m) | 0.0023 | Std.ΔEllipsoid Height(m) | 0.0023 | Std. Δ Z（m）(m) | 0.0007 |
| Horizontal Accuracy(m) | 0.0024 | Vertical Accuracy(m) | 0.0045 | | |

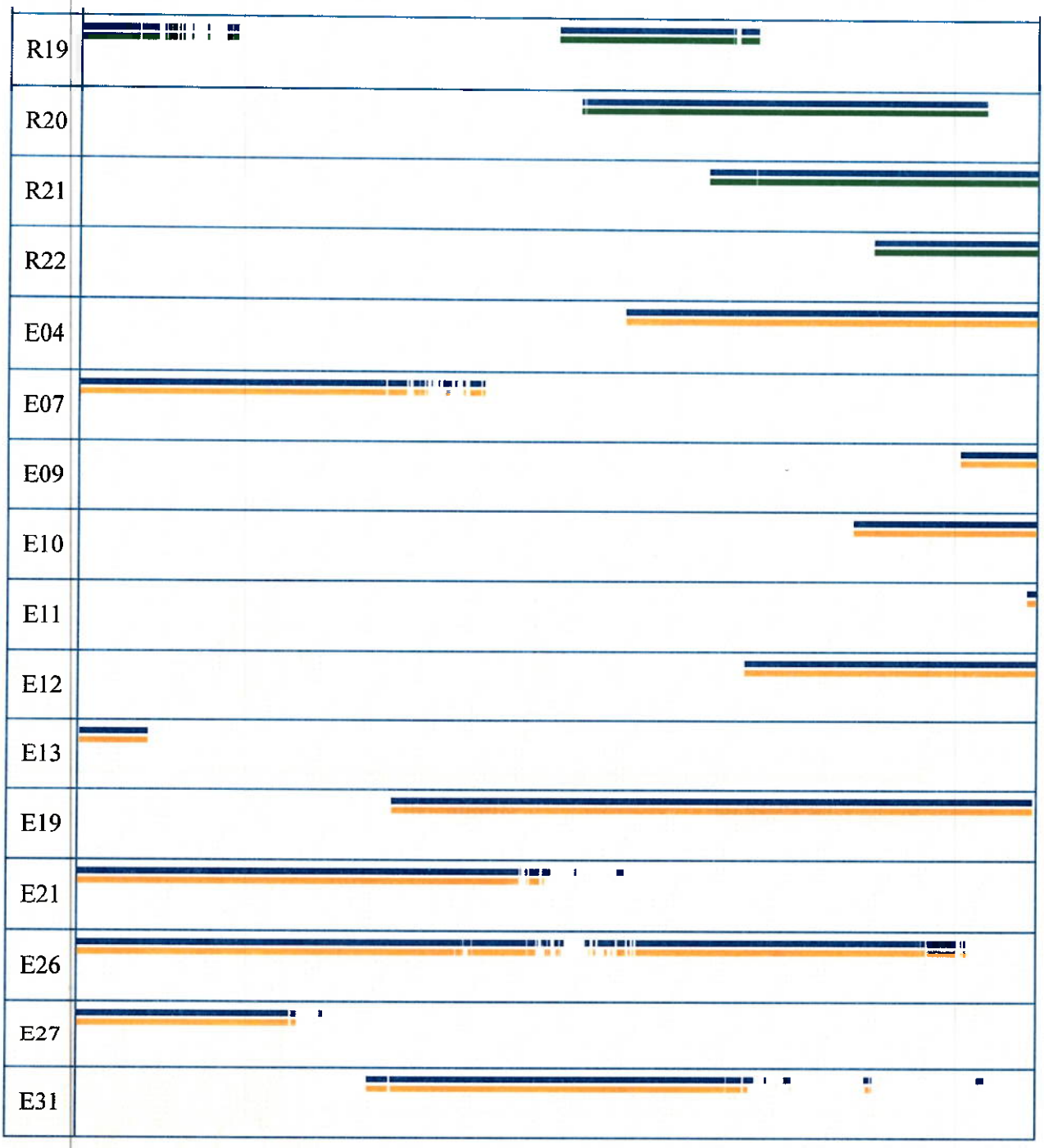
**Aposteriori Covariance Matrix (cm^2)**

| | X | Y | Z |
|---|---|---|---|
| X | 0.0088 | | |
| Y | -0.0111 | 0.0515 | |
| Z | -0.0024 | 0.0072 | 0.0055 |

## 4 Tracking Summary

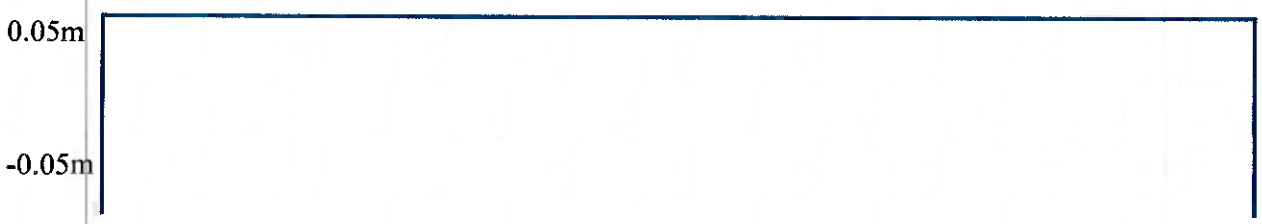
| Satellite | Phase Sum Total Epoch：31790，Sampling Interval(s)：60，Ratio =4.1，RMS =0.020206 |
|---|---|
| G02 | |
| G03 | |
| G04 | |
| G07 | |
| G08 | |
| G09 | |
| G10 | |
| G16 | |
| G17 | |

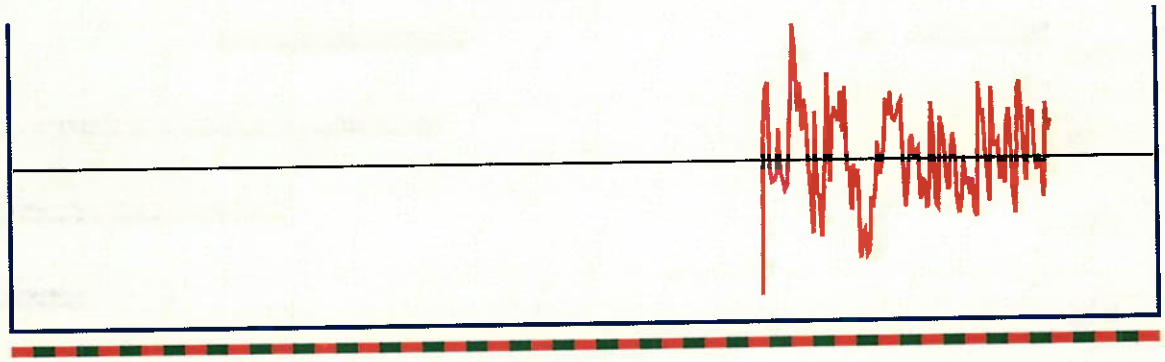

G18
G19
G21
G23
G25
G26
G28
G30
G31
G32
R03
R04
R05
R06
R07
R08
R09
R10
R14
R15
R16
R18




**5 Residuals**

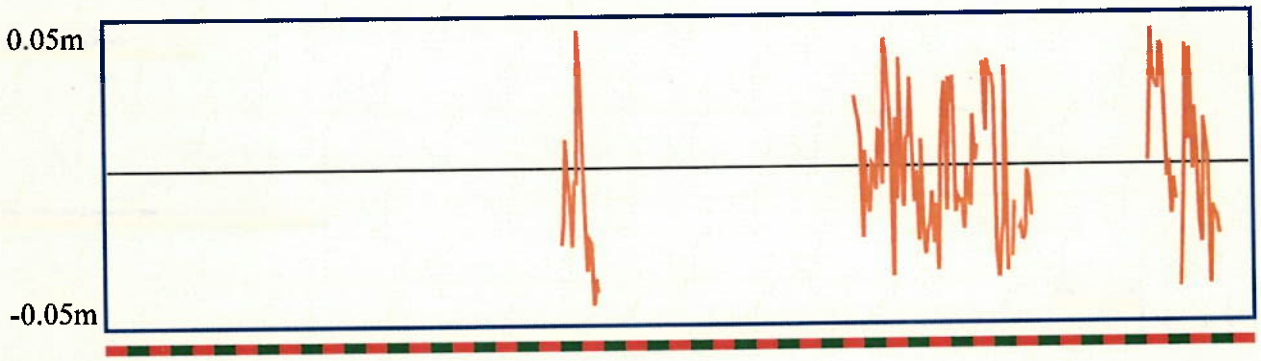
**G02**





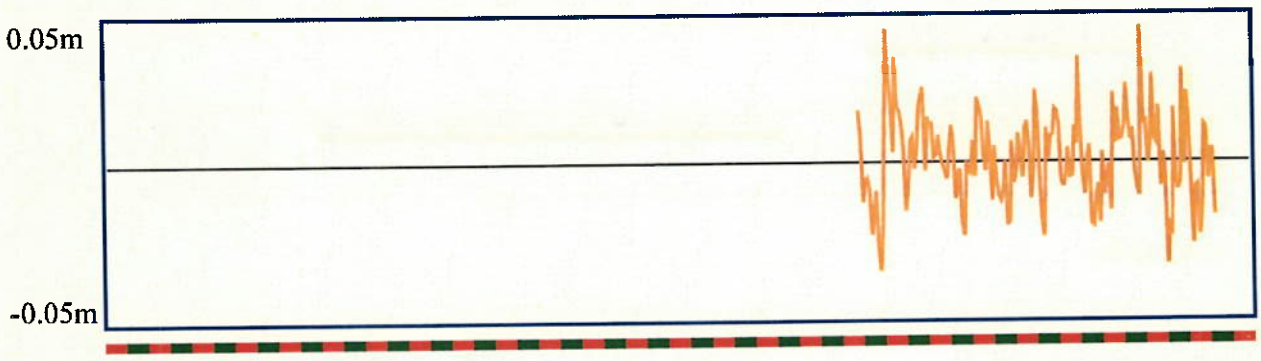
2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

**G03**




2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

**G04**




2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

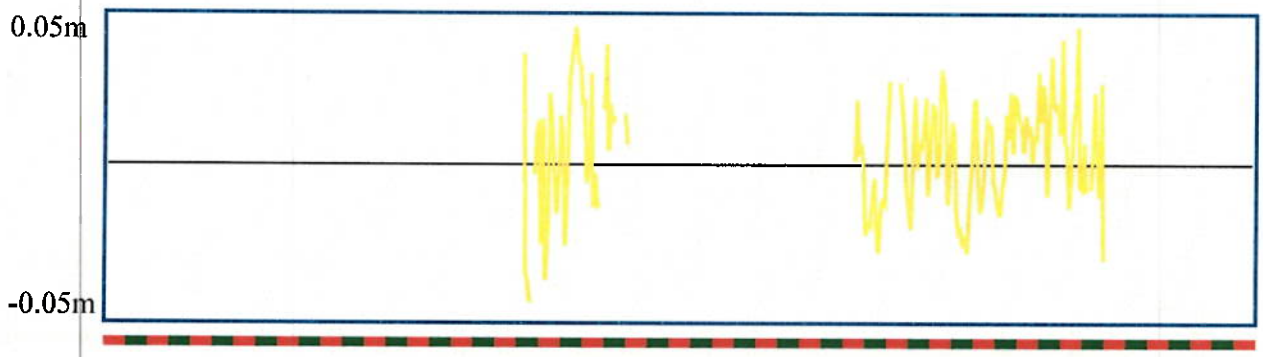
**G07**





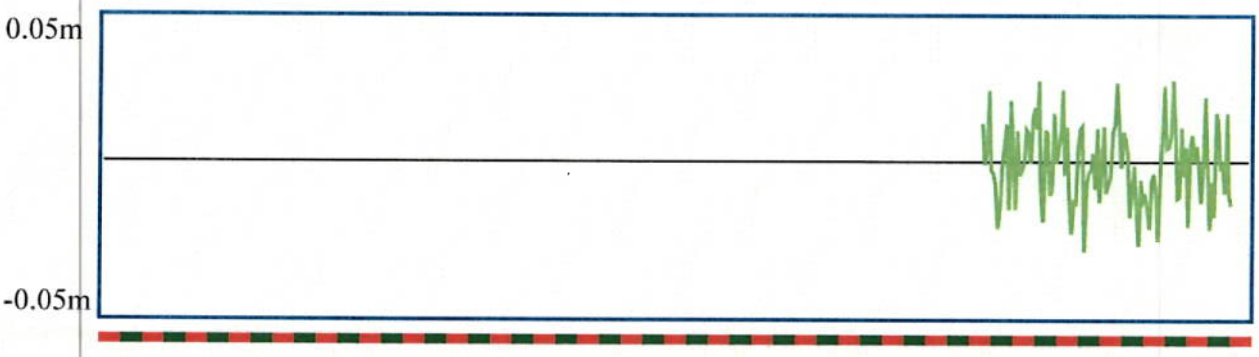

2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

**G08**




2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

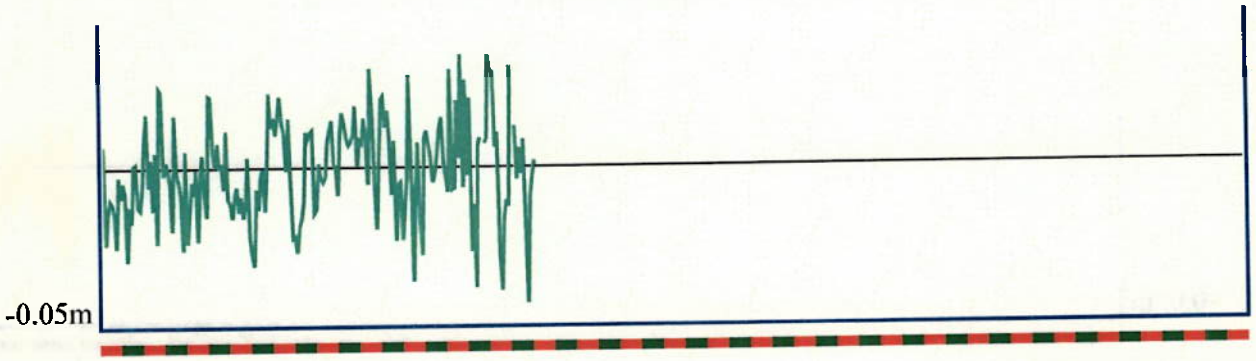
**G09**




2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

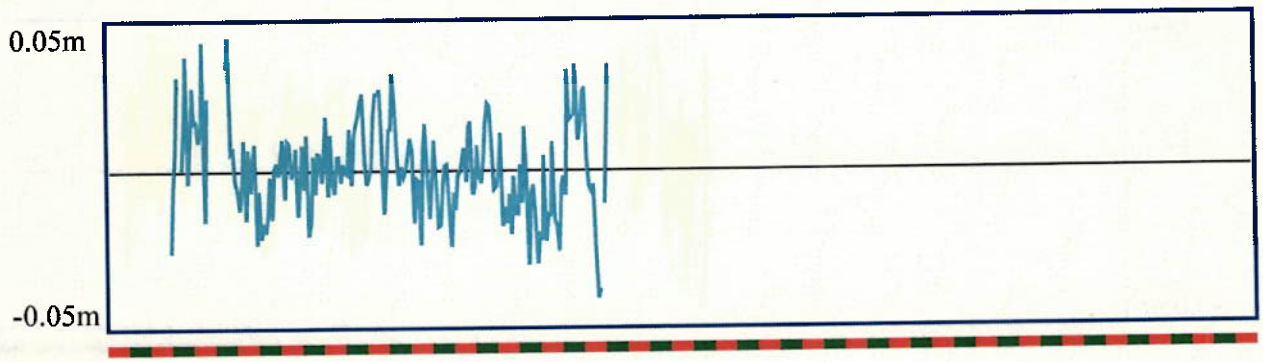
**G10**





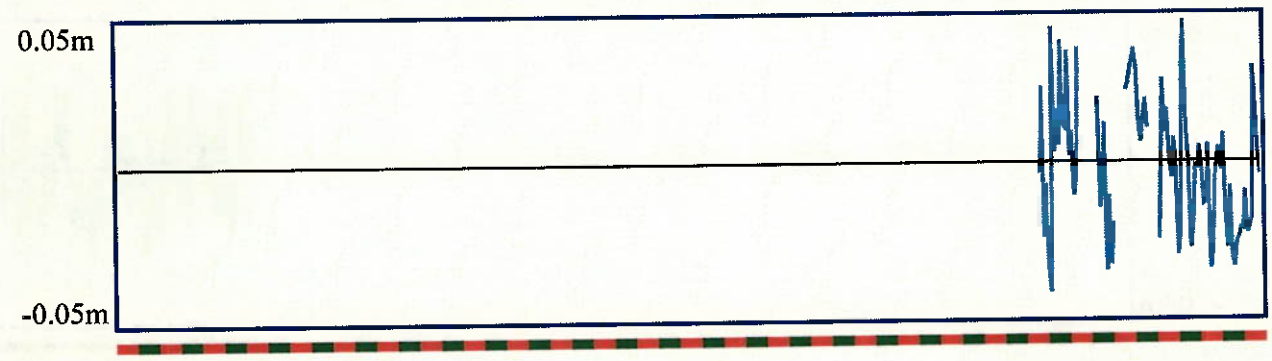

2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

**G16**




2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

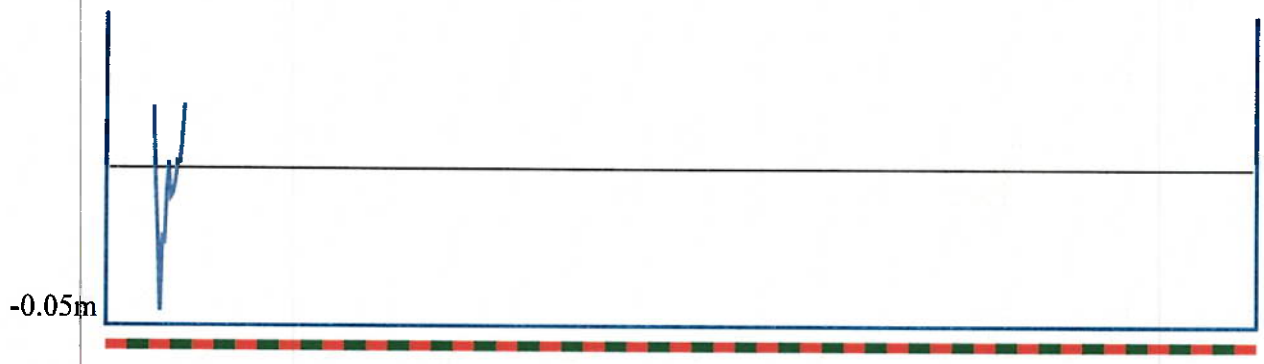
**G17**




2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

**G18**




-0.05m
2024-01-08 12:38:04
10min/cell
2024-01-08 21:27:53

**G19**


0.05m
-0.05m
2024-01-08 12:38:04
10min/cell
2024-01-08 21:27:53

**G21**

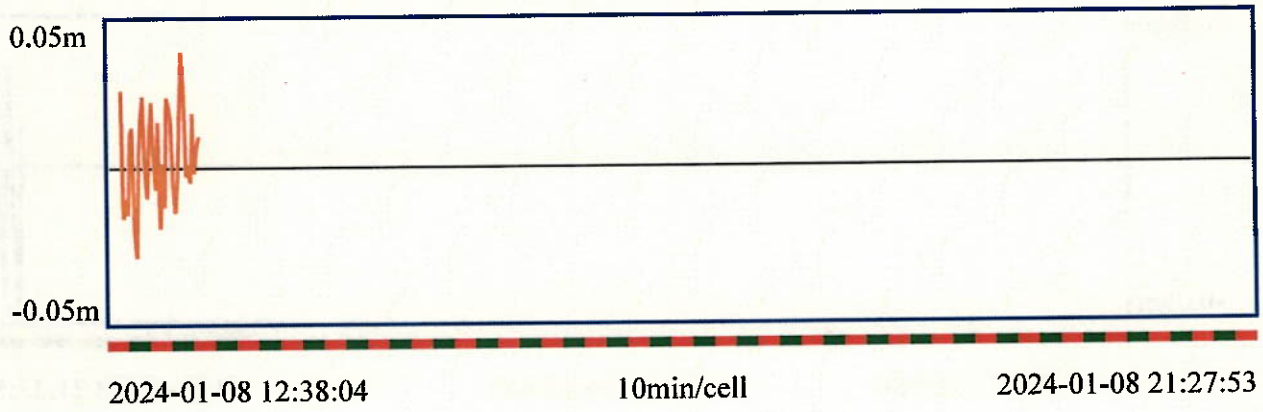

0.05m
-0.05m
2024-01-08 12:38:04
10min/cell
2024-01-08 21:27:53

**G23**

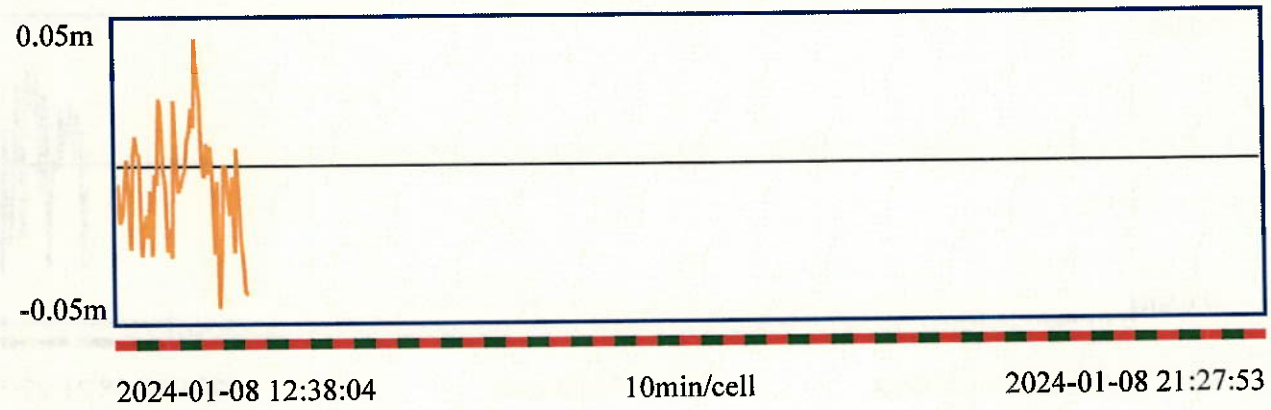

0.05m


-0.05m
2024-01-08 12:38:04
10min/cell
2024-01-08 21:27:53

**G25**

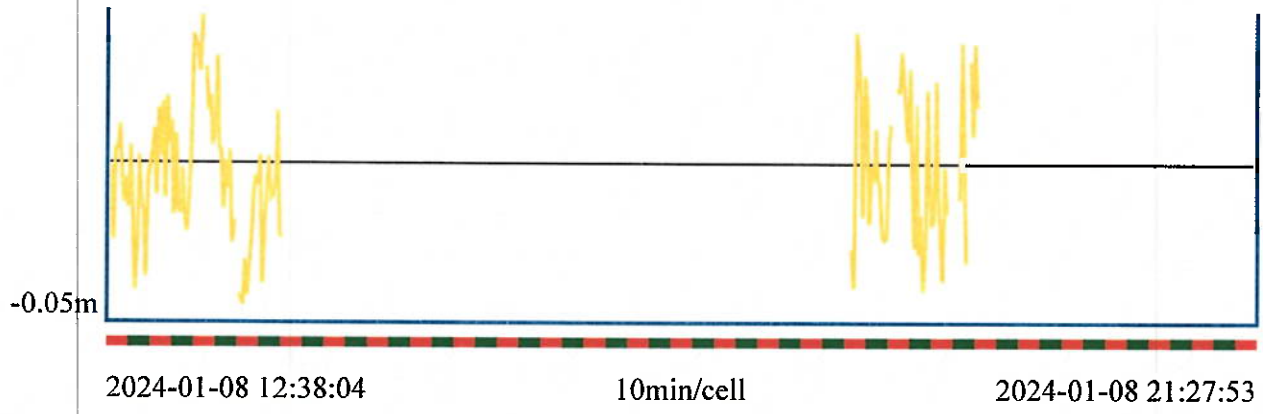

0.05m
-0.05m
2024-01-08 12:38:04
10min/cell
2024-01-08 21:27:53

**G28**

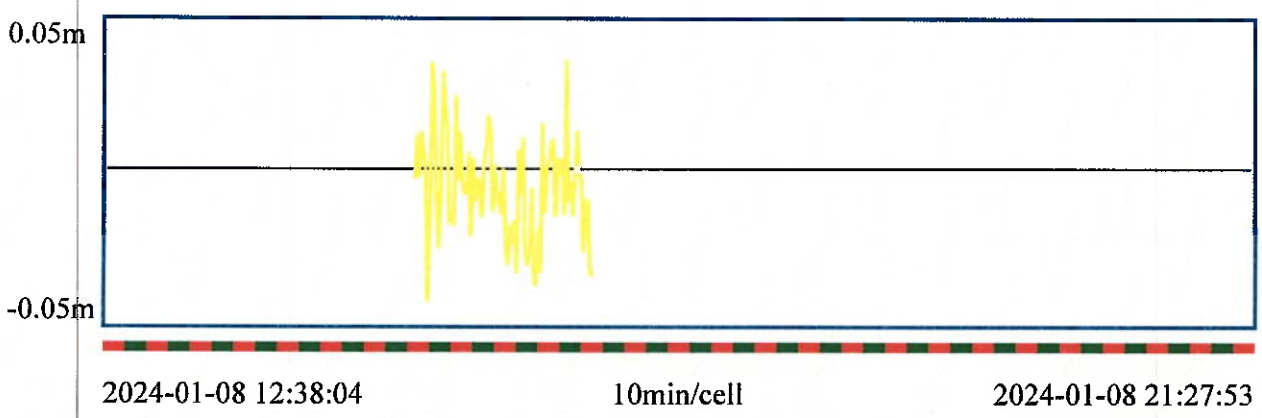

0.05m
-0.05m
2024-01-08 12:38:04
10min/cell
2024-01-08 21:27:53

**G31**


0.05m




G32




## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 15.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |
| Use Observed Met. Data | Allowed |

**6 .4 Ionosphere**

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

**6 .5 Ambiguity**

| | |
|---|---|
| Search Mode | Lambda |

**6 .6 Quality**

| | |
|---|---|
| RMS Tolerance | 0.040m |
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |

# B02 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B02(GNSS01-1103349008M.hcs->IGAC-1103349008M.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 1600.8184 |
| Elevation Mask | 15° |
| RMS(m) | 0.0201 |
| HDOP | 4.140 |
| VDOP | 10.920 |
| PDOP | 11.679 |
| Total number of satellites | 16 |
| Start Time (GPST) | 2024-01-08 12.53.20( week : 2296 , second : 132800 ) |
| Stop Time (GPST) | 2024-01-08 21.06.23( week : 2296 , second : 162383 ) |
| Observation Time | 08:13:03 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\GNSS01-1103349008M.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\IGAC-1103349008M.24o |
| Receiver Type | CHC I80 | CHC I80 |

| | | |
|---|---|---|
| Receiver Serial | 1103373 | 1103349 |
| Antanna Type | CHCI80 | CHCI80 |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height(m) | 1.8000 | 1.8000 |

## 3 Baseline Components

**Start Point41298001**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 734428.2161 | Latitude | 02°11'37.37879"N | Latitude | 02°11'37.37879"N | X (m) | 1580775.1027 |
| East(m) | 826024.1295 | Longitude | 075°38'28.69216"W | Longitude | 075°38'28.69216"W | Y (m) | -6175189.8112 |
| Height (m) | 790.3342 | Ellipsoid Height(m) | 816.0524 | Ellipsoid Height(m) | 816.0524 | Z (m) | 242541.7604 |

**End PointGNSS-01**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 734683.1258 | Latitude | 02°11'45.72828"N | Latitude | 02°11'45.72828"N | X (m) | 1582314.0626 |
| East(m) | 827604.2522 | Longitude | 075°37'37.58234"W | Longitude | 075°37'37.58234"W | Y (m) | -6174832.5558 |
| Height (m) | 835.8655 | Ellipsoid Height(m) | 861.6585 | Ellipsoid Height(m) | 861.6585 | Z (m) | 242799.8118 |

**BaselineB02**

| | | | | | |
|---|---|---|---|---|---|
| ΔNorth(m) | 254.9097 | NS Fwd Azimuth | 080°46'33.34788" | ΔX（m）(m) | 1538.9599 |
| ΔEast(m) | 1580.1227 | Ellipsoid Dist.(m) | 1600.8184 | ΔY（m）(m) | 357.2554 |
| ΔHeight(m) | 45.5313 | ΔEllipsoid Height(m) | 45.6060 | ΔZ（m）(m) | 258.0514 |

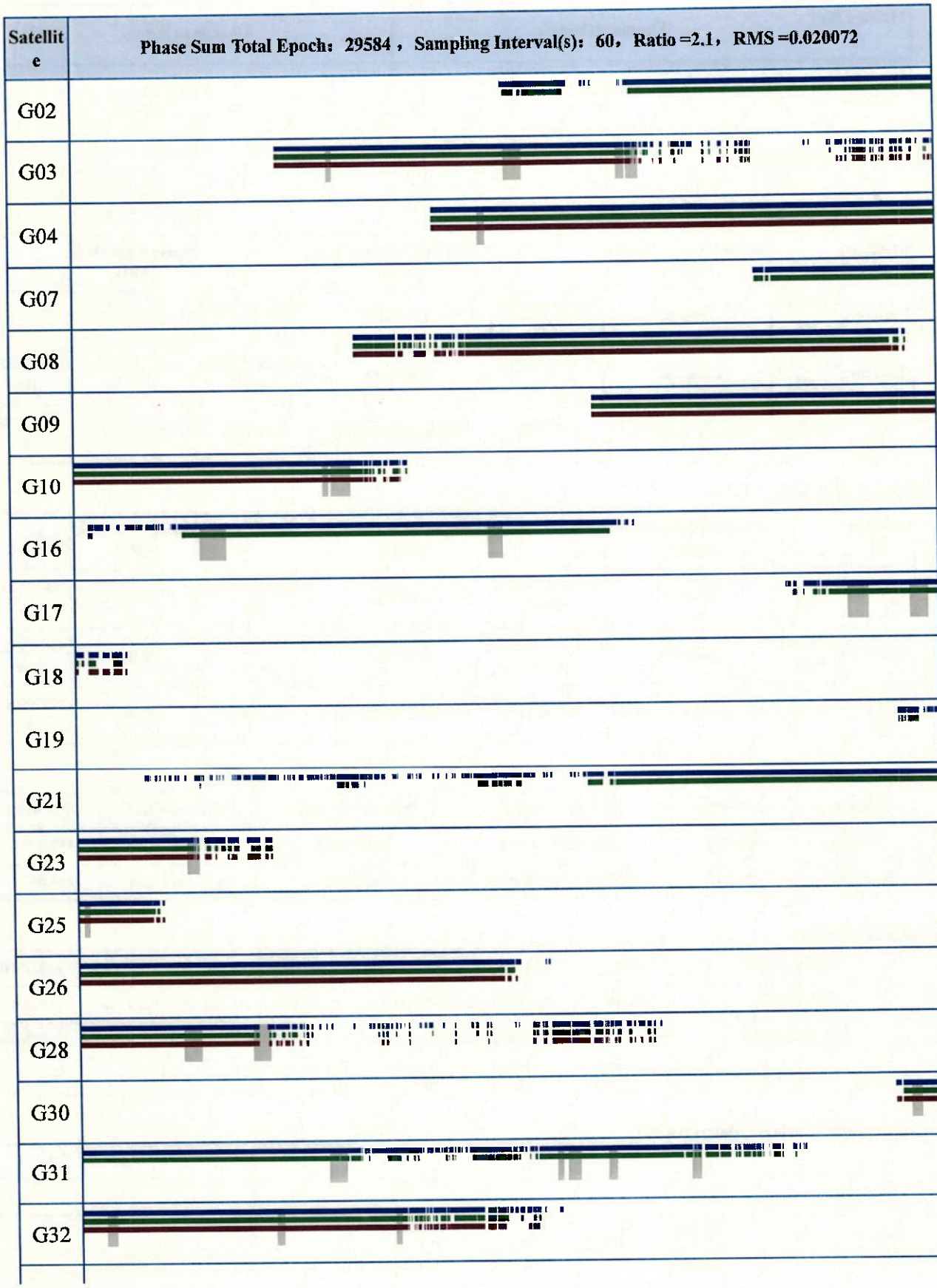
**Standard Errors**

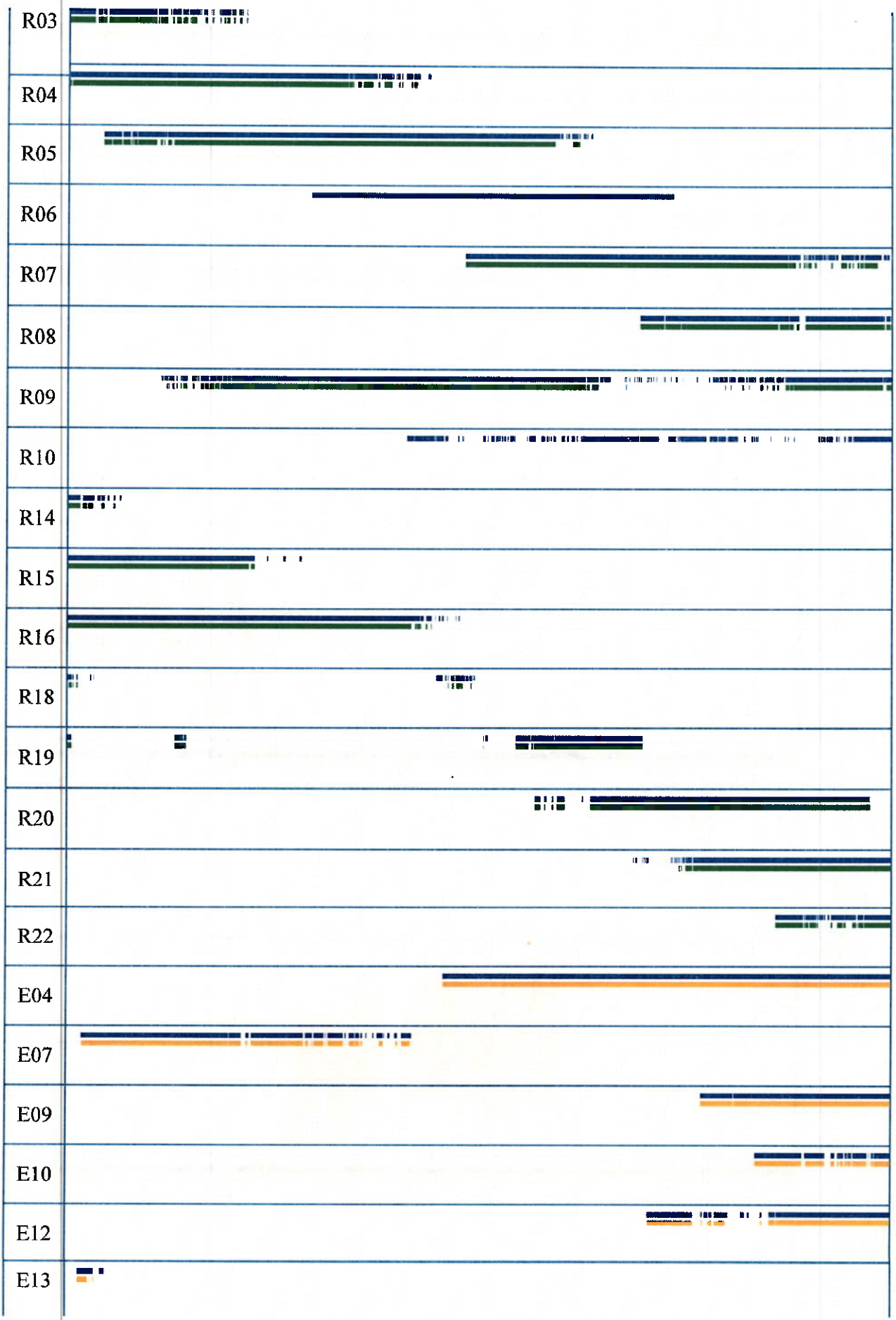
| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0006 | Std. NS Fwd Azimuth(s) | 0.0573 | Std.ΔX（m）(m) | 0.0010 |
| Std.ΔEast(m) | 0.0009 | Std.Ellipsoid Distance(m) | 0.0000 | Std.ΔY（m）(m) | 0.0018 |
| Std.ΔHeight(m) | 0.0018 | Std.ΔEllipsoid Height(m) | 0.0018 | Std.ΔZ（m）(m) | 0.0006 |
| Horizontal Accuracy(m) | 0.0027 | Vertical Accuracy(m) | 0.0047 | | |

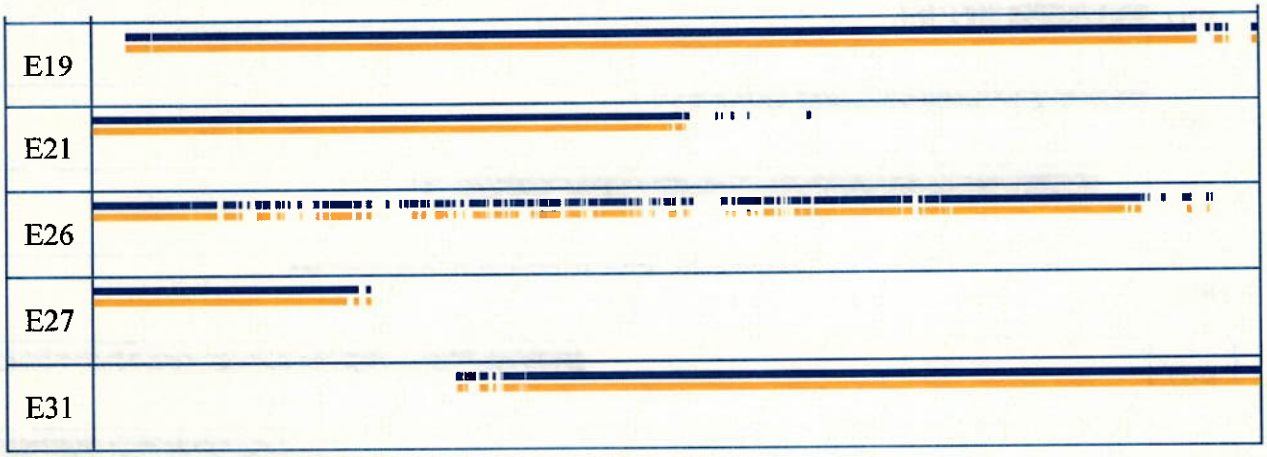
**Aposteriori Covariance Matrix (cm^2)**

| | X | Y | Z |
|---|---|---|---|
| X | 0.0103 | | |
| Y | -0.0086 | 0.0311 | |
| Z | 0.0007 | -0.0031 | 0.0037 |

## 4 Tracking Summary

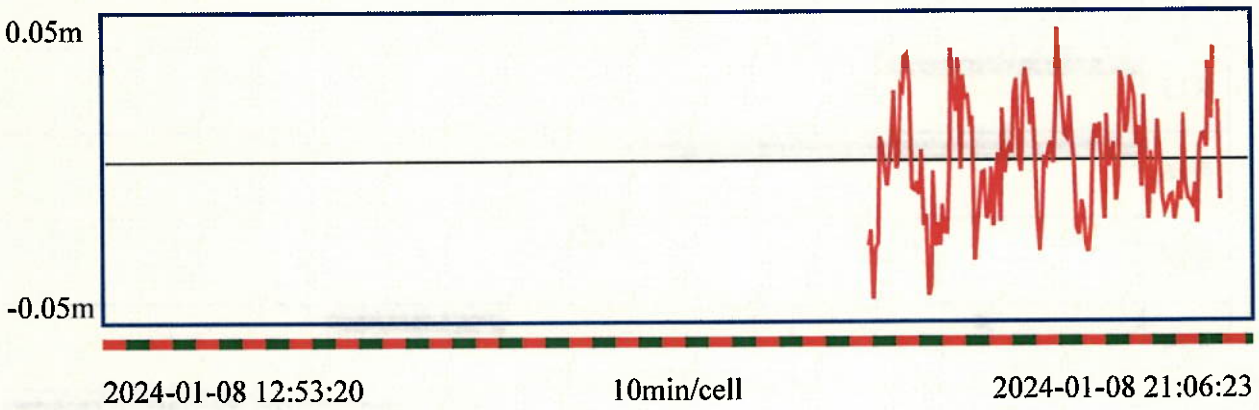



R03
R04
R05
R06
R07
R08
R09
R10
R14
R15
R16
R18
R19
R20
R21
R22
E04
E07
E09
E10
E12
E13

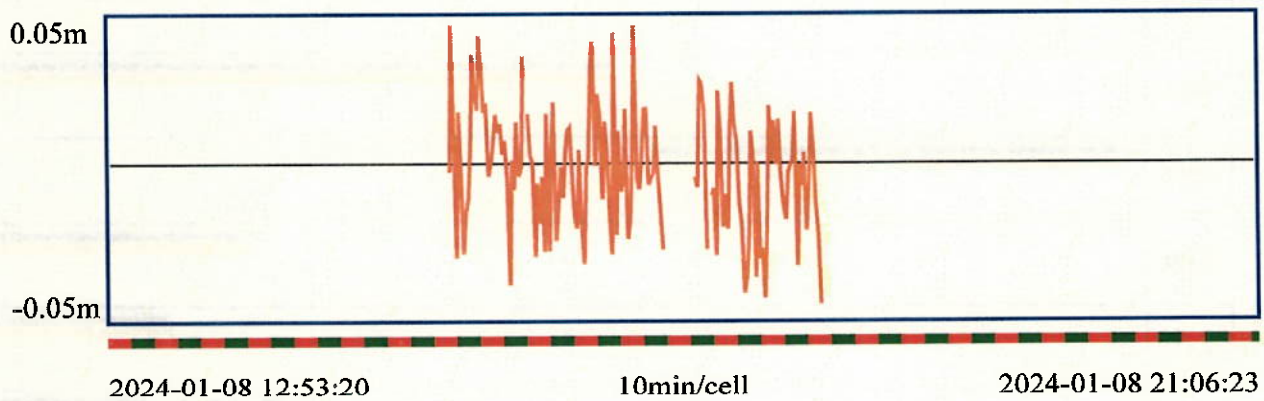



**5 Residuals**

**G02**




**G03**



G04



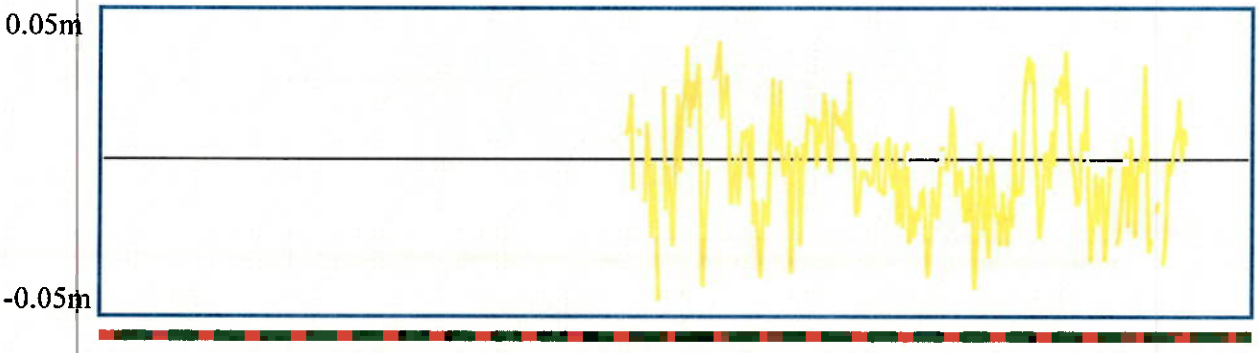

2024-01-08 12:53:20 10min/cell 2024-01-08 21:06:23

G07



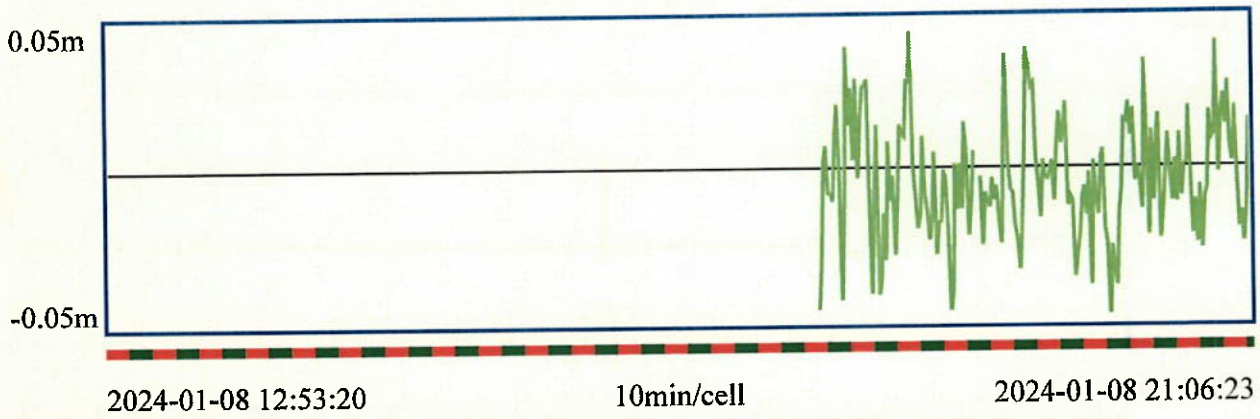

2024-01-08 12:53:20 10min/cell 2024-01-08 21:06:23

G08

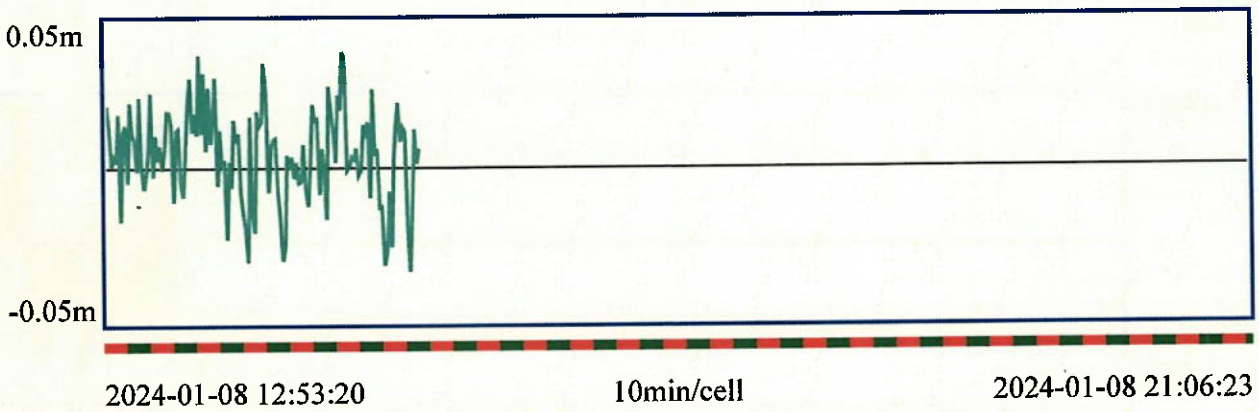



2024-01-08 12:53:20 10min/cell 2024-01-08 21:06:23

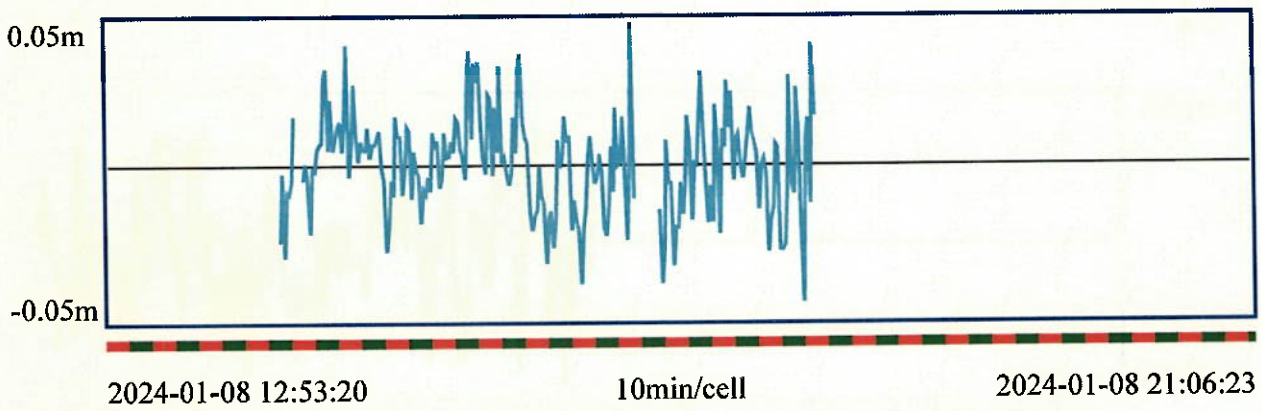
G09


0.05m
-0.05m
2024-01-08 12:53:20
10min/cell
2024-01-08 21:06:23

**G10**

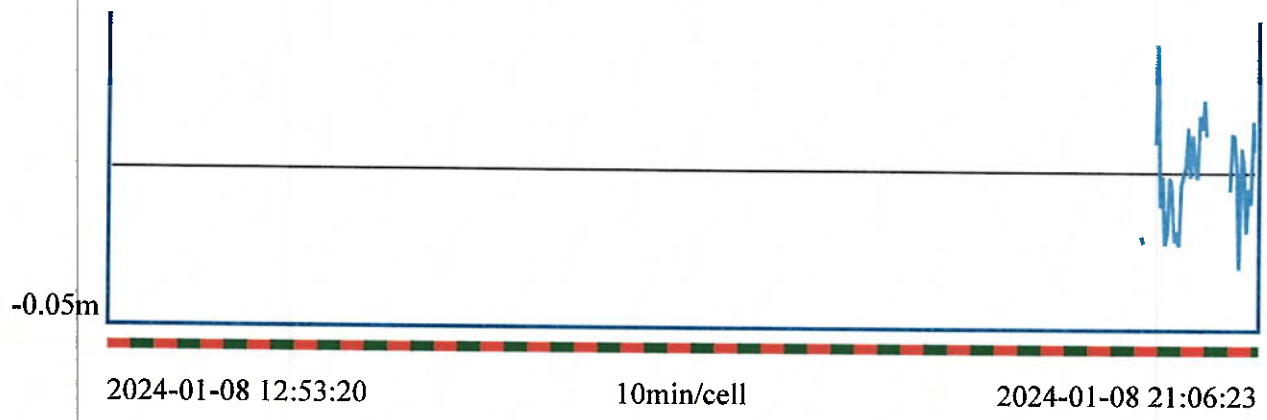

0.05m
-0.05m
2024-01-08 12:53:20
10min/cell
2024-01-08 21:06:23

**G16**

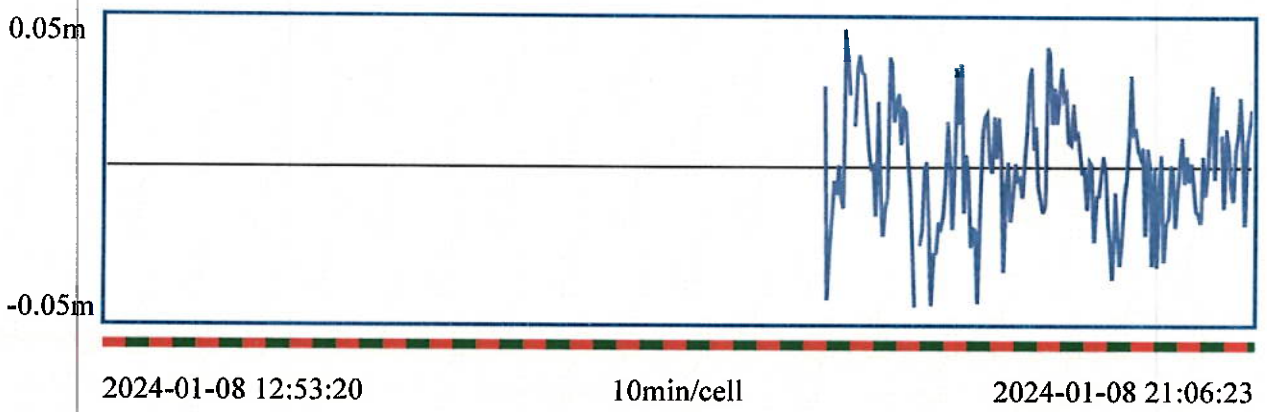

0.05m
-0.05m
2024-01-08 12:53:20
10min/cell
2024-01-08 21:06:23

**G17**

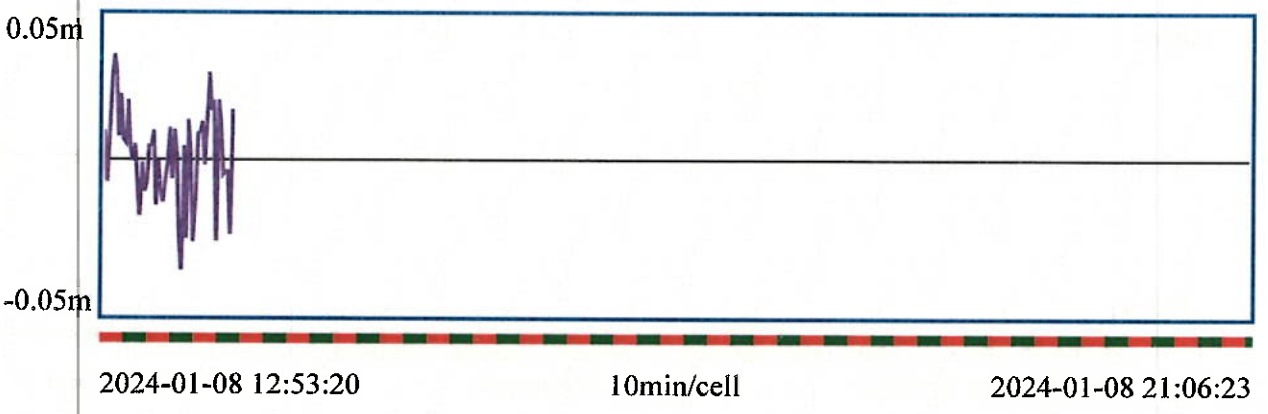

0.05m


-0.05m
2024-01-08 12:53:20
10min/cell
2024-01-08 21:06:23

G21

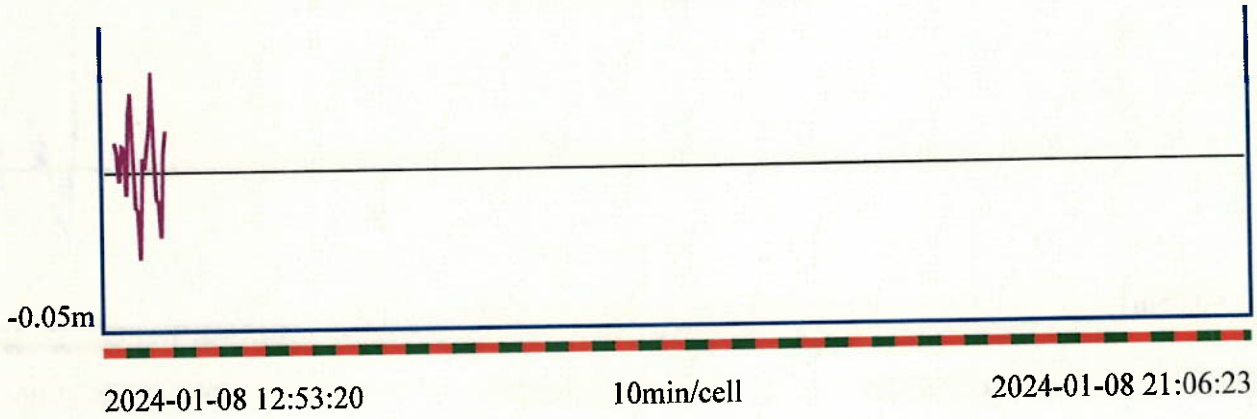

0.05m
-0.05m
2024-01-08 12:53:20
10min/cell
2024-01-08 21:06:23

G23

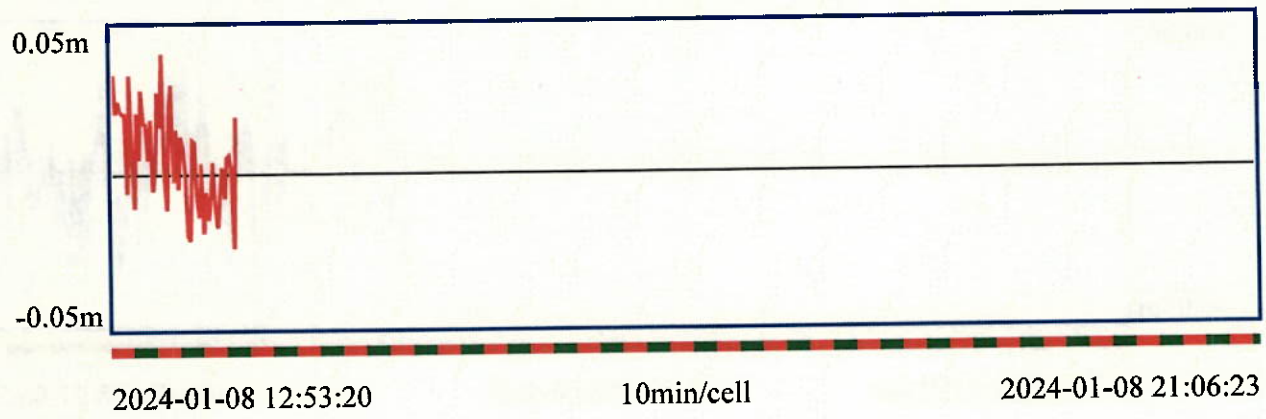

0.05m
-0.05m
2024-01-08 12:53:20
10min/cell
2024-01-08 21:06:23

G25

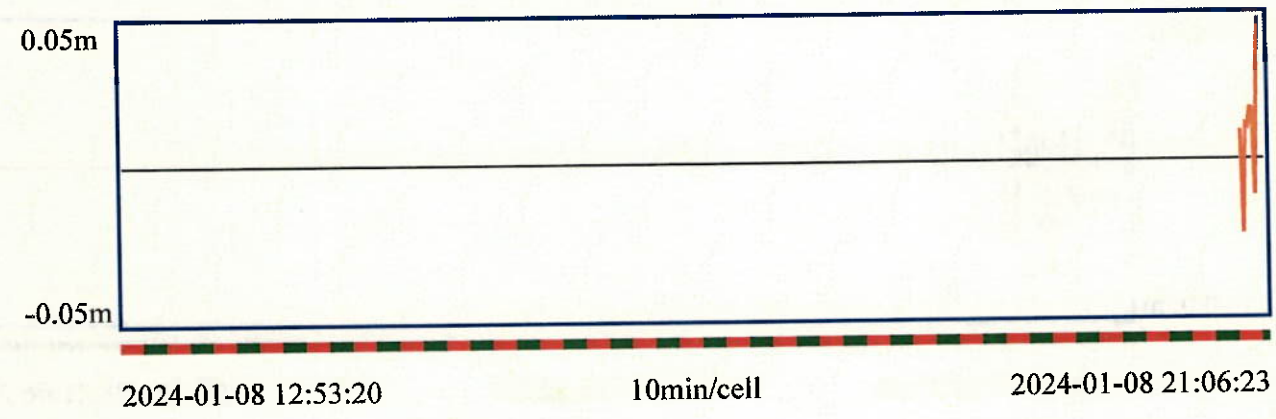

0.05m


-0.05m
2024-01-08 12:53:20
10min/cell
2024-01-08 21:06:23

**G28**

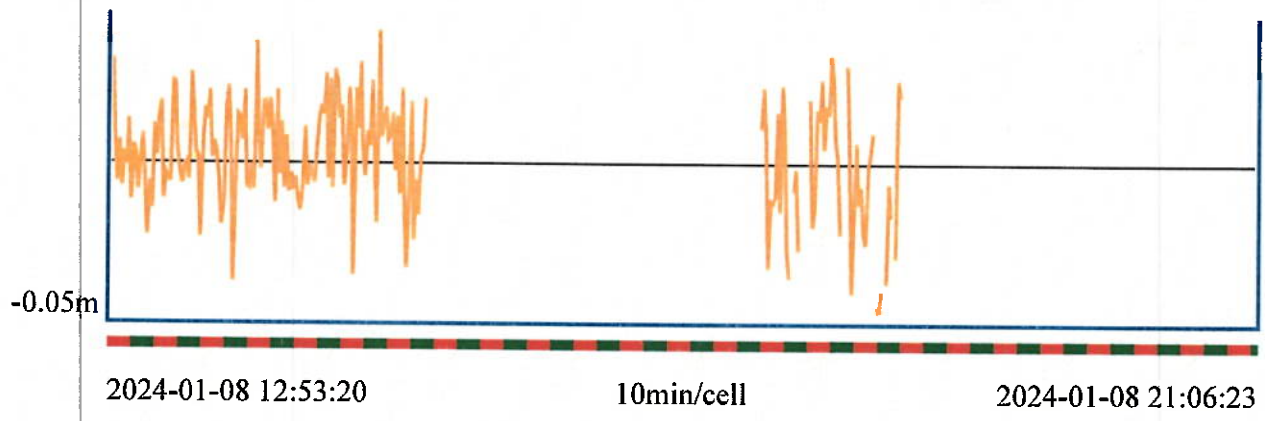

0.05m
-0.05m
2024-01-08 12:53:20
10min/cell
2024-01-08 21:06:23

**G30**

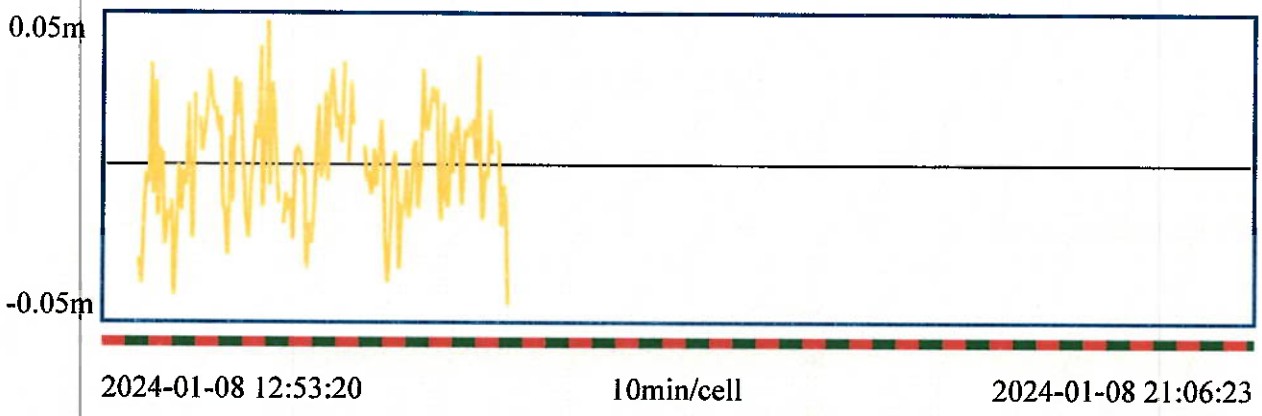

0.05m
-0.05m
2024-01-08 12:53:20
10min/cell
2024-01-08 21:06:23

**G31**


0.05m




**G32**




## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 15.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |
| Use Observed Met. Data | Allowed |

**6 .4 Ionosphere**

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

**6 .5 Ambiguity**

| | |
|---|---|
| Search Mode | Lambda |

**6 .6 Quality**

| | |
|---|---|
| RMS Tolerance | 0.040m |
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |

# B03 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B03(GNSS02-3382008M2.hcs->IGAC-1103349008M.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 1333.9193 |
| Elevation Mask | 12° |
| RMS(m) | 0.0203 |
| HDOP | 3.219 |
| VDOP | 8.274 |
| PDOP | 8.878 |
| Total number of satellites | 4 |
| Start Time (GPST) | 2024-01-08 12.53.20( week : 2296 , second : 132800 ) |
| Stop Time (GPST) | 2024-01-08 21.06.23( week : 2296 , second : 162383 ) |
| Observation Time | 08:13:03 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\GNSS02-3382008M2.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\IGAC-1103349008M.24o |
| Receiver Type | CHC I80 | CHC I80 |

| Receiver Serial | 1103382 | 1103349 |
|---|---|---|
| Antanna Type | CHCI80 | CHCI80 |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height(m) | 1.8220 | 1.8000 |

**3 Baseline Components**

**Start PointGNSS-02**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 735557.8608 | Latitude | 02°12'14.16215"N | Latitude | 02°12'14.16215"N | X (m) | 1581319.6478 |
| East(m) | 826595.9521 | Longitude | 075°38'10.23139"W | Longitude | 075°38'10.23139"W | Y (m) | -6175016.5582 |
| Height (m) | 800.9289 | Ellipsoid Height(m) | 826.6412 | Ellipsoid Height(m) | 826.6412 | Z (m) | 243671.3014 |

**End PointGNSS-01**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 734684.8570 | Latitude | 02°11'45.78463"N | Latitude | 02°11'45.78463"N | X (m) | 1582314.3942 |
| East(m) | 827604.2822 | Longitude | 075°37'37.58143"W | Longitude | 075°37'37.58143"W | Y (m) | -6174833.7365 |
| Height (m) | 837.1589 | Ellipsoid Height(m) | 862.9518 | Ellipsoid Height(m) | 862.9518 | Z (m) | 242801.5909 |

**BaselineB03**

| ΔNorth(m) | -873.0038 | NS Fwd Azimuth | 130°49'33.30226" | ΔX（m）(m) | 994.7464 |
|---|---|---|---|---|---|
| ΔEast(m) | 1008.3301 | Ellipsoid Dist.(m) | 1333.9193 | ΔY（m）(m) | 182.8217 |
| ΔHeight(m) | 36.2300 | ΔEllipsoid Height(m) | 36.3106 | ΔZ（m）(m) | -869.7105 |

**Standard Errors**

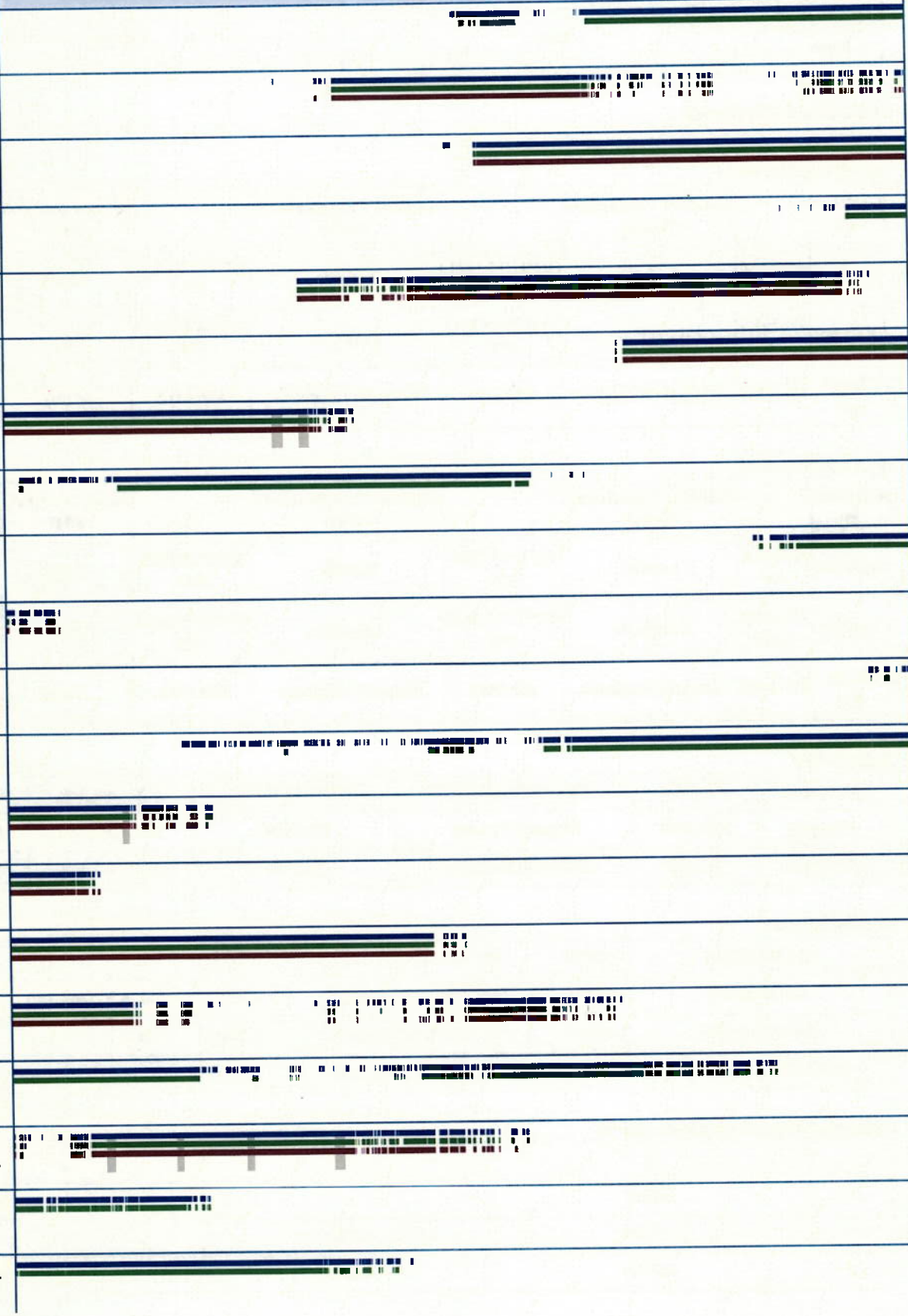
| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0028 | Std. NS Fwd Azimuth(s) | 0.5925 | Std. ΔX（m）(m) | 0.0045 |
| Std.ΔEast(m) | 0.0026 | Std.Ellipsoid Distance(m) | 0.0001 | Std. ΔY（m）(m) | 0.0088 |
| Std.ΔHeight(m) | 0.0095 | Std.ΔEllipsoid Height(m) | 0.0095 | Std. ΔZ（m）(m) | 0.0025 |
| Horizontal Accuracy(m) | 0.0032 | Vertical Accuracy(m) | 0.0048 | | |

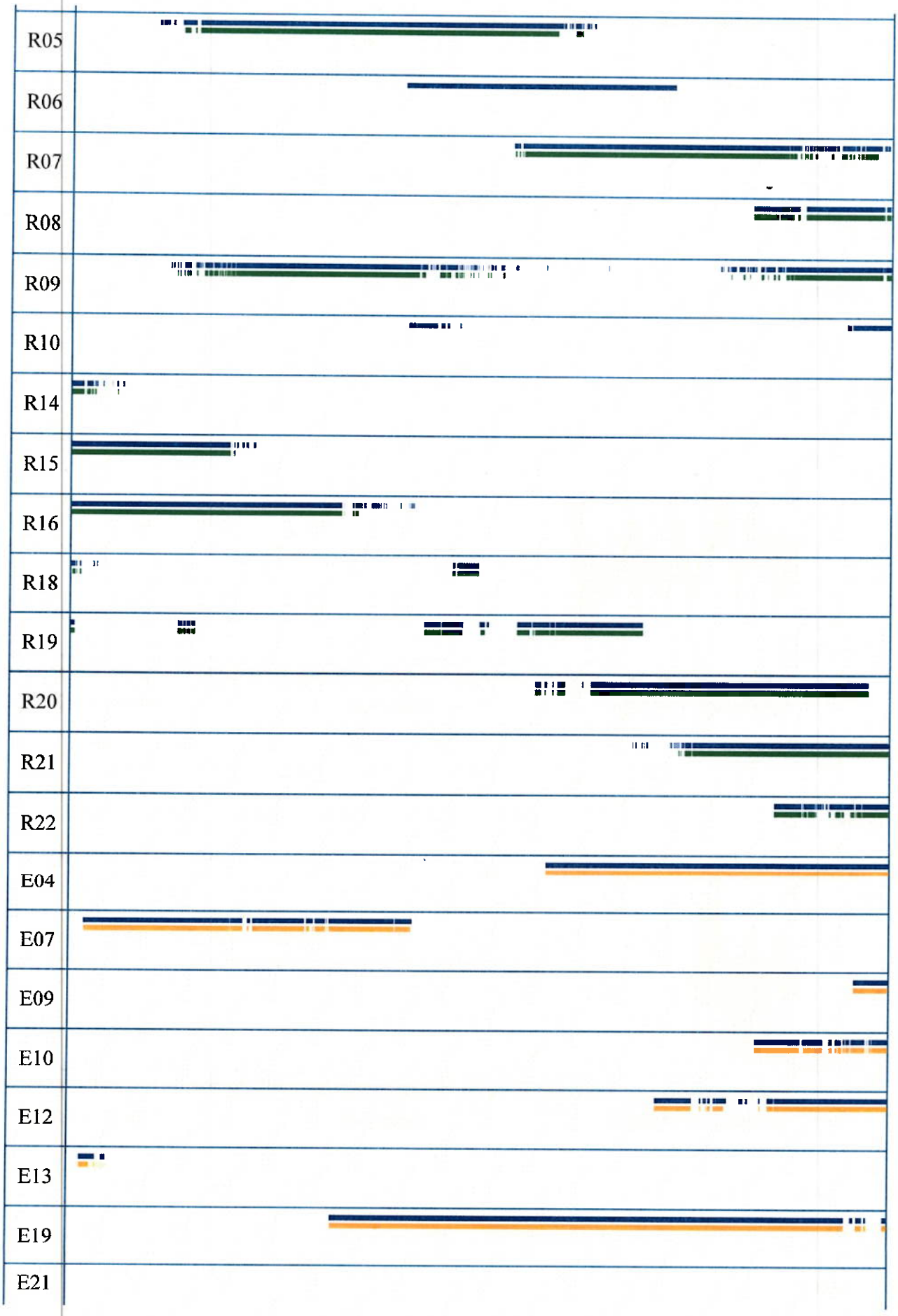
**Aposteriori Covariance Matrix (cm^2)**

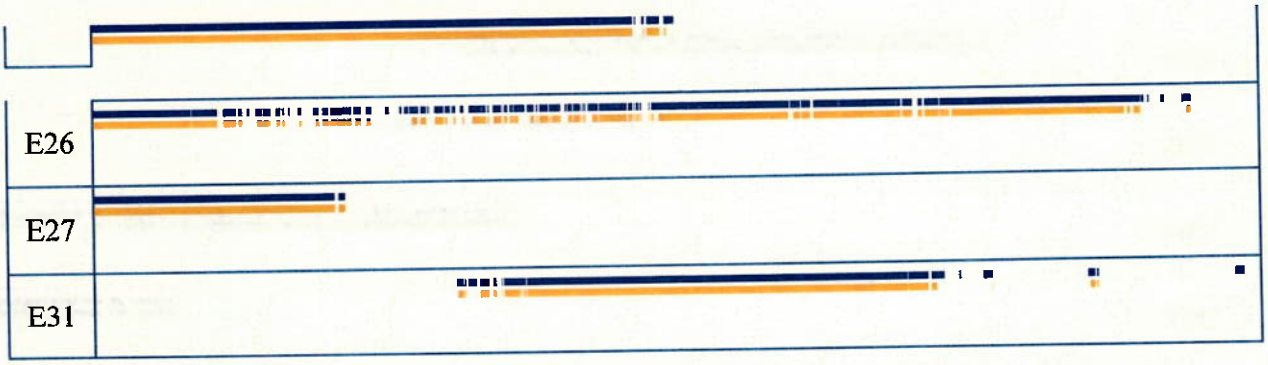
| | X | Y | Z |
|---|---|---|---|
| X | 0.2021 | | |
| Y | -0.3489 | 0.7781 | |
| Z | -0.0749 | 0.1422 | 0.0639 |

## 4 Tracking Summary

| Satellite | Phase Sum Total Epoch: 29584 , Sampling Interval(s): 60, Ratio =3.4, RMS =0.020293 |
|---|---|
| G02 | |
| G03 | |
| G04 | |
| G07 | |
| G08 | |
| G09 | |
| G10 | |
| G16 | |
| G17 | |
| G18 | |
| G19 | |
| G21 | |
| G23 | |
| G25 | |
| G26 | |
| G28 | |
| G31 | |
| G32 | |
| R03 | |
| R04 | |

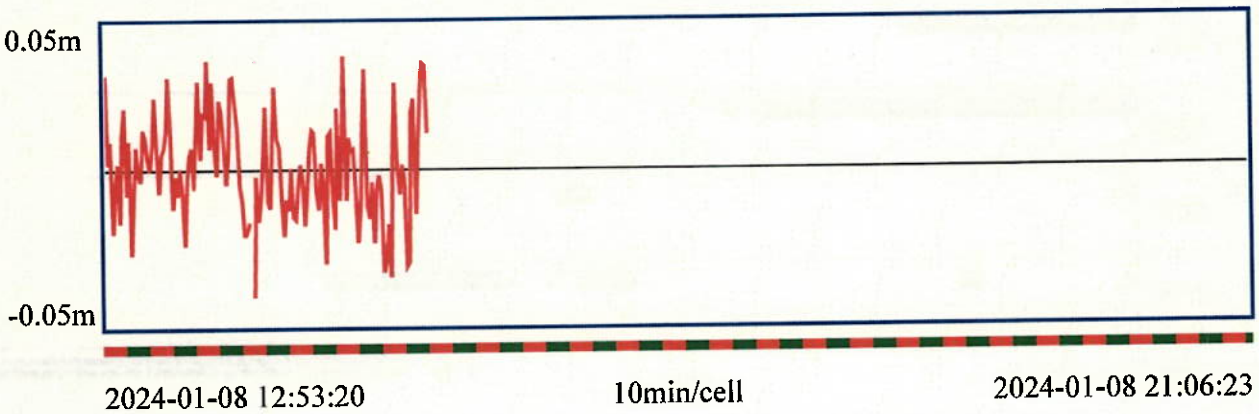



R05
R06
R07
R08
R09
R10
R14
R15
R16
R18
R19
R20
R21
R22
E04
E07
E09
E10
E12
E13
E19
E21

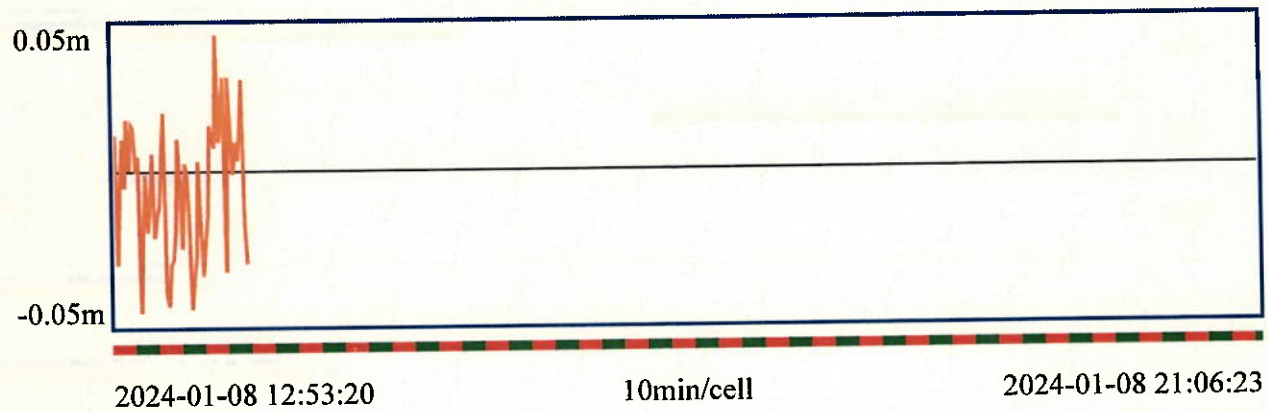



**5 Residuals**

**G10**

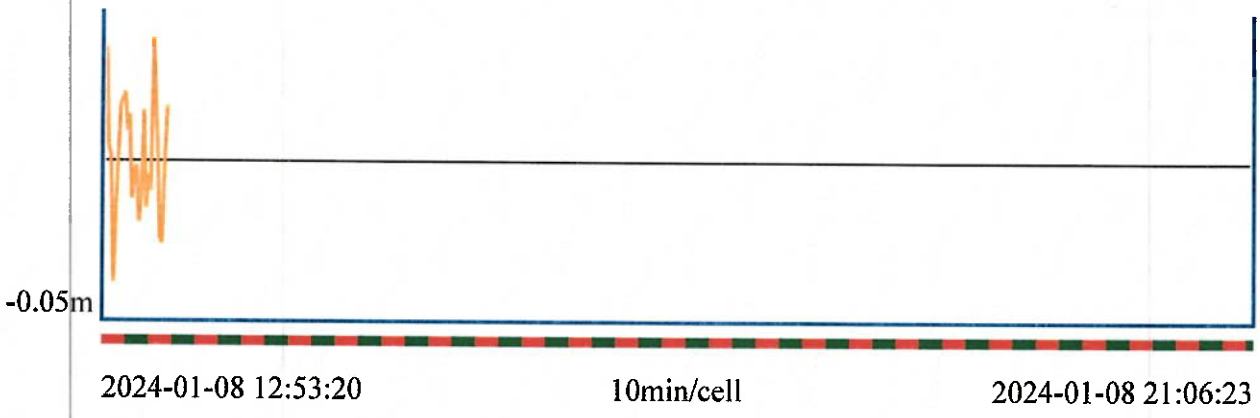



**G23**

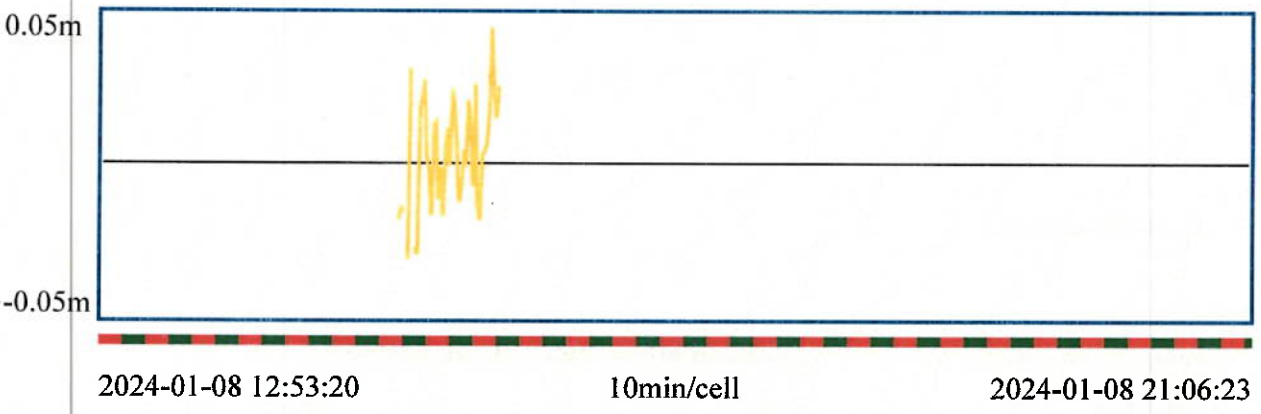



**G25**






**G32**




## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 12.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |
| Use Observed Met. Data | Allowed |

**6 .4 Ionosphere**

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

**6 .5 Ambiguity**

| | |
|---|---|
| Search Mode | Lambda |

**6 .6 Quality**

| | |
|---|---|
| RMS Tolerance | 0.040m |
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |

# B04 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B04(popa0080.hcs->GNSS01-1103349008M.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 110299.6503 |
| Elevation Mask | 12° |
| RMS(m) | 0.0184 |
| HDOP | 1.156 |
| VDOP | 2.187 |
| PDOP | 2.473 |
| Total number of satellites | 4 |
| Start Time (GPST) | 2024-01-08 12.38.04( week : 2296 , second : 131884 ) |
| Stop Time (GPST) | 2024-01-08 21.27.53( week : 2296 , second : 163673 ) |
| Observation Time | 08:49:49 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\popa0080.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\GNSS01-1103349008M.24o |
| Receiver Type | TRIMBLE NETR9 | CHC I80 |
| | | |

| | | |
|---|---|---|
| Receiver Serial | 5745R51401 | 1103373 |
| Antanna Type | TRM59800.00 SCIS | CHCI80 |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height(m) | 0.1870 | 1.8000 |

### 3 Baseline Components

**Start PointPOPA**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 762178.6507 | Latitude | 02°26'35.21659"N | Latitude | 02°26'35.21659"N | X (m) | 1477067.4724 |
| East(m) | 719225.8329 | Longitude | 076°36'04.34005"W | Longitude | 076°36'04.34005"W | Y (m) | -6200659.0158 |
| Height (m) | 1749.8291 | Ellipsoid Height(m) | 1782.1742 | Ellipsoid Height(m) | 1782.1742 | Z (m) | 270141.5077 |

**End Point41298001**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 734427.0512 | Latitude | 02°11'37.34092"N | Latitude | 02°11'37.34092"N | X (m) | 1580773.9714 |
| East(m) | 826025.2958 | Longitude | 075°38'28.65439"W | Longitude | 075°38'28.65439"W | Y (m) | -6175180.6854 |
| Height (m) | 781.1616 | Ellipsoid Height(m) | 806.8799 | Ellipsoid Height(m) | 806.8799 | Z (m) | 242540.2468 |

**BaselineB04**

| | | | | | |
|---|---|---|---|---|---|
| ΔNorth(m) | -27751.5995 | NS Fwd Azimuth | 104°27'47.60696" | ΔX（m）(m) | 103706.4990 |
| ΔEast(m) | 106799.4629 | Ellipsoid Dist.(m) | 110299.6503 | ΔY（m）(m) | 25478.3304 |
| ΔHeight(m) | -968.6675 | ΔEllipsoid Height(m) | -975.2942 | ΔZ（m）(m) | -27601.2609 |

**Standard Errors**

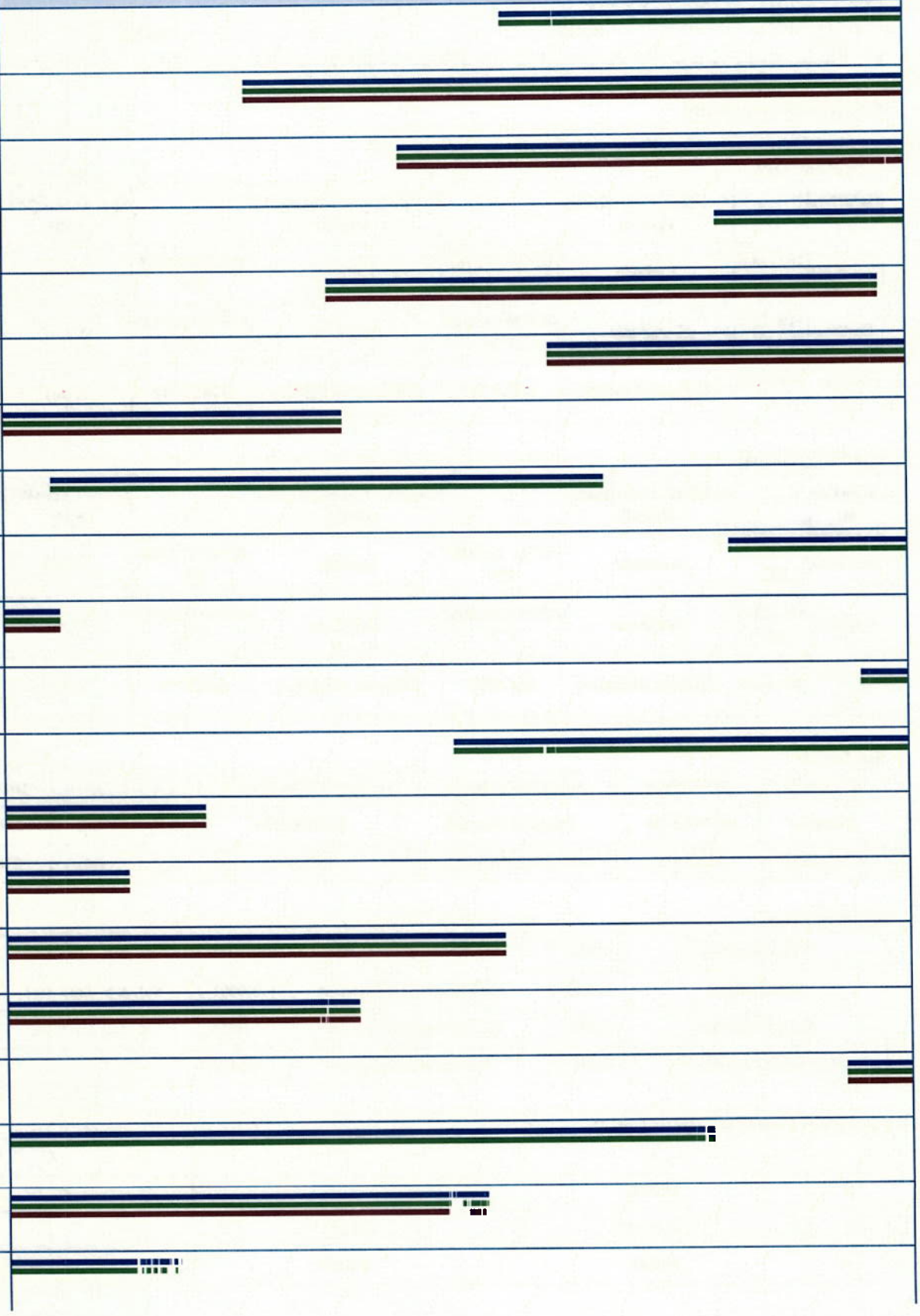
| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0012 | Std. NS Fwd Azimuth(s) | 0.0031 | Std. ΔX（m）(m) | 0.0026 |
| Std.ΔEast(m) | 0.0021 | Std.Ellipsoid Distance(m) | 0.0001 | Std. ΔY（m）(m) | 0.0028 |
| Std.ΔHeight(m) | 0.0032 | Std.ΔEllipsoid Height(m) | 0.0032 | Std. ΔZ（m）(m) | 0.0012 |
| Horizontal Accuracy(m) | 0.0213 | Vertical Accuracy(m) | 0.0402 | | |

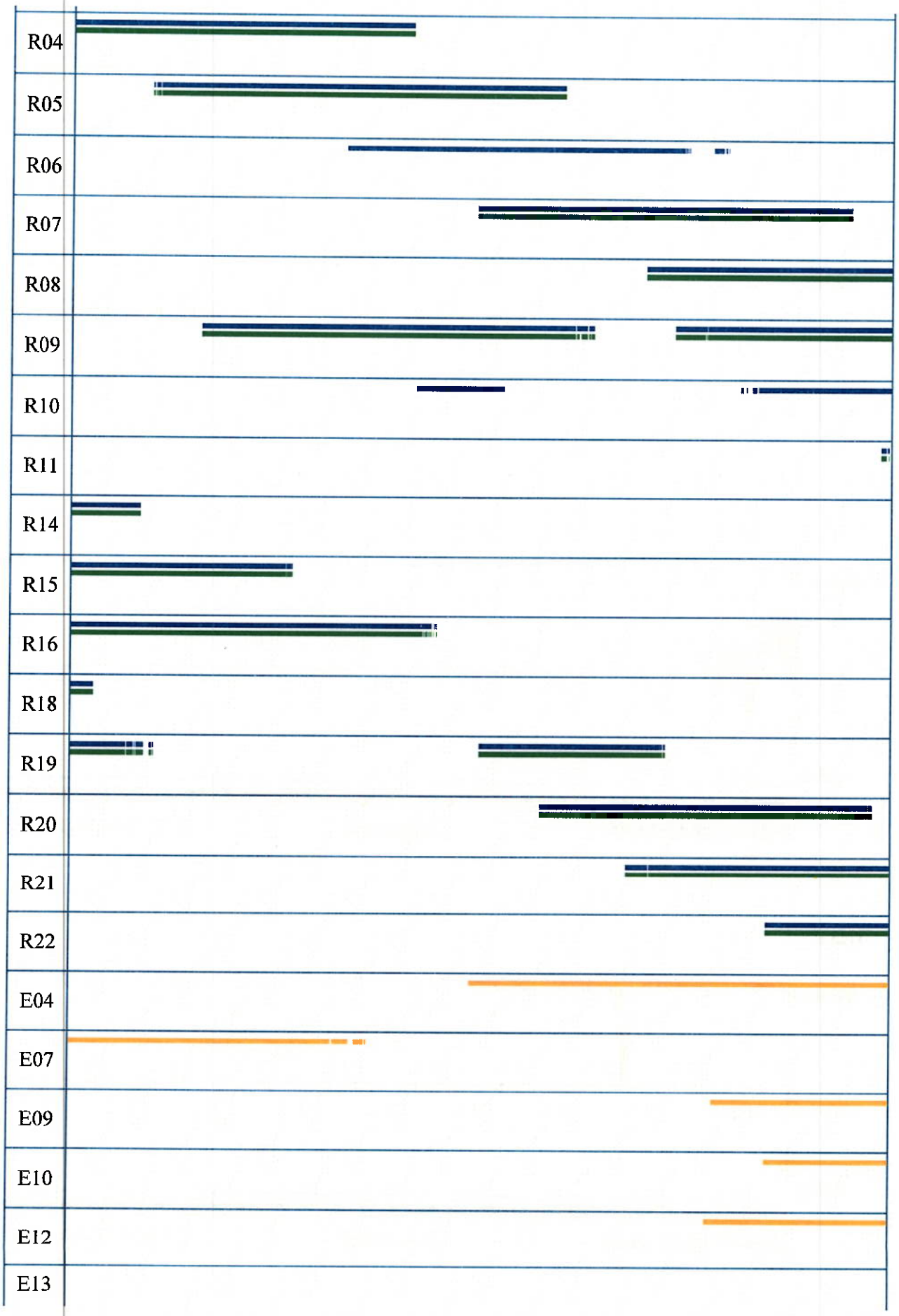
**Aposteriori Covariance Matrix (cm^2)**

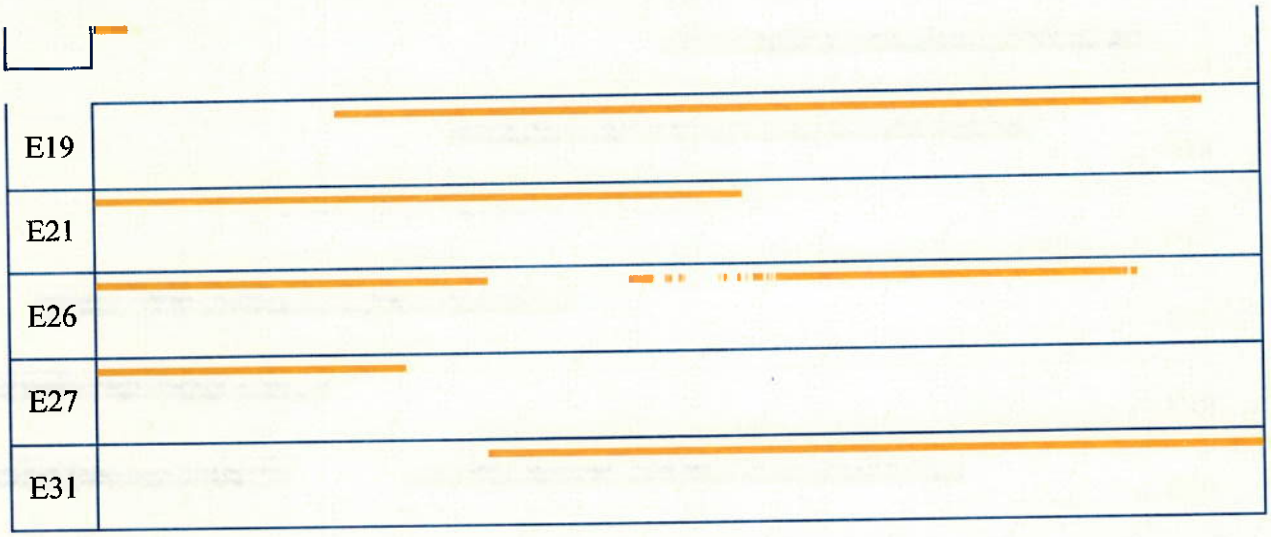
| | X | Y | Z |
|---|---|---|---|
| X | 0.0678 | | |
| Y | -0.0511 | 0.0804 | |
| Z | 0.0045 | -0.0122 | 0.0149 |

## 4 Tracking Summary

| Satellite | Phase Sum Total Epoch：5760，Sampling Interval(s)：60，Ratio =8.4，RMS =0.018403 |
|---|---|
| G02 | |
| G03 | |
| G04 | |
| G07 | |
| G08 | |
| G09 | |
| G10 | |
| G16 | |
| G17 | |
| G18 | |
| G19 | |
| G21 | |
| G23 | |
| G25 | |
| G26 | |
| G28 | |
| G30 | |
| G31 | |
| G32 | |
| R03 | |

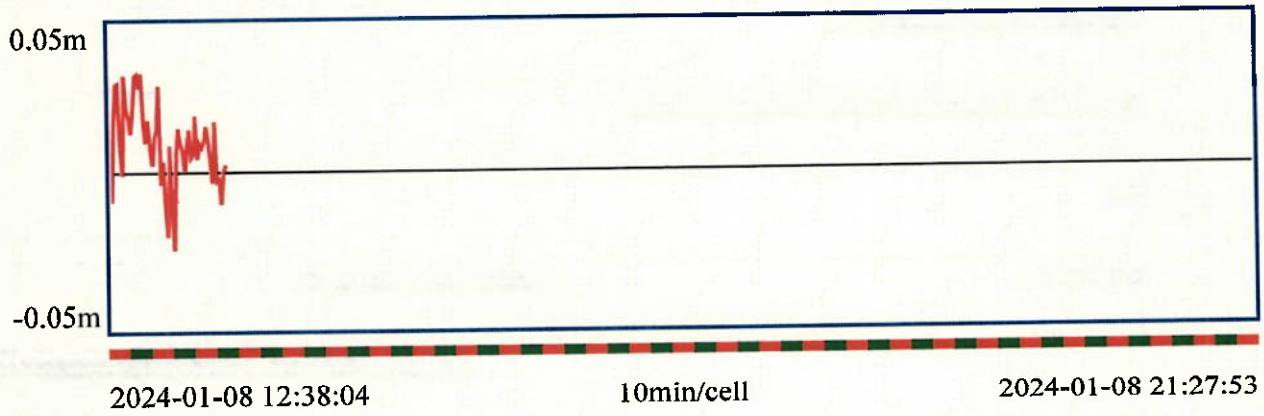



R04
R05
R06
R07
R08
R09
R10
R11
R14
R15
R16
R18
R19
R20
R21
R22
E04
E07
E09
E10
E12
E13

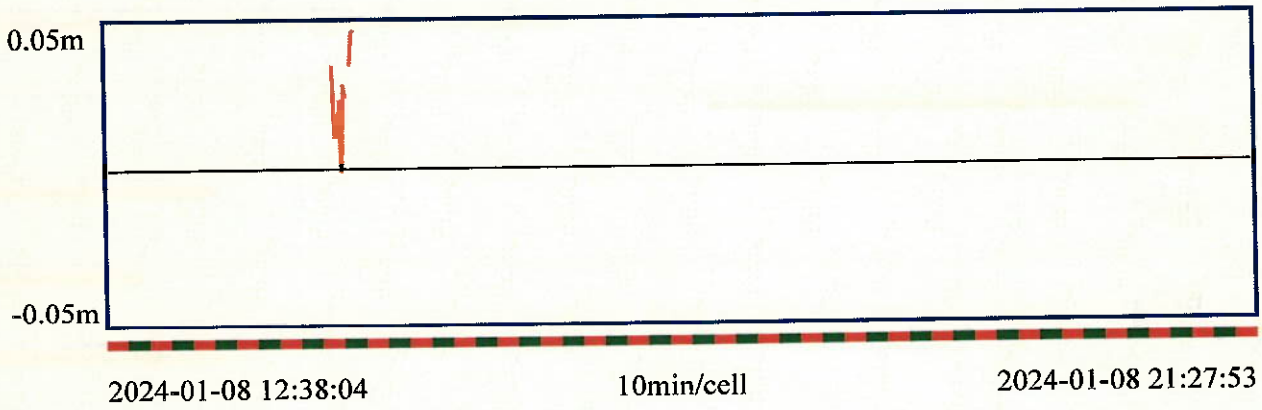



**5 Residuals**

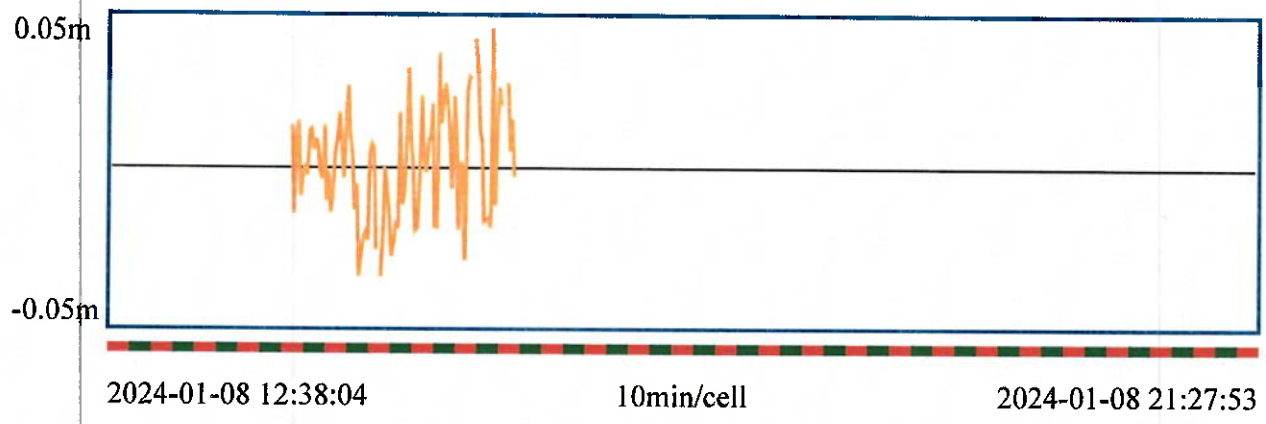
**G10**



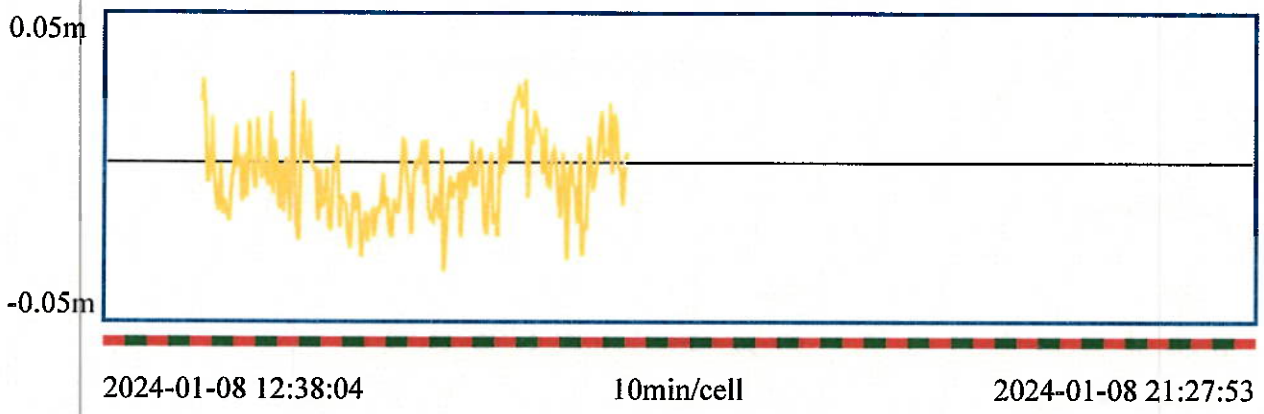

**G23**



**G28**




**G32**




## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 12.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |

| | |
|---|---|
| Use Observed Met. Data | Allowed |

**6 .4 Ionosphere**

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

**6 .5 Ambiguity**

| | |
|---|---|
| Search Mode | Lambda |

**6 .6 Quality**

| | |
|---|---|
| RMS Tolerance | 0.040m |
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |

# B05 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B05(popa0080.hcs->GNSS02-3382008M2.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 110576.3208 |
| Elevation Mask | 13° |
| RMS(m) | 0.0173 |
| HDOP | 2.142 |
| VDOP | 5.072 |
| PDOP | 5.506 |
| Total number of satellites | 4 |
| Start Time (GPST) | 2024-01-08 12.25.01( week : 2296 , second : 131101 ) |
| Stop Time (GPST) | 2024-01-08 21.35.11( week : 2296 , second : 164111 ) |
| Observation Time | 09:10:10 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\popa0080.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\GNSS02-3382008M2.24o |

| | | |
|---|---|---|
| Receiver Type | TRIMBLE NETR9 | CHC I80 |
| Receiver Serial | 5745R51401 | 1103382 |
| Antanna Type | TRM59800.00 SCIS | CHCI80 |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height(m) | 0.1870 | 1.8220 |

## 3 Baseline Components

**Start PointPOPA**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 762178.6507 | Latitude | 02°26'35.21659"N | Latitude | 02°26'35.21659"N | X (m) | 1477067.4724 |
| East(m) | 719225.8329 | Longitude | 076°36'04.34005"W | Longitude | 076°36'04.34005"W | Y (m) | -6200659.0158 |
| Height (m) | 1749.8291 | Ellipsoid Height(m) | 1782.1742 | Ellipsoid Height(m) | 1782.1742 | Z (m) | 270141.5077 |

**End PointGNSS-02**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 735554.9689 | Latitude | 02°12'14.06807"N | Latitude | 02°12'14.06807"N | X (m) | 1581318.1985 |
| East(m) | 826597.0952 | Longitude | 075°38'10.19431"W | Longitude | 075°38'10.19431"W | Y (m) | -6175006.2799 |
| Height (m) | 790.4934 | Ellipsoid Height(m) | 816.2059 | Ellipsoid Height(m) | 816.2059 | Z (m) | 243668.0122 |

**BaselineB05**

| | | | | | |
|---|---|---|---|---|---|
| ΔNorth(m) | -26623.6818 | NS Fwd Azimuth | 103°49'23.21119" | ΔX（m）(m) | 104250.7261 |
| ΔEast(m) | 107371.2623 | Ellipsoid Dist.(m) | 110576.3208 | ΔY（m）(m) | 25652.7359 |
| ΔHeight(m) | -959.3358 | ΔEllipsoid Height(m) | -965.9683 | ΔZ（m）(m) | -26473.4955 |

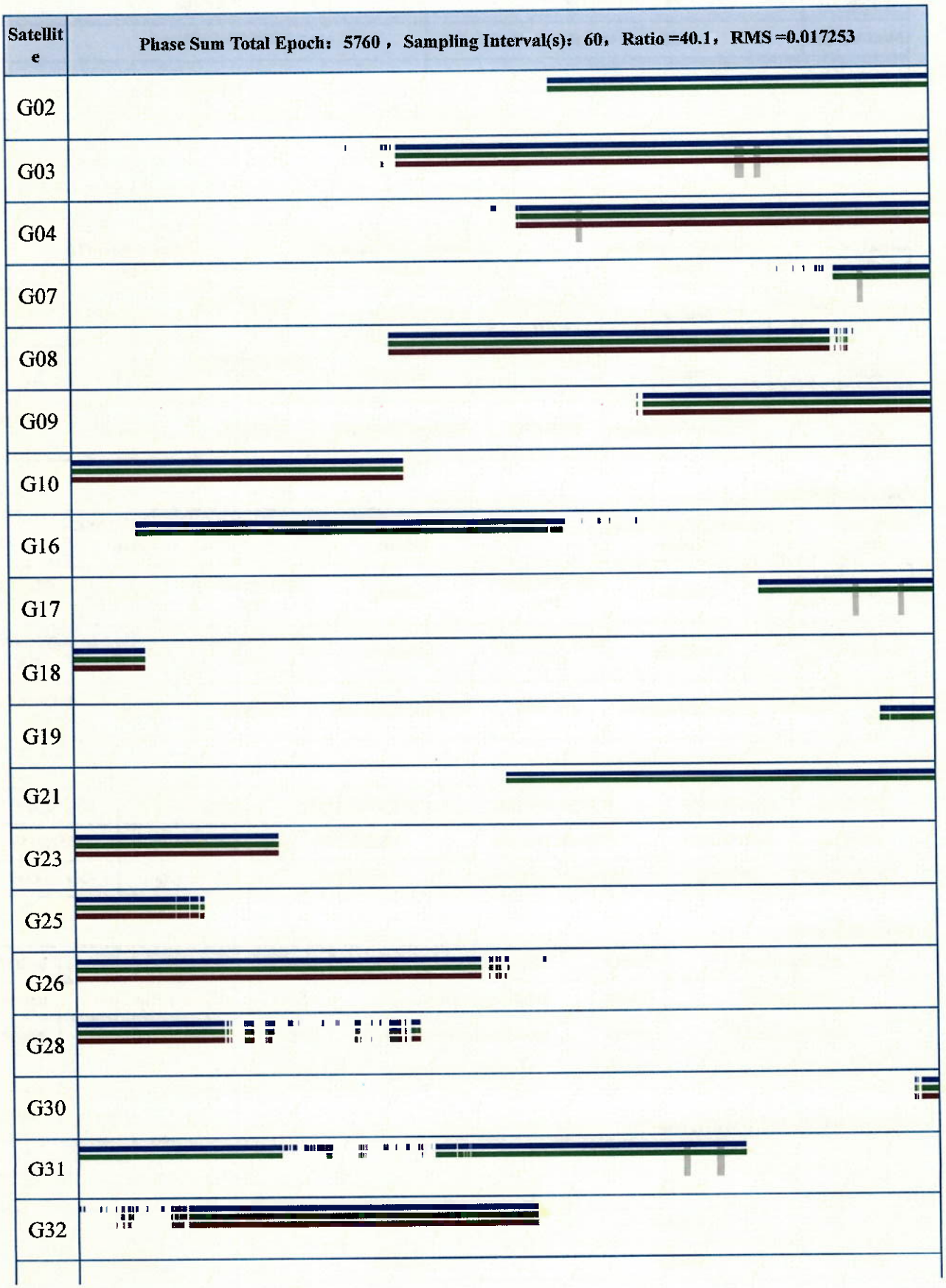
**Standard Errors**

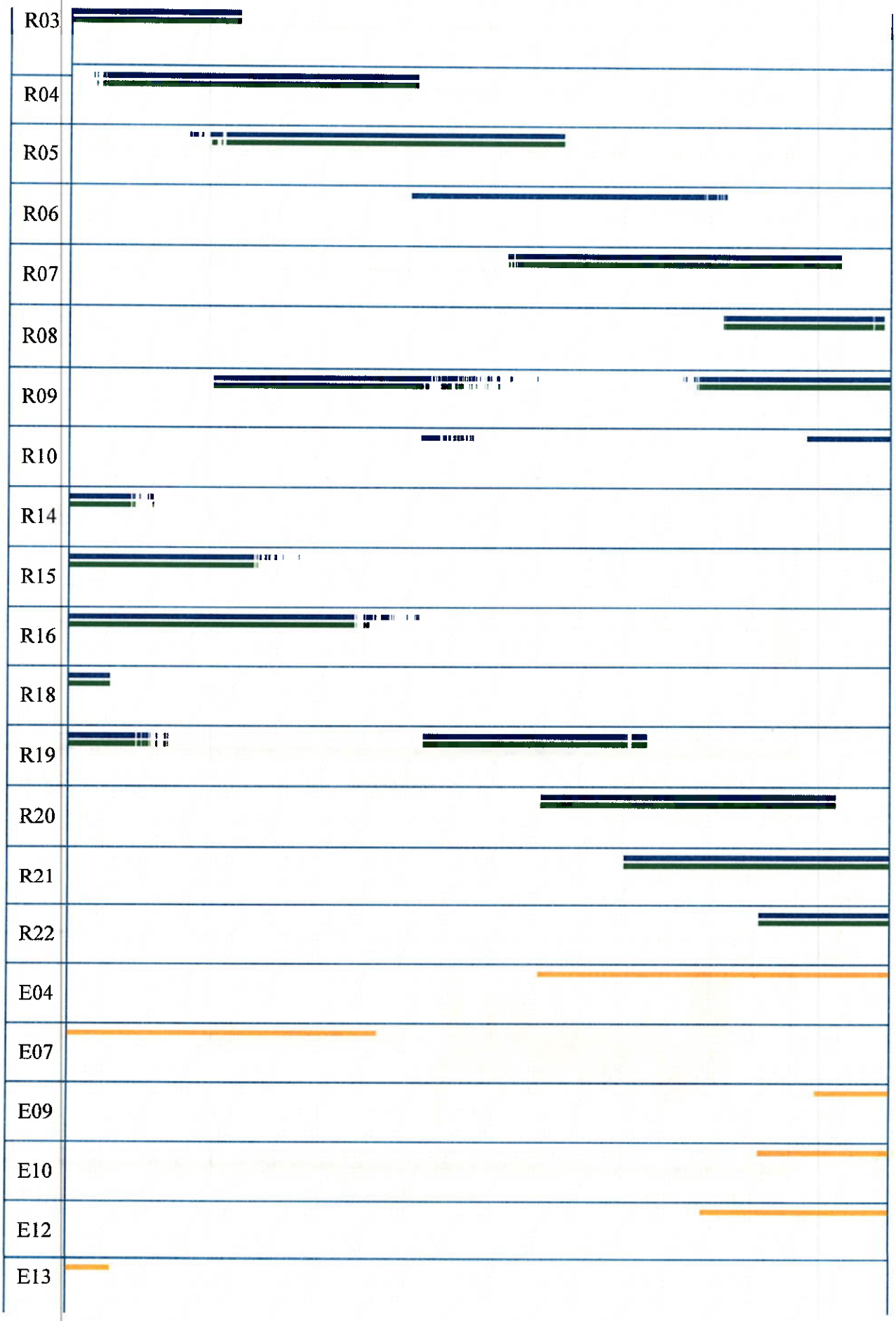
| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0015 | Std. NS Fwd Azimuth(s) | 0.0036 | Std. ΔX（m）(m) | 0.0027 |
| Std.ΔEast(m) | 0.0021 | Std.Ellipsoid Distance(m) | 0.0001 | Std. ΔY（m）(m) | 0.0036 |
| Std.ΔHeight(m) | 0.0039 | Std.ΔEllipsoid Height(m) | 0.0040 | Std. ΔZ（m）(m) | 0.0014 |
| Horizontal Accuracy(m) | 0.0370 | Vertical Accuracy(m) | 0.0594 | | |

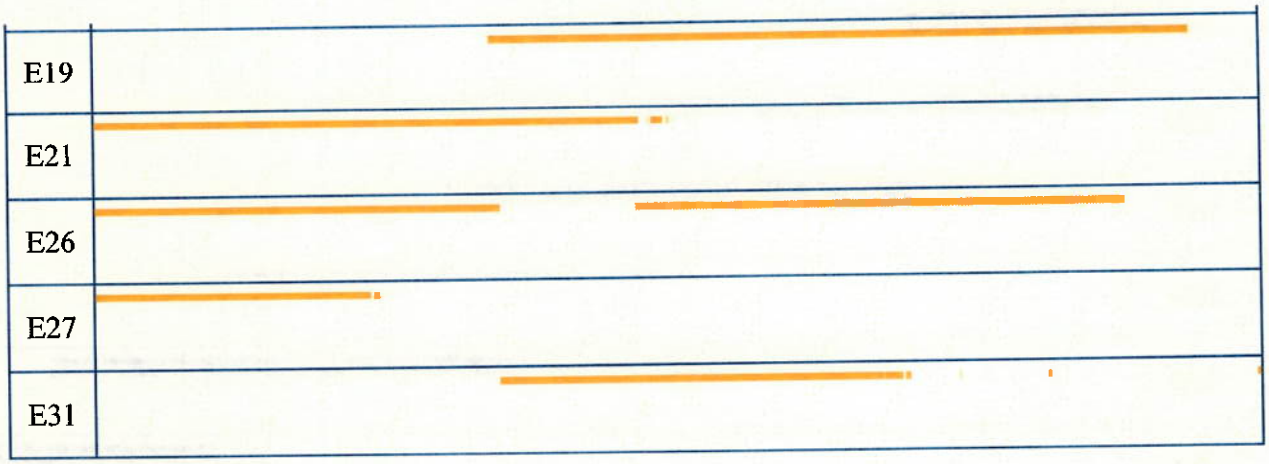
**Aposteriori Covariance Matrix (cm^2)**

| | X | Y | Z |
|---|---|---|---|
| X | 0.0714 | | |
| Y | -0.0653 | 0.1308 | |
| Z | -0.0070 | 0.0096 | 0.0210 |

## 4 Tracking Summary

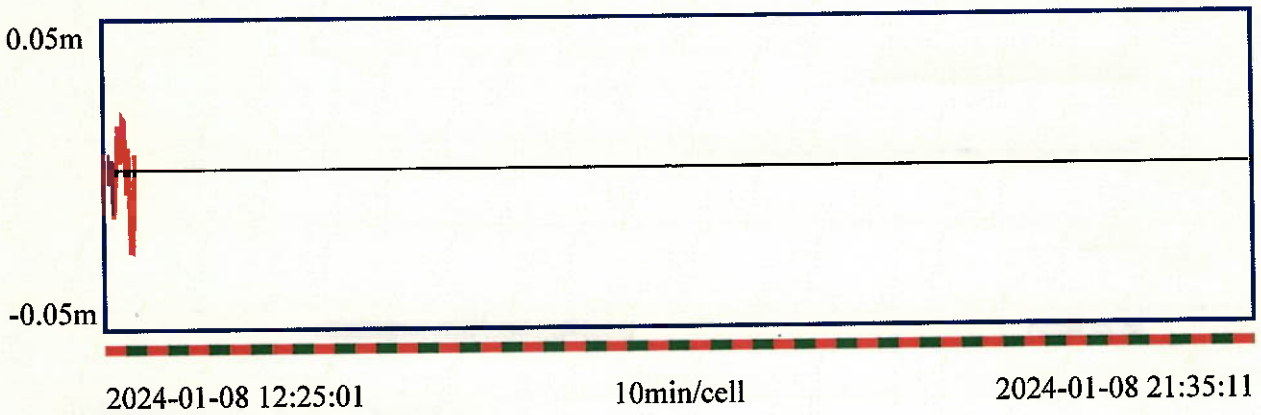



R03
R04
R05
R06
R07
R08
R09
R10
R14
R15
R16
R18
R19
R20
R21
R22
E04
E07
E09
E10
E12
E13

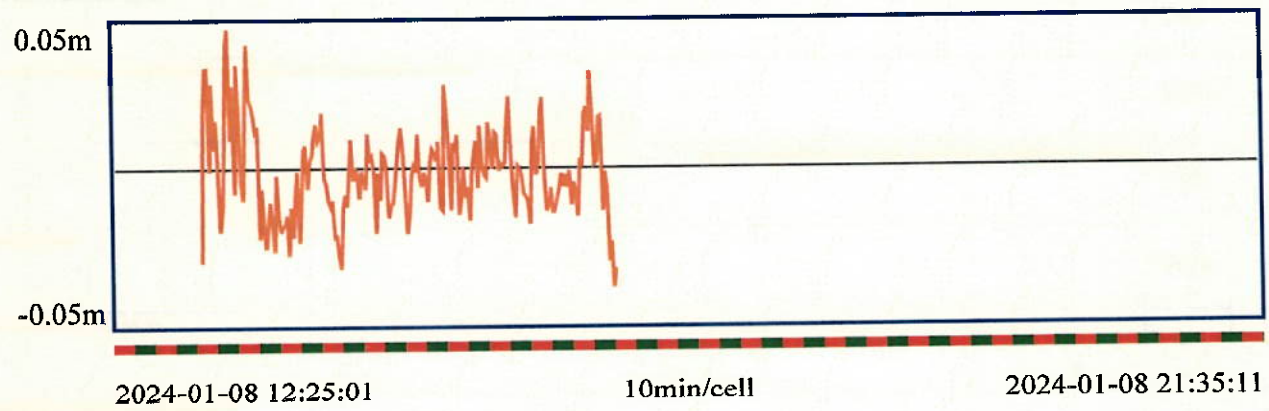



**5 Residuals**

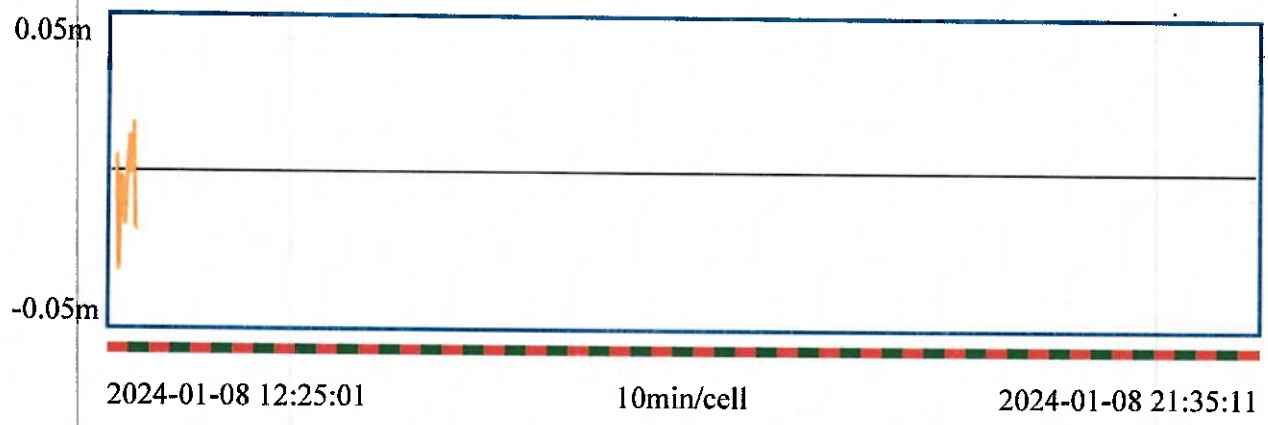
**G10**



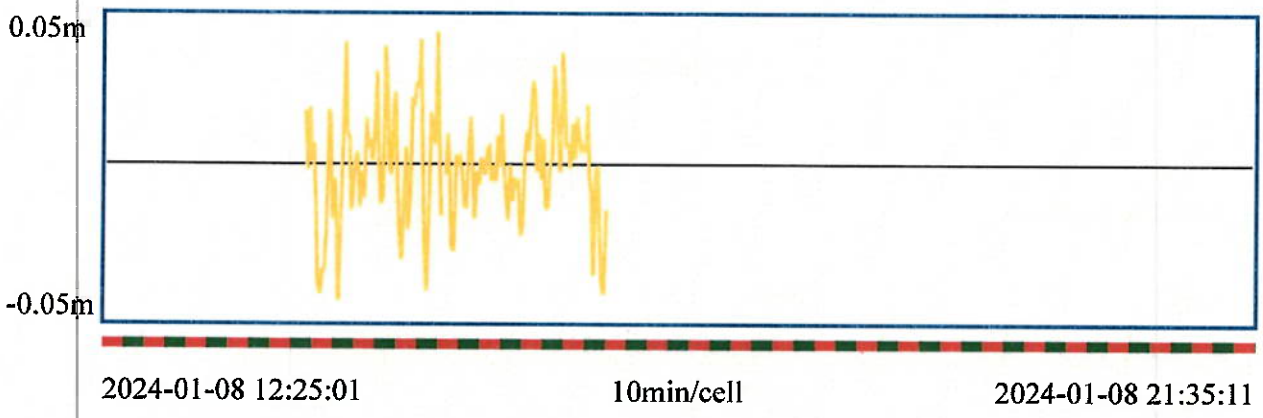

**G16**



G28




G32




## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 13.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |

| | |
|---|---|
| Use Observed Met. Data | Allowed |

**6 .4 Ionosphere**

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

**6 .5 Ambiguity**

| | |
|---|---|
| Search Mode | Lambda |

**6 .6 Quality**

| | |
|---|---|
| RMS Tolerance | 0.040m |
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |

# B06 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B06(popa0080.hcs->IGAC-1103349008M.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 111766.4129 |
| Elevation Mask | 12° |
| RMS(m) | 0.0206 |
| HDOP | 1.478 |
| VDOP | 3.010 |
| PDOP | 3.354 |
| Total number of satellites | 7 |
| Start Time (GPST) | 2024-01-08 12.53.20( week : 2296 , second : 132800 ) |
| Stop Time (GPST) | 2024-01-08 21.06.23( week : 2296 , second : 162383 ) |
| Observation Time | 08:13:03 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\popa0080.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\IGAC-1103349008M.24o |

| Receiver Type | TRIMBLE NETR9 | CHC I80 |
|---|---|---|
| Receiver Serial | 5745R51401 | 1103349 |
| Antanna Type | TRM59800.00 SCIS | CHCI80 |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height(m) | 0.1870 | 1.8000 |

**3 Baseline Components**

**Start PointPOPA**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 762178.6507 | Latitude | 02°26'35.21659"N | Latitude | 02°26'35.21659"N | X (m) | 1477067.4724 |
| East(m) | 719225.8329 | Longitude | 076°36'04.34005"W | Longitude | 076°36'04.34005"W | Y (m) | -6200659.0158 |
| Height (m) | 1749.8291 | Ellipsoid Height(m) | 1782.1742 | Ellipsoid Height(m) | 1782.1742 | Z (m) | 270141.5077 |

**End PointGNSS-01**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 734681.9721 | Latitude | 02°11'45.69078"N | Latitude | 02°11'45.69077"N | X (m) | 1582312.8943 |
| East(m) | 827605.4043 | Longitude | 075°37'37.54503"W | Longitude | 075°37'37.54503"W | Y (m) | -6174823.3519 |
| Height (m) | 826.6086 | Ellipsoid Height(m) | 852.4017 | Ellipsoid Height(m) | 852.4017 | Z (m) | 242798.3057 |

**BaselineB06**

| ΔNorth(m) | -27496.6786 | NS Fwd Azimuth | 104°07'59.18409" | ΔX（m）(m) | 105245.4219 |
|---|---|---|---|---|---|
| ΔEast(m) | 108379.5714 | Ellipsoid Dist.(m) | 111766.4129 | ΔY（m）(m) | 25835.6639 |
| ΔHeight(m) | -923.2205 | ΔEllipsoid Height(m) | -929.7724 | ΔZ（m）(m) | -27343.2020 |

**Standard Errors**

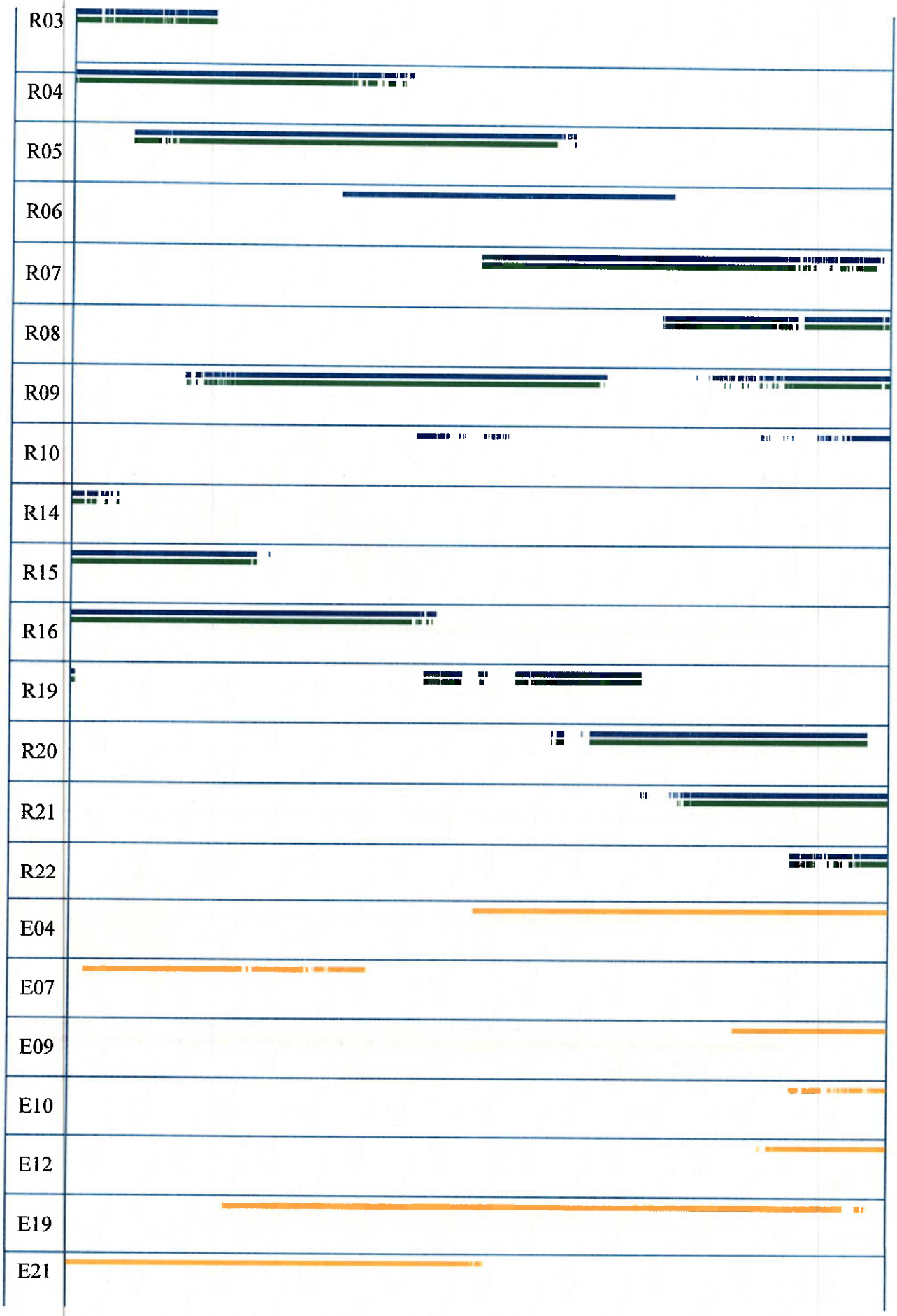
| Std.ΔNorth(m) | 0.0009 | Std. NS Fwd Azimuth(s) | 0.0024 | Std.ΔX（m）(m) | 0.0021 |
|---|---|---|---|---|---|
| Std.ΔEast(m) | 0.0016 | Std.Ellipsoid Distance(m) | 0.0001 | Std.ΔY（m）(m) | 0.0029 |
| Std.ΔHeight(m) | 0.0032 | Std.ΔEllipsoid Height(m) | 0.0032 | Std.ΔZ（m）(m) | 0.0010 |
| Horizontal Accuracy(m) | 0.0305 | Vertical Accuracy(m) | 0.0598 | | |

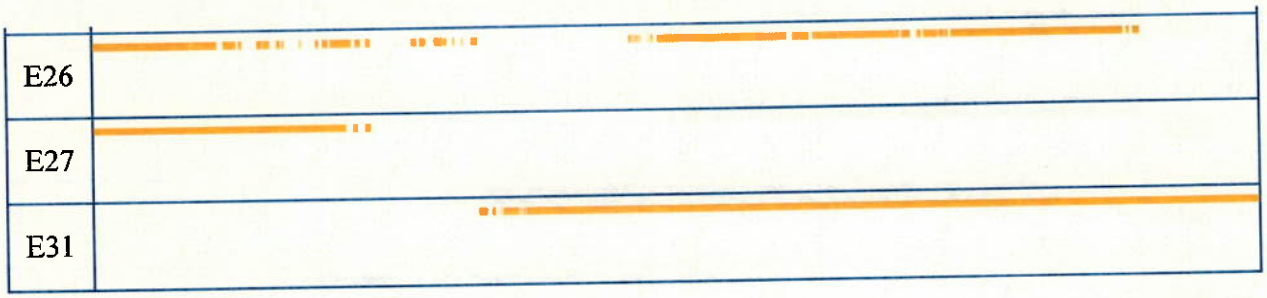
**Aposteriori Covariance Matrix (cm^2)**

| | X | Y | Z |
|---|---|---|---|
| X | 0.0445 | | |
| Y | -0.0447 | 0.0832 | |
| Z | 0.0082 | -0.0124 | 0.0095 |

## 4 Tracking Summary

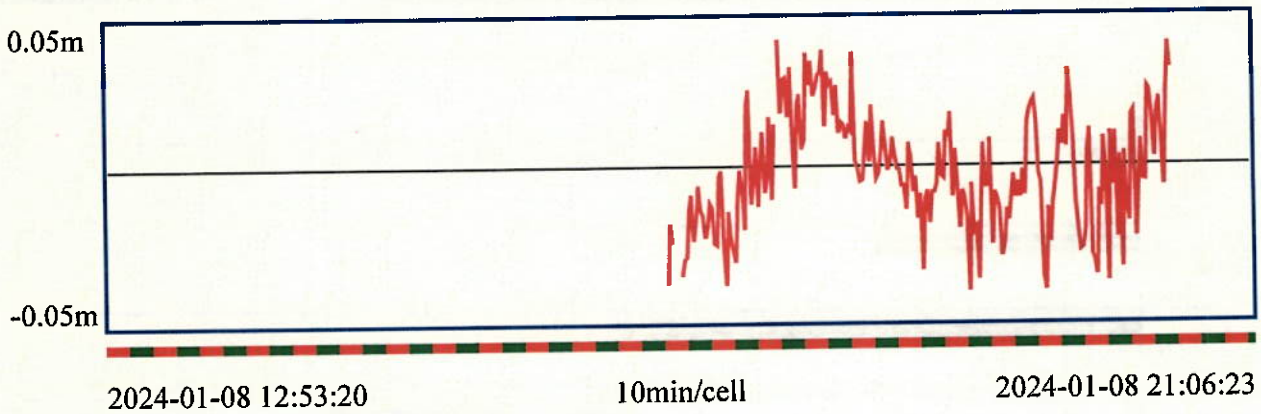
| Satellite | Phase Sum Total Epoch：5760，Sampling Interval(s)：60，Ratio =2.0，RMS =0.020619 |
|---|---|
| G02 | |
| G03 | |
| G04 | |
| G07 | |
| G08 | |
| G09 | |
| G10 | |
| G16 | |
| G17 | |
| G18 | |
| G19 | |
| G21 | |
| G23 | |
| G25 | |
| G26 | |
| G28 | |
| G30 | |
| G31 | |
| G32 | |


R03
R04
R05
R06
R07
R08
R09
R10
R14
R15
R16
R19
R20
R21
R22
E04
E07
E09
E10
E12
E19
E21

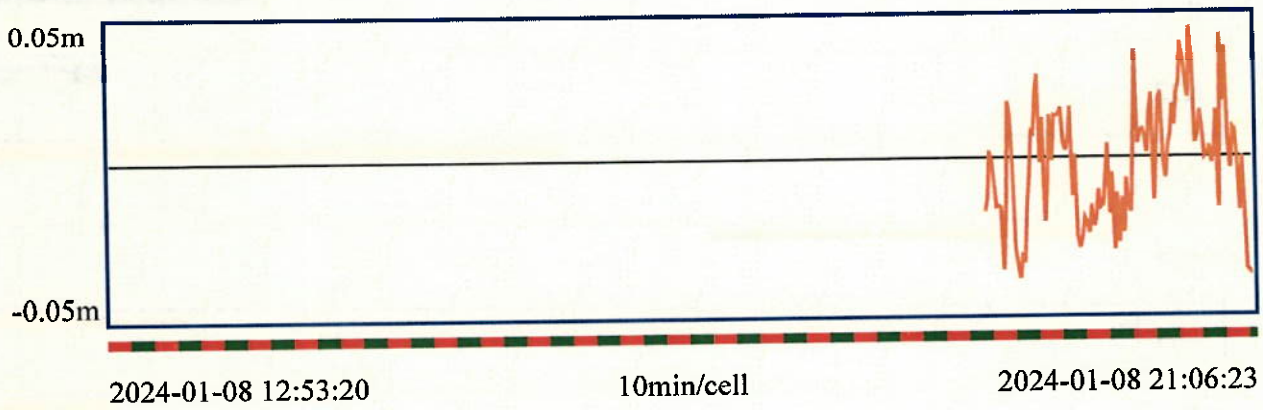



**5 Residuals**

**G08**

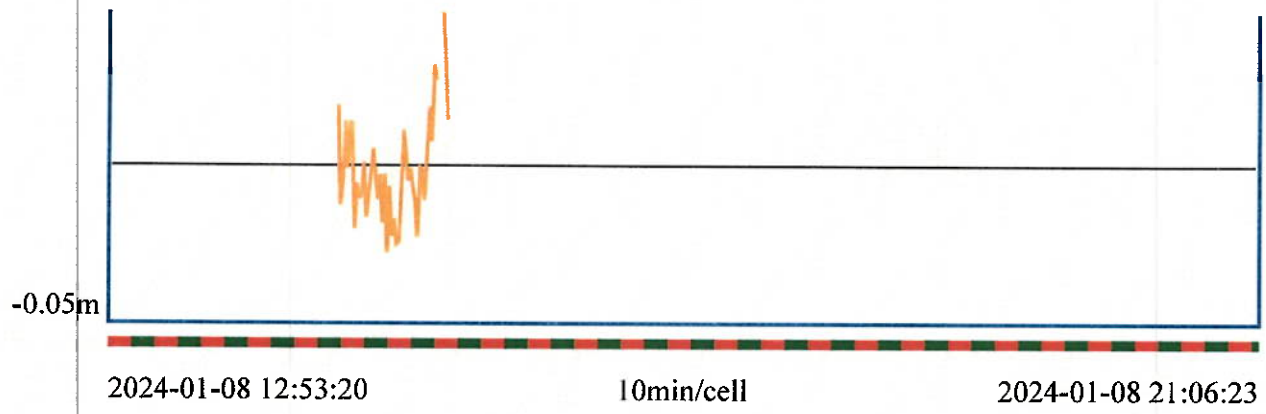



**G09**

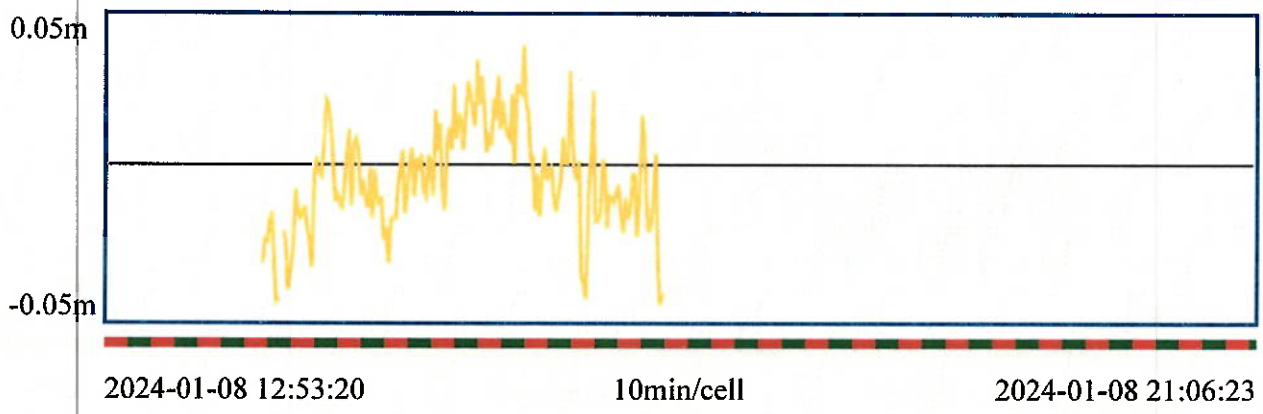



**G10**

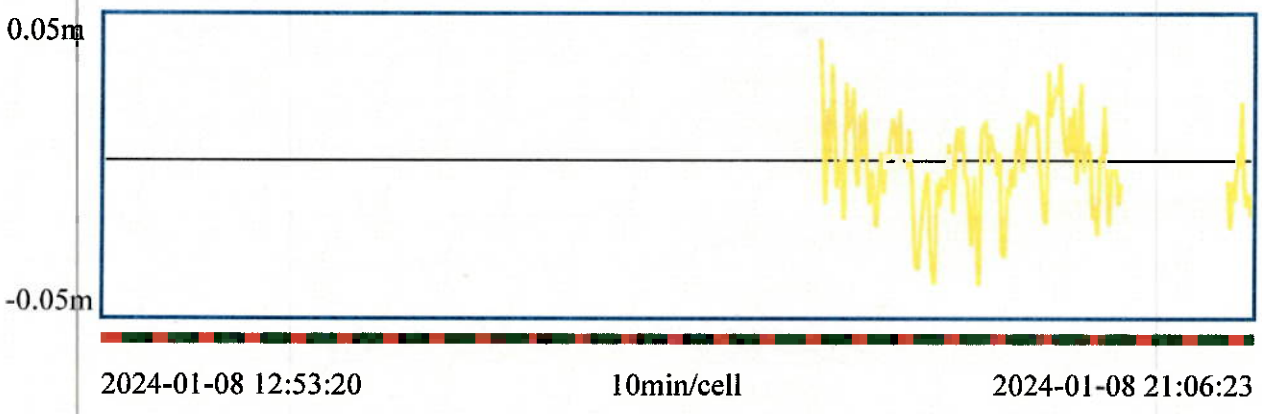



-0.05m
2024-01-08 12:53:20
10min/cell
2024-01-08 21:06:23

G16

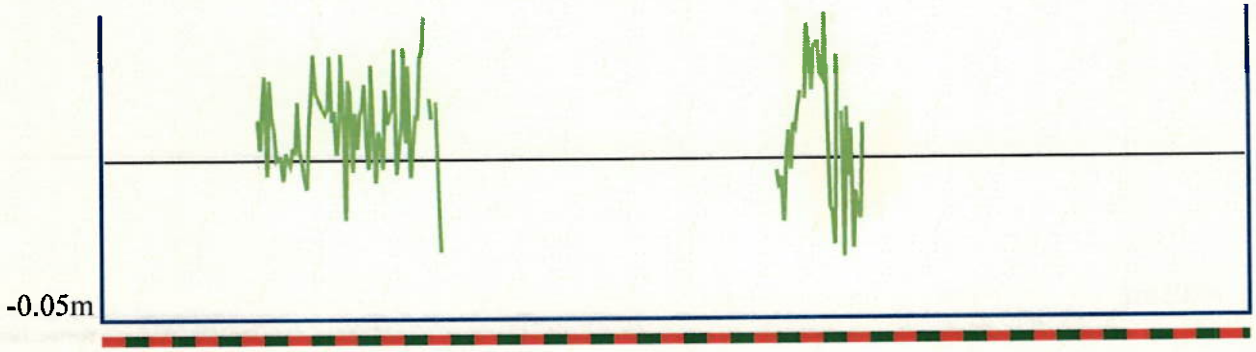

0.05m
-0.05m
2024-01-08 12:53:20
10min/cell
2024-01-08 21:06:23

G21

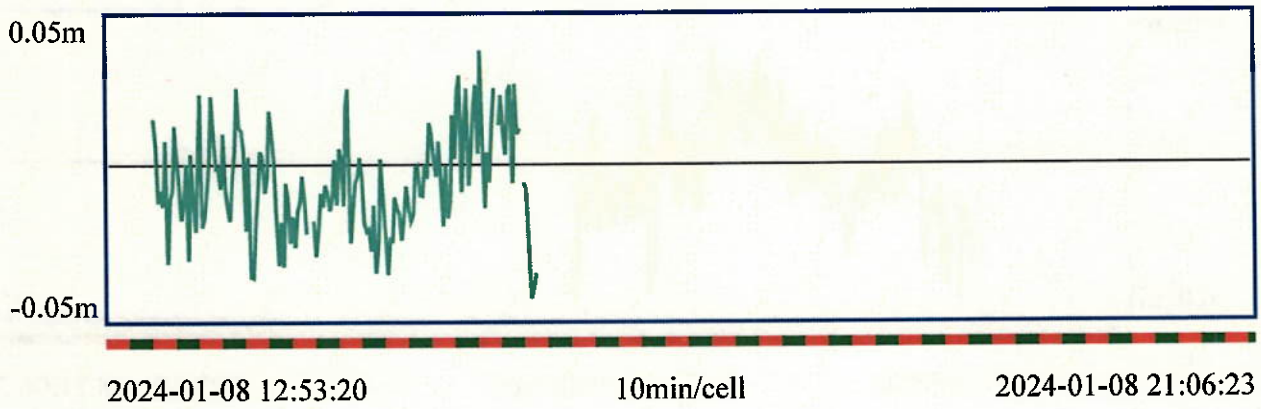

0.05m
-0.05m
2024-01-08 12:53:20
10min/cell
2024-01-08 21:06:23

G31


0.05m




**G32**




## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 12.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |
| Use Observed Met. Data | Allowed |

**6 .4 Ionosphere**

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

**6 .5 Ambiguity**

| | |
|---|---|
| Search Mode | Lambda |

**6 .6 Quality**

| | |
|---|---|
| RMS Tolerance | 0.040m |
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |

# B16 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B16(GNSS01-1103349008M.hcs->grzn0080.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 6906.4668 |
| Elevation Mask | 12° |
| RMS(m) | 0.0197 |
| HDOP | 1.107 |
| VDOP | 1.977 |
| PDOP | 2.265 |
| Total number of satellites | 15 |
| Start Time (GPST) | 2024-01-08 12.38.04( week : 2296 , second : 131884 ) |
| Stop Time (GPST) | 2024-01-08 21.27.53( week : 2296 , second : 163673 ) |
| Observation Time | 08:49:49 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\GNSS01-1103349008M.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\grzn0080.24o |
| Receiver Type | CHC I80 | LEICA GR50 |
| | | |

| | | |
|---|---|---|
| Receiver Serial | 1103373 | 1871654.0 |
| Antanna Type | CHCI80 | LEIAR20 LEIM |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height(m) | 1.8000 | 0.0350 |

### 3 Baseline Components

**Start Point41298001**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 734428.2161 | Latitude | 02°11'37.37879"N | Latitude | 02°11'37.37879"N | X (m) | 1580775.1027 |
| East(m) | 826024.1295 | Longitude | 075°38'28.69216"W | Longitude | 075°38'28.69216"W | Y (m) | -6175189.8112 |
| Height (m) | 790.3342 | Ellipsoid Height(m) | 816.0524 | Ellipsoid Height(m) | 816.0524 | Z (m) | 242541.7604 |

**End PointGRZN**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 737393.3085 | Latitude | 02°13'14.08725"N | Latitude | 02°13'14.08725"N | X (m) | 1586855.6891 |
| East(m) | 832255.5517 | Longitude | 075°35'07.19539"W | Longitude | 075°35'07.19539"W | Y (m) | -6173832.8740 |
| Height (m) | 1101.0980 | Ellipsoid Height(m) | 1127.1266 | Ellipsoid Height(m) | 1127.1266 | Z (m) | 245522.4439 |

**BaselineB16**

| | | | | | |
|---|---|---|---|---|---|
| ΔNorth(m) | 2965.0924 | NS Fwd Azimuth | 064°29'35.77354" | ΔX（m）(m) | 6080.5864 |
| ΔEast(m) | 6231.4222 | Ellipsoid Dist.(m) | 6906.4668 | ΔY（m）(m) | 1356.9372 |
| ΔHeight(m) | 310.7638 | ΔEllipsoid Height(m) | 311.0742 | ΔZ（m）(m) | 2980.6835 |

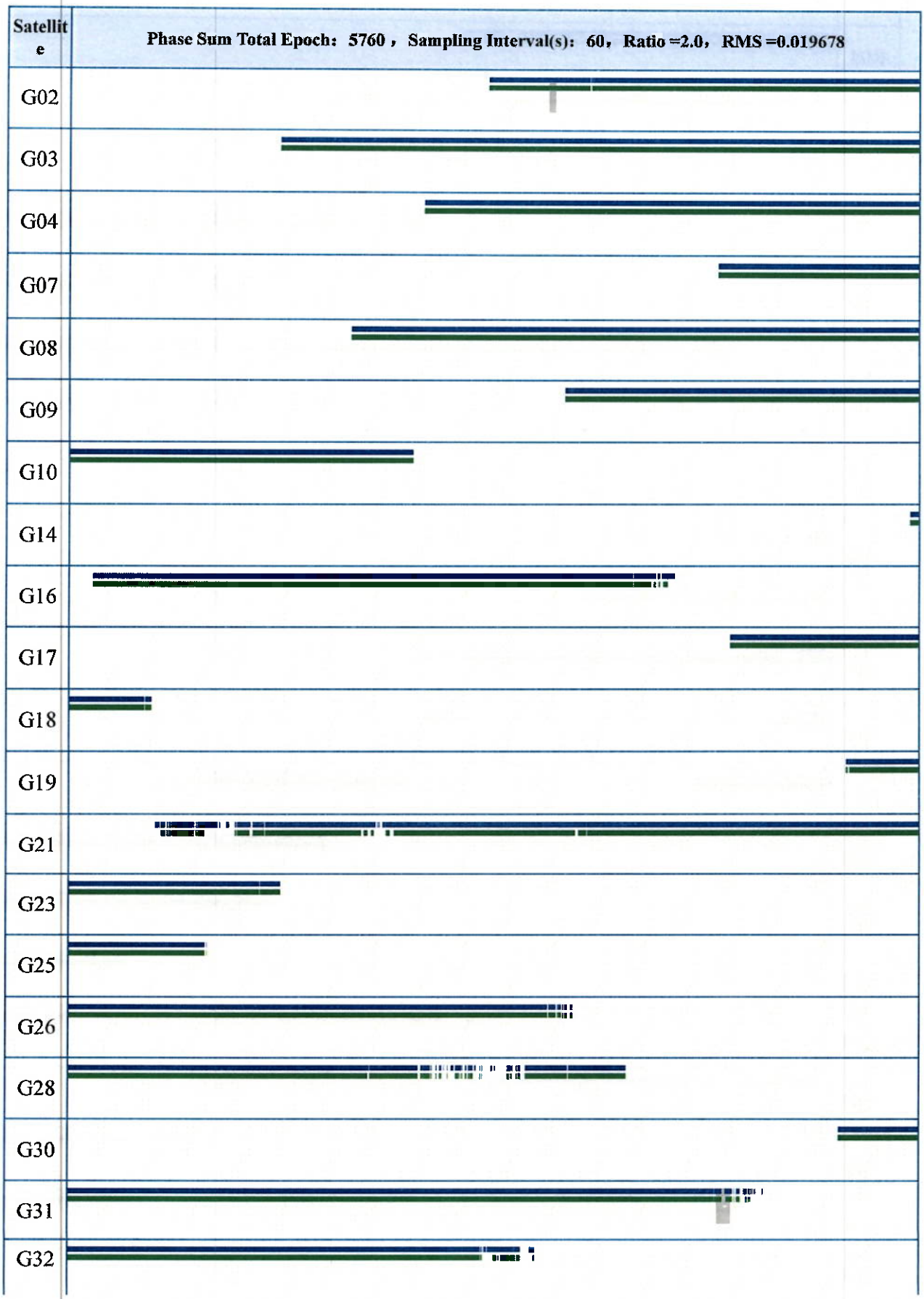
**Standard Errors**

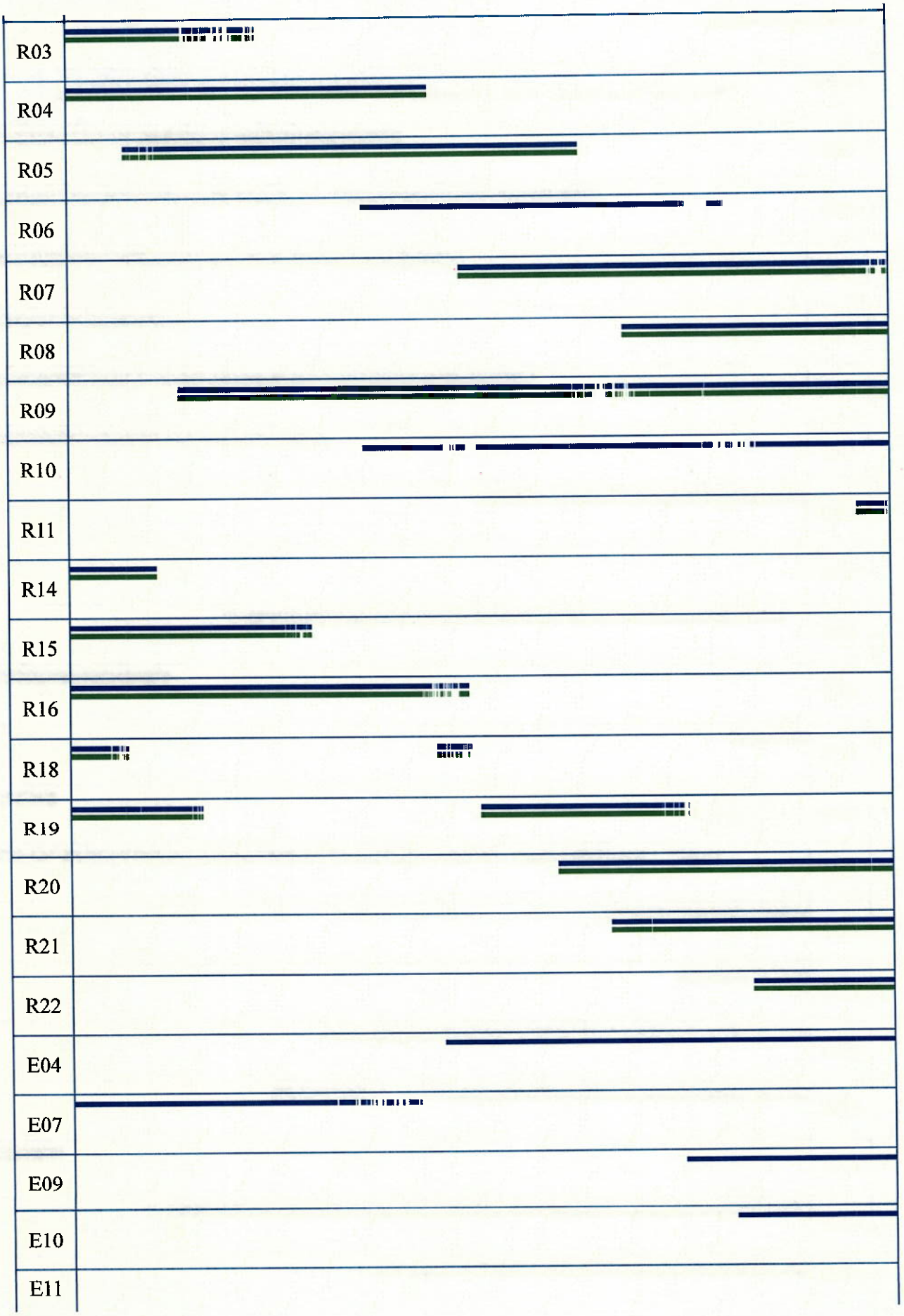
| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0005 | Std. NS Fwd Azimuth(s) | 0.0035 | Std. ΔX（m）(m) | 0.0008 |
| Std.ΔEast(m) | 0.0008 | Std.Ellipsoid Distance(m) | 0.0000 | Std. ΔY（m）(m) | 0.0011 |
| Std.ΔHeight(m) | 0.0012 | Std.ΔEllipsoid Height(m) | 0.0012 | Std. ΔZ（m）(m) | 0.0005 |
| Horizontal Accuracy(m) | 0.0060 | Vertical Accuracy(m) | 0.0074 | | |

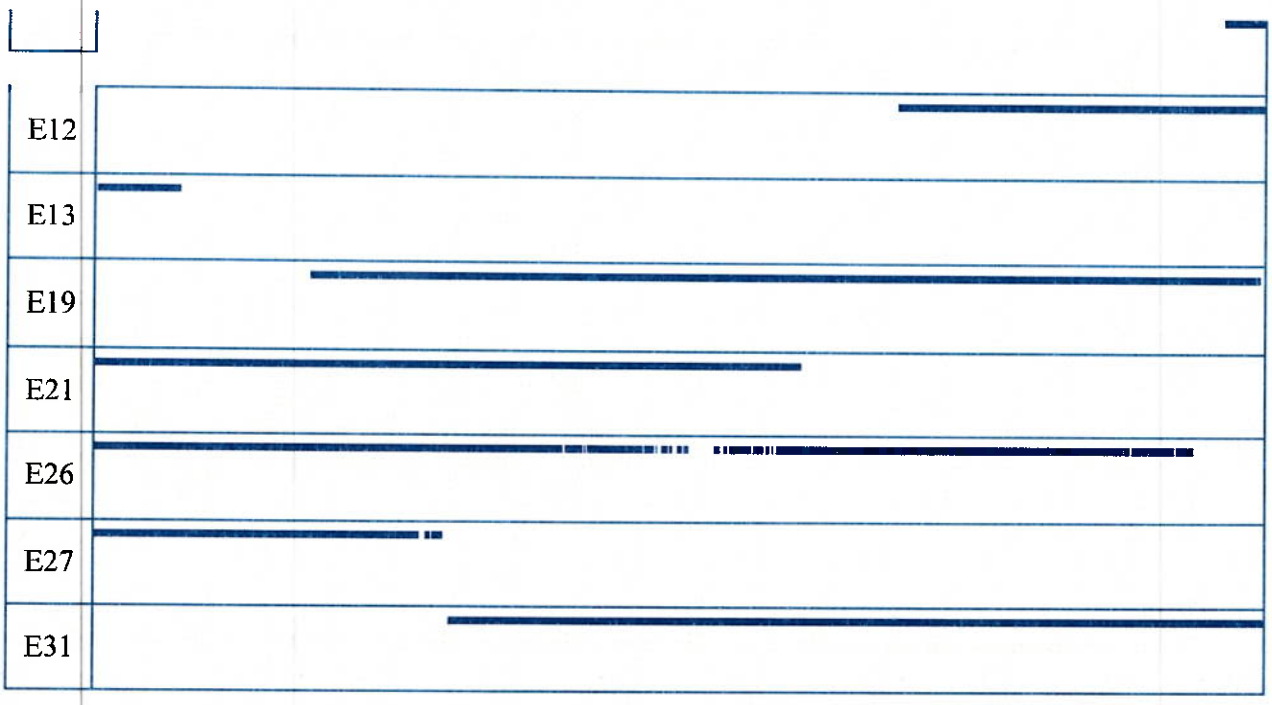
**Aposteriori Covariance Matrix (cm^2)**

| | X | Y | Z |
|---|---|---|---|
| X | 0.0068 | | |
| Y | -0.0028 | 0.0124 | |
| Z | -0.0004 | -0.0005 | 0.0024 |

## 4 Tracking Summary

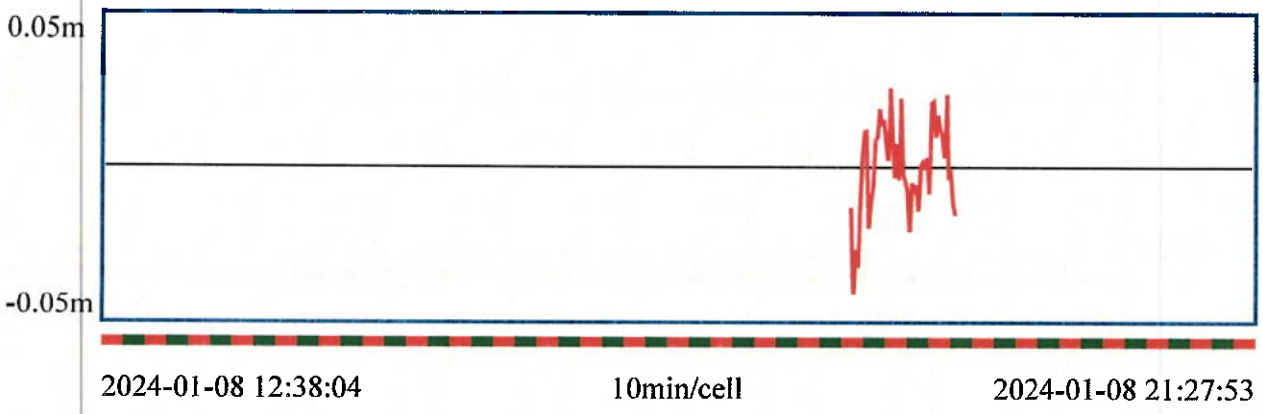



R03
R04
R05
R06
R07
R08
R09
R10
R11
R14
R15
R16
R18
R19
R20
R21
R22
E04
E07
E09
E10
E11

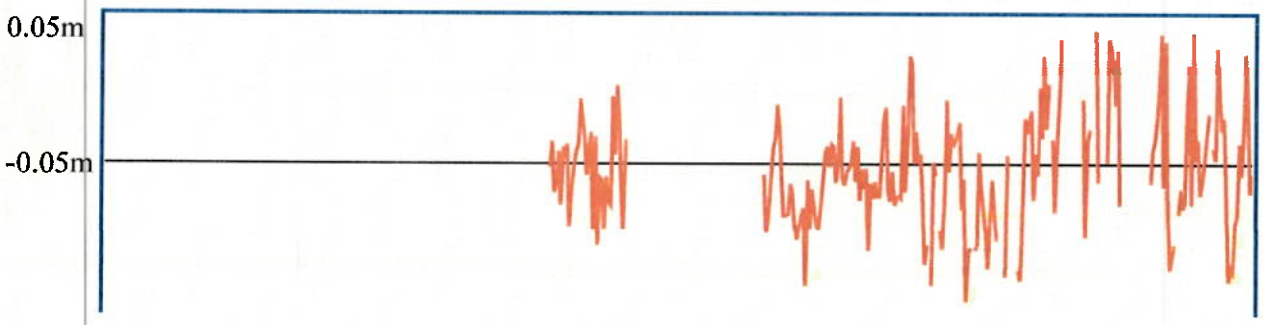


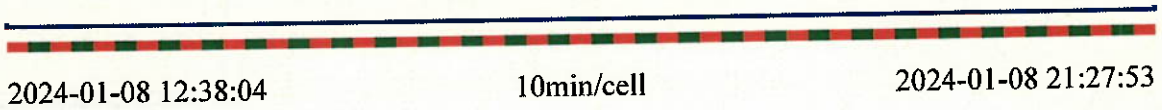

**5 Residuals**

**G02**



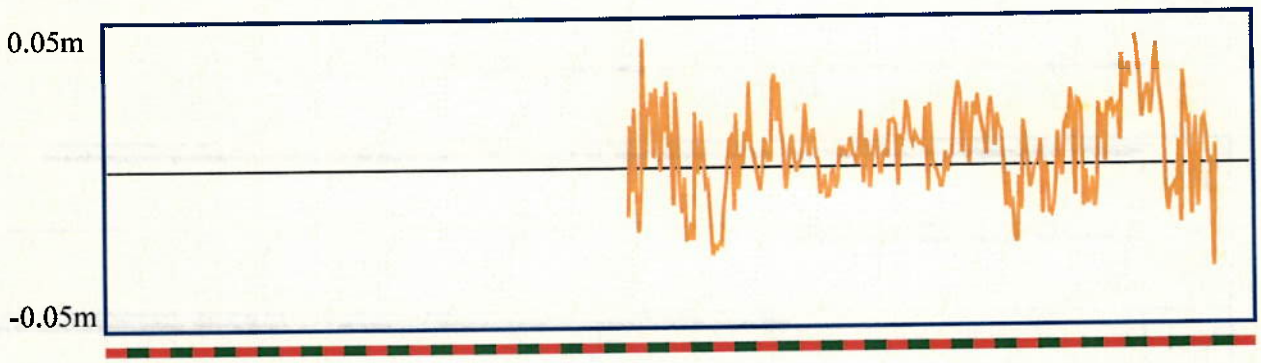

**G03**





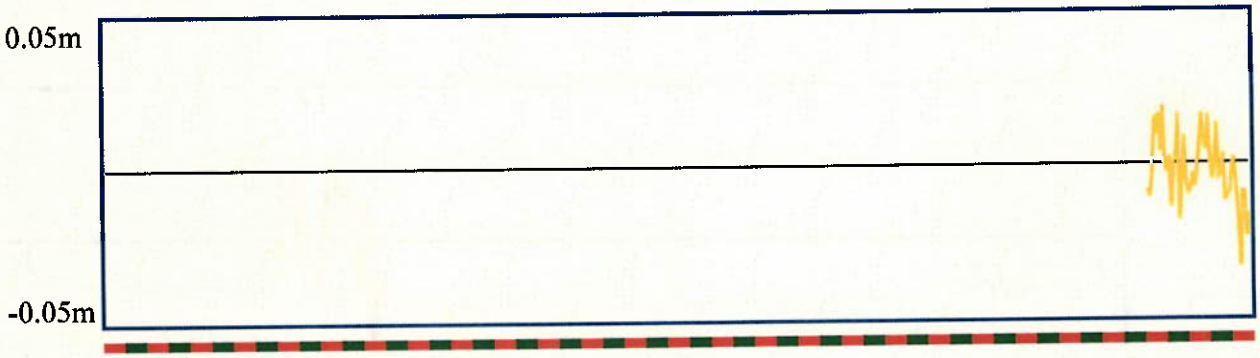
2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

**G04**



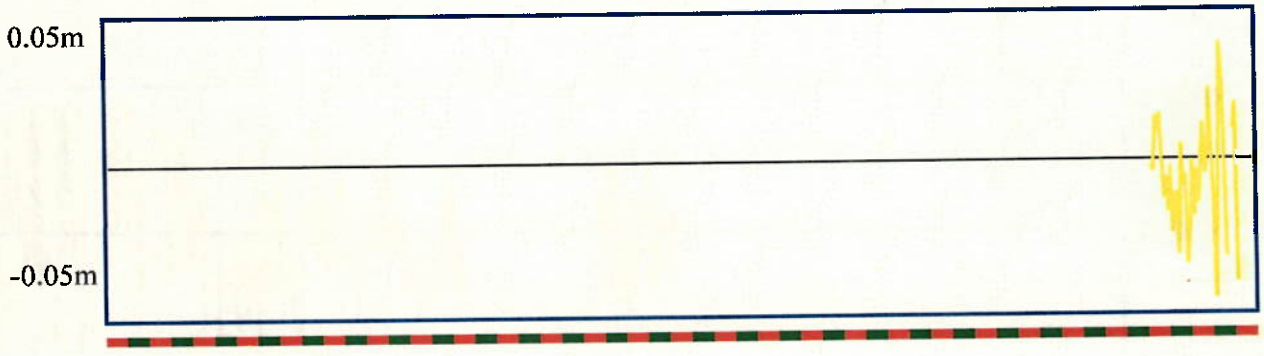

2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

**G07**



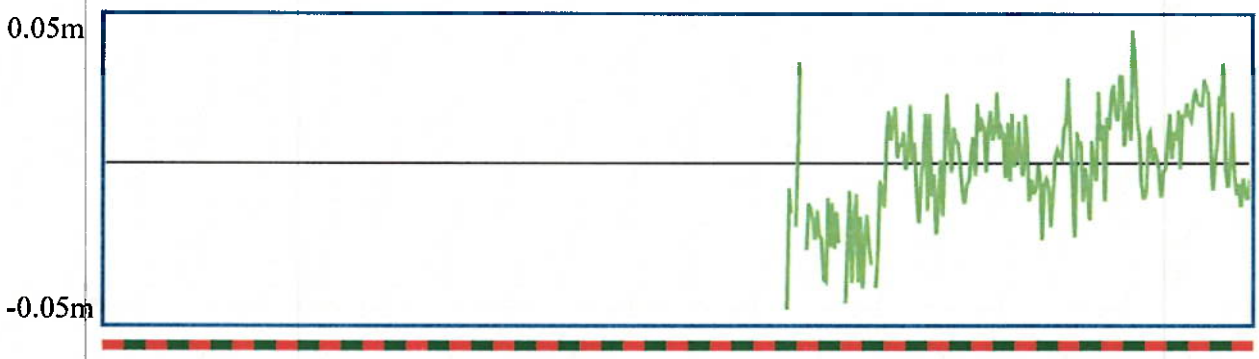

2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

**G08**



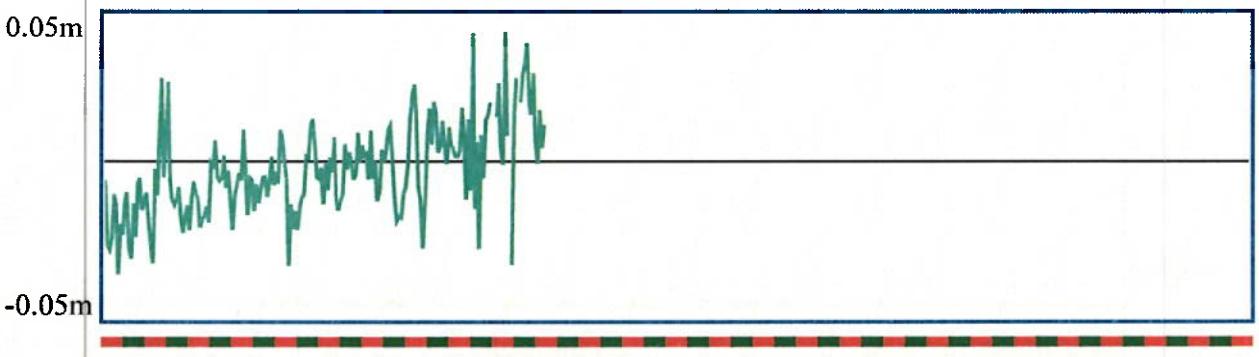
2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

**G09**



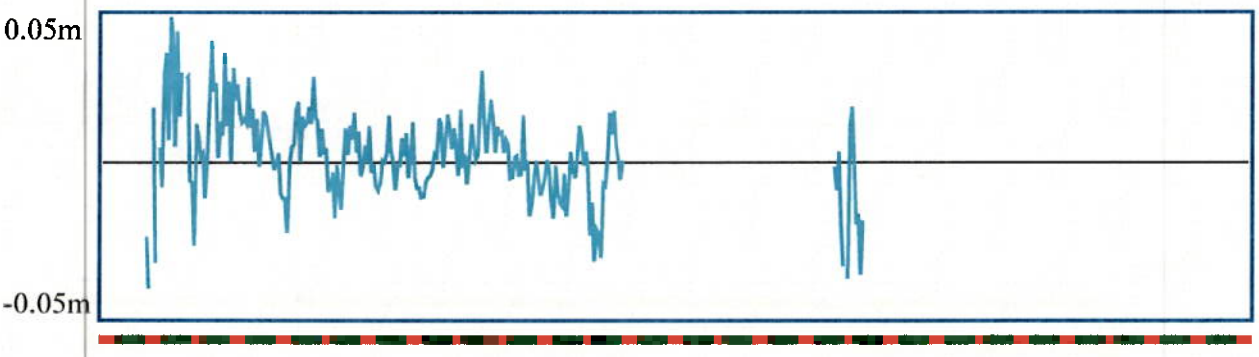

2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

**G10**



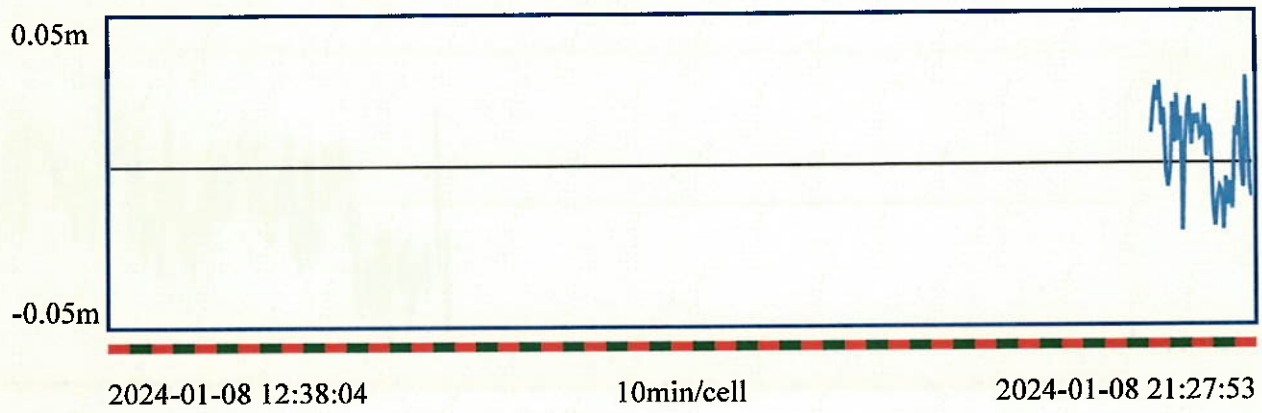

2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

**G16**

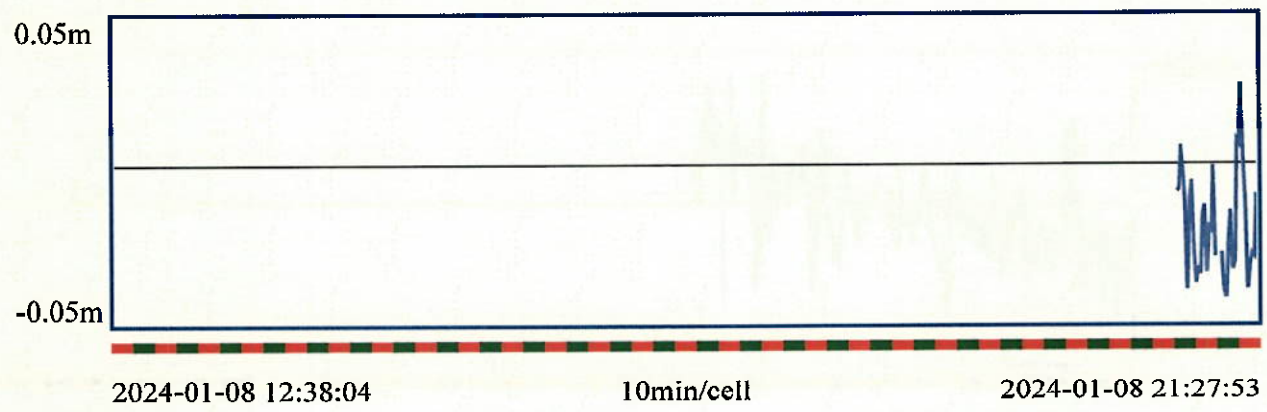



2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

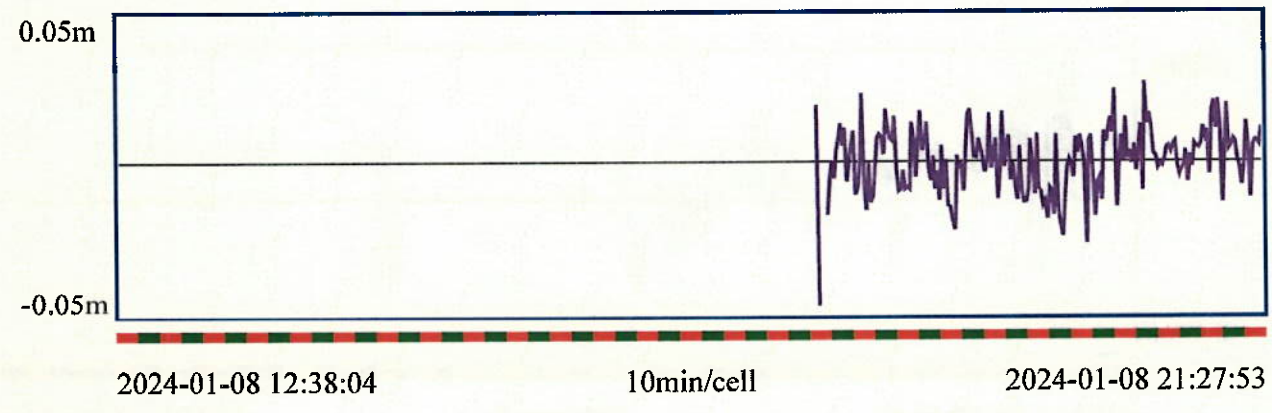
G17


0.05m
-0.05m
2024-01-08 12:38:04
10min/cell
2024-01-08 21:27:53

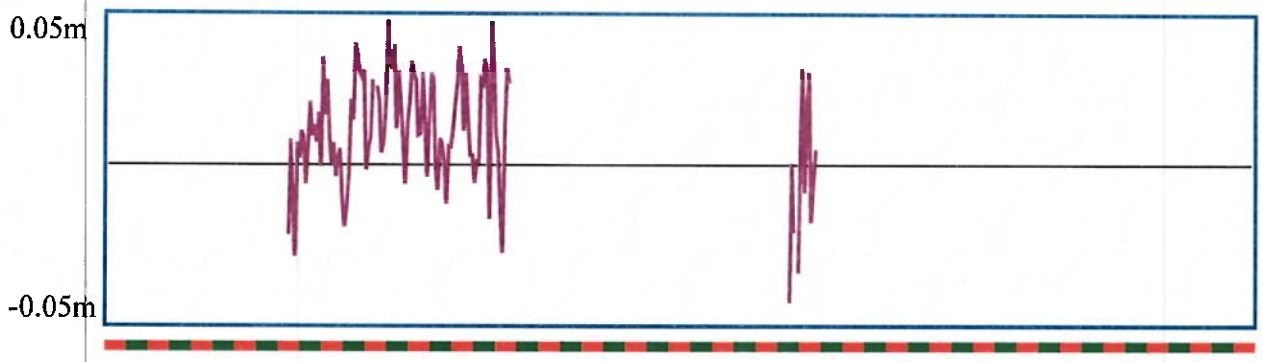
G19


0.05m
-0.05m
2024-01-08 12:38:04
10min/cell
2024-01-08 21:27:53

G21

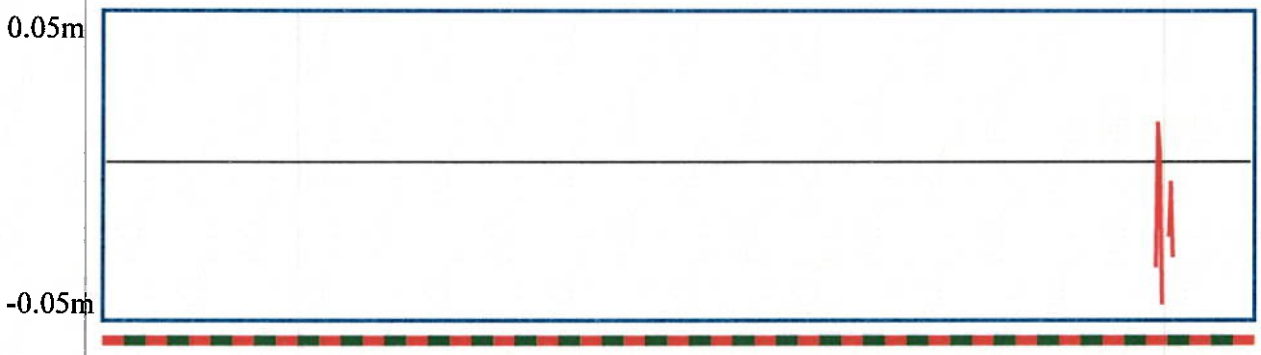

0.05m
-0.05m
2024-01-08 12:38:04
10min/cell
2024-01-08 21:27:53

G28



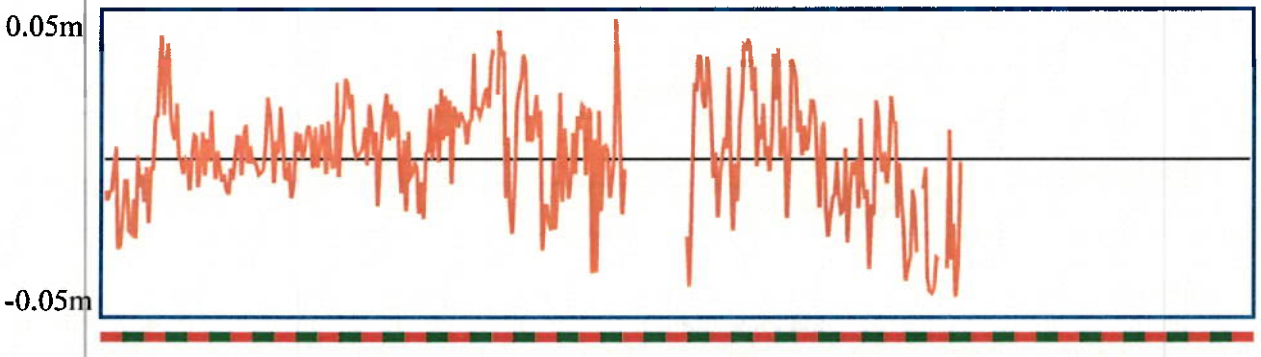

2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

G30



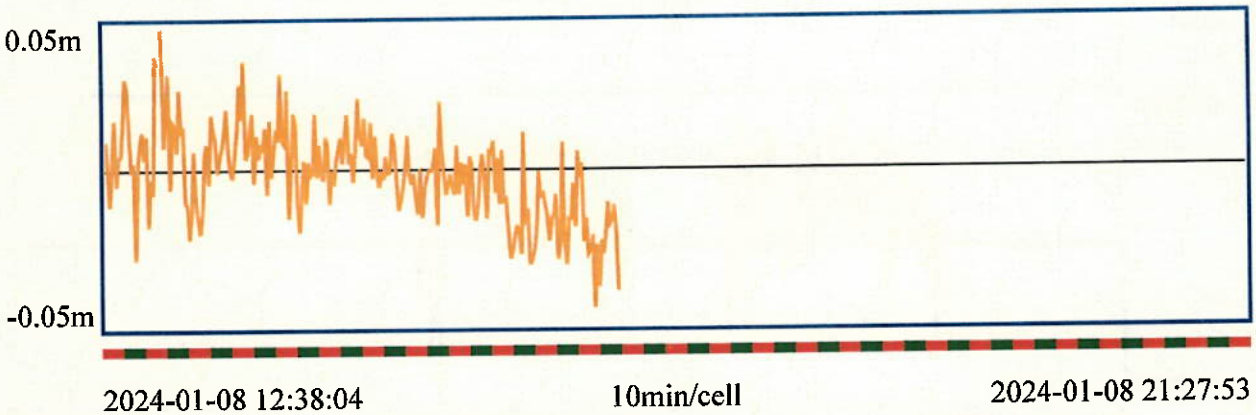

2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

G31




2024-01-08 12:38:04 10min/cell 2024-01-08 21:27:53

G32




## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 12.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |
| Use Observed Met. Data | Allowed |

### 6 .4 Ionosphere

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

### 6 .5 Ambiguity

| | |
|---|---|
| Search Mode | Lambda |

### 6 .6 Quality

| | |
|---|---|
| RMS Tolerance | 0.040m |
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |

# B17 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B17(GNSS02-3382008M2.hcs->grzn0080.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 5956.7418 |
| Elevation Mask | 12° |
| RMS(m) | 0.0203 |
| HDOP | 2.103 |
| VDOP | 4.838 |
| PDOP | 5.275 |
| Total number of satellites | 5 |
| Start Time (GPST) | 2024-01-08 12.25.01( week : 2296 , second : 131101 ) |
| Stop Time (GPST) | 2024-01-08 21.35.11( week : 2296 , second : 164111 ) |
| Observation Time | 09:10:10 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\GNSS02-3382008M2.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\grzn0080.24o |
| Receiver Type | CHC I80 | LEICA GR50 |
| Receiver Serial | 1103382 | 1871654.0 |
| Antanna Type | CHCI80 | LEIAR20 LEIM |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height(m) | 1.8220 | 0.0350 |

## 3 Baseline Components

**Start PointGNSS-02**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 735557.8608 | Latitude | 02°12'14.16215"N | Latitude | 02°12'14.16215"N | X (m) | 1581319.6478 |
| East(m) | 826595.9521 | Longitude | 075°38'10.23139"W | Longitude | 075°38'10.23139"W | Y (m) | -6175016.5582 |
| Height | 800.9289 | Ellipsoid Height(m) | 826.6412 | Ellipsoid Height(m) | 826.6412 | Z (m) | 243671.301 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (m) | | | | | | | 4 |

**End PointGRZN**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 737395.0397 | Latitude | 02°13'14.14359"N | Latitude | 02°13'14.14359"N | X (m) | 1586855.9904 |
| East(m) | 832255.5570 | Longitude | 075°35'07.19528"W | Longitude | 075°35'07.19528"W | Y (m) | -6173834.0323 |
| Height (m) | 1102.3630 | Ellipsoid Height(m) | 1128.3915 | Ellipsoid Height(m) | 1128.3915 | Z (m) | 245524.2225 |

**BaselineB17**

| | | | | | |
|---|---|---|---|---|---|
| ΔNorth(m) | 1837.1789 | NS Fwd Azimuth | 071°57'20.58876" | ΔX（m）(m) | 5536.3426 |
| ΔEast(m) | 5659.6049 | Ellipsoid Dist.(m) | 5956.7418 | ΔY（m）(m) | 1182.5259 |
| ΔHeight(m) | 301.4341 | ΔEllipsoid Height(m) | 301.7503 | ΔZ（m）(m) | 1852.9211 |

**Standard Errors**

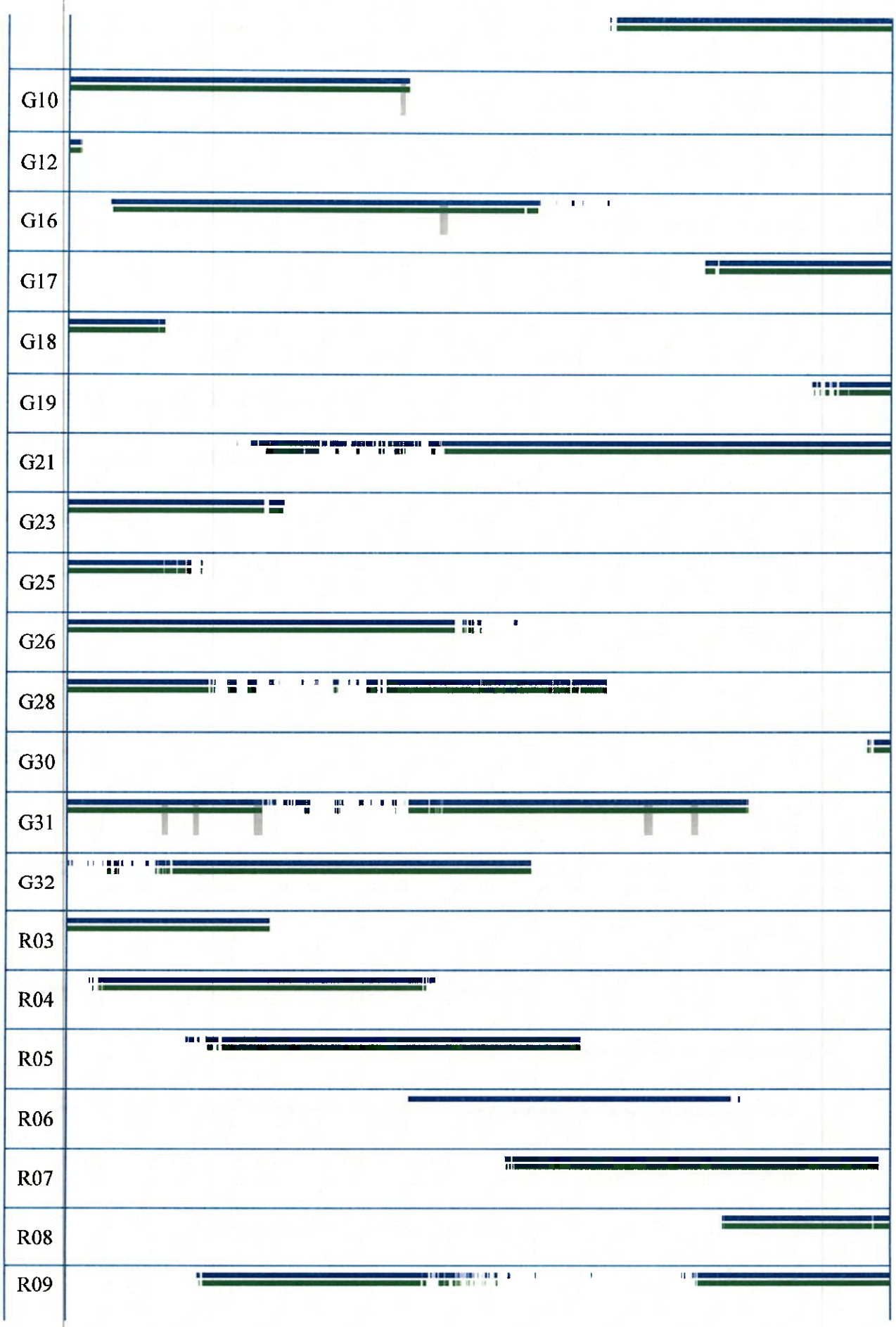
| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0013 | Std. NS Fwd Azimuth(s) | 0.0173 | Std. ΔX（m）(m) | 0.0031 |
| Std.ΔEast(m) | 0.0023 | Std.Ellipsoid Distance(m) | 0.0001 | Std. ΔY（m）(m) | 0.0035 |
| Std.ΔHeight(m) | 0.0040 | Std.ΔEllipsoid Height(m) | 0.0040 | Std. ΔZ（m）(m) | 0.0013 |
| Horizontal Accuracy(m) | 0.0051 | Vertical Accuracy(m) | 0.0069 | | |

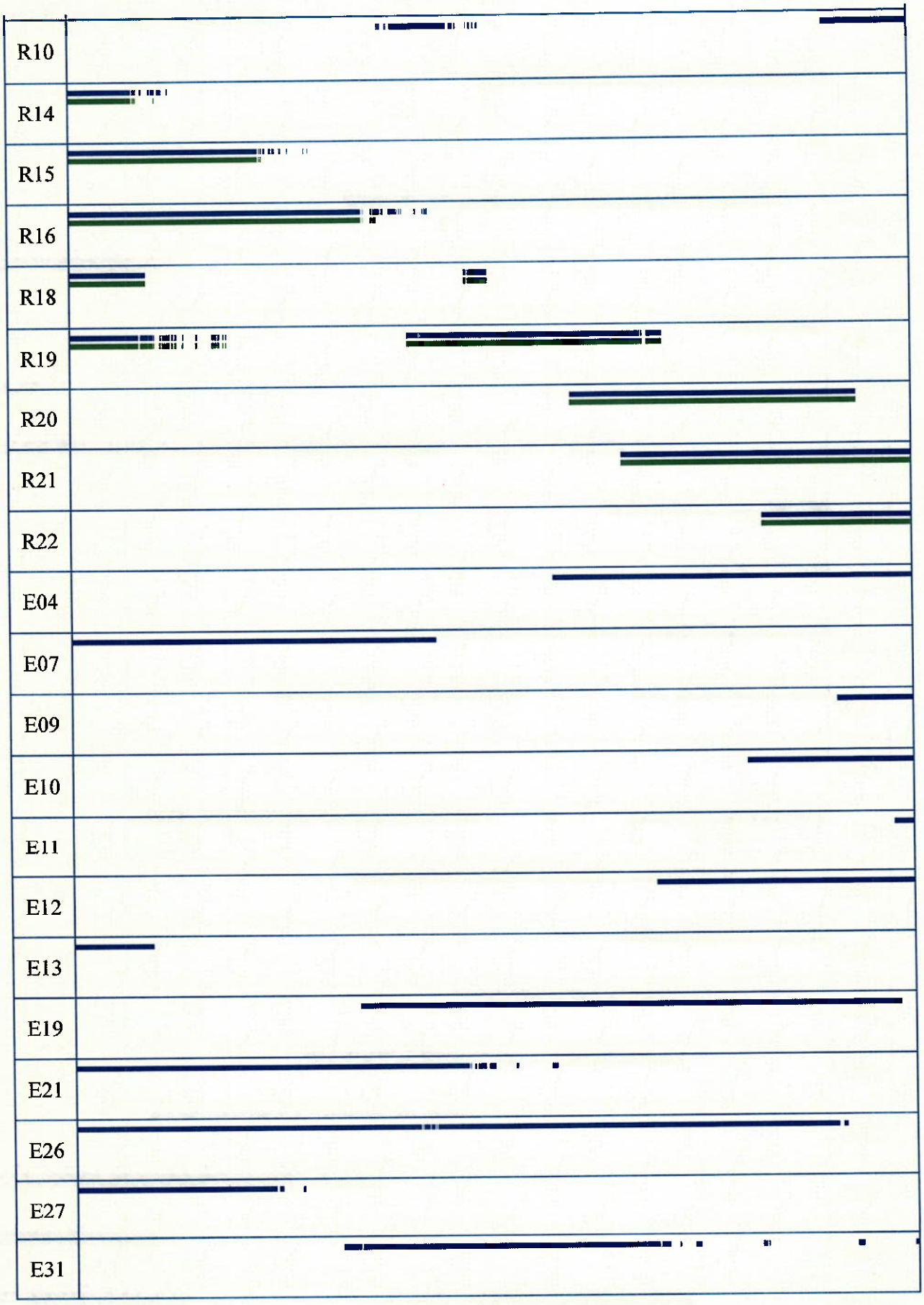
**Aposteriori Covariance Matrix (cm^2)**

| | X | Y | Z |
|---|---|---|---|
| X | 0.0934 | | |
| Y | -0.0855 | 0.1228 | |
| Z | 0.0003 | 0.0043 | 0.0159 |

## 4 Tracking Summary

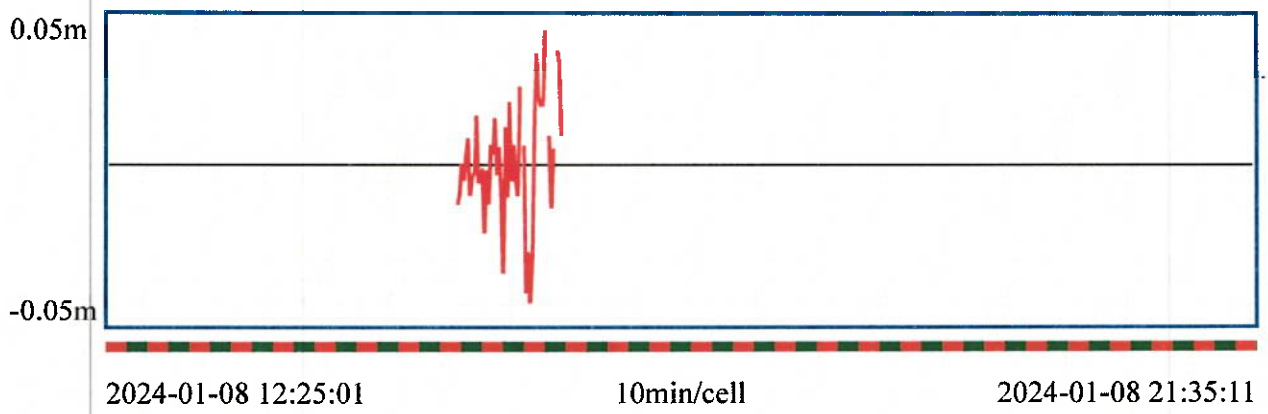
| Satellite | Phase Sum Total Epoch: 5760 , Sampling Interval(s): 60, Ratio =3.6, RMS =0.020278 |
|---|---|
| G02 | |
| G03 | |
| G04 | |
| G07 | |
| G08 | |
| G09 | |


G10
G12
G16
G17
G18
G19
G21
G23
G25
G26
G28
G30
G31
G32
R03
R04
R05
R06
R07
R08
R09

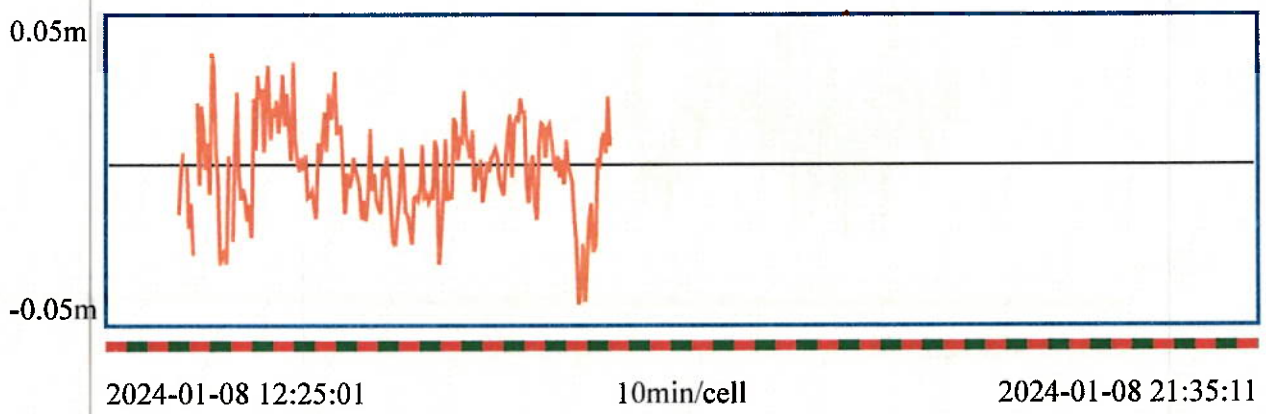

R10
R14
R15
R16
R18
R19
R20
R21
R22
E04
E07
E09
E10
E11
E12
E13
E19
E21
E26
E27
E31

**5 Residuals**

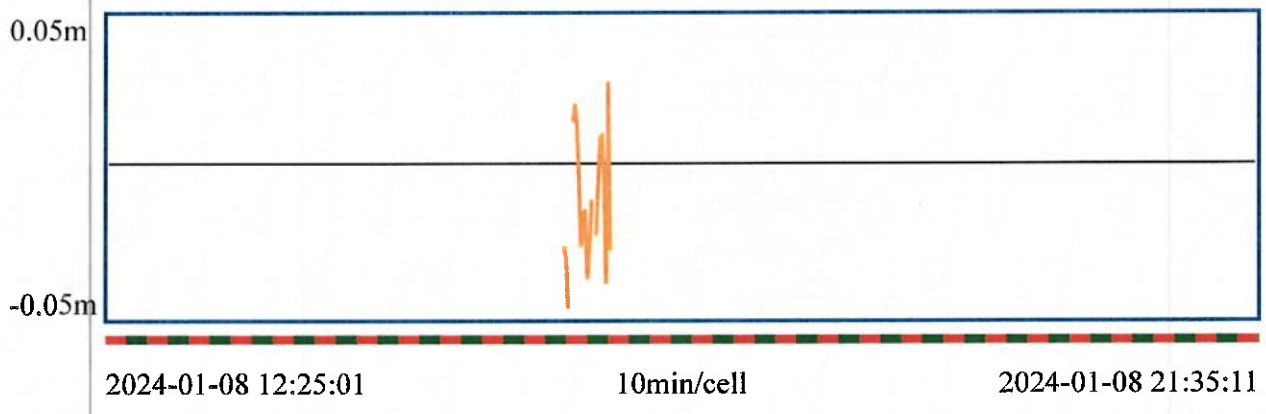
**G10**



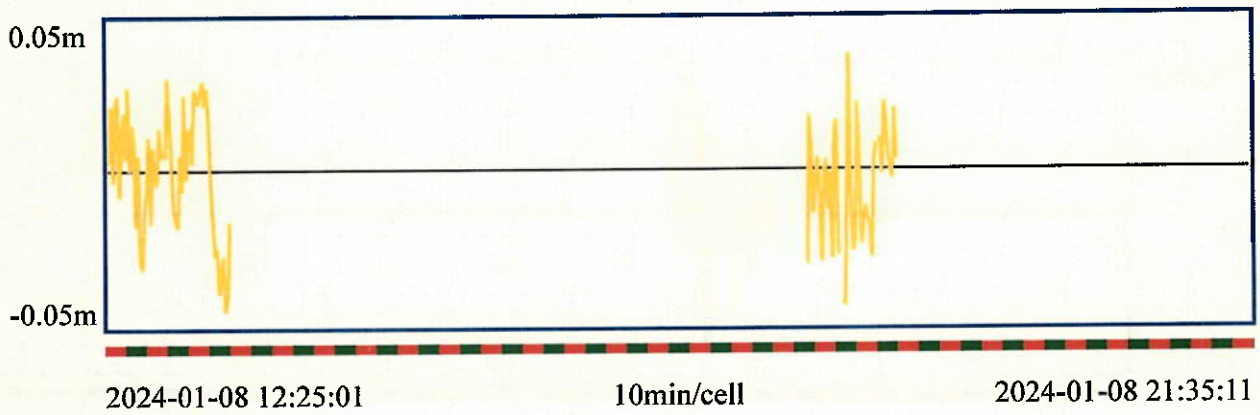

**G16**



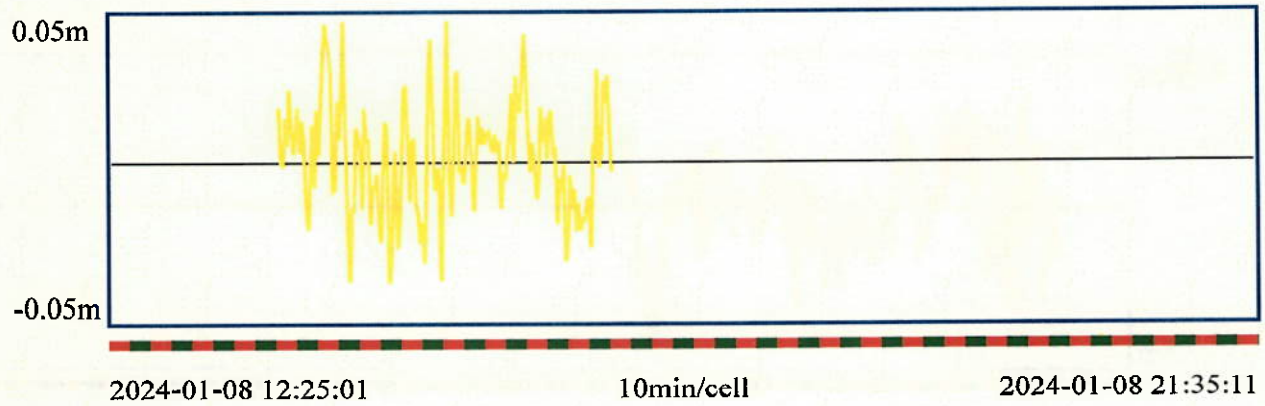

**G28**



**G31**




**G32**




## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 12.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | Model | |
|---|---|---|
| | Minimum Zenith Delay Interval | 2hour |
| | Use Observed Met. Data | Allowed |

**6 .4 Ionosphere**

| | Model | Klobuchar |
|---|---|---|
| | Ambiguity Resolution Pass | Allowed |

**6 .5 Ambiguity**

| | Search Mode | Lambda |
|---|---|---|

**6 .6 Quality**

| | RMS Tolerance | 0.040m |
|---|---|---|
| | RATIO Tolerance | 1.80 |
| | Gross Error Tolerance | 3.5 |

# B18 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B18(IGAC-1103349008M.hcs->grzn0080.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 5388.7175 |
| Elevation Mask | 12° |
| RMS(m) | 0.0188 |
| HDOP | 1.343 |
| VDOP | 2.470 |
| PDOP | 2.812 |
| Total number of satellites | 3 |
| Start Time (GPST) | 2024-01-08 12.53.20( week : 2296 , second : 132800 ) |
| Stop Time (GPST) | 2024-01-08 21.06.23( week : 2296 , second : 162383 ) |
| Observation Time | 08:13:03 |

## 2 Occupations Data

| | | |
|---|---|---|

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\IGAC-11 03349008M.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex \grzn0080.24o |
| Receiver Type | CHC I80 | LEICA GR50 |
| Receiver Serial | 1103349 | 1871654.0 |
| Antanna Type | CHCI80 | LEIAR20 LEIM |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Heigh t(m) | 1.8000 | 0.0350 |

**3 Baseline Components**

**Start PointGNSS-01**

| Grid(Loc al) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(W GS84) | | Space Coor.(WG S84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 734682.3 603 | Latitude | 02°11'45.7033 3"N | Latitude | 02°11'45.7033 3"N | X (m) | 1582313.26 40 |
| East(m) | 827603.1 200 | Longitude | 075°37'37.6189 4"W | Longitude | 075°37'37.6189 4"W | Y (m) | -6174833.9 961 |
| Height (m) | 837.0340 | Ellipsoid Height(m) | 862.8269 | Ellipsoid Height(m) | 862.8269 | Z (m) | 242799.090 6 |

**End PointGRZN**

| Grid(Loc al) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(W GS84) | | Space Coor.(WG S84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 737392.5 467 | Latitude | 02°13'14.0624 2"N | Latitude | 02°13'14.0624 2"N | X (m) | 1586854.86 34 |
| East(m) | 832254.3 982 | Longitude | 075°35'07.2326 8"W | Longitude | 075°35'07.2326 8"W | Y (m) | -6173834.2 917 |
| Height (m) | 1102.237 0 | Ellipsoid Height(m) | 1128.2655 | Ellipsoid Height(m) | 1128.2655 | Z (m) | 245521.725 7 |

**BaselineB18**

| | | | | | |
|---|---|---|---|---|---|
| ΔNorth(m) | 2710.1864 | NS Fwd Azimuth | 059°42'42.97057" | Δ X （m）(m) | 4541.5994 |
| ΔEast(m) | 4651.2781 | Ellipsoid Dist.(m) | 5388.7175 | Δ Y （m）(m) | 999.7044 |
| ΔHeight(m) | 265.2030 | ΔEllipsoid Height(m) | 265.4386 | Δ Z （m）(m) | 2722.6351 |

**Standard Errors**

| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0012 | Std. NS Fwd Azimuth(s) | 0.0059 | Std. Δ X （m）(m) | 0.0032 |
| Std.ΔEast(m) | 0.0024 | Std.Ellipsoid Distance(m) | 0.0001 | Std. Δ Y （m）(m) | 0.0039 |
| Std.ΔHeight(m) | 0.0045 | Std.ΔEllipsoid Height(m) | 0.0045 | Std. Δ Z （m）(m) | 0.0012 |
| Horizontal Accuracy(m) | 0.0051 | Vertical Accuracy(m) | 0.0065 | | |

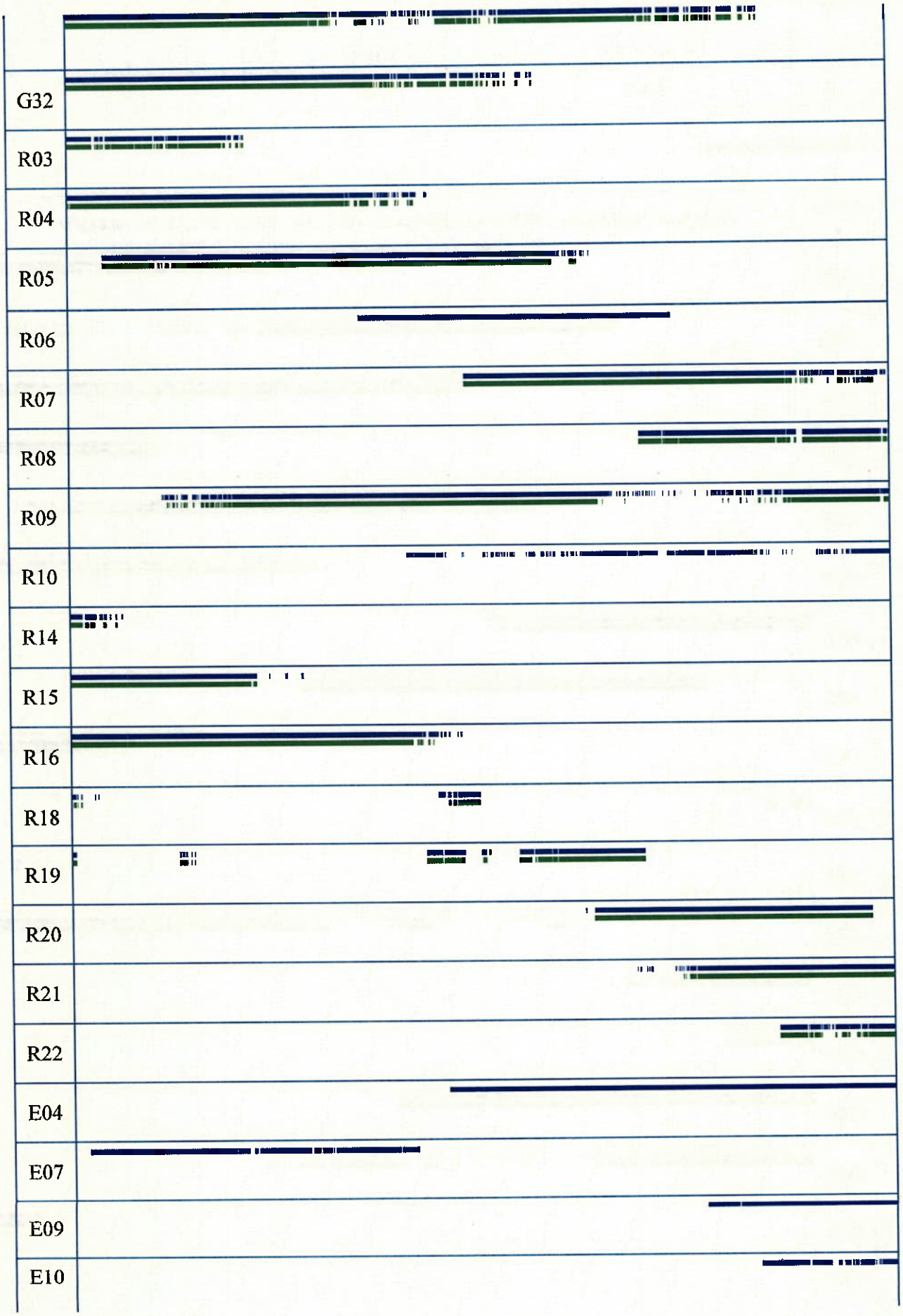
**Aposteriori Covariance Matrix (cm^2)**

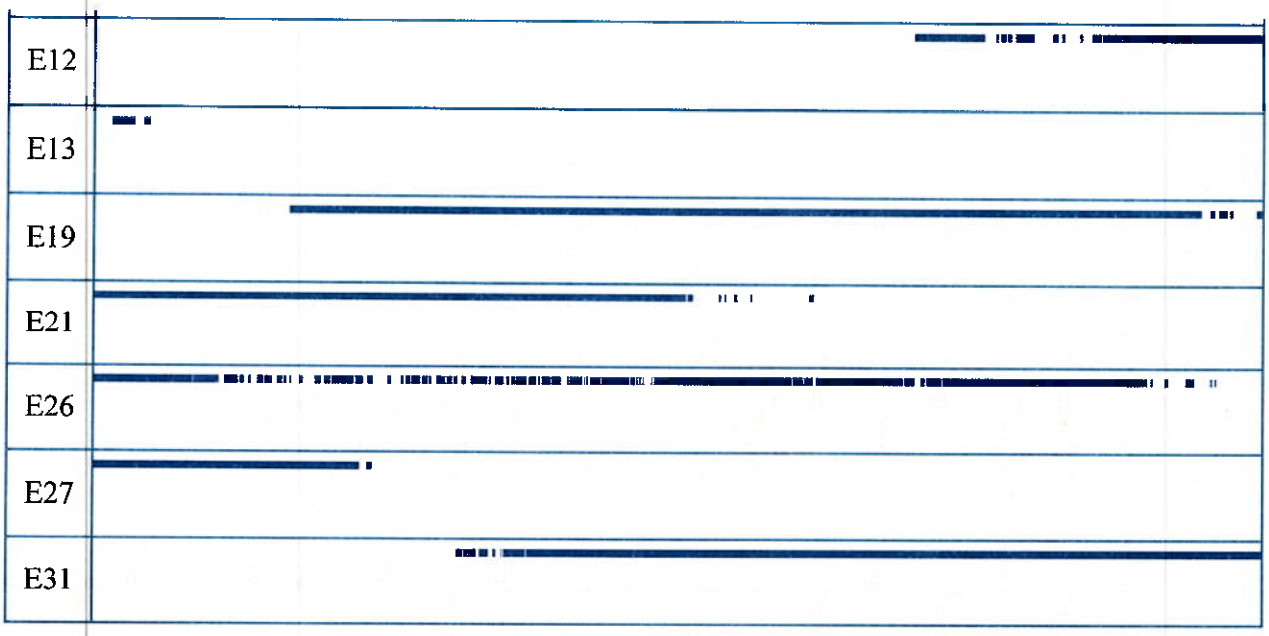
| | X | Y | Z |
|---|---|---|---|
| | | | |

| | | | |
|---|---|---|---|
| X | 0.1051 | | |
| Y | -0.1003 | 0.1544 | |
| Z | -0.0103 | 0.0057 | 0.0147 |

**4 Tracking Summary**

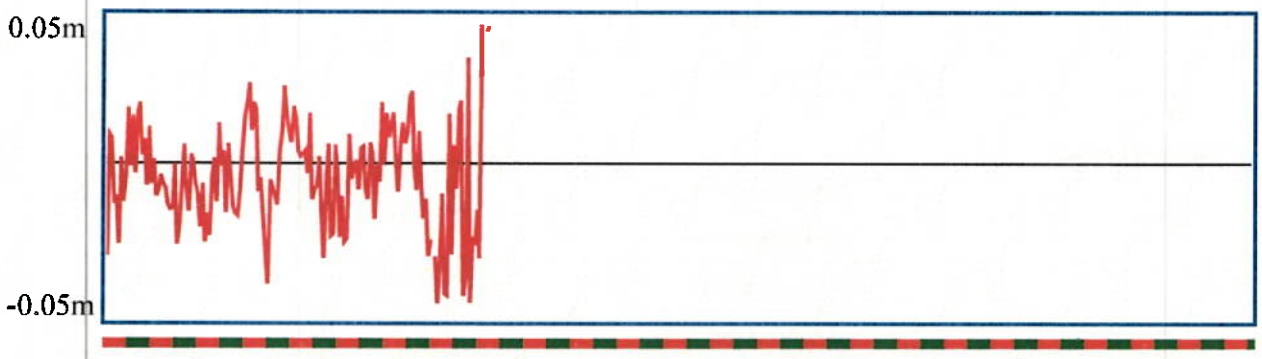
| Satellite | Phase Sum Total Epoch：5760，Sampling Interval(s)：60，Ratio =35.7，RMS =0.018789 |
|---|---|
| G02 | |
| G03 | |
| G04 | |
| G07 | |
| G08 | |
| G09 | |
| G10 | |
| G16 | |
| G17 | |
| G18 | |
| G19 | |
| G21 | |
| G23 | |
| G25 | |
| G26 | |
| G28 | |
| G30 | |
| G31 | |


G32
R03
R04
R05
R06
R07
R08
R09
R10
R14
R15
R16
R18
R19
R20
R21
R22
E04
E07
E09
E10



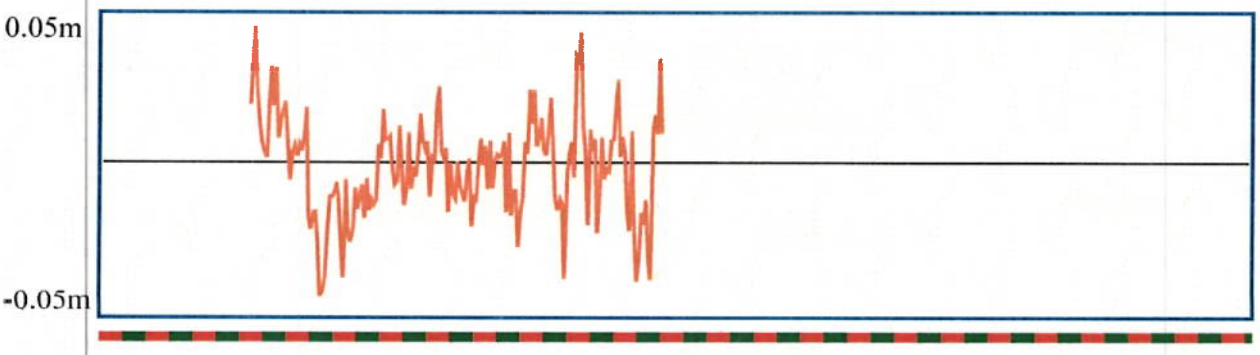

**5 Residuals**

**G10**



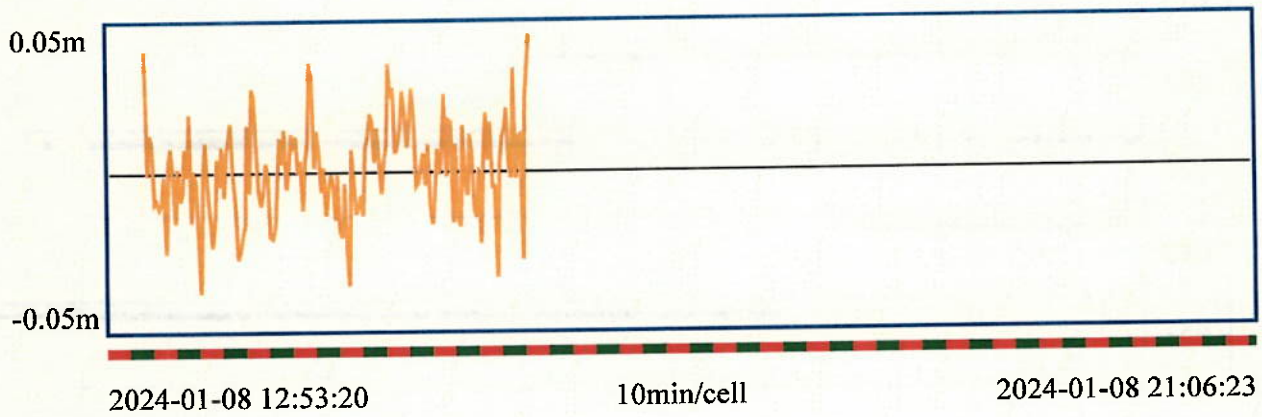

2024-01-08 12:53:20 10min/cell 2024-01-08 21:06:23

**G16**



2024-01-08 12:53:20 10min/cell 2024-01-08 21:06:23

**G32**




## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 12.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |
| Use Observed Met. Data | Allowed |

### 6 .4 Ionosphere

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

### 6 .5 Ambiguity

| | |
|---|---|
| Search Mode | Lambda |

### 6 .6 Quality

| | |
|---|---|
| RMS Tolerance | 0.040m |

| | |
|---|---|
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |

# B19 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B19(popa0080.hcs->grzn0080.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 115669.7988 |
| Elevation Mask | 12° |
| RMS(m) | 0.0162 |
| HDOP | 1.024 |
| VDOP | 1.987 |
| PDOP | 2.235 |
| Total number of satellites | 29 |
| Start Time (GPST) | 2024-01-08 00.00.00( week : 2296 , second : 86400 ) |
| Stop Time (GPST) | 2024-01-08 23.59.45( week : 2296 , second : 172785 ) |
| Observation Time | 23:59:45 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\popa0080.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\grzn0080.24o |
| Receiver Type | TRIMBLE NETR9 | LEICA GR50 |
| Receiver Serial | 5745R51401 | 1871654.0 |
| Antanna Type | TRM59800.00 SCIS | LEIAR20 LEIM |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height (m) | 0.1870 | 0.0350 |

## 3 Baseline Components

**Start PointPOPA**

| | | | | | | | |
|---|---|---|---|---|---|---|---|

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 762178.6507 | Latitude | 02°26'35.21659"N | Latitude | 02°26'35.21659"N | X (m) | 1477067.4724 |
| East(m) | 719225.8329 | Longitude | 076°36'04.34005"W | Longitude | 076°36'04.34005"W | Y (m) | -6200659.0158 |
| Height (m) | 1749.8291 | Ellipsoid Height(m) | 1782.1742 | Ellipsoid Height(m) | 1782.1742 | Z (m) | 270141.5077 |

**End PointGRZN**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 737392.1551 | Latitude | 02°13'14.04975"N | Latitude | 02°13'14.04975"N | X (m) | 1586854.5381 |
| East(m) | 832256.7009 | Longitude | 075°35'07.15817"W | Longitude | 075°35'07.15817"W | Y (m) | -6173823.7755 |
| Height (m) | 1091.9479 | Ellipsoid Height(m) | 1117.9766 | Ellipsoid Height(m) | 1117.9766 | Z (m) | 245520.9381 |

**BaselineB19**

| | | | | | |
|---|---|---|---|---|---|
| ΔNorth(m) | -24786.4957 | NS Fwd Azimuth | 102°15'54.79273" | ΔX（m）(m) | 109787.0657 |
| ΔEast(m) | 113030.8680 | Ellipsoid Dist.(m) | 115669.7988 | ΔY（m）(m) | 26835.2403 |
| ΔHeight(m) | -657.8813 | ΔEllipsoid Height(m) | -664.1976 | ΔZ（m）(m) | -24620.5695 |

**Standard Errors**

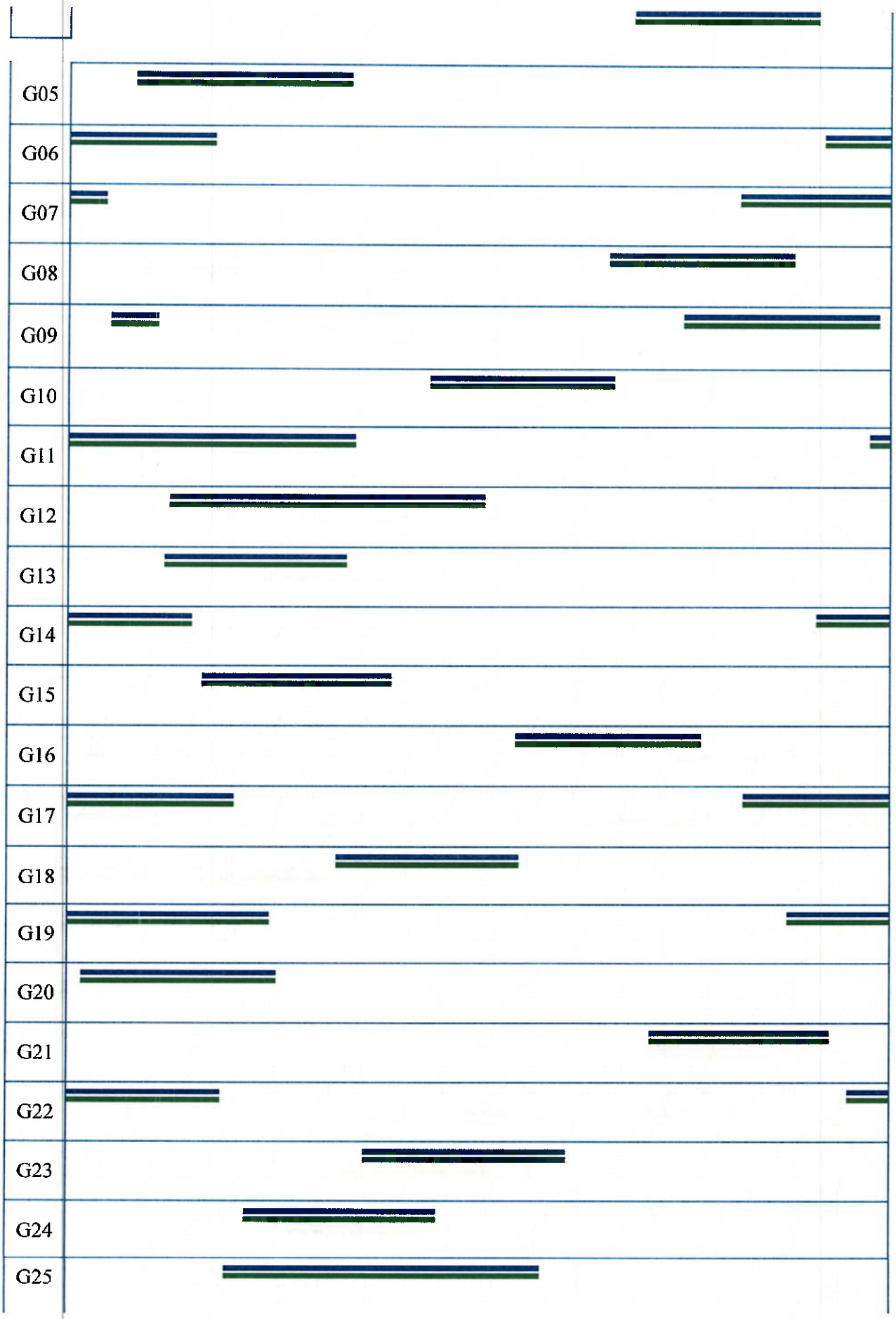
| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0002 | Std. NS Fwd Azimuth(s) | 0.0005 | Std.ΔX（m）(m) | 0.0004 |
| Std.ΔEast(m) | 0.0004 | Std.Ellipsoid Distance(m) | 0.0000 | Std.ΔY（m）(m) | 0.0006 |
| Std.ΔHeight(m) | 0.0006 | Std.ΔEllipsoid Height(m) | 0.0006 | Std.ΔZ（m）(m) | 0.0002 |
| Horizontal Accuracy(m) | 0.0166 | Vertical Accuracy(m) | 0.0323 | | |

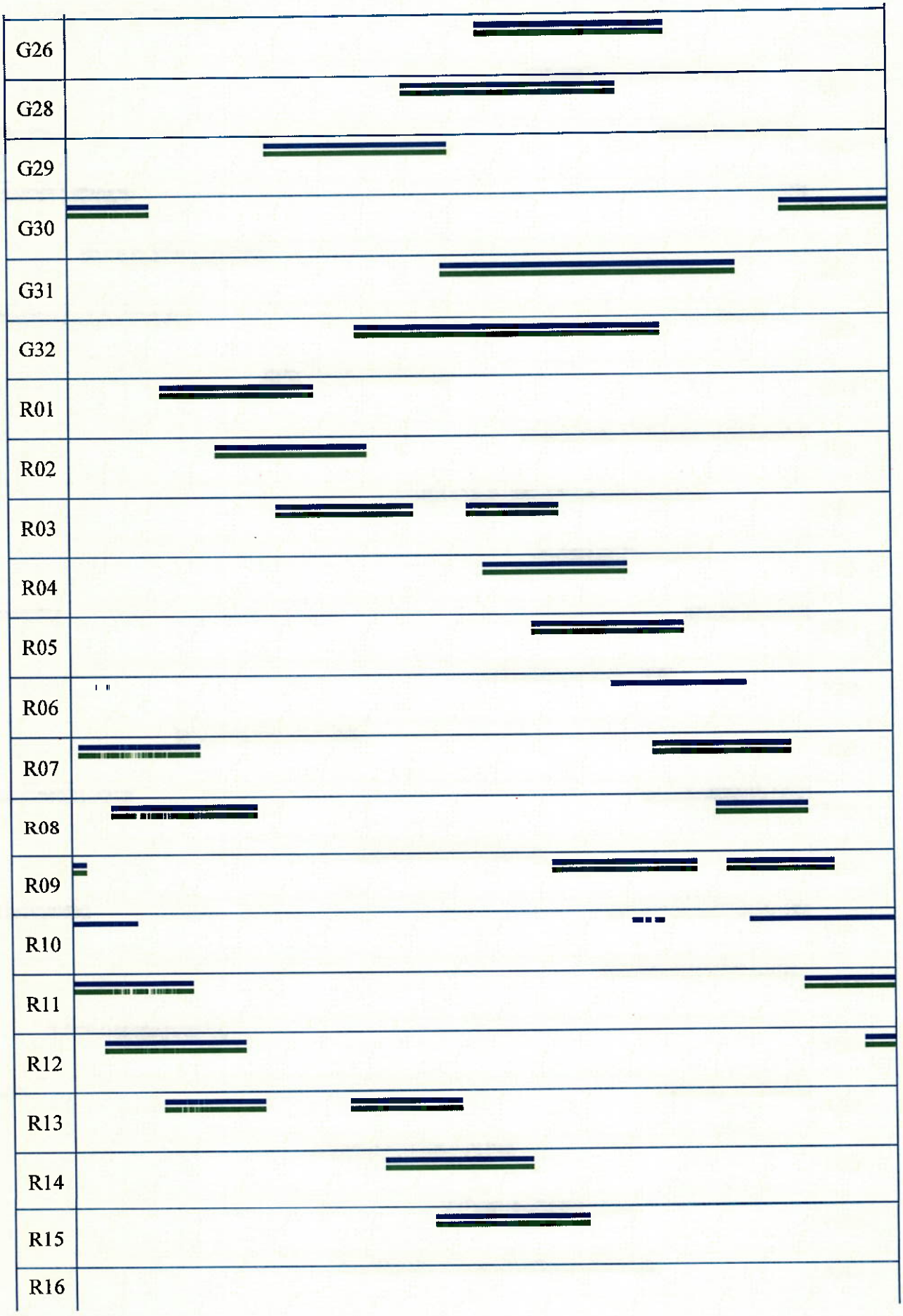
**Aposteriori Covariance Matrix (cm^2)**

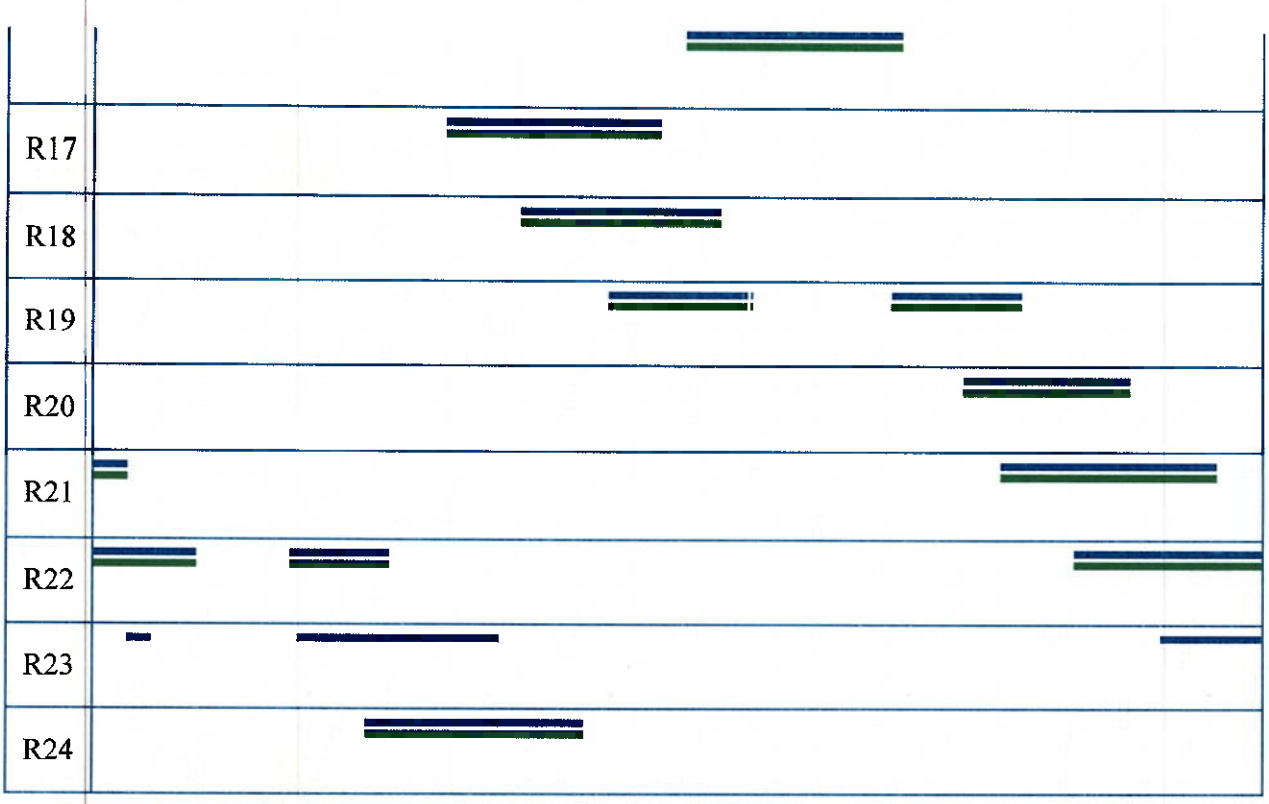
| | X | Y | Z |
|---|---|---|---|
| X | 0.0016 | | |
| Y | -0.0006 | 0.0032 | |
| Z | -0.0001 | -0.0001 | 0.0005 |

**4 Tracking Summary**

| Satellite | Phase Sum Total Epoch：5760，Sampling Interval(s)：60，Ratio =3.9，RMS =0.016248 |
|---|---|
| G02 | |
| G03 | |
| G04 | |

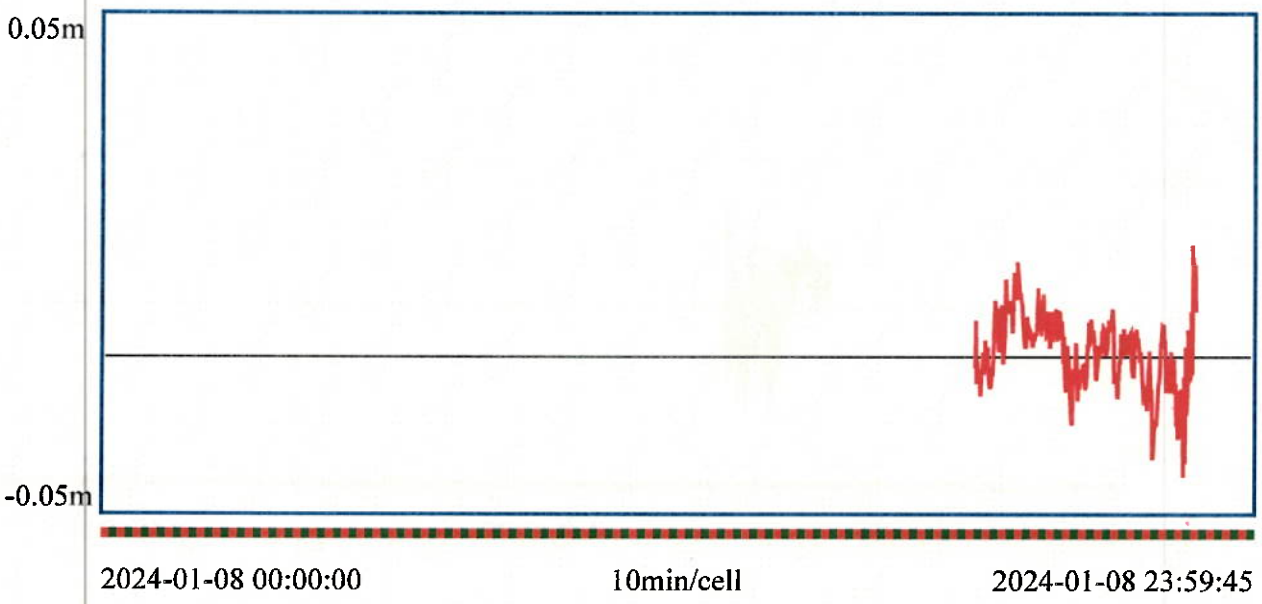

G05
G06
G07
G08
G09
G10
G11
G12
G13
G14
G15
G16
G17
G18
G19
G20
G21
G22
G23
G24
G25


G26
G28
G29
G30
G31
G32
R01
R02
R03
R04
R05
R06
R07
R08
R09
R10
R11
R12
R13
R14
R15
R16



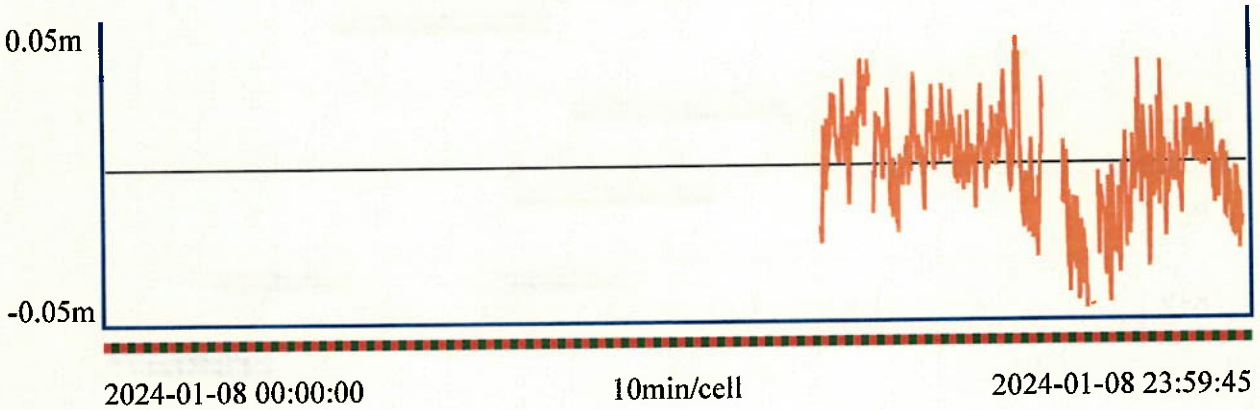

**5 Residuals**

**G02**

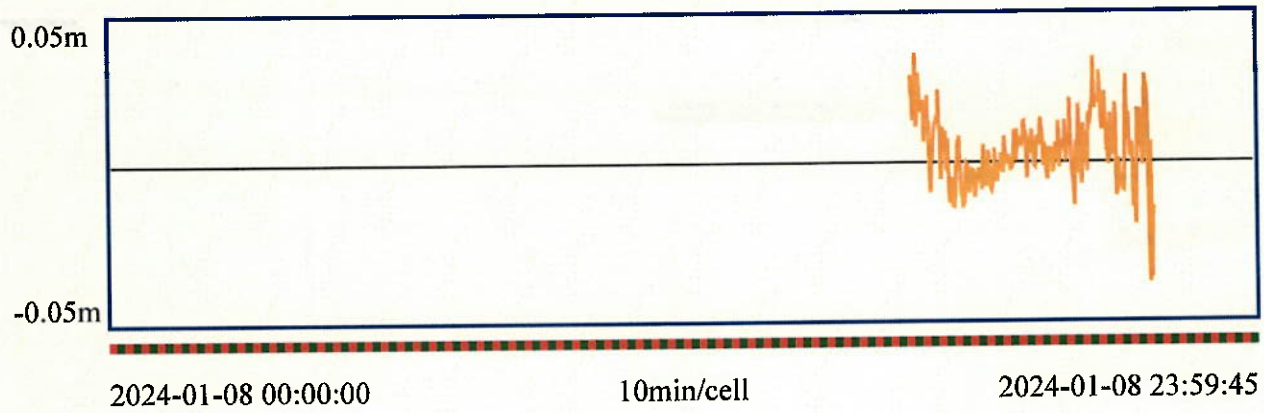



**G03**

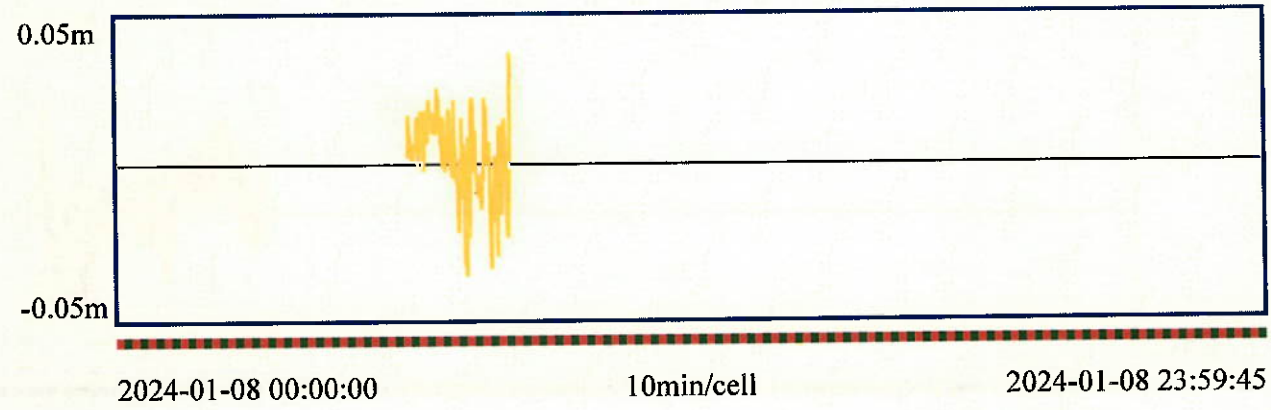



0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G04**


0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G05**

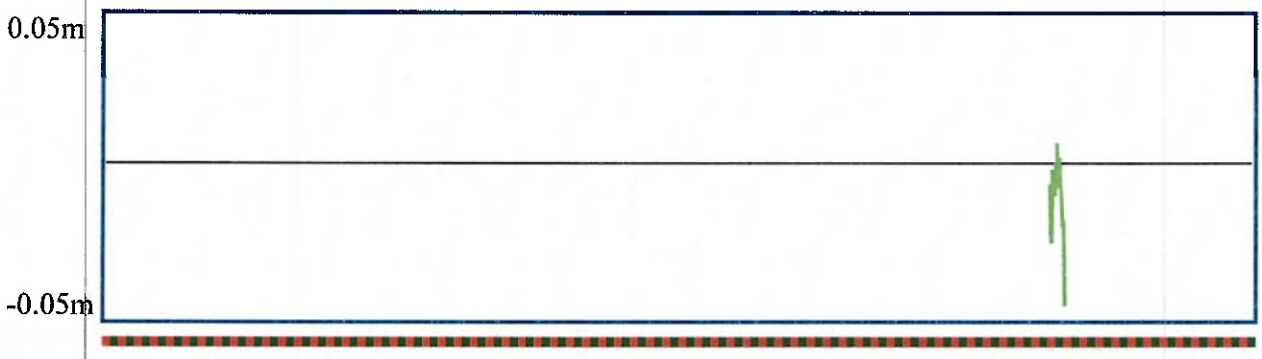

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G06**

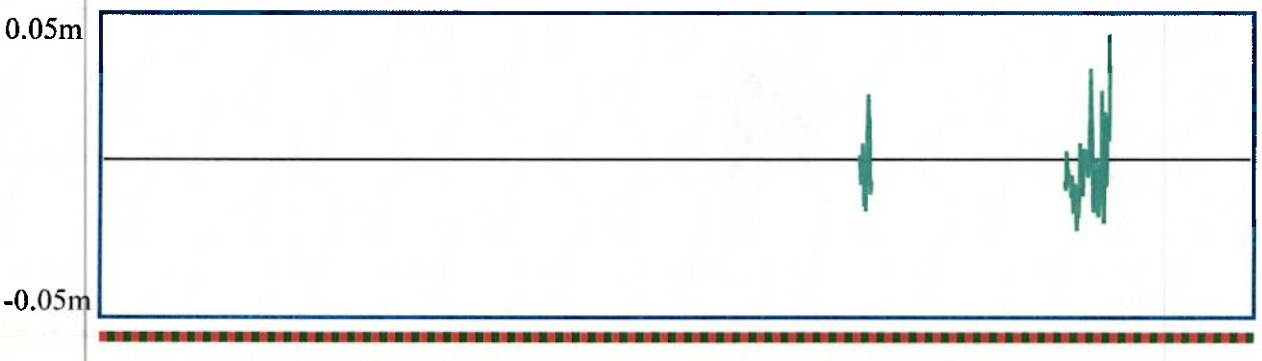

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G07**

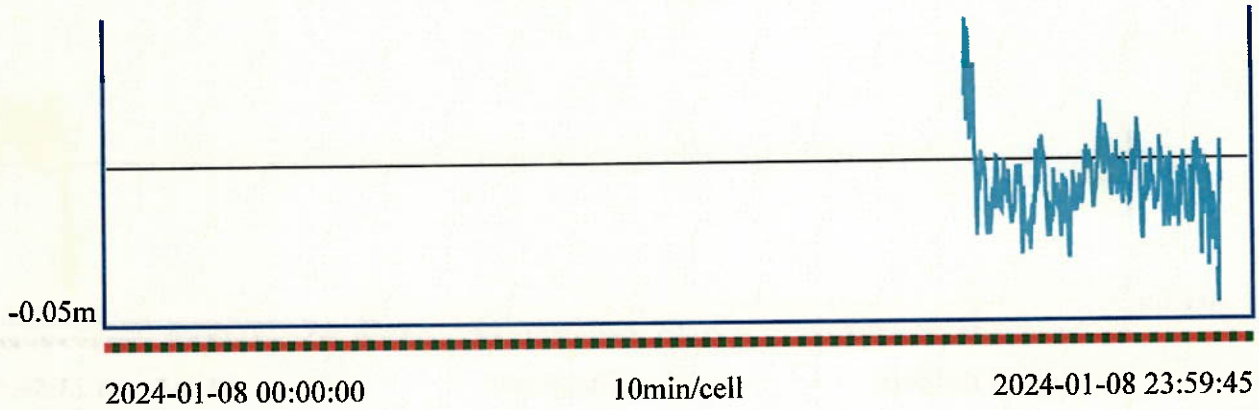

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G08**

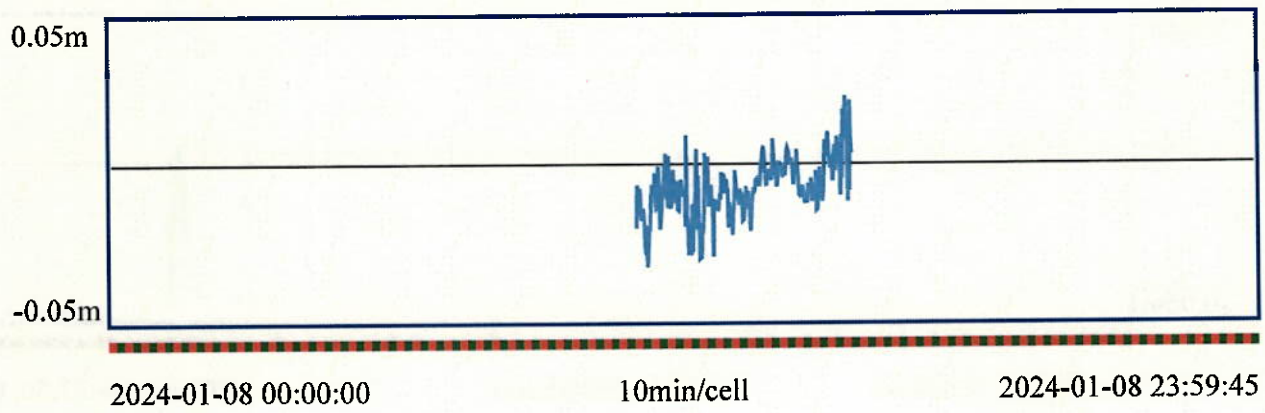

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G09**

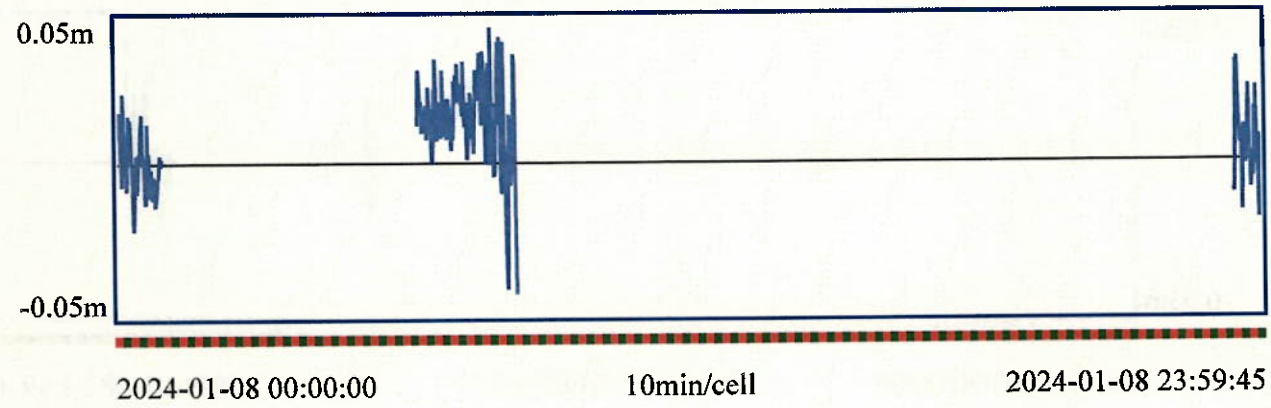

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G10**

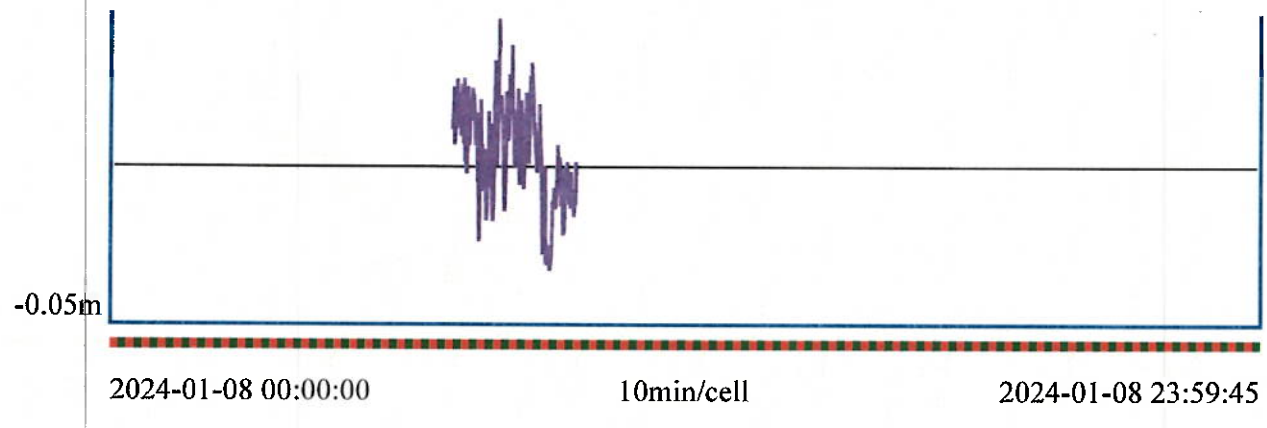

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G11**

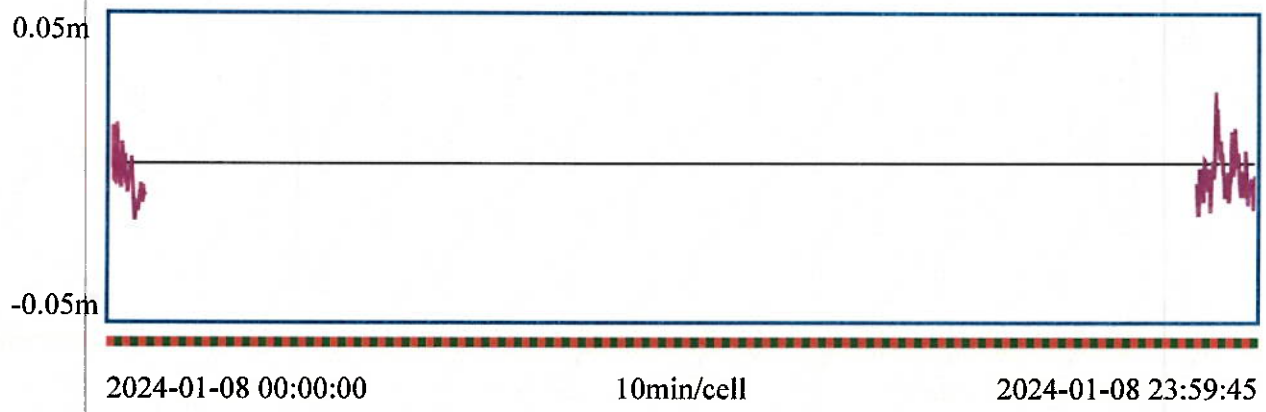

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G12**

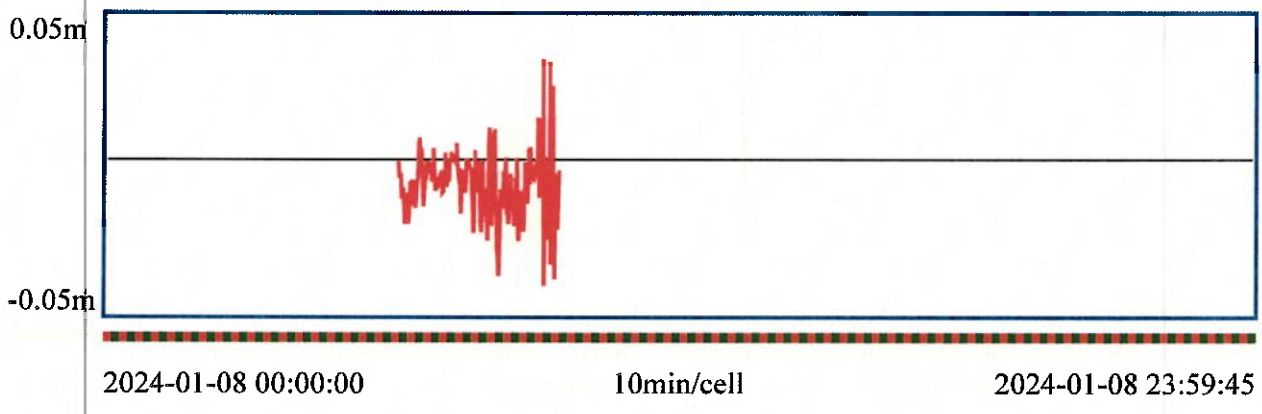

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G14**

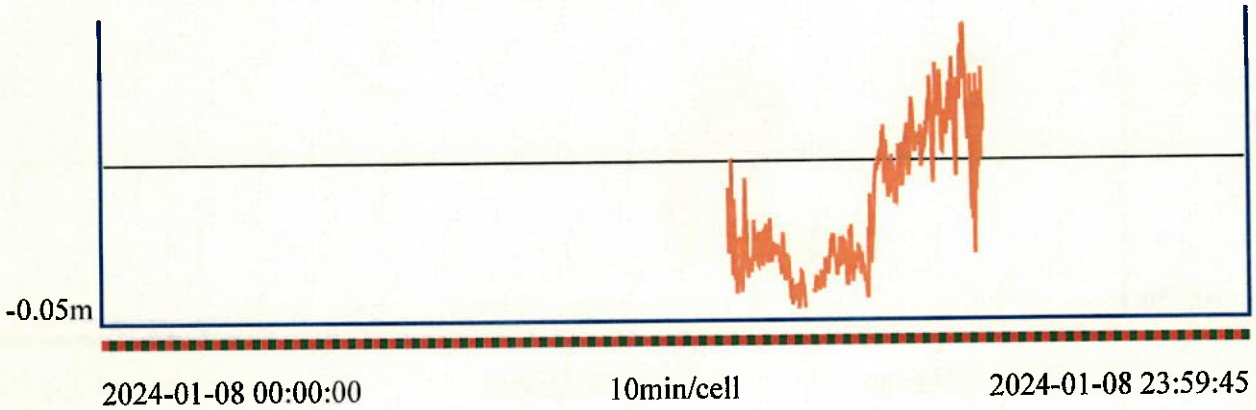

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G15**

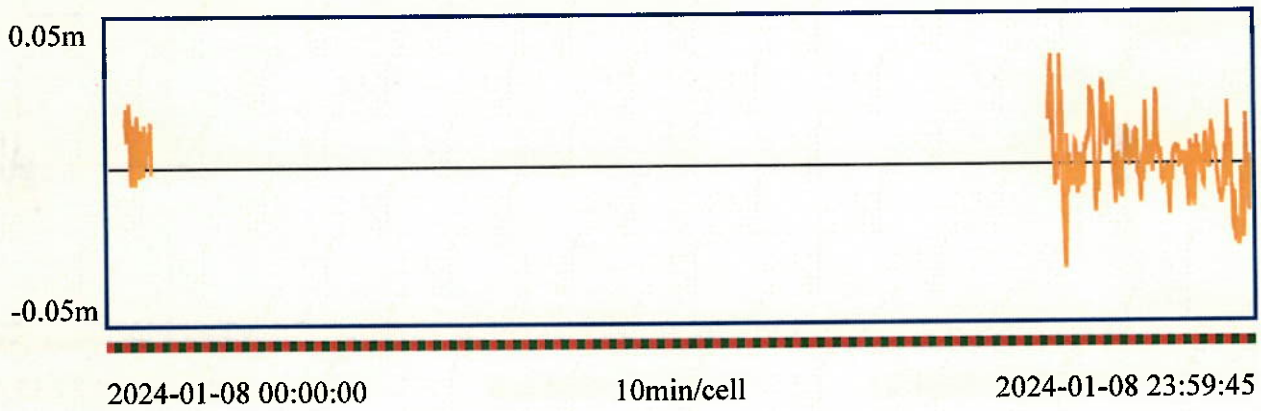

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G16**

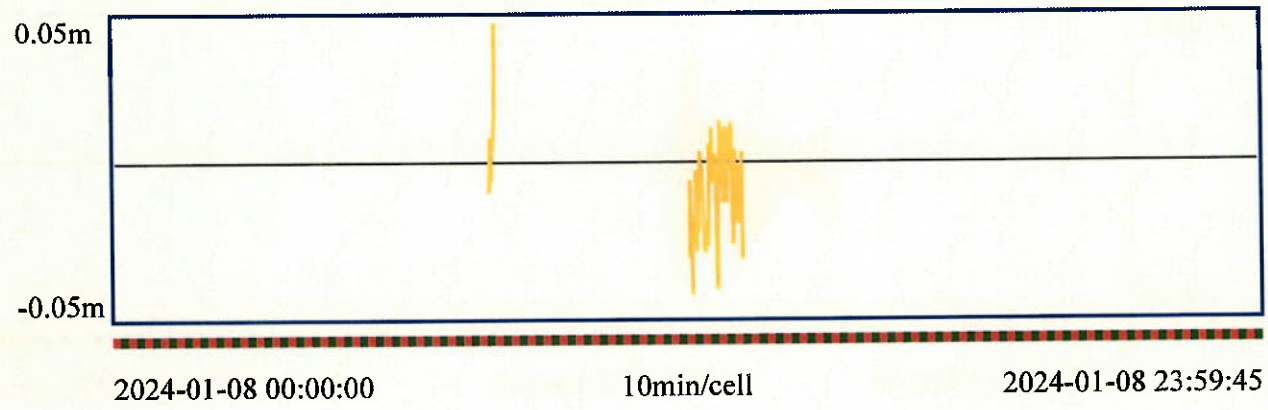

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

G17

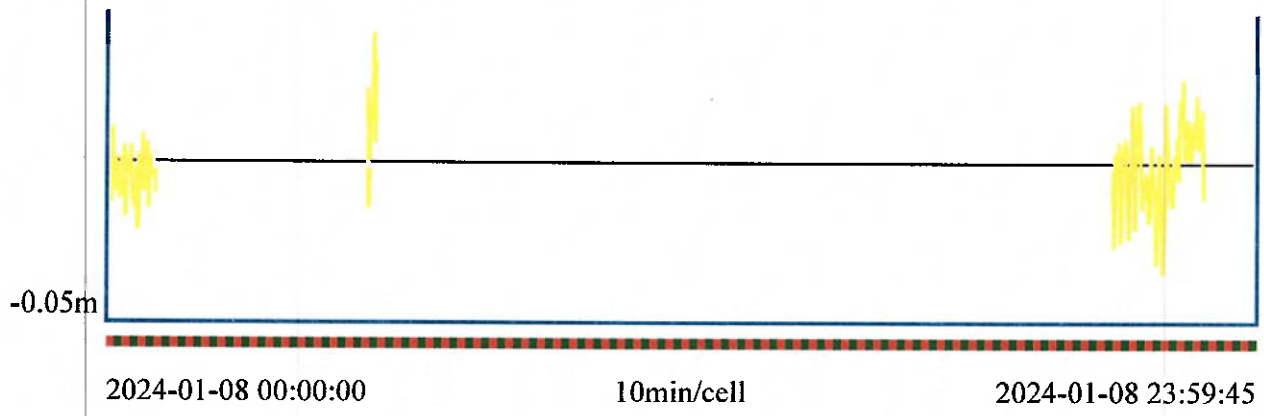

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

G18

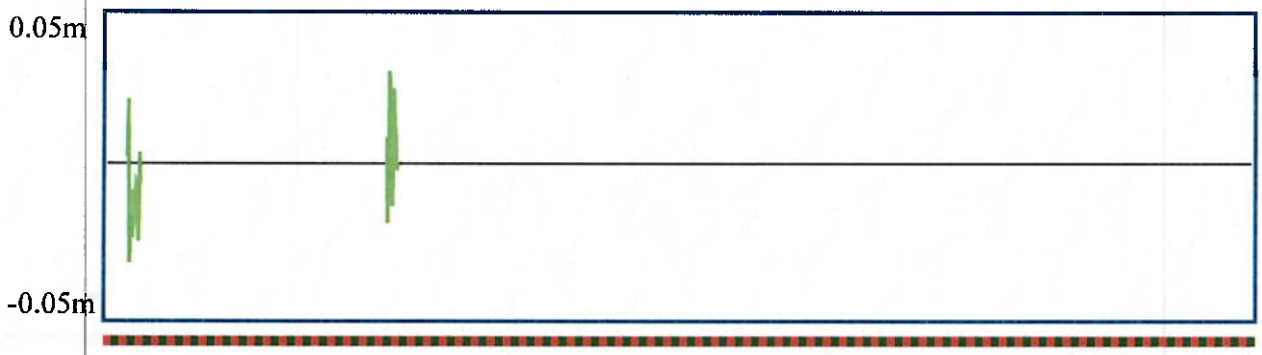

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

G19

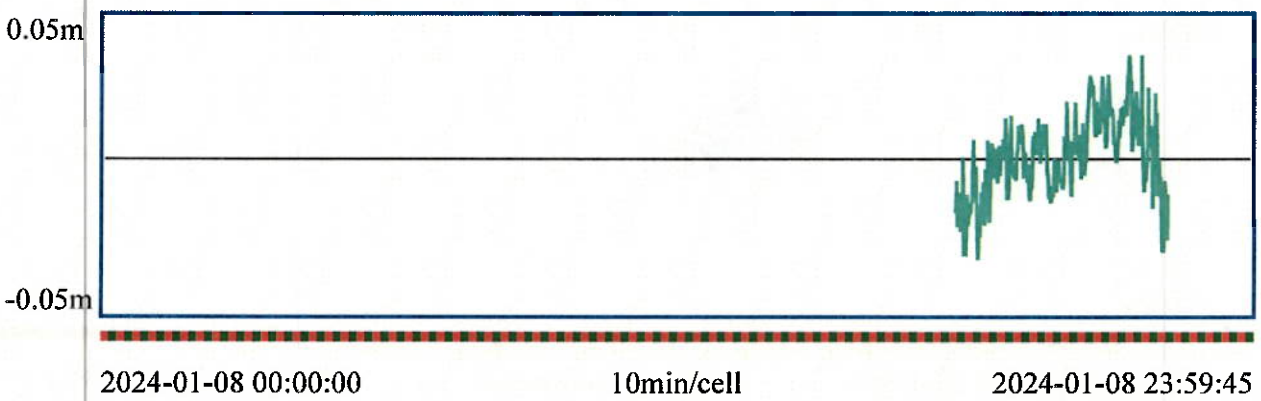

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G20**

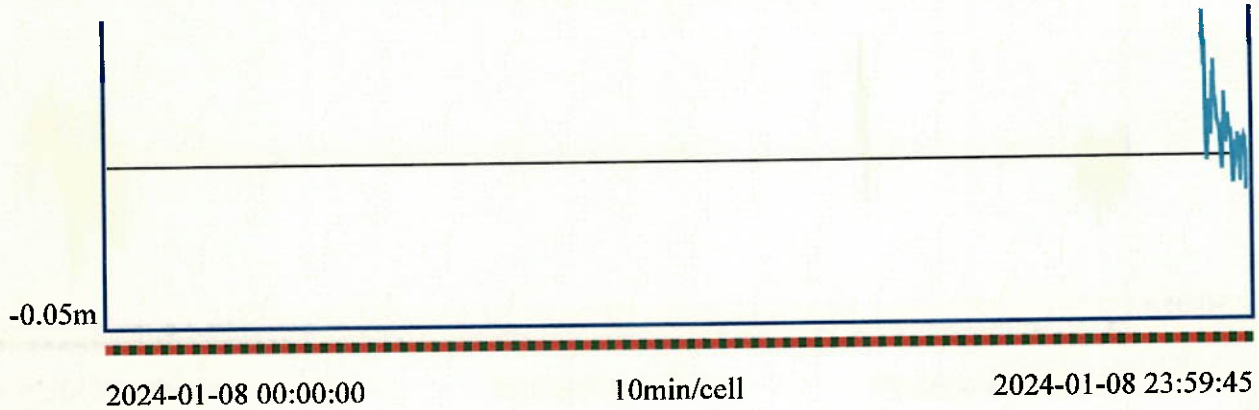

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G21**

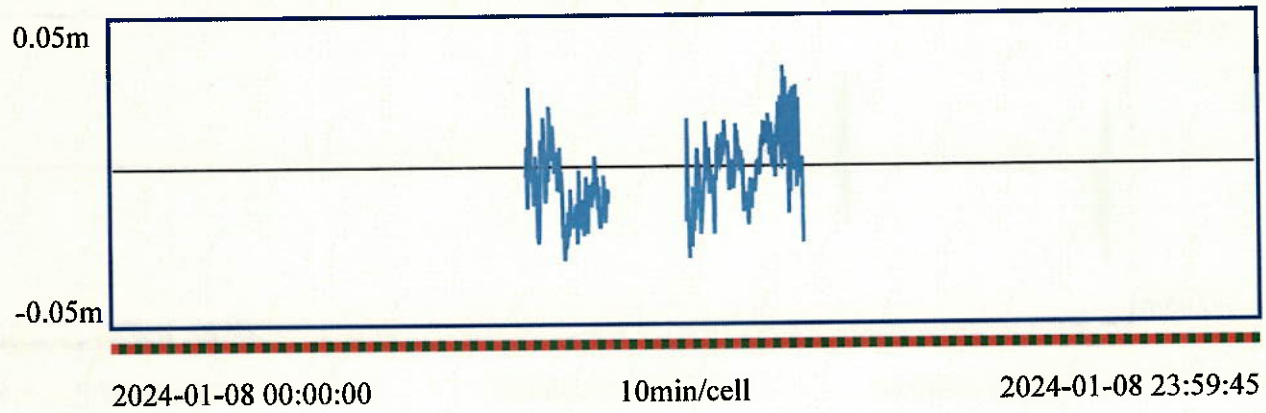

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G22**

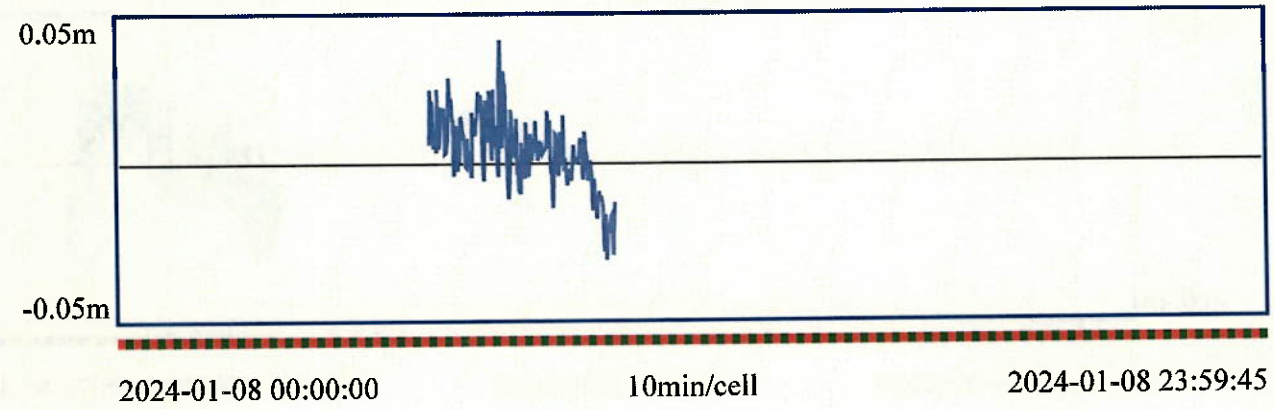

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G23**

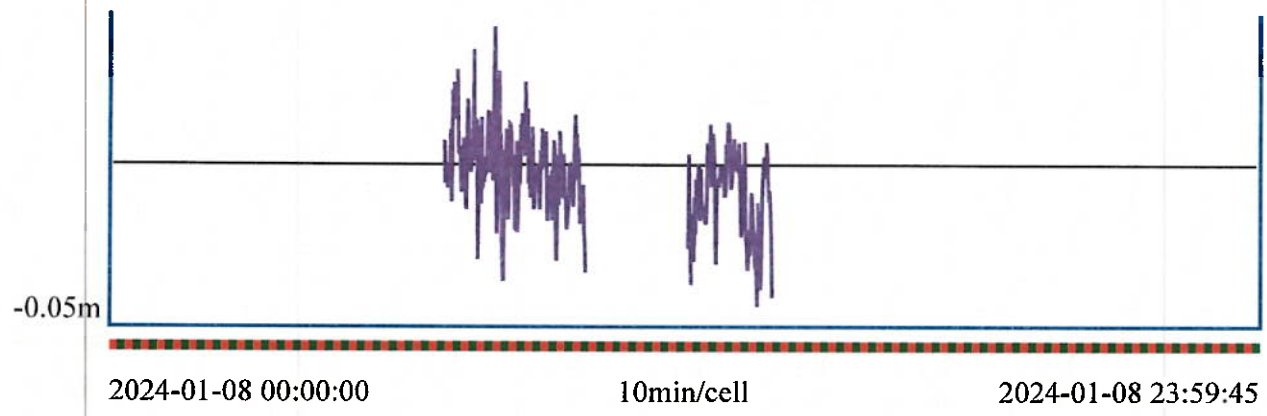

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G24**

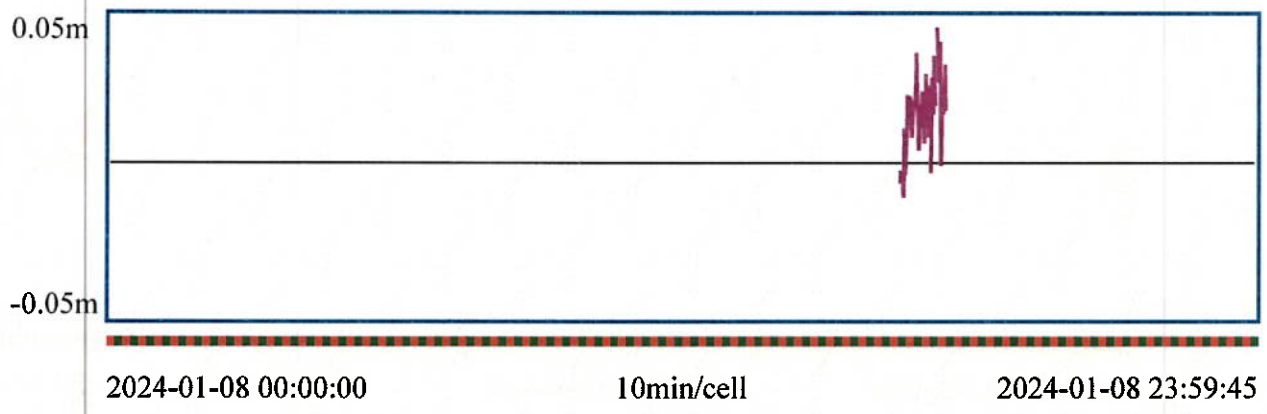

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G25**

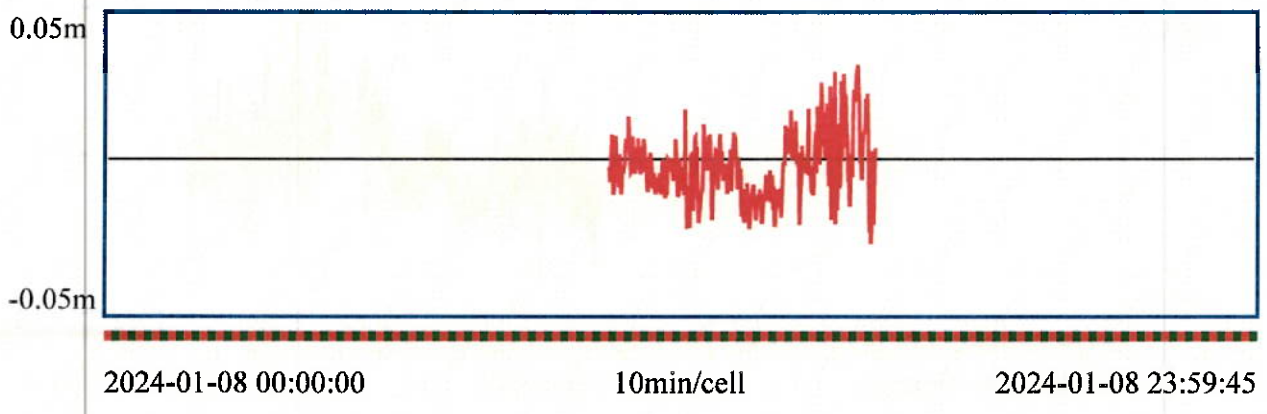

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G26**

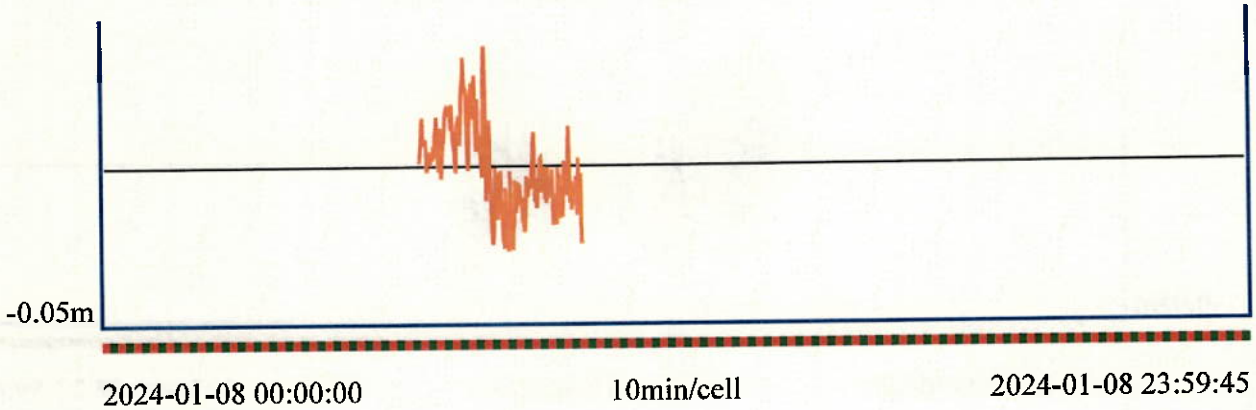

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G28**

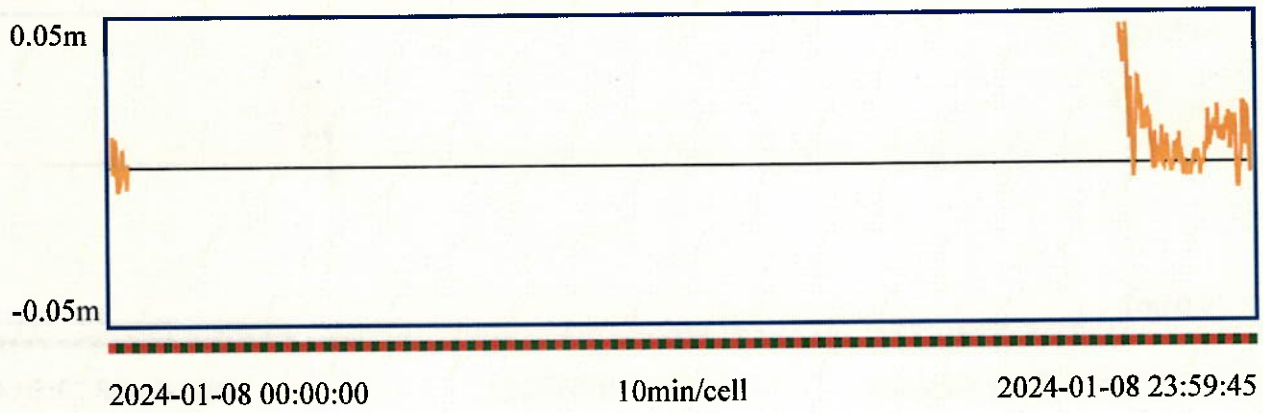

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G29**

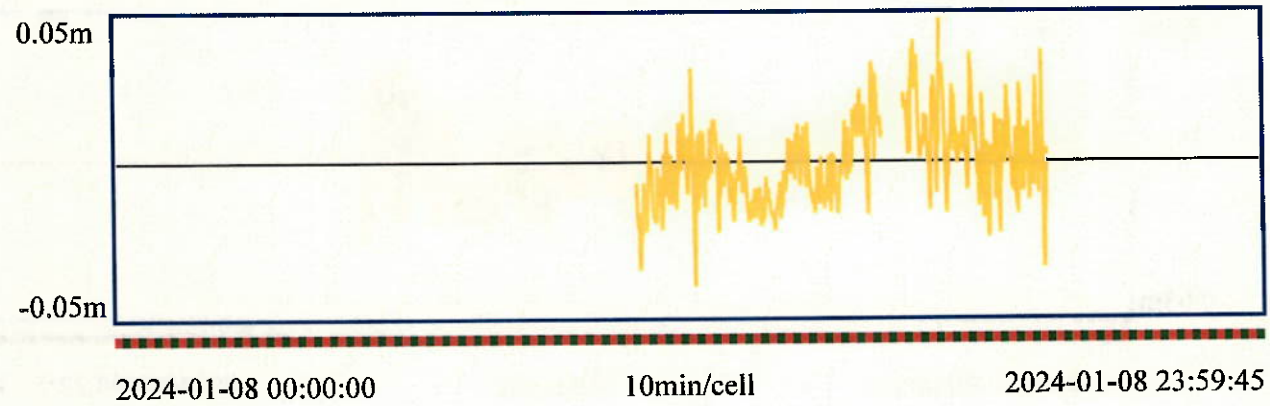

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G30**

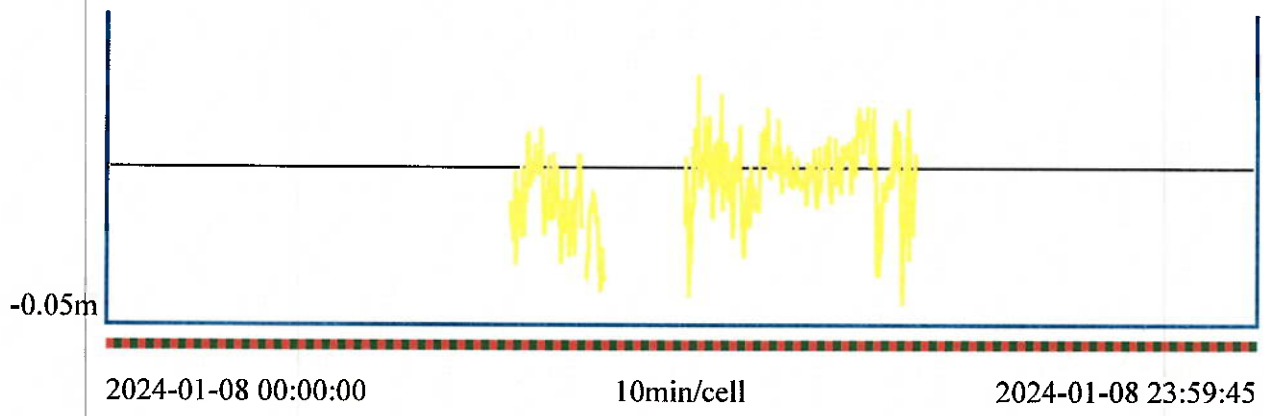

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G31**


0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G32**


0.05m




## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 12.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |
| Use Observed Met. Data | Allowed |

### 6 .4 Ionosphere

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

### 6 .5 Ambiguity

| | |
|---|---|
| Search Mode | Lambda |

### 6 .6 Quality

| | |
|---|---|
| RMS Tolerance | 0.040m |
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |

# B22 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B22(cali0080.hcs->GNSS01-1103349008M.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 164049.0044 |
| Elevation Mask | 12° |
| RMS(m) | 0.0116 |
| HDOP | 1.136 |
| VDOP | 2.047 |
| PDOP | 2.341 |
| Total number of satellites | 2 |
| Start Time (GPST) | 2024-01-08 12.38.04( week : 2296 , second : 131884 ) |
| Stop Time (GPST) | 2024-01-08 21.27.53( week : 2296 , second : 163673 ) |
| Observation Time | 08:49:49 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\cali0080.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\GNSS01-1103349008M.24o |
| Receiver Type | TRIMBLE NETR9 | CHC I80 |
| Receiver Serial | 5145K79436 | 1103373 |
| Antanna Type | TRM59800.00 SCIS | CHCI80 |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height(m) | 0.1400 | 1.8000 |

## 3 Baseline Components

**Start PointCALI**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 865391.7124 | Latitude | 03°22'32.83935"N | Latitude | 03°22'32.83935"N | X (m) | 1483099.9919 |
| East(m) | 727091.9440 | Longitude | 076°31'57.23091"W | Longitude | 076°31'57.23091"W | Y (m) | -6193060.1466 |
| | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Height (m) | 998.4875 | Ellipsoid Height(m) | 1027.4780 | Ellipsoid Height(m) | 1027.4780 | Z (m) | 373124.2967 |

**End Point41298001**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 734427.0866 | Latitude | 02°11'37.34208"N | Latitude | 02°11'37.34208"N | X (m) | 1580774.0570 |
| East(m) | 826025.3410 | Longitude | 075°38'28.65293"W | Longitude | 075°38'28.65293"W | Y (m) | -6175180.8376 |
| Height (m) | 781.3317 | Ellipsoid Height(m) | 807.0501 | Ellipsoid Height(m) | 807.0501 | Z (m) | 242540.2886 |

**BaselineB22**

| | | | | | |
|---|---|---|---|---|---|
| ΔNorth(m) | -130964.6258 | NS Fwd Azimuth | 142°48'34.05910" | ΔX（m）(m) | 97674.0651 |
| ΔEast(m) | 98933.3969 | Ellipsoid Dist.(m) | 164049.0044 | ΔY（m）(m) | 17879.3089 |
| ΔHeight(m) | -217.1557 | ΔEllipsoid Height(m) | -220.4280 | ΔZ（m）(m) | -130584.0081 |

**Standard Errors**

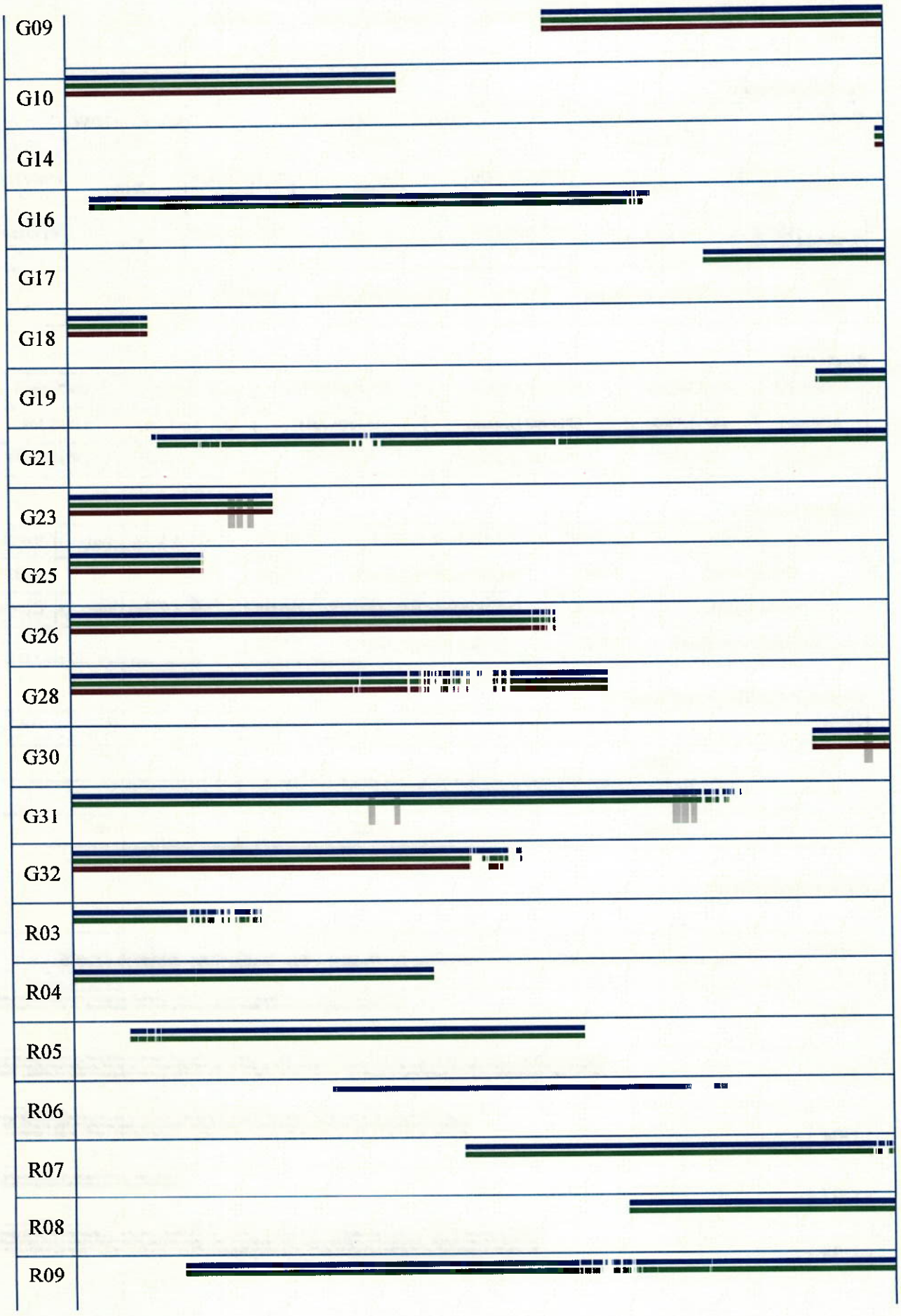
| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0009 | Std. NS Fwd Azimuth(s) | 0.0024 | Std. ΔX（m）(m) | 0.0024 |
| Std.ΔEast(m) | 0.0017 | Std.Ellipsoid Distance(m) | 0.0001 | Std. ΔY（m）(m) | 0.0034 |
| Std.ΔHeight(m) | 0.0038 | Std.ΔEllipsoid Height(m) | 0.0038 | Std. ΔZ（m）(m) | 0.0009 |
| Horizontal Accuracy(m) | 0.0132 | Vertical Accuracy(m) | 0.0238 | | |

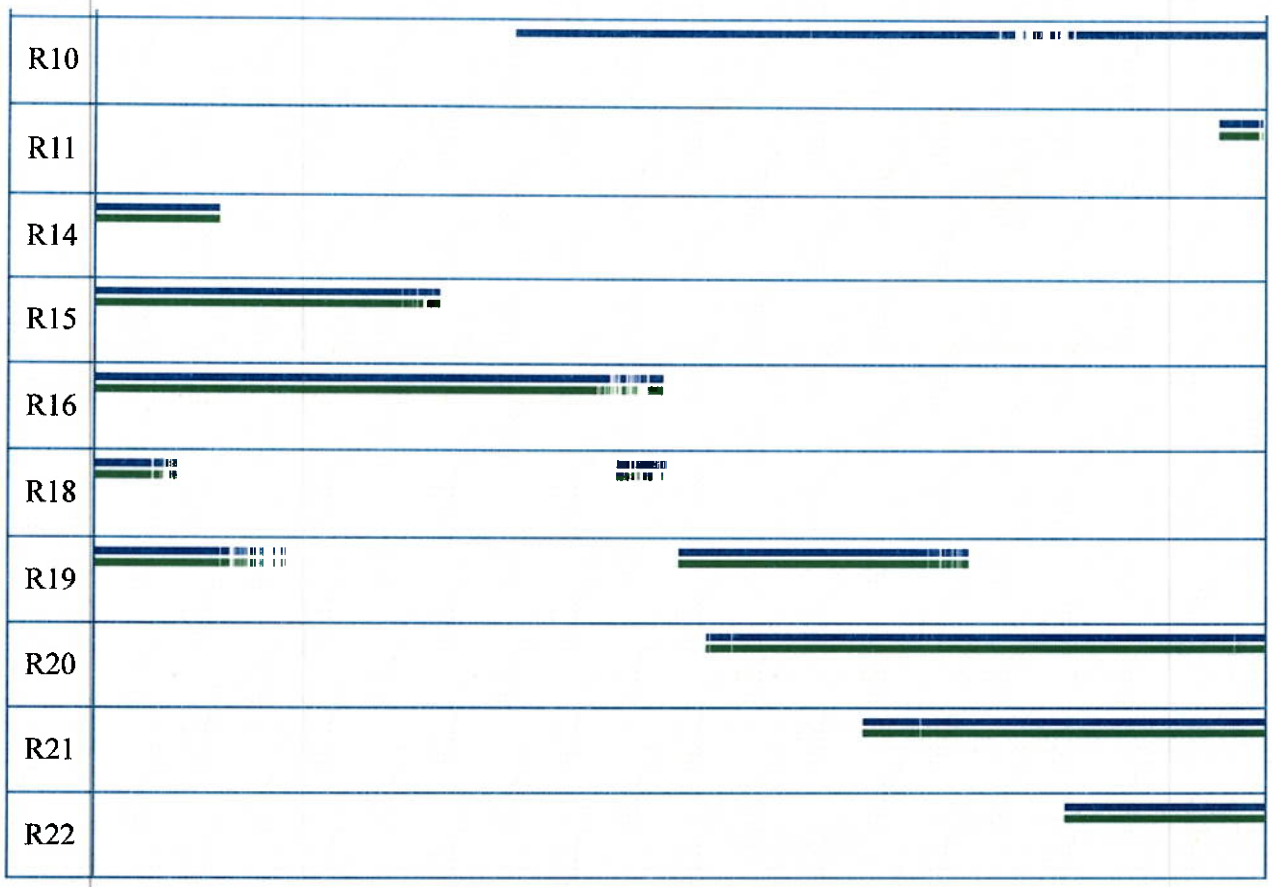
**Aposteriori Covariance Matrix (cm^2)**

| | X | Y | Z |
|---|---|---|---|
| X | 0.0558 | | |
| Y | -0.0672 | 0.1168 | |
| Z | 0.0027 | -0.0082 | 0.0089 |

## 4 Tracking Summary

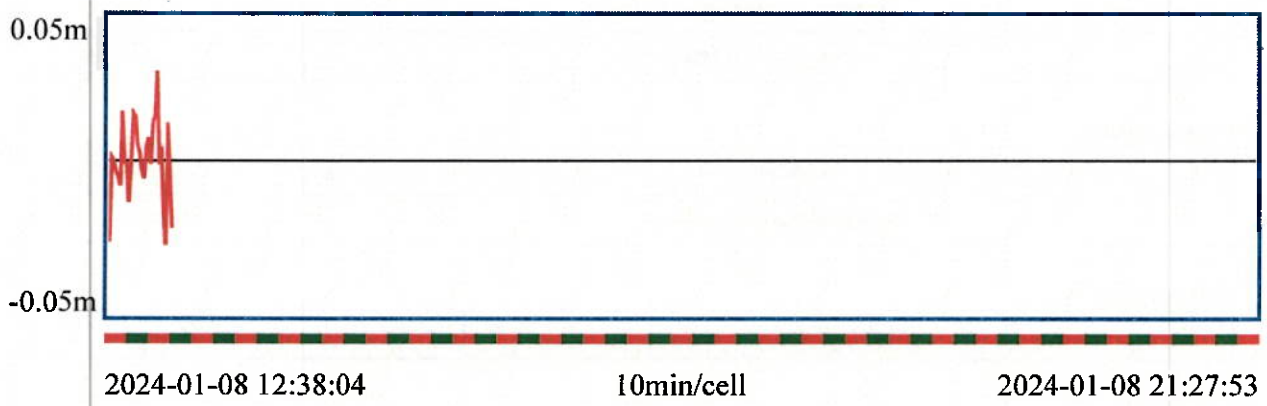
| Satellite | Phase Sum Total Epoch：5760，Sampling Interval(s)：60，Ratio =3.6，RMS =0.011606 |
|---|---|
| G02 | |
| G03 | |
| G04 | |
| G07 | |
| G08 | |


G09
G10
G14
G16
G17
G18
G19
G21
G23
G25
G26
G28
G30
G31
G32
R03
R04
R05
R06
R07
R08
R09

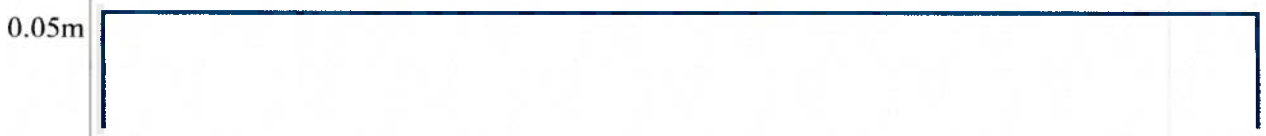


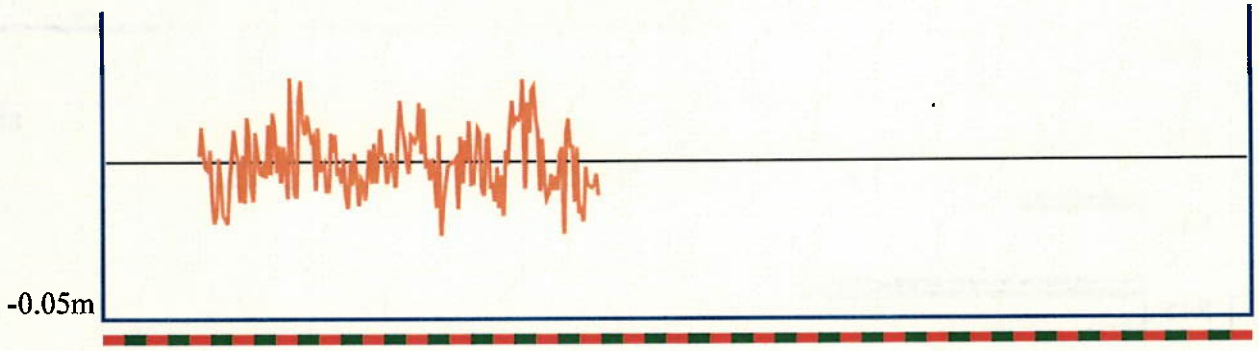

**5 Residuals**

**G10**




**G32**






## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 12.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |
| Use Observed Met. Data | Allowed |

### 6 .4 Ionosphere

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

### 6 .5 Ambiguity

| | |
|---|---|
| Search Mode | Lambda |

### 6 .6 Quality

| | |
|---|---|
| RMS Tolerance | 0.040m |
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |

# B23 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B23(cali0080.hcs->GNSS02-3382008M2.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 163498.2675 |
| Elevation Mask | 15° |
| RMS(m) | 0.0176 |
| HDOP | 1.537 |
| VDOP | 3.105 |
| PDOP | 3.465 |
| Total number of satellites | 2 |
| Start Time (GPST) | 2024-01-08 12.25.01( week : 2296 , second : 131101 ) |
| Stop Time (GPST) | 2024-01-08 21.35.11( week : 2296 , second : 164111 ) |
| Observation Time | 09:10:10 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\cali0080.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\GNSS02-3382008M2.24o |
| Receiver Type | TRIMBLE NETR9 | CHC I80 |
| Receiver Serial | 5145K79436 | 1103382 |
| Antanna Type | TRM59800.00 SCIS | CHCI80 |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height(m) | 0.1400 | 1.8220 |

## 3 Baseline Components

**Start PointCALI**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 865391.7124 | Latitude | 03°22'32.83935"N | Latitude | 03°22'32.83935"N | X (m) | 1483099.9919 |
| East(m) | 727091.9440 | Longitude | 076°31'57.23091"W | Longitude | 076°31'57.23091"W | Y (m) | -6193060.1466 |
| Height | 998.4875 | Ellipsoid Height(m) | 1027.4780 | Ellipsoid Height(m) | 1027.4780 | Z (m) | 373124.296 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (m) | | | | | | | 7 |

**End PointGNSS-02**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 735554.9851 | Latitude | 02°12'14.06860"N | Latitude | 02°12'14.06860"N | X (m) | 1581318.2008 |
| East(m) | 826597.0943 | Longitude | 075°38'10.19434"W | Longitude | 075°38'10.19434"W | Y (m) | -6175006.2923 |
| Height (m) | 790.5066 | Ellipsoid Height(m) | 816.2191 | Ellipsoid Height(m) | 816.2191 | Z (m) | 243668.0289 |

**BaselineB23**

| | | | | | |
|---|---|---|---|---|---|
| ΔNorth(m) | -129836.7273 | NS Fwd Azimuth | 142°24'40.78915" | ΔX（m）(m) | 98218.2089 |
| ΔEast(m) | 99505.1503 | Ellipsoid Dist.(m) | 163498.2675 | ΔY（m）(m) | 18053.8542 |
| ΔHeight(m) | -207.9809 | ΔEllipsoid Height(m) | -211.2590 | ΔZ（m）(m) | -129456.2678 |

**Standard Errors**

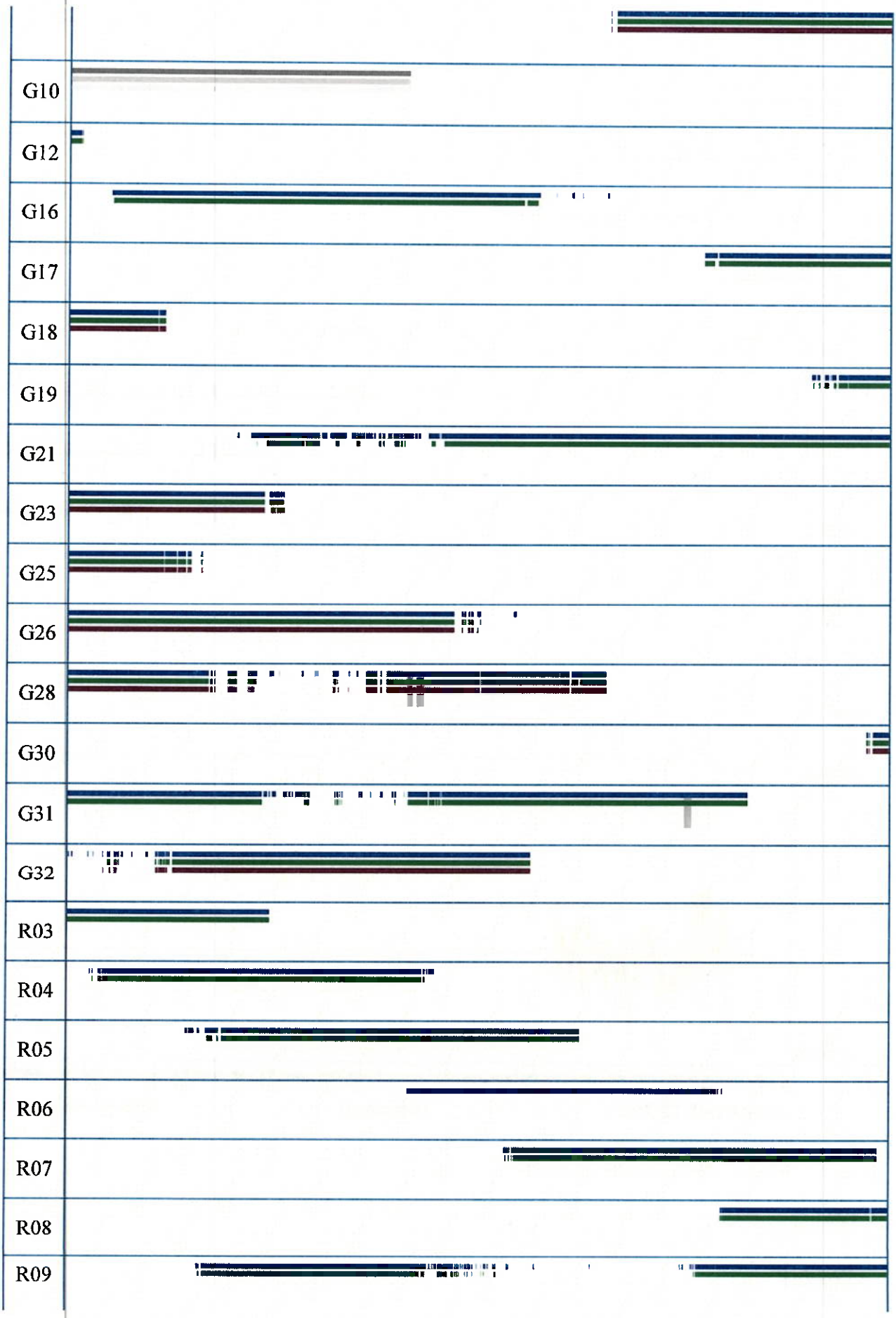
| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0020 | Std. NS Fwd Azimuth(s) | 0.0039 | Std. ΔX（m）(m) | 0.0029 |
| Std.ΔEast(m) | 0.0023 | Std.Ellipsoid Distance(m) | 0.0001 | Std. ΔY（m）(m) | 0.0042 |
| Std.ΔHeight(m) | 0.0045 | Std.ΔEllipsoid Height(m) | 0.0046 | Std. ΔZ（m）(m) | 0.0020 |
| Horizontal Accuracy(m) | 0.0271 | Vertical Accuracy(m) | 0.0547 | | |

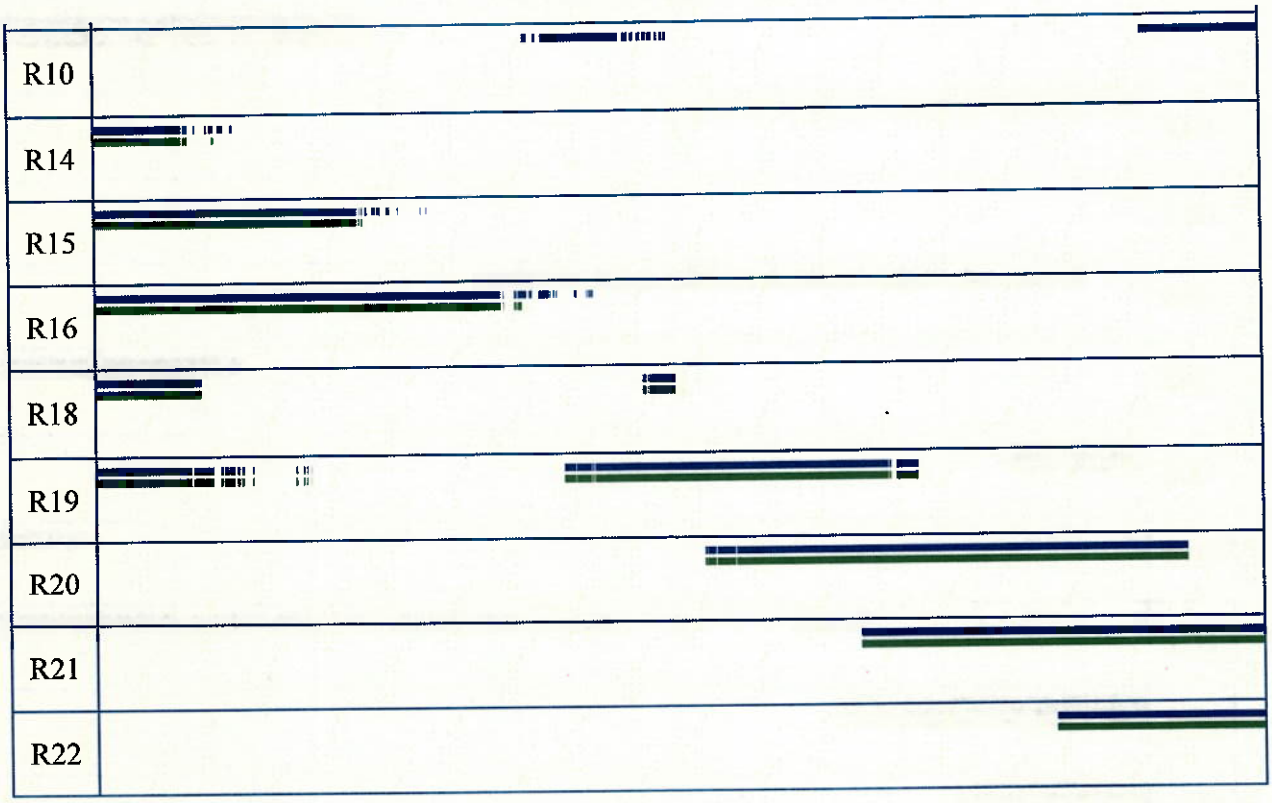
**Aposteriori Covariance Matrix (cm^2)**

| | X | Y | Z |
|---|---|---|---|
| X | 0.0868 | | |
| Y | -0.0838 | 0.1745 | |
| Z | 0.0018 | 0.0090 | 0.0384 |

## 4 Tracking Summary

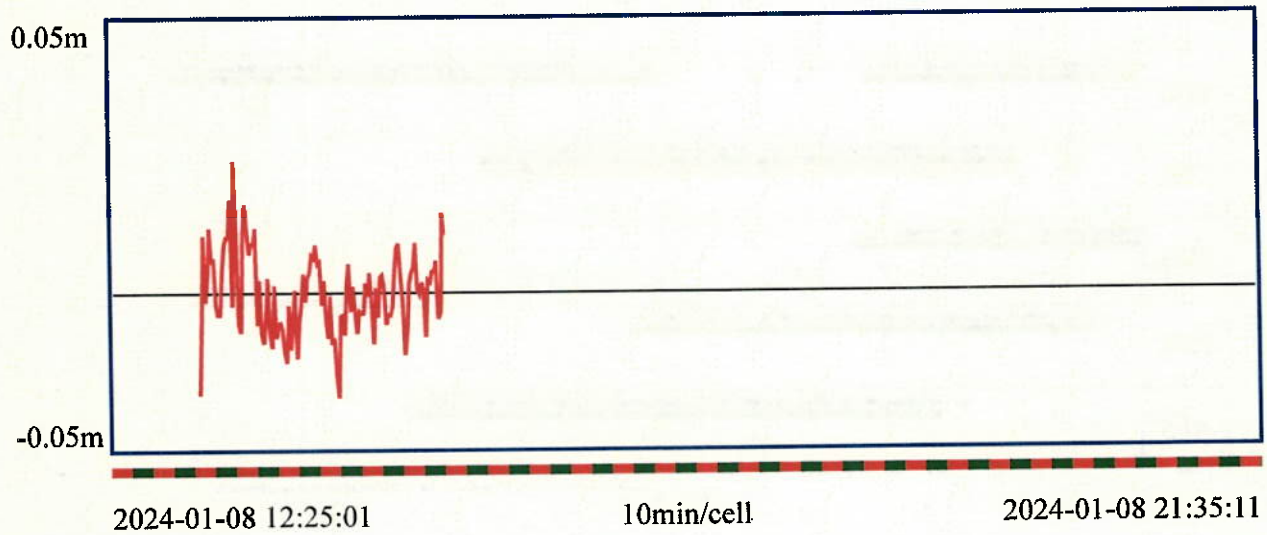
| Satellite | Phase Sum Total Epoch：5760，Sampling Interval(s)：60，Ratio =8.3，RMS =0.017611 |
|---|---|
| G02 | |
| G03 | |
| G04 | |
| G07 | |
| G08 | |
| G09 | |


G10
G12
G16
G17
G18
G19
G21
G23
G25
G26
G28
G30
G31
G32
R03
R04
R05
R06
R07
R08
R09



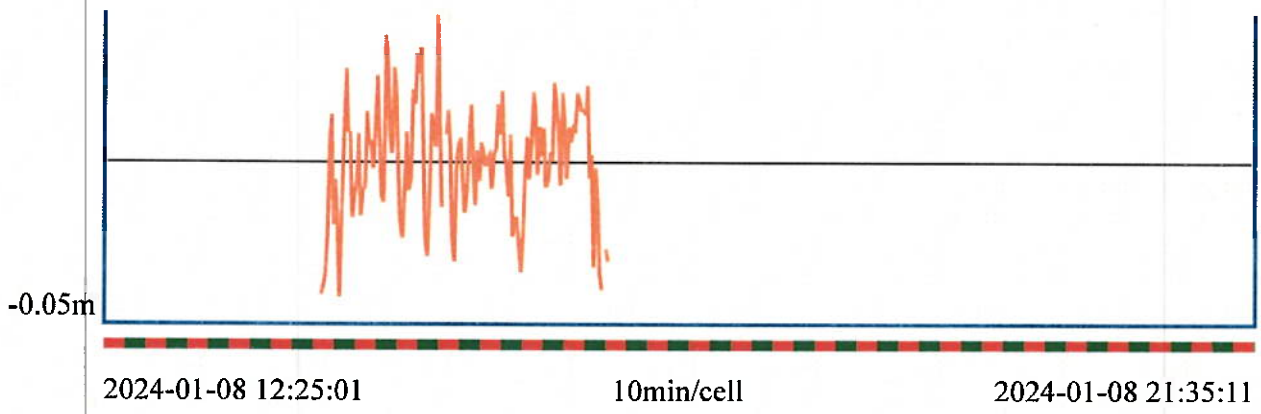

**5 Residuals**

**G16**




**G32**






## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 15.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |
| Use Observed Met. Data | Allowed |

### 6 .4 Ionosphere

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

### 6 .5 Ambiguity

| | |
|---|---|
| Search Mode | Lambda |

### 6 .6 Quality

| | |
|---|---|
| RMS Tolerance | 0.040m |
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |

# B24 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B24(cali0080.hcs->IGAC-1103349008M.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 164804.8659 |
| Elevation Mask | 12° |
| RMS(m) | 0.0168 |
| HDOP | 1.343 |
| VDOP | 2.469 |
| PDOP | 2.811 |
| Total number of satellites | 3 |
| Start Time (GPST) | 2024-01-08 12.53.20( week : 2296 , second : 132800 ) |
| Stop Time (GPST) | 2024-01-08 21.06.23( week : 2296 , second : 162383 ) |
| Observation Time | 08:13:03 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\cali0080.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\IGAC-1103349008M.24o |
| Receiver Type | TRIMBLE NETR9 | CHC I80 |
| Receiver Serial | 5145K79436 | 1103349 |
| Antanna Type | TRM59800.00 SCIS | CHCI80 |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height(m) | 0.1400 | 1.8000 |

## 3 Baseline Components

**Start PointCALI**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 865391.7124 | Latitude | 03°22'32.83935"N | Latitude | 03°22'32.83935"N | X (m) | 1483099.9919 |
| East(m) | 727091.9440 | Longitude | 076°31'57.23091"W | Longitude | 076°31'57.23091"W | Y (m) | -6193060.1466 |
| Height | 998.4875 | Ellipsoid Height(m) | 1027.4780 | Ellipsoid Height(m) | 1027.4780 | Z (m) | 373124.296 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (m) | | | | | | | 7 |

**End PointGNSS-01**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 734681.9799 | Latitude | 02°11'45.69103"N | Latitude | 02°11'45.69103"N | X (m) | 1582312.9307 |
| East(m) | 827605.4079 | Longitude | 075°37'37.54491"W | Longitude | 075°37'37.54491"W | Y (m) | -6174823.4793 |
| Height (m) | 826.7414 | Ellipsoid Height(m) | 852.5345 | Ellipsoid Height(m) | 852.5345 | Z (m) | 242798.3186 |

**BaselineB24**

| | | | | | |
|---|---|---|---|---|---|
| ΔNorth(m) | -130709.7325 | NS Fwd Azimuth | 142°19'04.37243" | ΔX（m）(m) | 99212.9388 |
| ΔEast(m) | 100513.4639 | Ellipsoid Dist.(m) | 164804.8659 | ΔY（m）(m) | 18236.6673 |
| ΔHeight(m) | -171.7461 | ΔEllipsoid Height(m) | -174.9435 | ΔZ（m）(m) | -130325.9781 |

**Standard Errors**

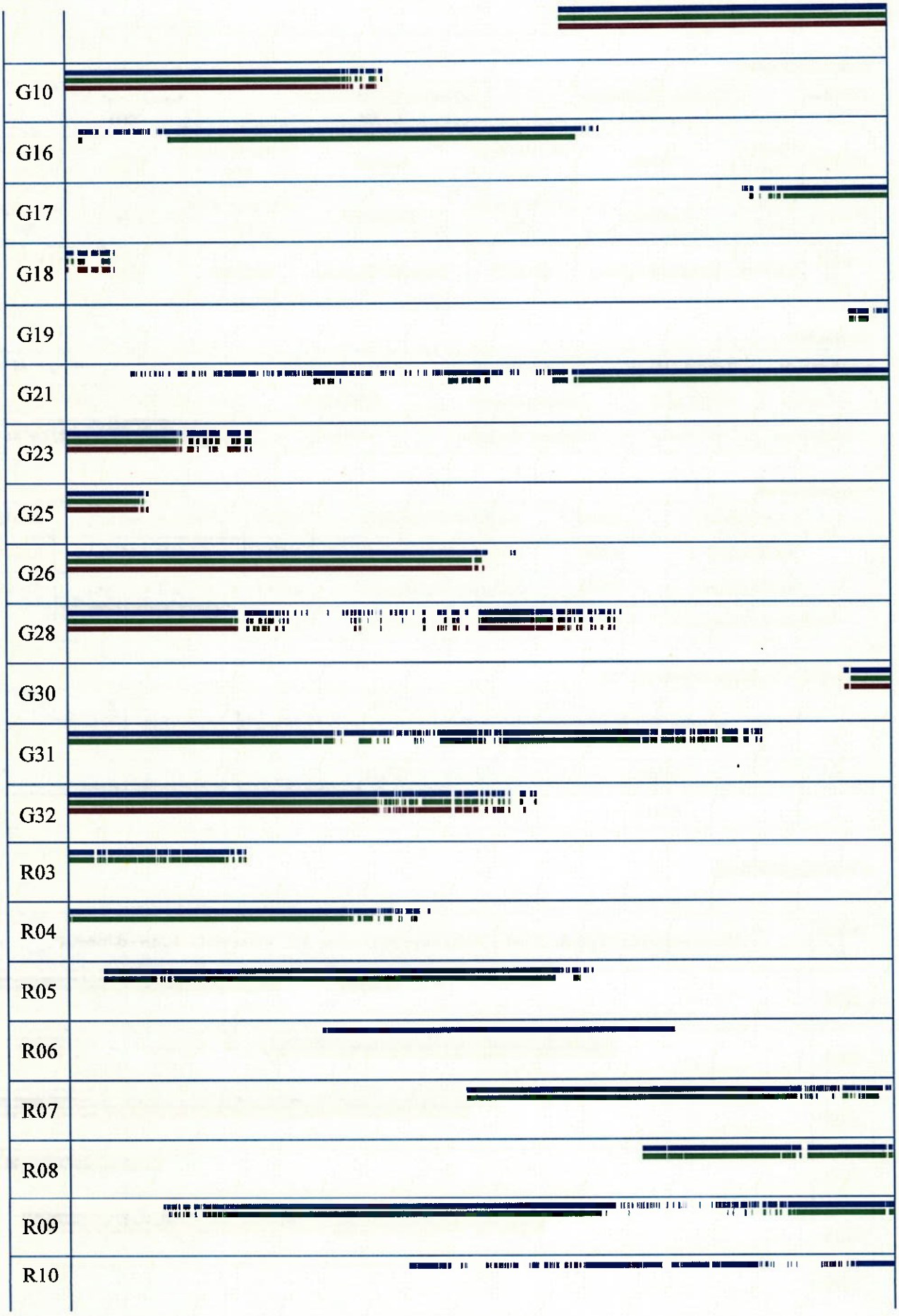
| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0017 | Std. NS Fwd Azimuth(s) | 0.0043 | Std. ΔX（m）(m) | 0.0042 |
| Std.ΔEast(m) | 0.0030 | Std.Ellipsoid Distance(m) | 0.0001 | Std. ΔY（m）(m) | 0.0057 |
| Std.ΔHeight(m) | 0.0064 | Std.ΔEllipsoid Height(m) | 0.0064 | Std. ΔZ（m）(m) | 0.0019 |
| Horizontal Accuracy(m) | 0.0226 | Vertical Accuracy(m) | 0.0415 | | |

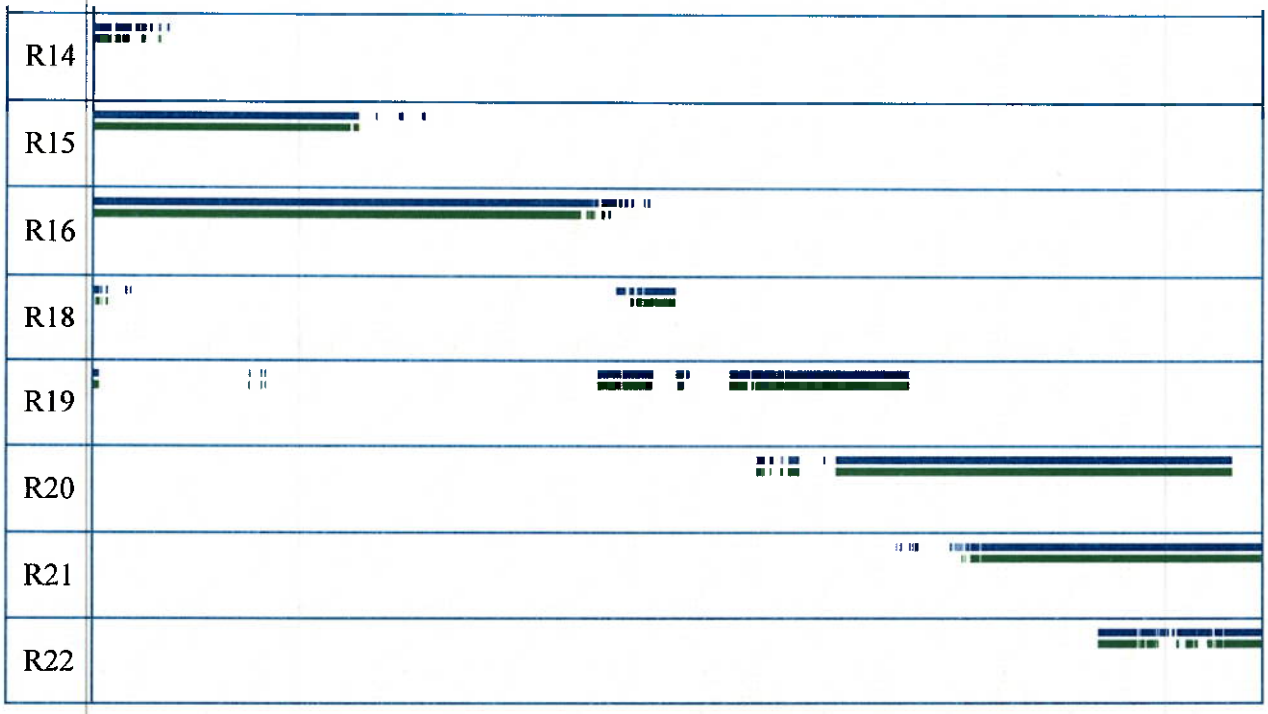
**Aposteriori Covariance Matrix (cm^2)**

| | X | Y | Z |
|---|---|---|---|
| X | 0.1728 | | |
| Y | -0.2011 | 0.3237 | |
| Z | 0.0113 | -0.0442 | 0.0345 |

**4 Tracking Summary**

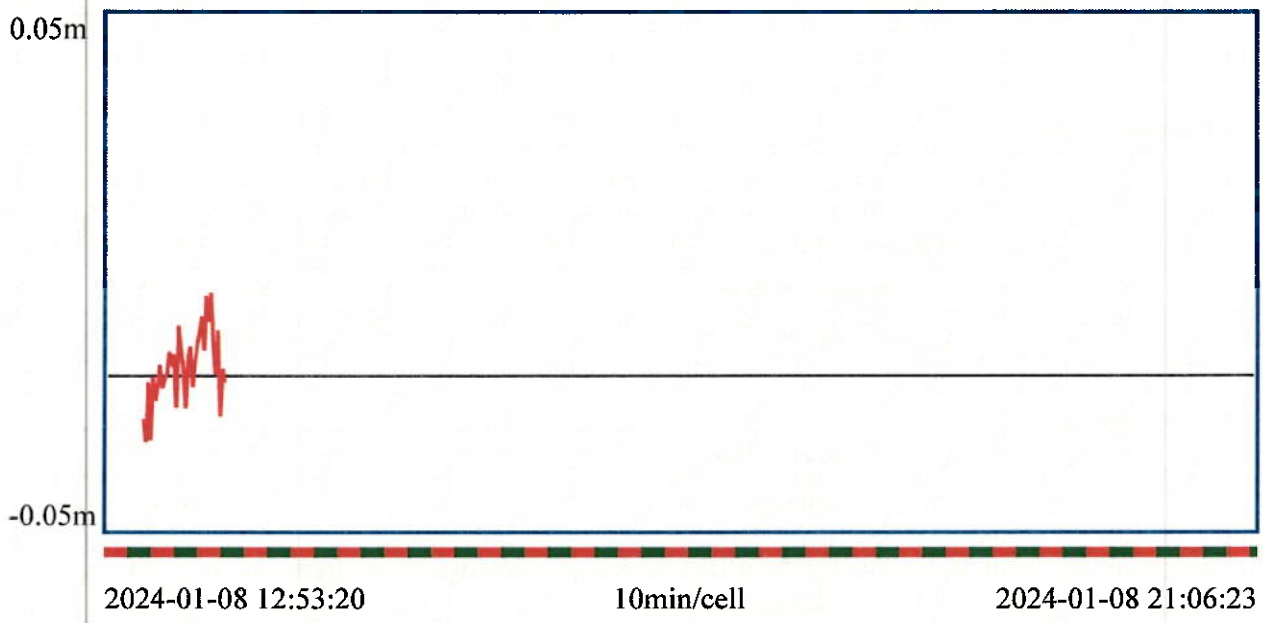
| Satellite | Phase Sum Total Epoch：5760，Sampling Interval(s)：60，Ratio =4.1，RMS =0.016804 |
|---|---|
| G02 | |
| G03 | |
| G04 | |
| G07 | |
| G08 | |
| G09 | |


G10
G16
G17
G18
G19
G21
G23
G25
G26
G28
G30
G31
G32
R03
R04
R05
R06
R07
R08
R09
R10



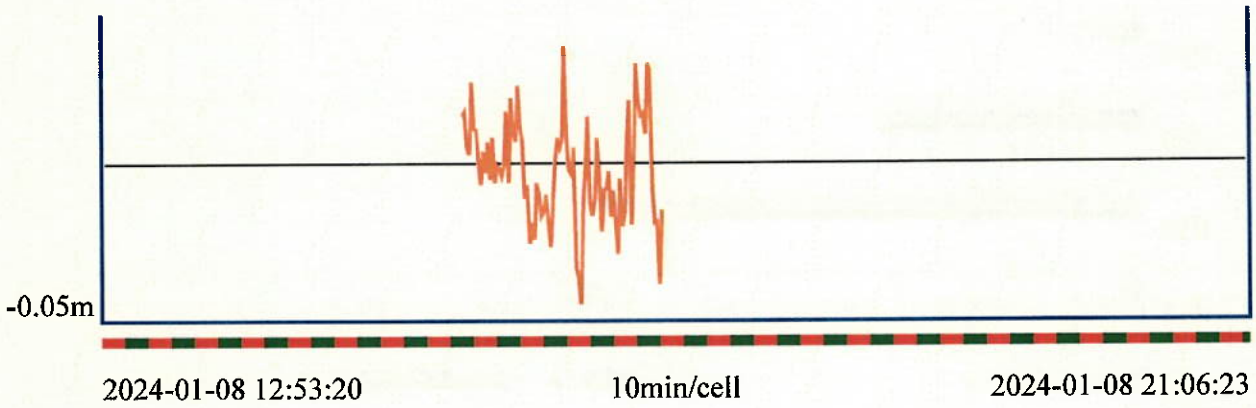

**5 Residuals**

**G10**

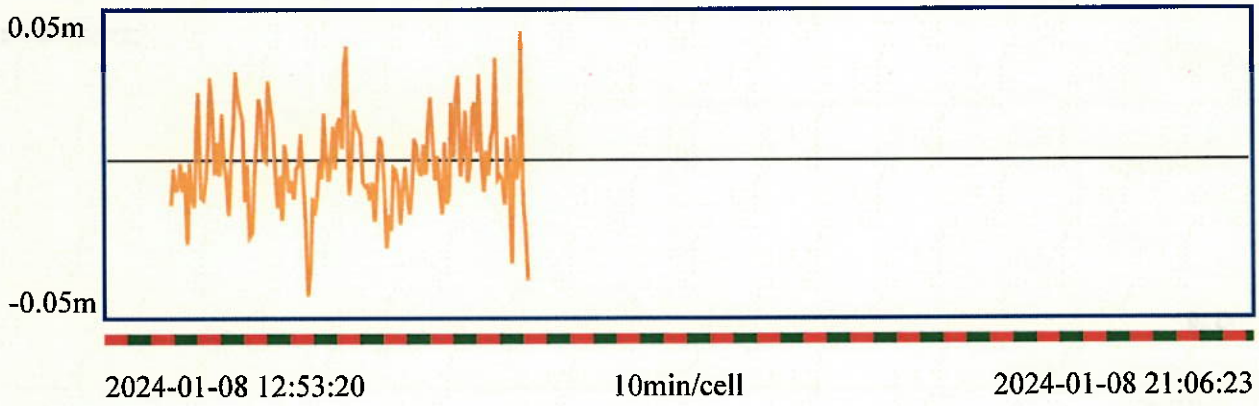



**G16**






**G32**




## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 12.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |
| Use Observed Met. Data | Allowed |

**6 .4 Ionosphere**

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

**6 .5 Ambiguity**

| | |
|---|---|
| Search Mode | Lambda |

**6 .6 Quality**

| | |
|---|---|
| RMS Tolerance | 0.040m |
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |

# B25 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B25(cali0080.hcs->popa0080.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 103438.8078 |
| Elevation Mask | 12° |
| RMS(m) | 0.0201 |
| HDOP | 1.142 |
| VDOP | 2.274 |
| PDOP | 2.545 |
| Total number of satellites | 26 |
| Start Time (GPST) | 2024-01-08 00.00.00( week : 2296 , second : 86400 ) |
| Stop Time (GPST) | 2024-01-08 23.59.45( week : 2296 , second : 172785 ) |
| Observation Time | 23:59:45 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\cali0080.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\popa0080.24o |
| Receiver Type | TRIMBLE NETR9 | TRIMBLE NETR9 |
| | | |

| | | |
|---|---|---|
| Receiver Serial | 5145K79436 | 5745R51401 |
| Antanna Type | TRM59800.00 SCIS | TRM59800.00 SCIS |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height (m) | 0.1400 | 0.1870 |

### 3 Baseline Components

**Start PointCALI**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 865391.7124 | Latitude | 03°22'32.83935"N | Latitude | 03°22'32.83935"N | X (m) | 1483099.9919 |
| East(m) | 727091.9440 | Longitude | 076°31'57.23091"W | Longitude | 076°31'57.23091"W | Y (m) | -6193060.1466 |
| Height (m) | 998.4875 | Ellipsoid Height(m) | 1027.4780 | Ellipsoid Height(m) | 1027.4780 | Z (m) | 373124.2967 |

**End PointPOPA**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 762178.6607 | Latitude | 02°26'35.21691"N | Latitude | 02°26'35.21691"N | X (m) | 1477067.4587 |
| East(m) | 719225.8237 | Longitude | 076°36'04.34034"W | Longitude | 076°36'04.34034"W | Y (m) | -6200658.9979 |
| Height (m) | 1749.8089 | Ellipsoid Height(m) | 1782.1539 | Ellipsoid Height(m) | 1782.1539 | Z (m) | 270141.5168 |

**BaselineB25**

| | | | | | |
|---|---|---|---|---|---|
| ΔNorth(m) | -103213.0517 | NS Fwd Azimuth | 184°14'01.37126" | ΔX（m）(m) | -6032.5332 |
| ΔEast(m) | -7866.1203 | Ellipsoid Dist.(m) | 103438.8078 | ΔY（m）(m) | -7598.8513 |
| ΔHeight(m) | 751.3214 | ΔEllipsoid Height(m) | 754.6759 | ΔZ（m）(m) | -102982.7799 |

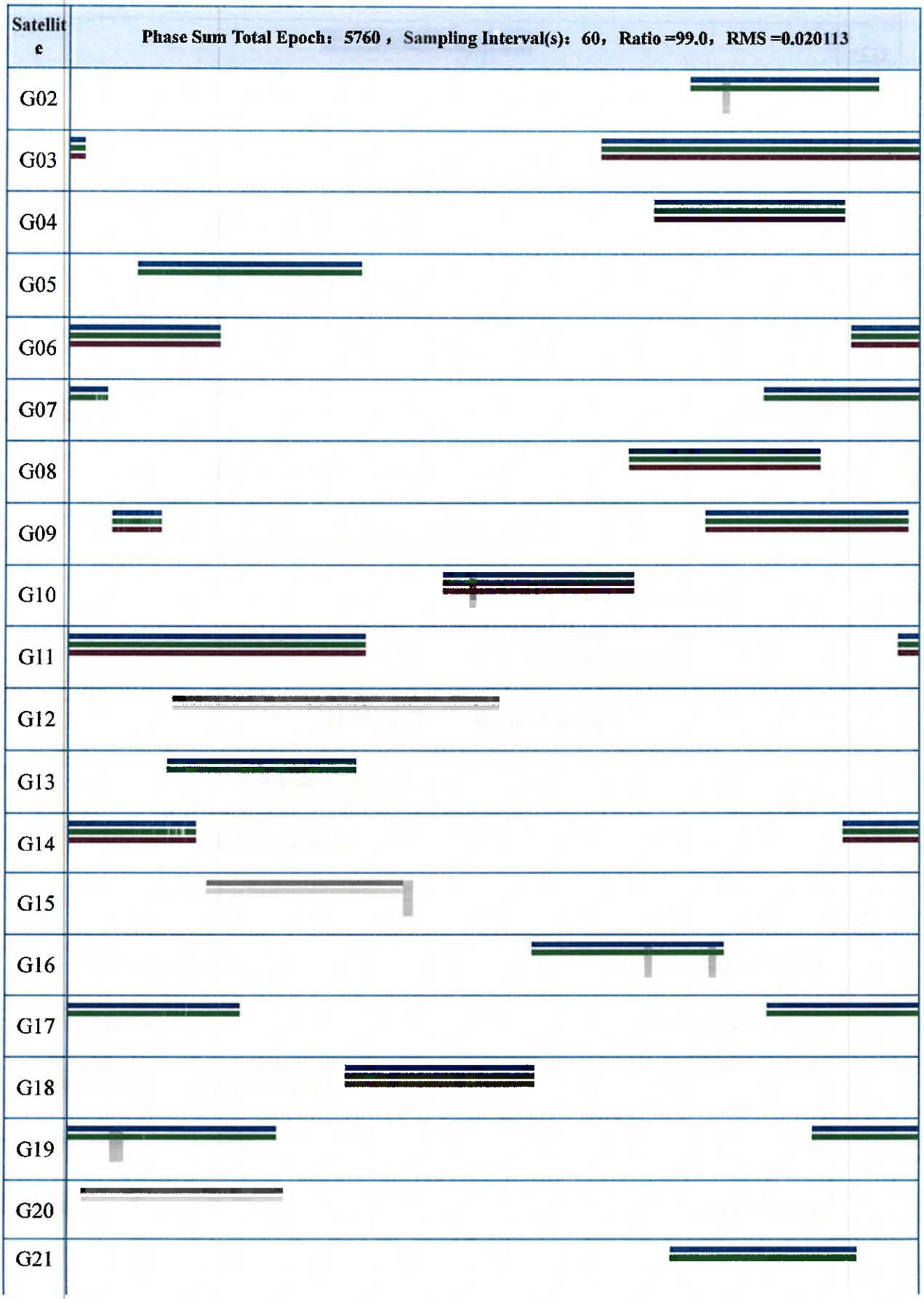
**Standard Errors**

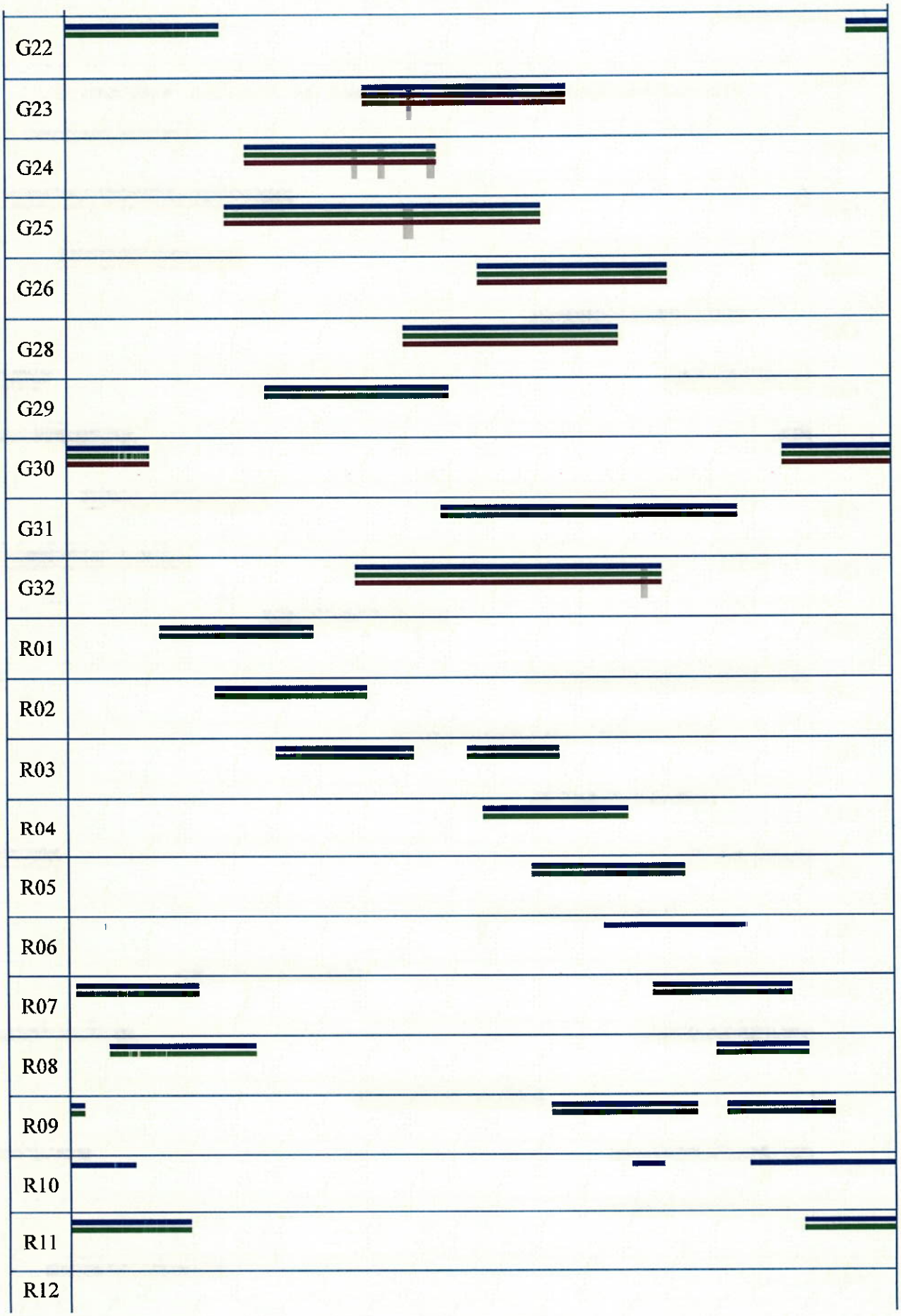
| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0003 | Std. NS Fwd Azimuth(s) | 0.0009 | Std. ΔX（m）(m) | 0.0005 |
| Std.ΔEast(m) | 0.0005 | Std.Ellipsoid Distance(m) | 0.0000 | Std. ΔY（m）(m) | 0.0007 |
| Std.ΔHeight(m) | 0.0007 | Std.ΔEllipsoid Height(m) | 0.0007 | Std. ΔZ（m）(m) | 0.0003 |
| Horizontal Accuracy(m) | 0.0230 | Vertical Accuracy(m) | 0.0457 | | |

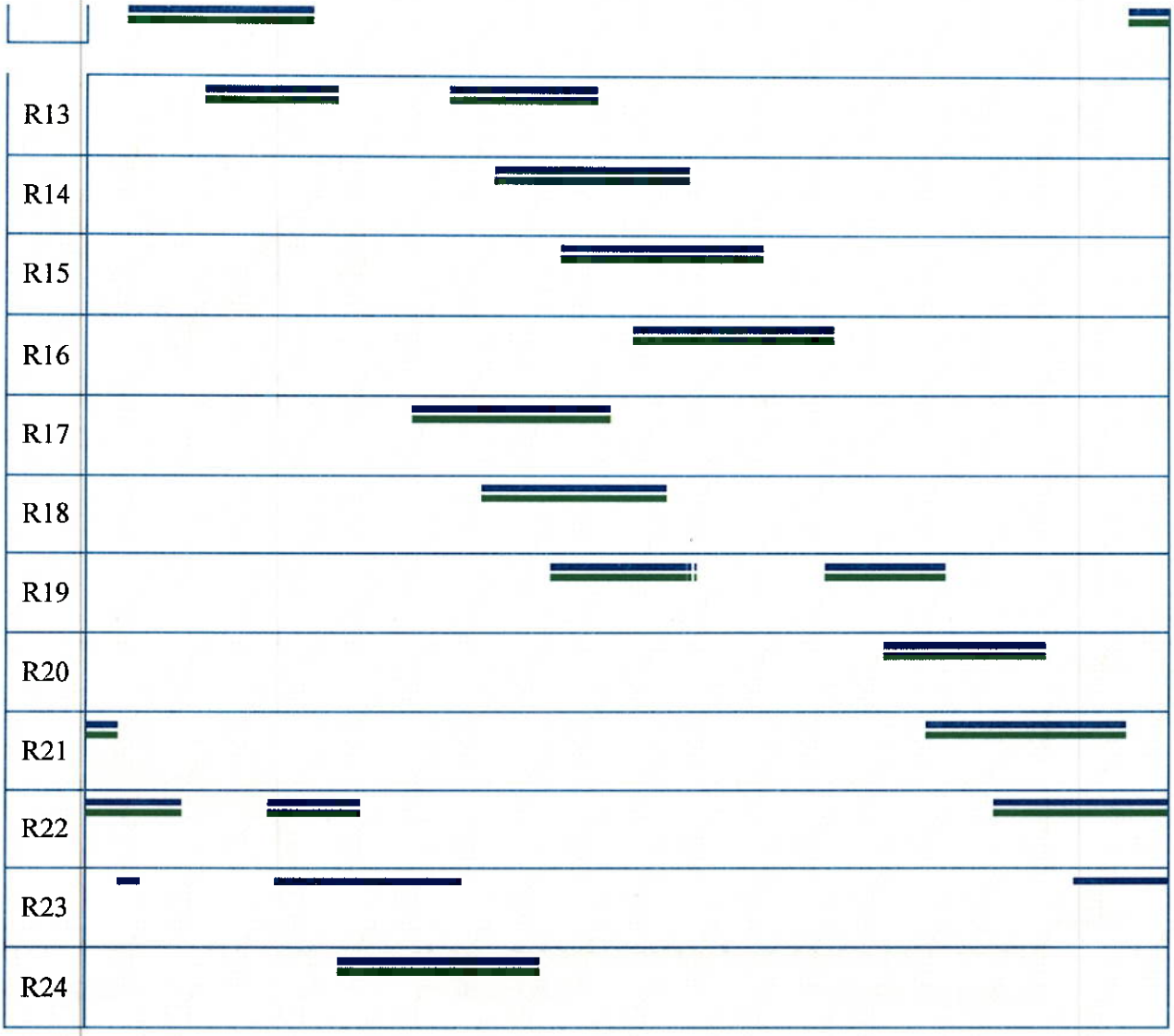
**Aposteriori Covariance Matrix (cm^2)**

| | X | Y | Z |
|---|---|---|---|
| X | 0.0026 | | |
| Y | -0.0009 | 0.0053 | |
| Z | -0.0002 | -0.0002 | 0.0008 |

## 4 Tracking Summary

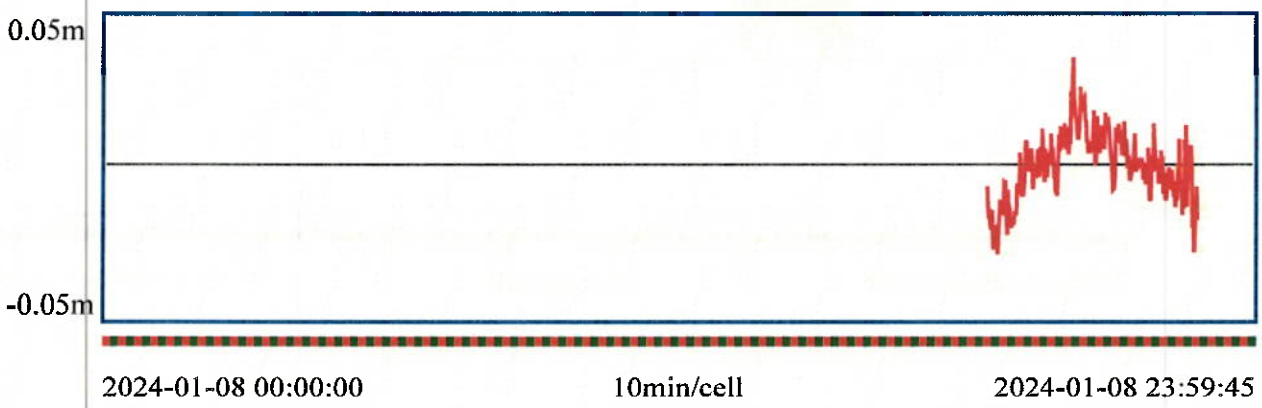



G22
G23
G24
G25
G26
G28
G29
G30
G31
G32
R01
R02
R03
R04
R05
R06
R07
R08
R09
R10
R11
R12

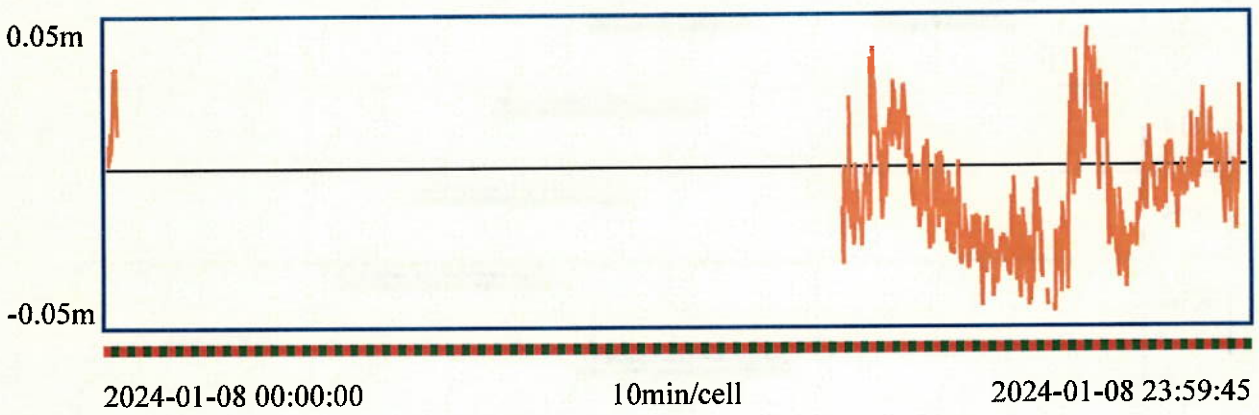



**5 Residuals**

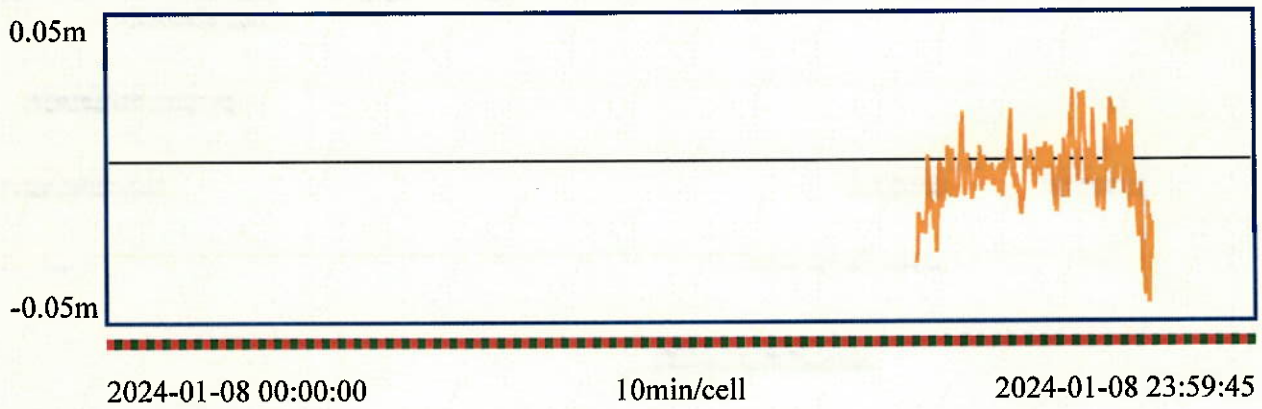
**G02**



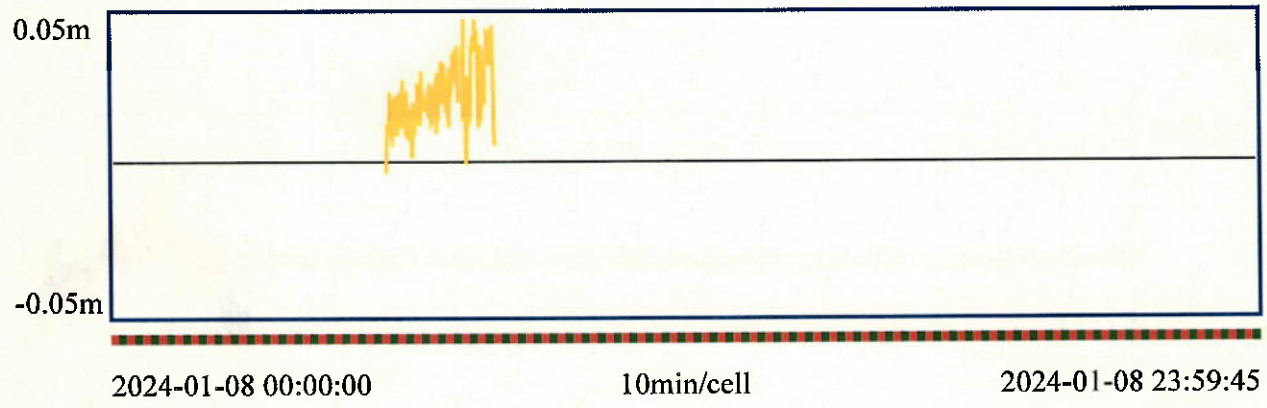
**G03**



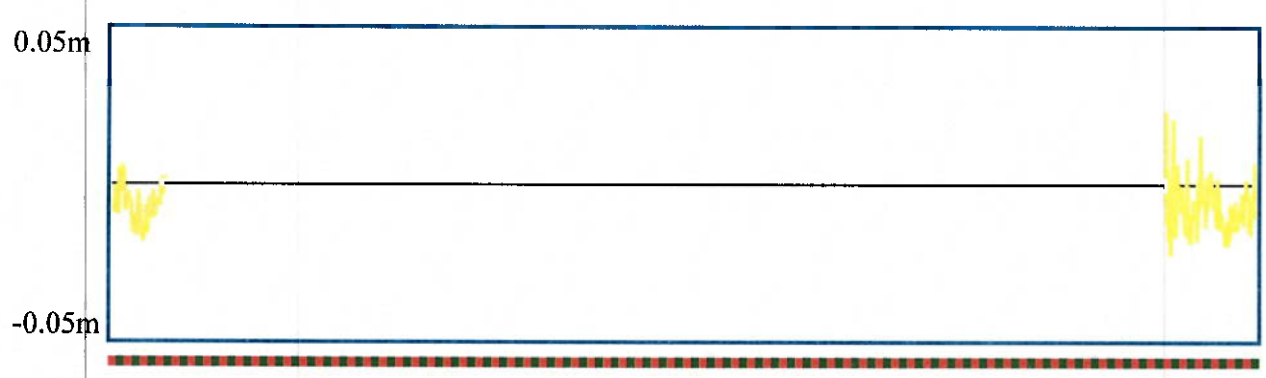

**G04**




**G05**

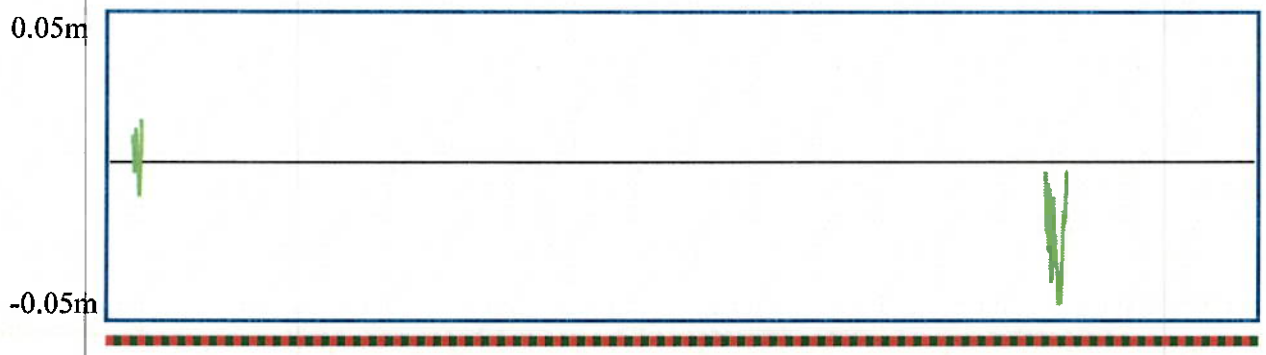



**G06**



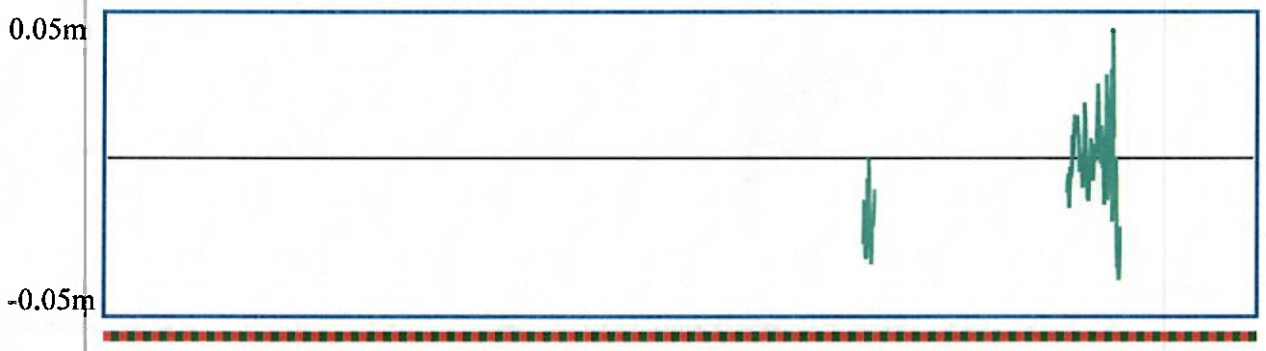

2024-01-08 00:00:00 10min/cell 2024-01-08 23:59:45

**G07**




2024-01-08 00:00:00 10min/cell 2024-01-08 23:59:45

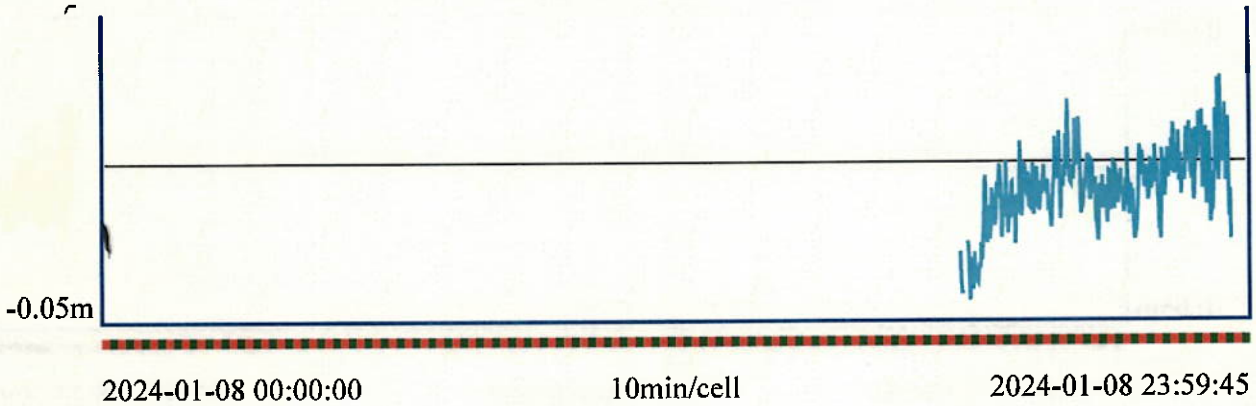
**G08**



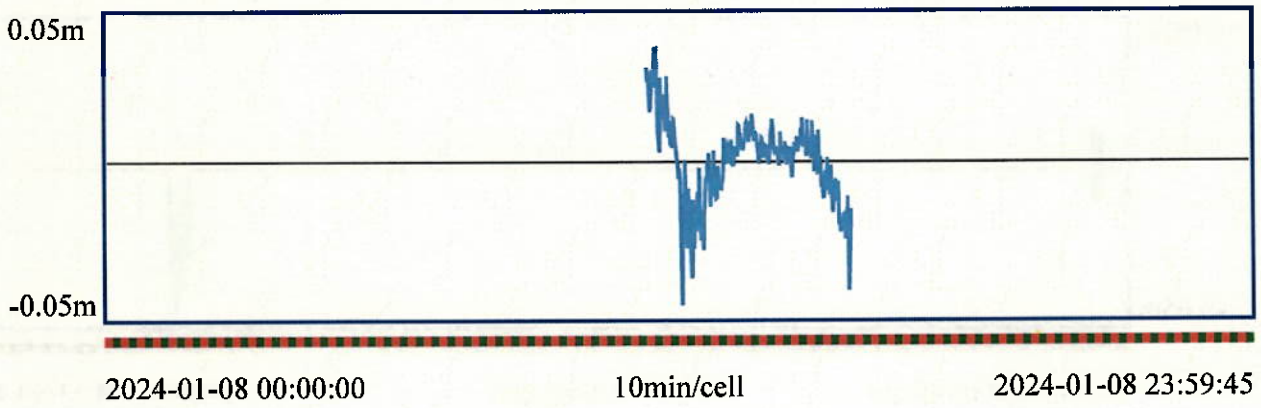

2024-01-08 00:00:00 10min/cell 2024-01-08 23:59:45

**G09**

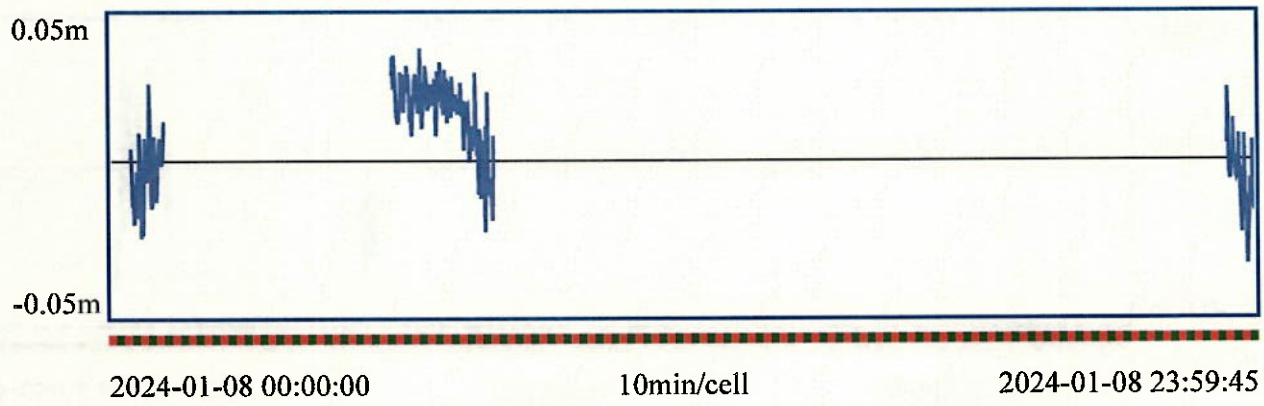



-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G10**

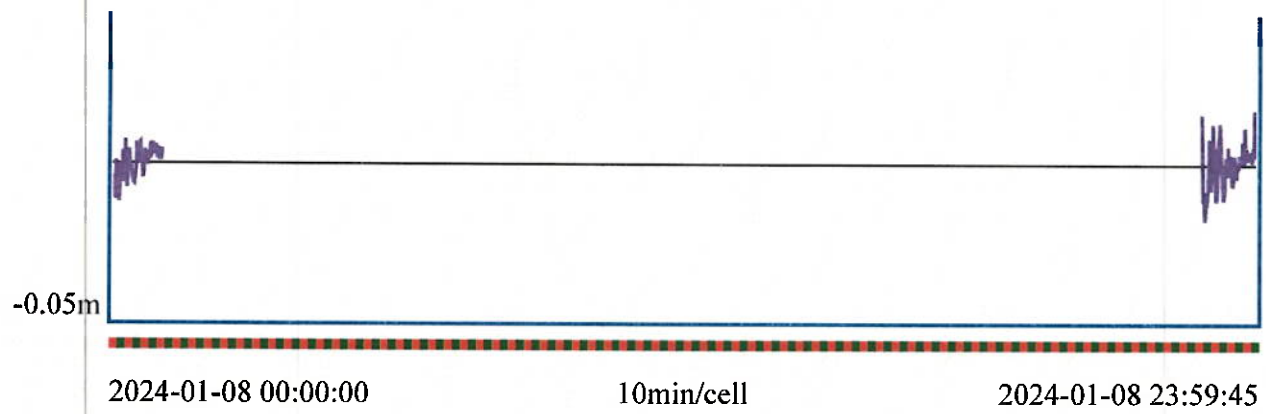

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G11**

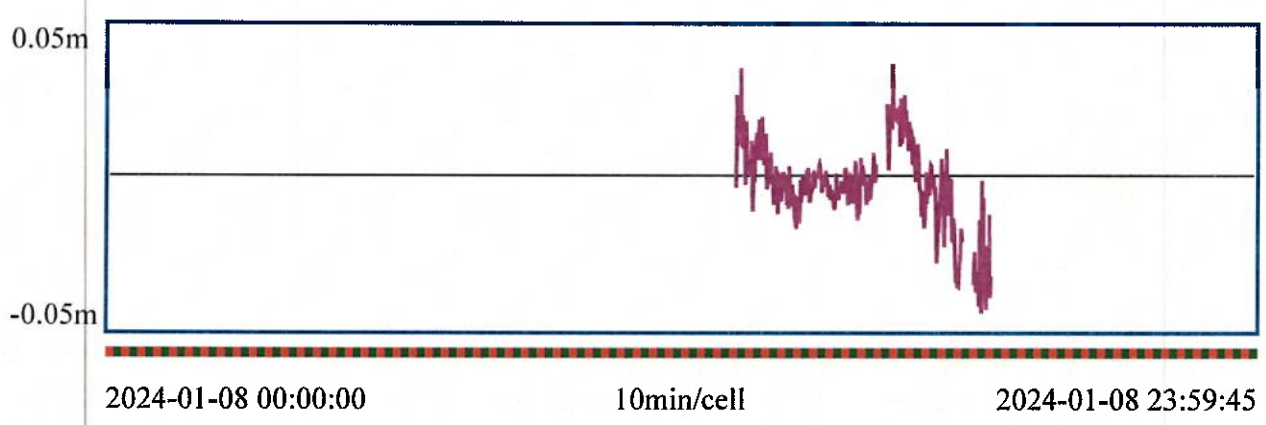

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G14**

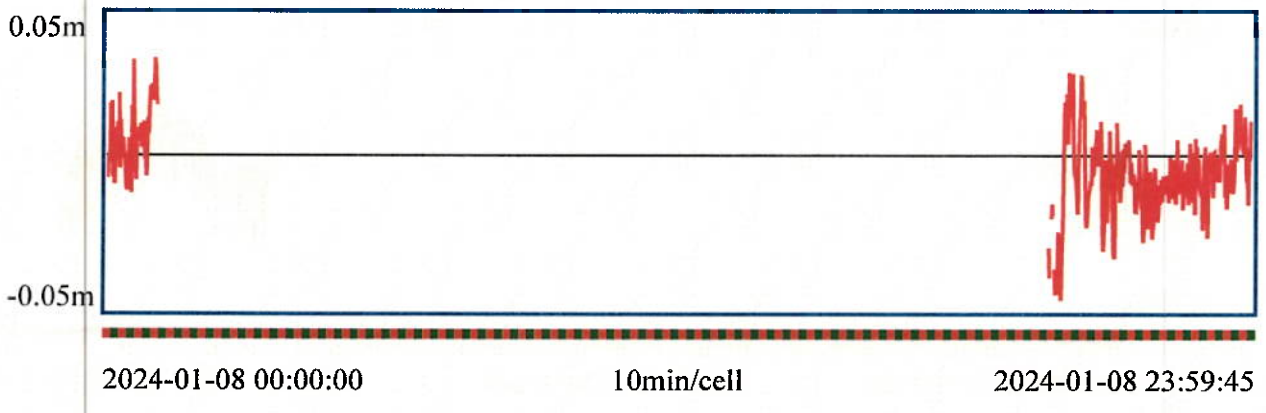

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

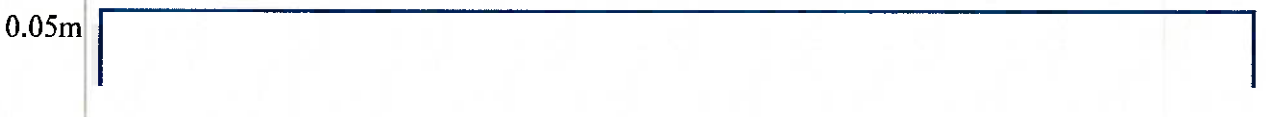
**G16**

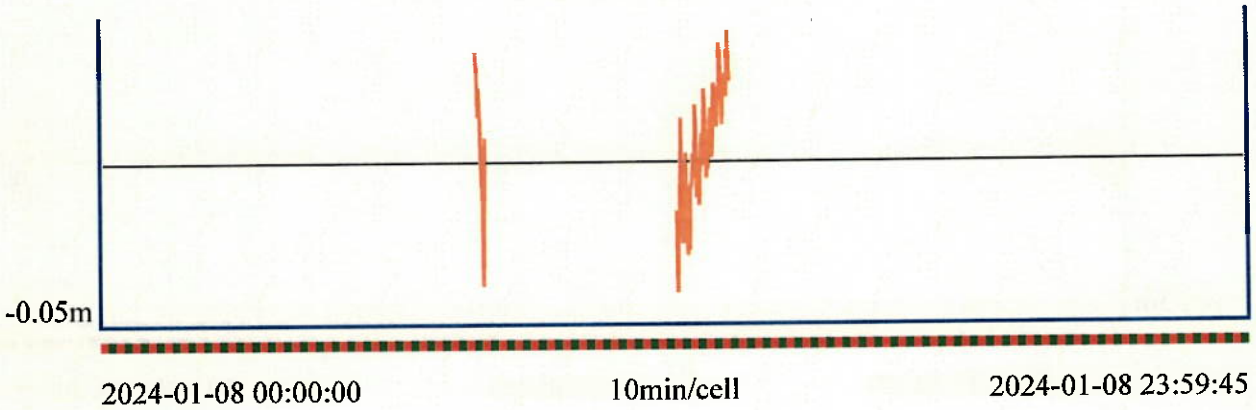

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G17**

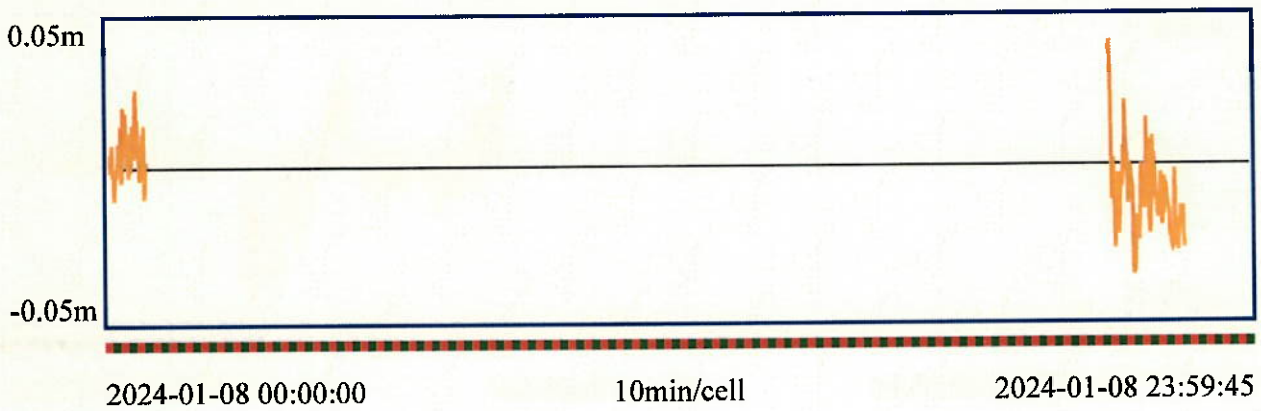

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G18**

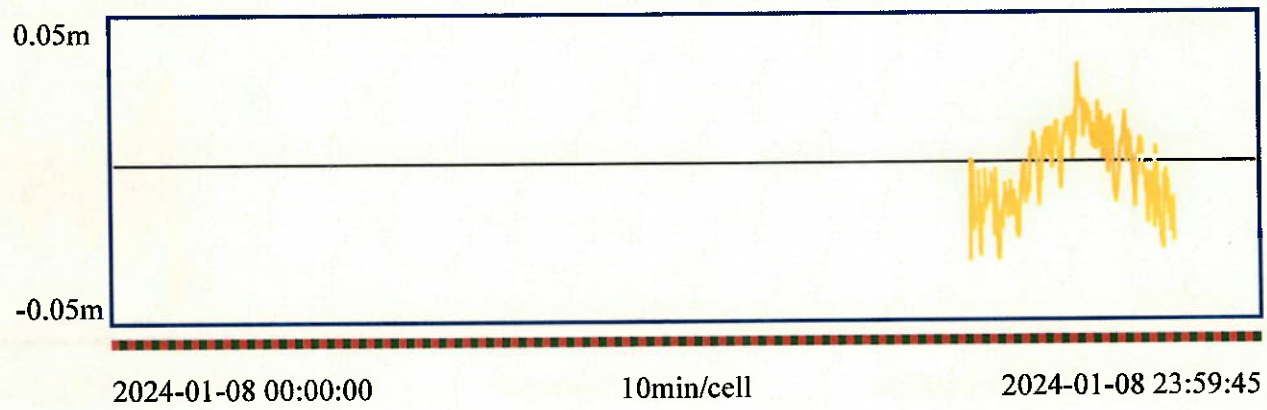

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G19**

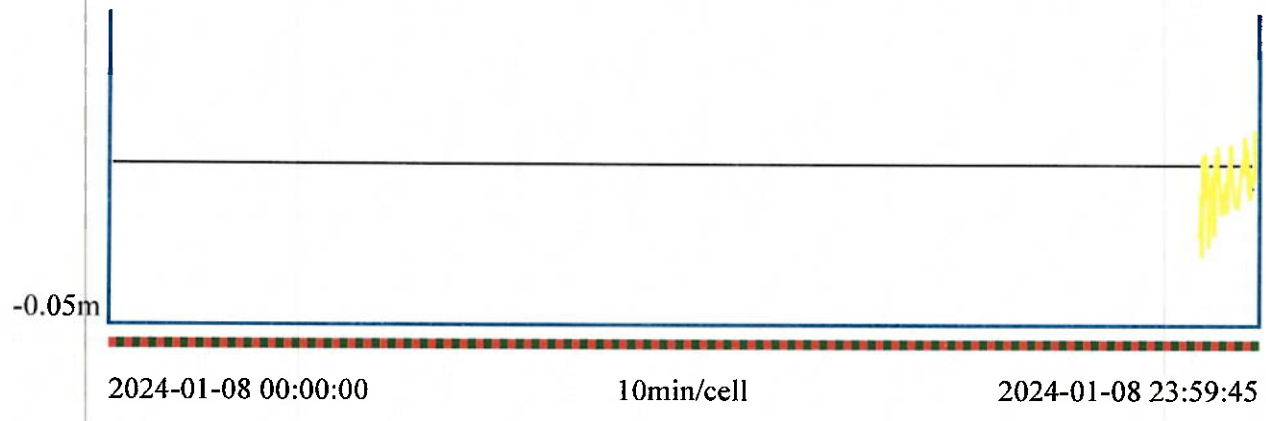

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G21**

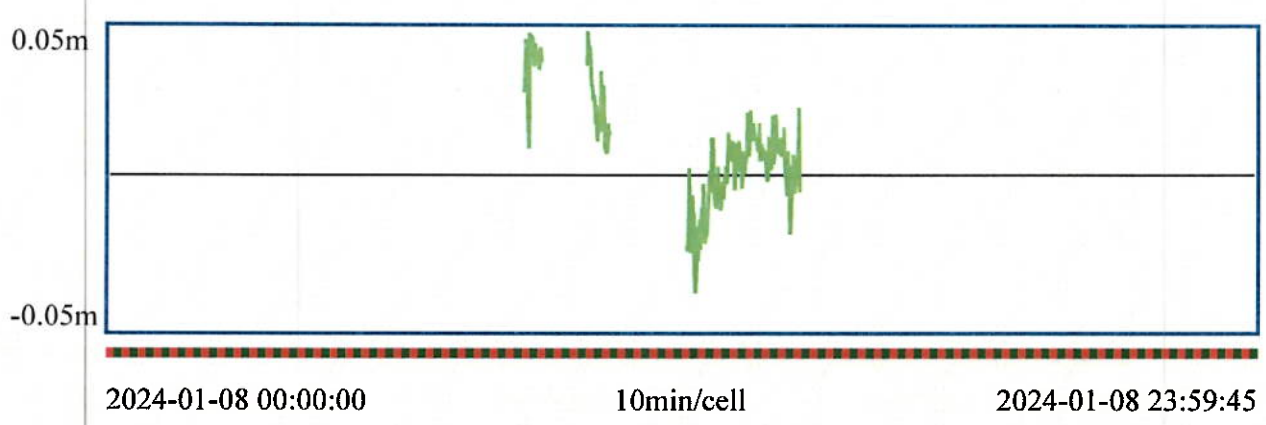

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G22**

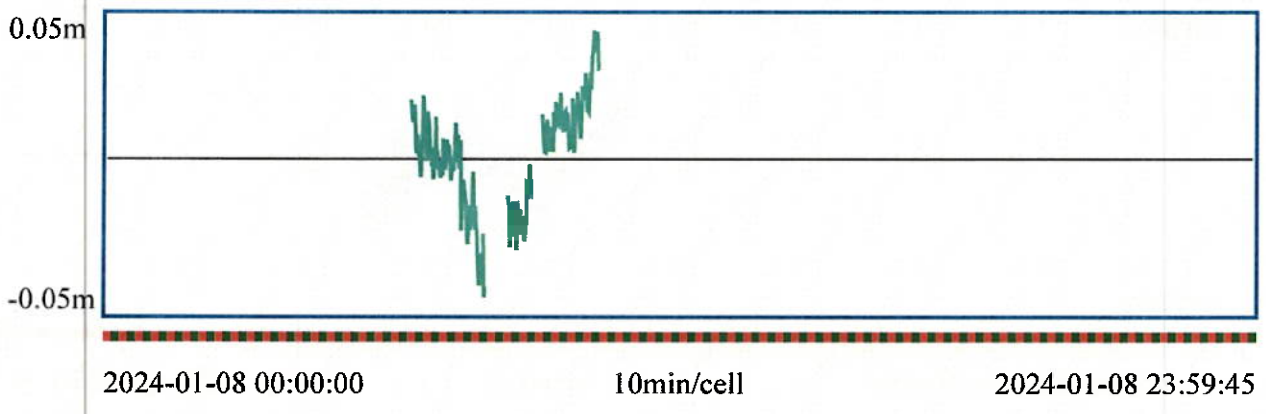

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G23**

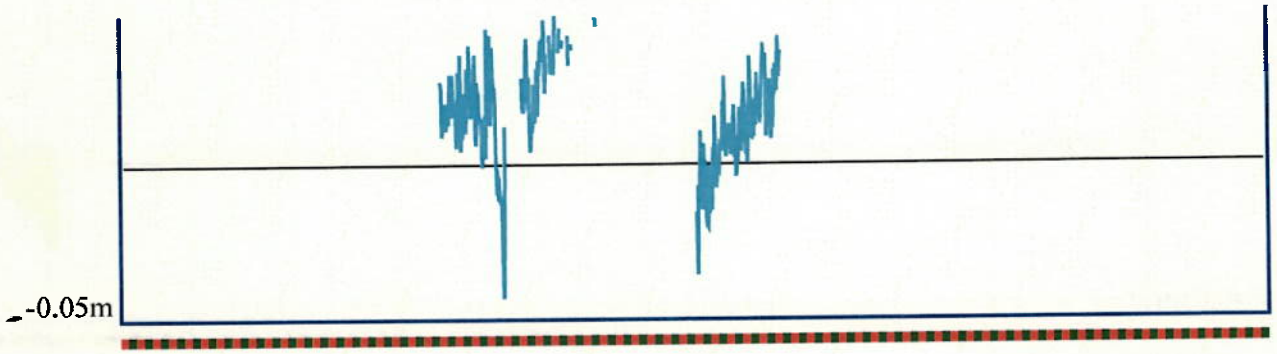

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G24**

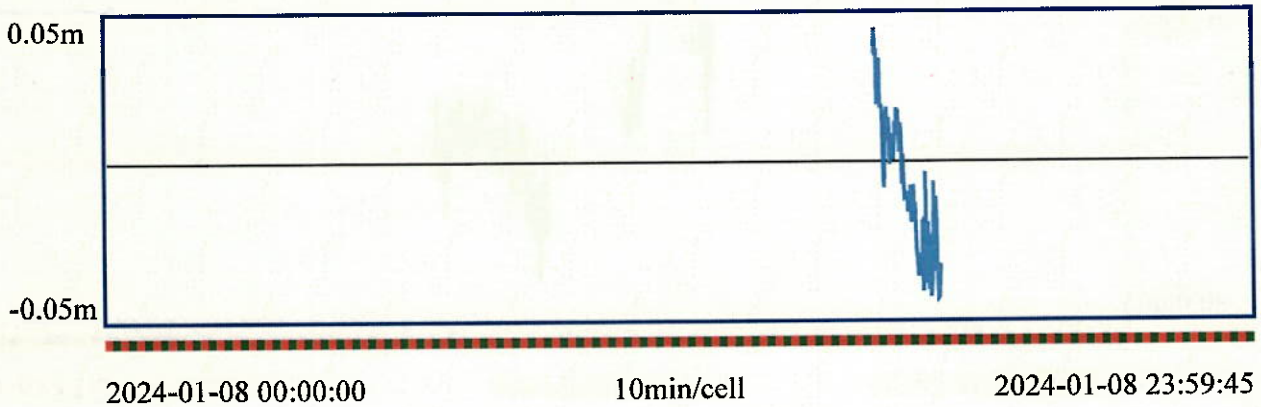

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G25**

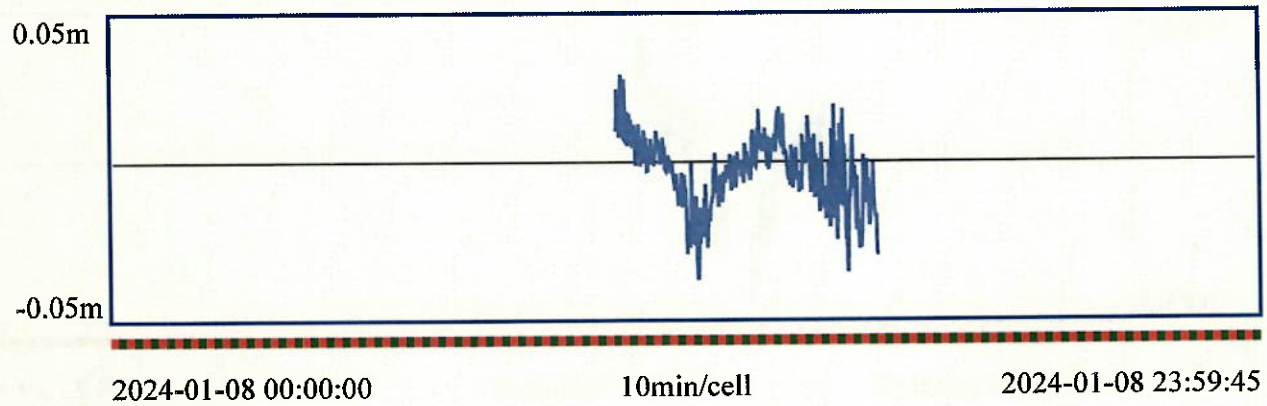

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G26**

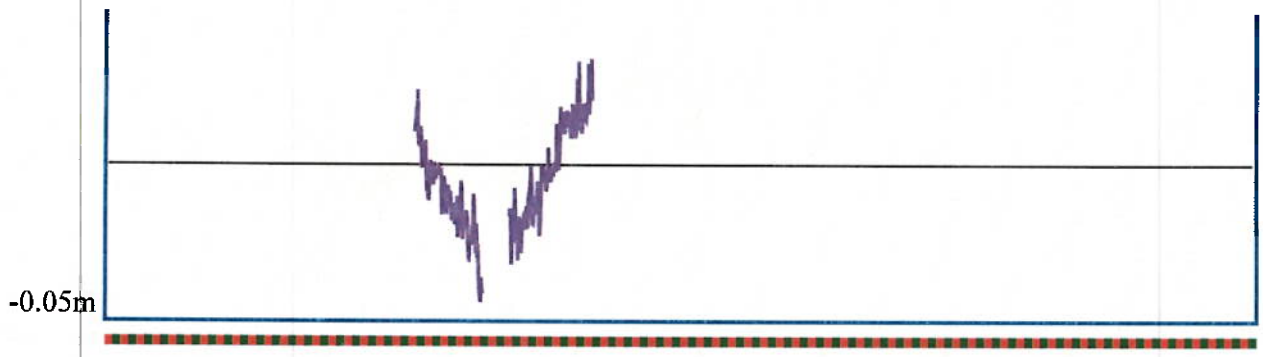

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G28**


0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

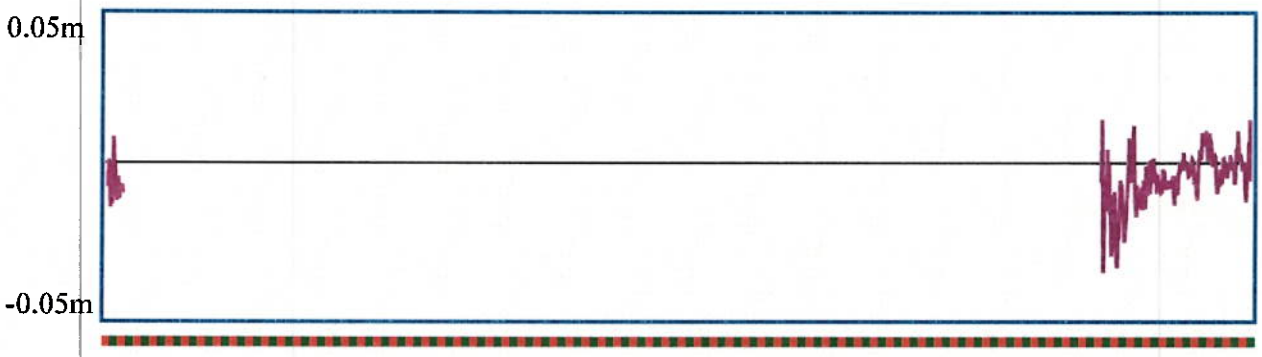
**G29**


0.05m



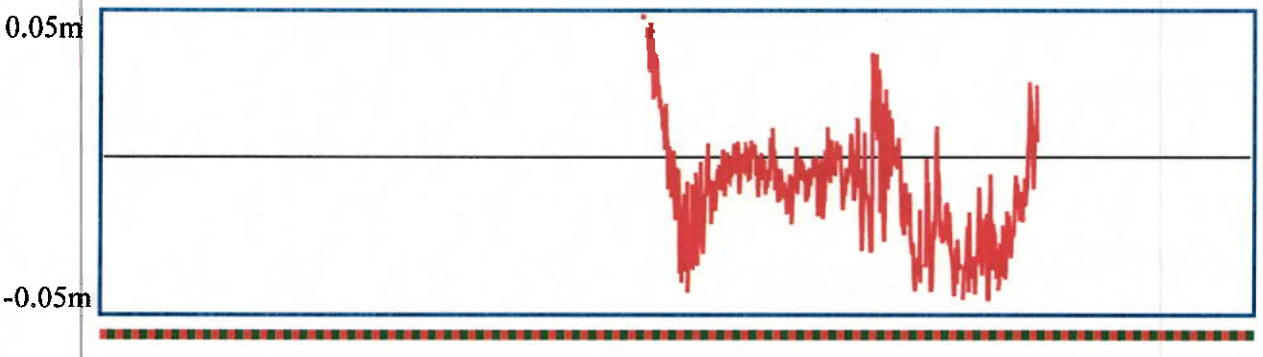

2024-01-08 00:00:00 10min/cell 2024-01-08 23:59:45

**G30**




2024-01-08 00:00:00 10min/cell 2024-01-08 23:59:45

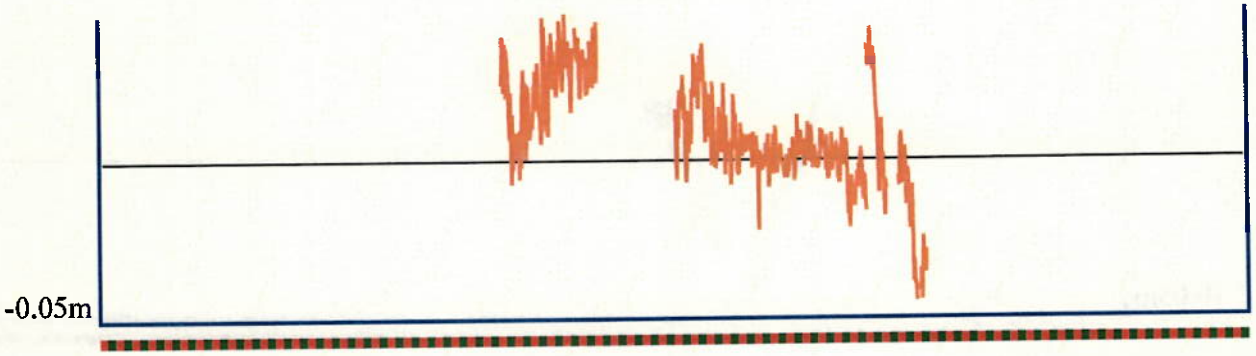
**G31**




2024-01-08 00:00:00 10min/cell 2024-01-08 23:59:45

**G32**






## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 12.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |
| Use Observed Met. Data | Allowed |

### 6 .4 Ionosphere

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

### 6 .5 Ambiguity

| | |
|---|---|
| Search Mode | Lambda |

### 6 .6 Quality

| | |
|---|---|
| RMS Tolerance | 0.040m |
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |

# B28 Baseline Report

## 1 Baseline Summary

| Name | Value |
|---|---|
| Baseline ID（Start->End） | B28(cali0080.hcs->grzn0080.hcs) |
| Solution Type | Lc Fix |
| Used Ephemeris | Precise |
| Ellipsoid Dist.(m) | 165582.7851 |
| Elevation Mask | 15° |
| RMS(m) | 0.0191 |
| HDOP | 1.059 |
| VDOP | 2.166 |
| PDOP | 2.411 |
| Total number of satellites | 27 |
| Start Time (GPST) | 2024-01-08 00.00.00( week : 2296 , second : 86400 ) |
| Stop Time (GPST) | 2024-01-08 23.59.45( week : 2296 , second : 172785 ) |
| Observation Time | 23:59:45 |

## 2 Occupations Data

| List | Start Point | End Point |
|---|---|---|
| Data File | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\cali0080.24o | E:\Trabajos Israel\Garzon-EPG\20240108_Data\Rinex\grzn0080.24o |
| Receiver Type | TRIMBLE NETR9 | LEICA GR50 |
| Receiver Serial | 5145K79436 | 1871654.0 |
| Antanna Type | TRM59800.00 SCIS | LEIAR20 LEIM |
| Measure Type | Measure to bottom | Measure to bottom |
| Antanna Height (m) | 0.1400 | 0.0350 |

## 3 Baseline Components

**Start PointCALI**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 865391.7124 | Latitude | 03°22'32.83935"N | Latitude | 03°22'32.83935"N | X (m) | 1483099.9919 |
| East(m) | 727091.9440 | Longitude | 076°31'57.23091"W | Longitude | 076°31'57.23091"W | Y (m) | -6193060.1466 |
| Height | 998.4875 | Ellipsoid Height(m) | 1027.4780 | Ellipsoid Height(m) | 1027.4780 | Z (m) | 373124.296 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (m) | | | | | | | 7 |

**End PointGRZN**

| Grid(Local) | | Geodetic Coordinates (Local) | | Geodetic Coordinates(WGS84) | | Space Coor.(WGS84) | |
|---|---|---|---|---|---|---|---|
| North(m) | 737392.1597 | Latitude | 02°13'14.04990"N | Latitude | 02°13'14.04990"N | X (m) | 1586854.5250 |
| East(m) | 832256.6968 | Longitude | 075°35'07.15831"W | Longitude | 075°35'07.15831"W | Y (m) | -6173823.7413 |
| Height (m) | 1091.9116 | Ellipsoid Height(m) | 1117.9403 | Ellipsoid Height(m) | 1117.9403 | Z (m) | 245520.9413 |

**BaselineB28**

| | | | | | |
|---|---|---|---|---|---|
| ΔNorth(m) | -127999.5528 | NS Fwd Azimuth | 140°28'13.16355" | ΔX（m）(m) | 103754.5331 |
| ΔEast(m) | 105164.7527 | Ellipsoid Dist.(m) | 165582.7851 | ΔY（m）(m) | 19236.4053 |
| ΔHeight(m) | 93.4241 | ΔEllipsoid Height(m) | 90.4623 | ΔZ（m）(m) | -127603.3554 |

**Standard Errors**

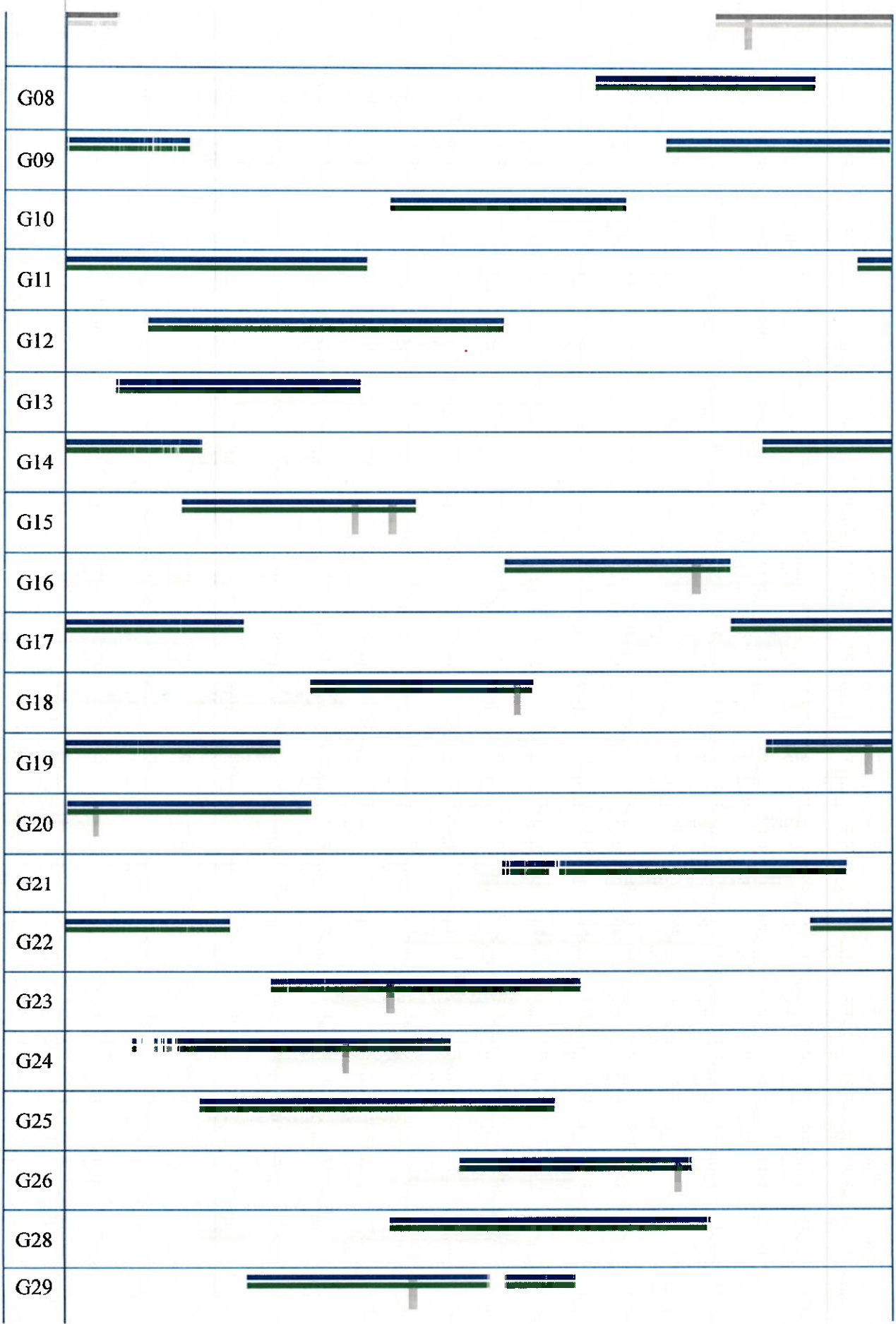
| | | | | | |
|---|---|---|---|---|---|
| Std.ΔNorth(m) | 0.0003 | Std. NS Fwd Azimuth(s) | 0.0007 | Std.ΔX（m）(m) | 0.0005 |
| Std.ΔEast(m) | 0.0004 | Std.Ellipsoid Distance(m) | 0.0000 | Std.ΔY（m）(m) | 0.0008 |
| Std.ΔHeight(m) | 0.0009 | Std.ΔEllipsoid Height(m) | 0.0009 | Std.ΔZ（m）(m) | 0.0003 |
| Horizontal Accuracy(m) | 0.0202 | Vertical Accuracy(m) | 0.0414 | | |

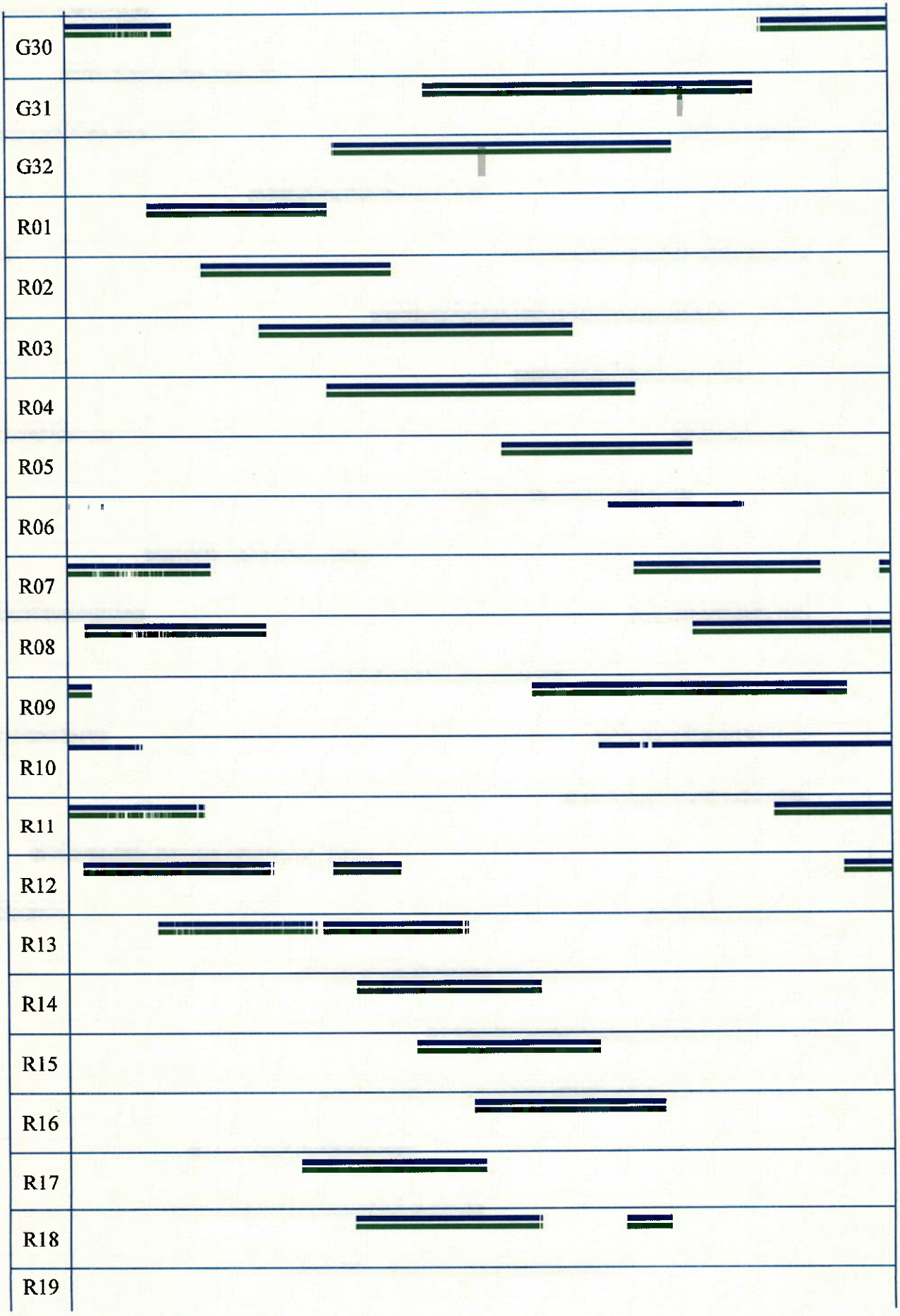
**Aposteriori Covariance Matrix (cm^2)**

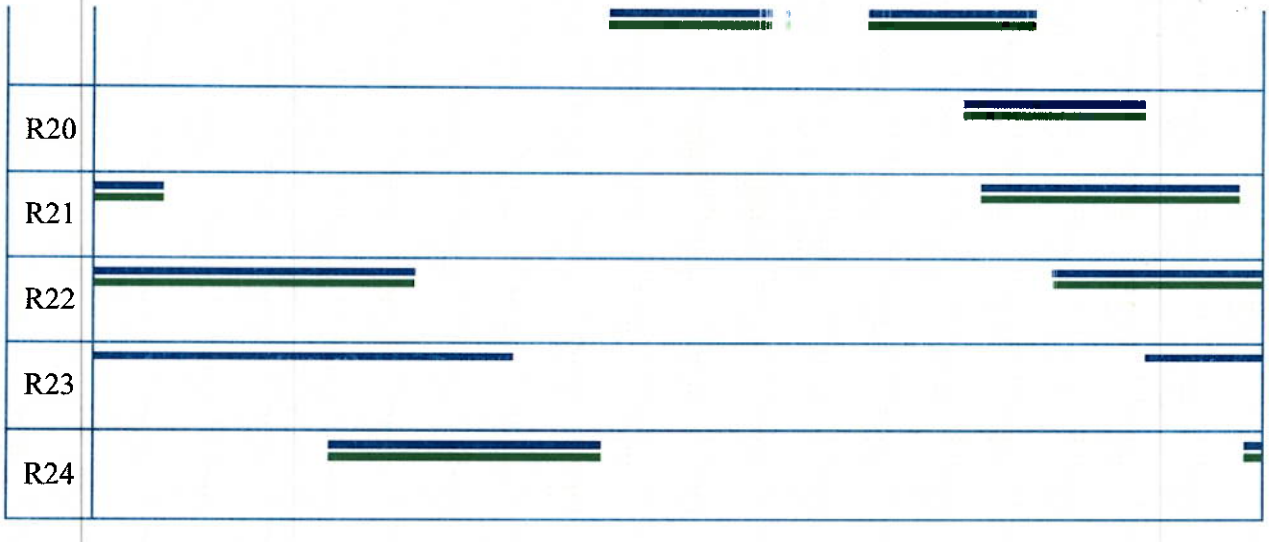
| | X | Y | Z |
|---|---|---|---|
| X | 0.0022 | | |
| Y | -0.0014 | 0.0071 | |
| Z | 0.0000 | -0.0001 | 0.0009 |

## 4 Tracking Summary

| Satellite | Phase Sum Total Epoch：5760，Sampling Interval(s)：60，Ratio =36.4，RMS =0.019123 |
|---|---|
| G02 | |
| G03 | |
| G04 | |
| G05 | |
| G06 | |
| G07 | |

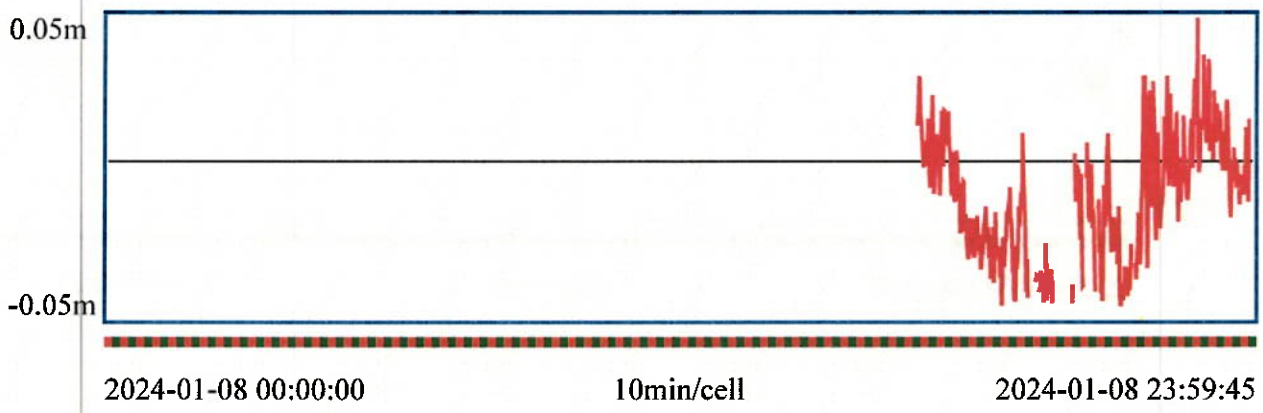

G08
G09
G10
G11
G12
G13
G14
G15
G16
G17
G18
G19
G20
G21
G22
G23
G24
G25
G26
G28
G29


G30
G31
G32
R01
R02
R03
R04
R05
R06
R07
R08
R09
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19

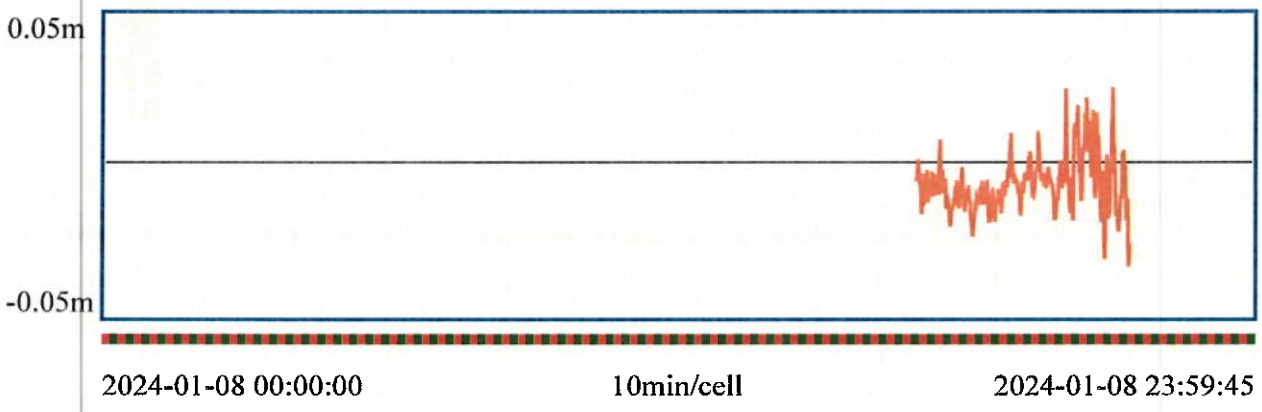



**5 Residuals**

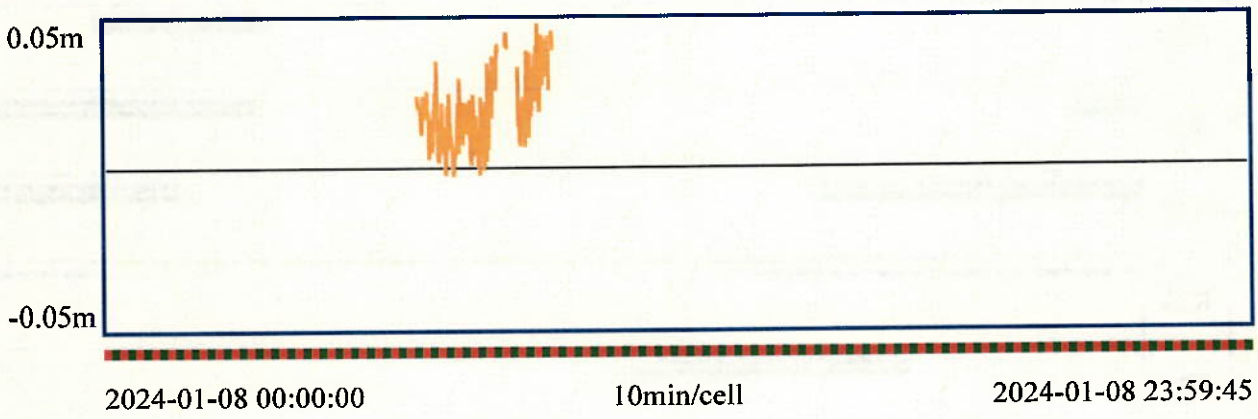
**G03**



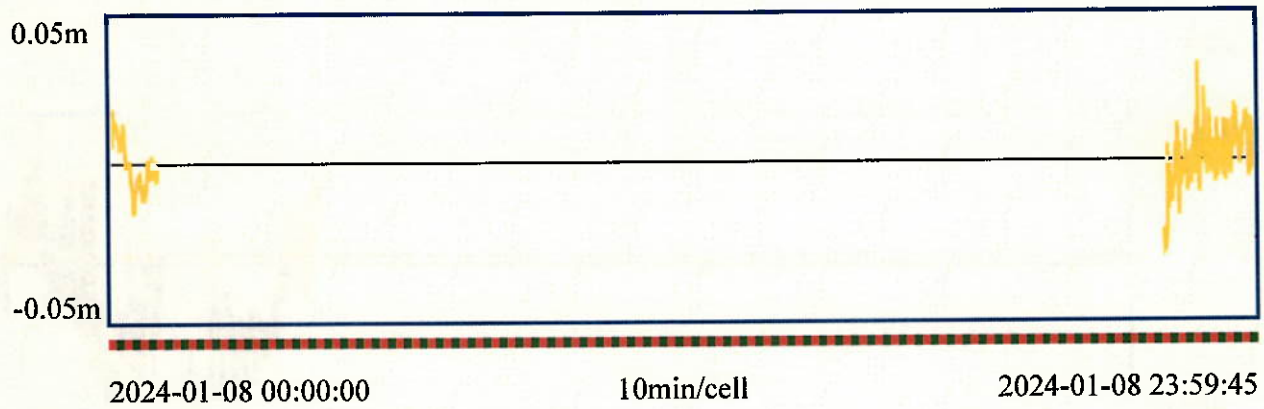

**G04**



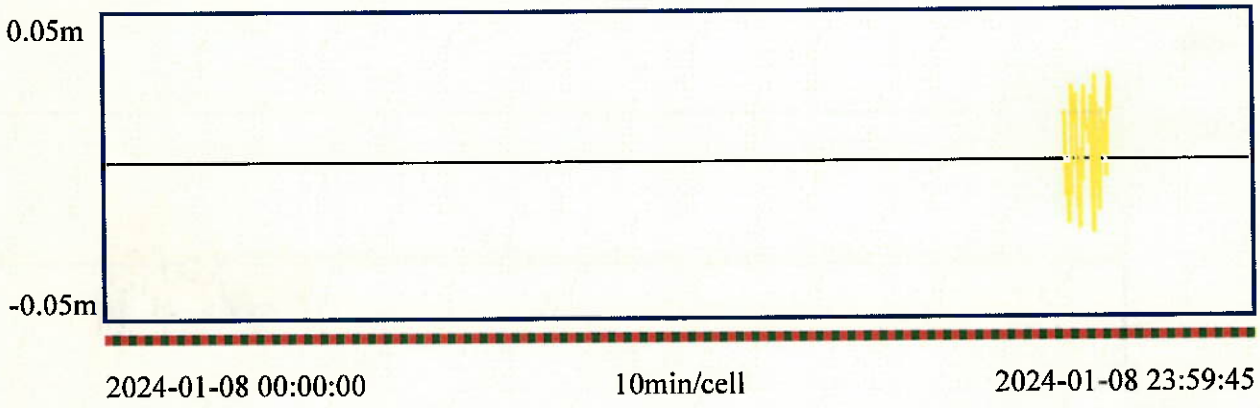
**G05**



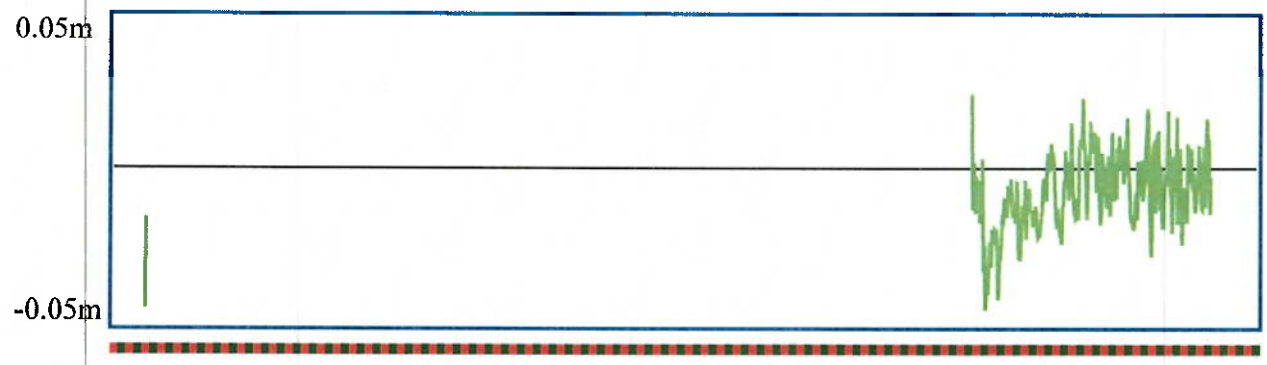

**G06**




**G08**




**G09**



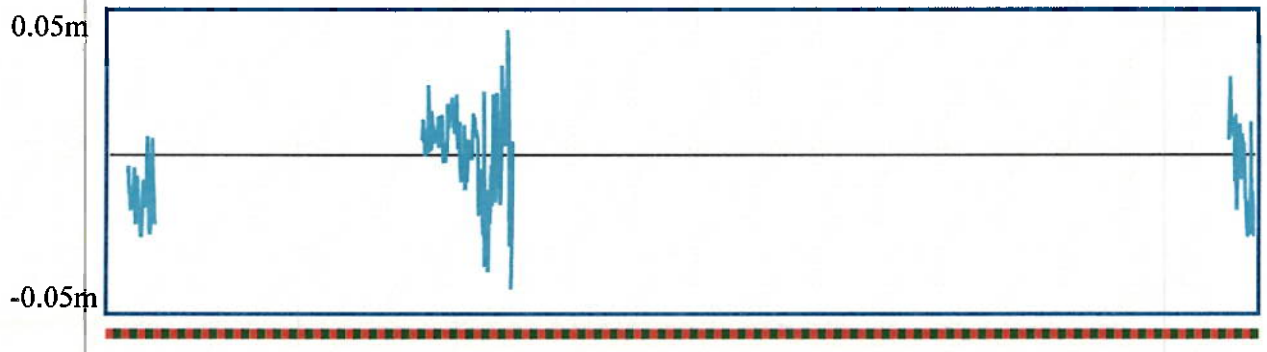

2024-01-08 00:00:00 10min/cell 2024-01-08 23:59:45

**G10**




2024-01-08 00:00:00 10min/cell 2024-01-08 23:59:45

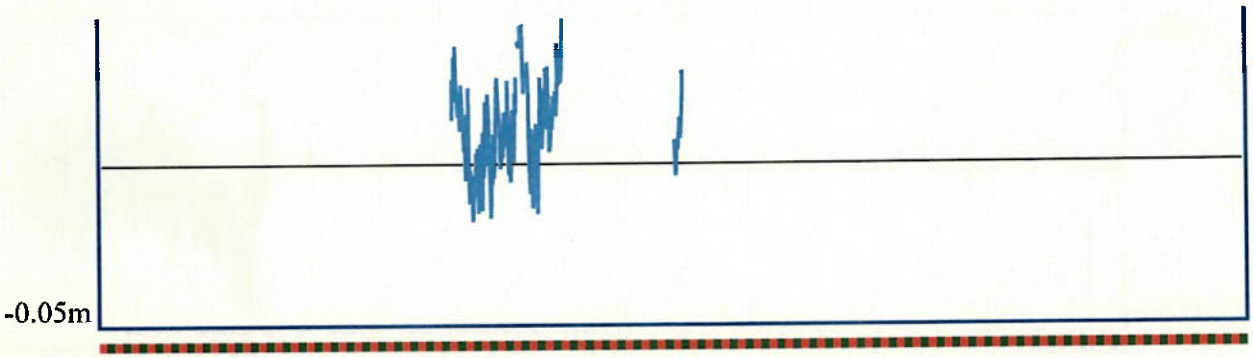
**G11**



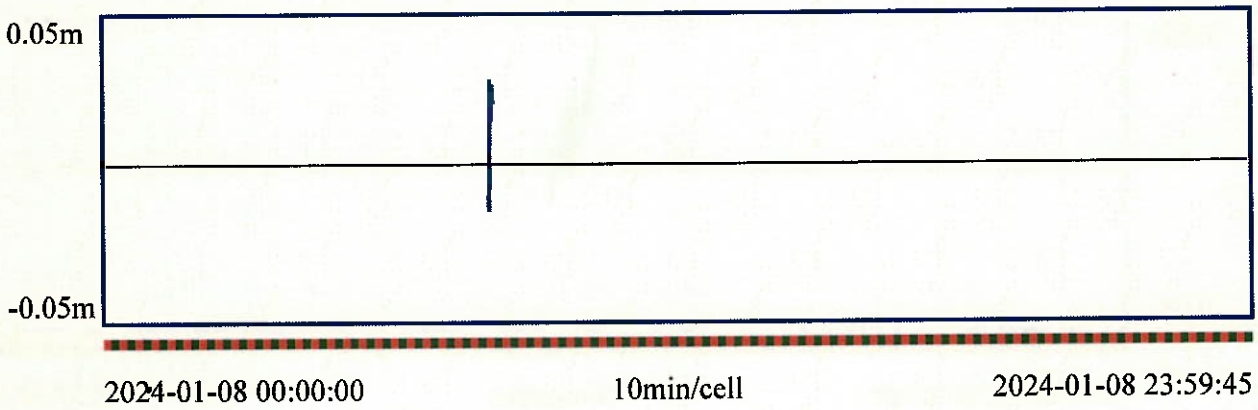

2024-01-08 00:00:00 10min/cell 2024-01-08 23:59:45

**G12**

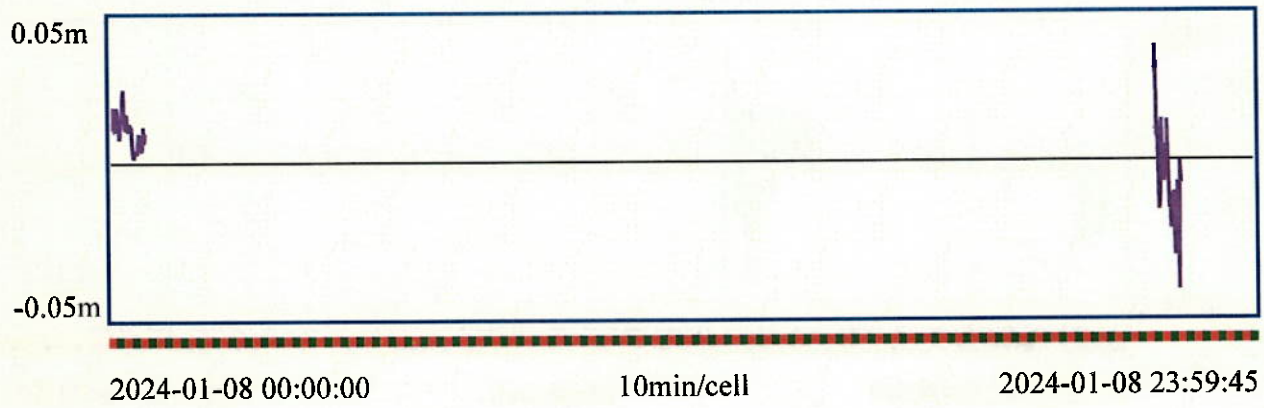



-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G13**

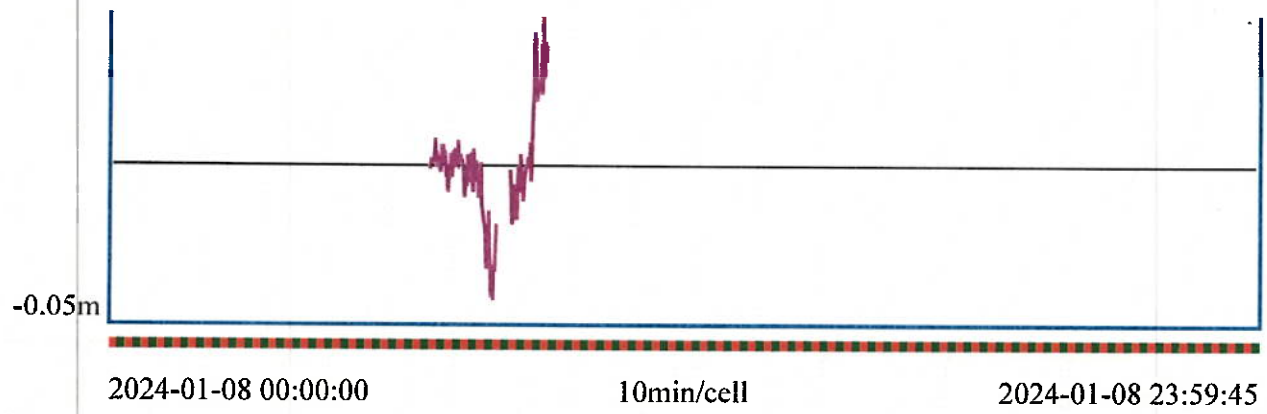

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G14**

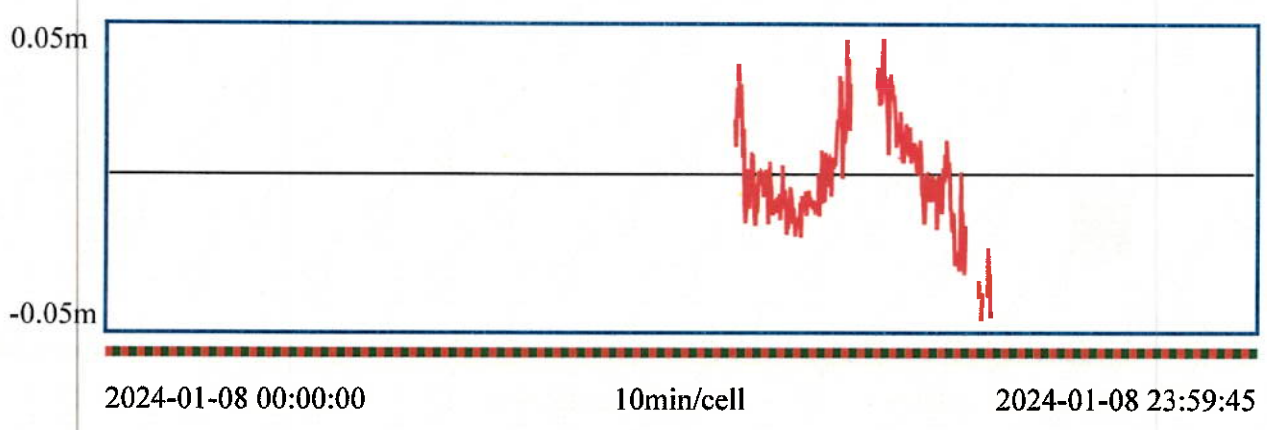

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G15**

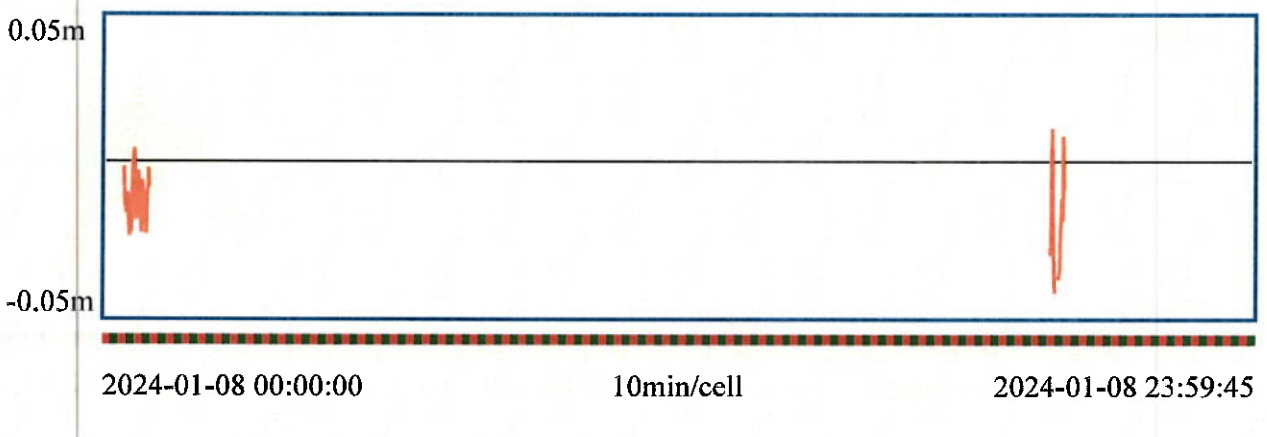

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G16**

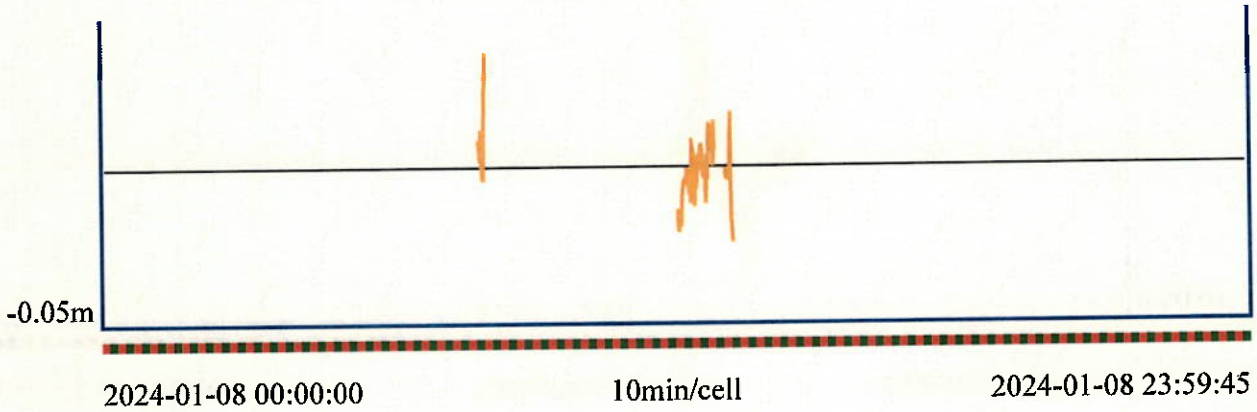

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G17**

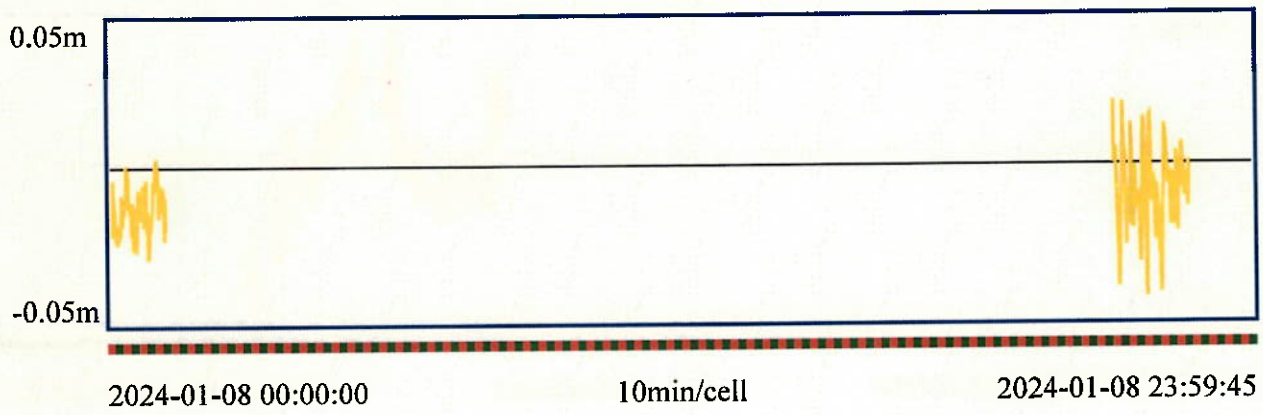

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G18**

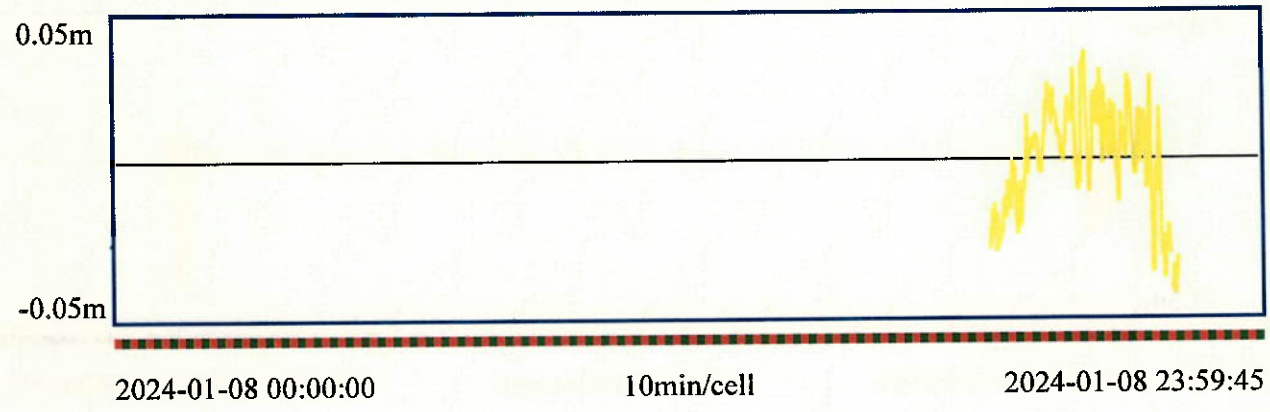

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G19**

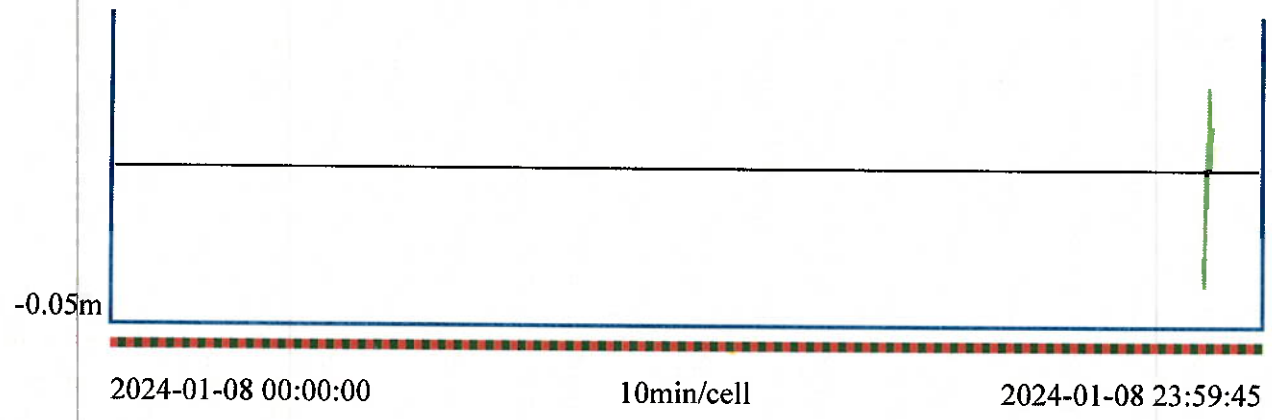

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G21**

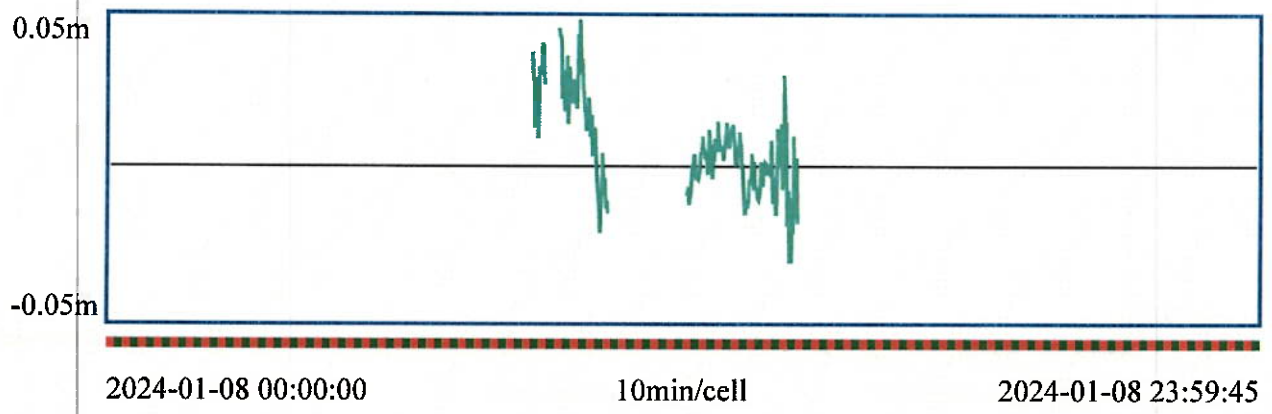

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G22**

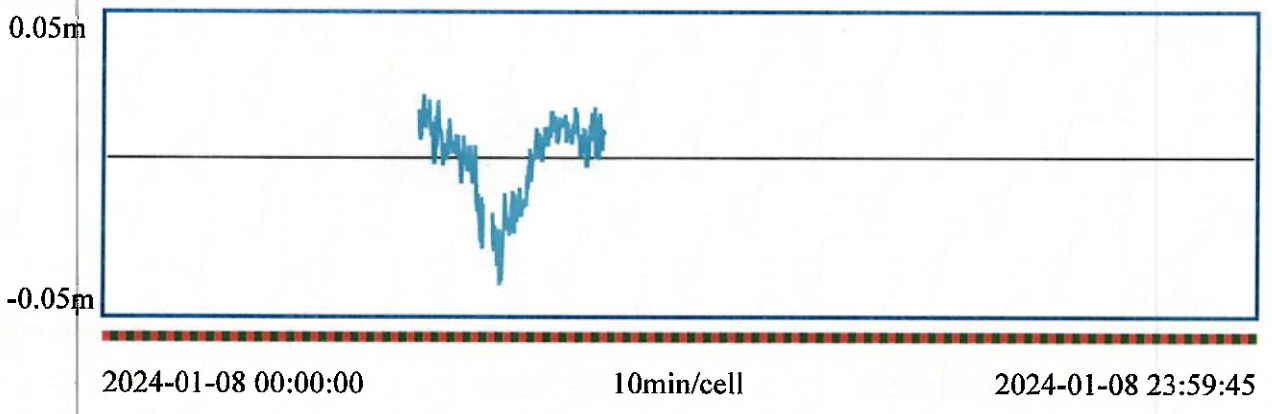

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

G23

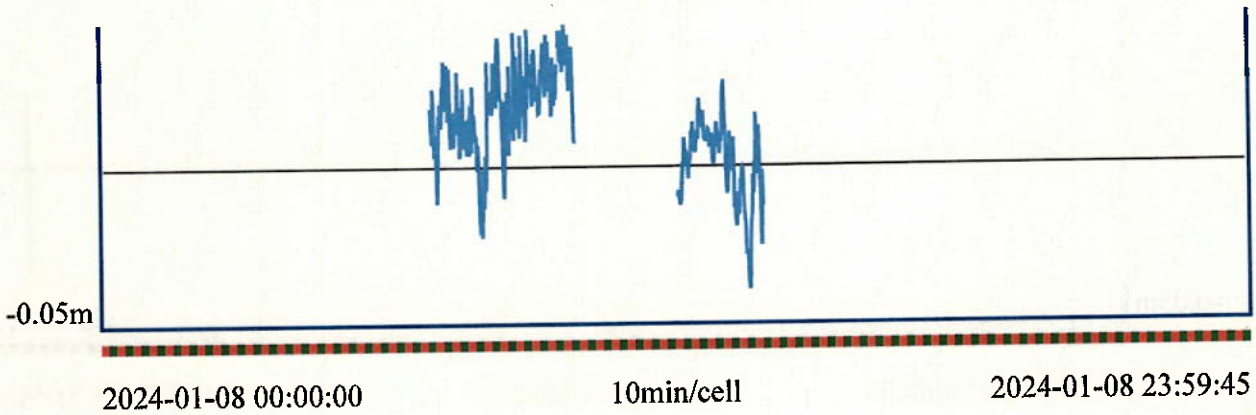

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

G24

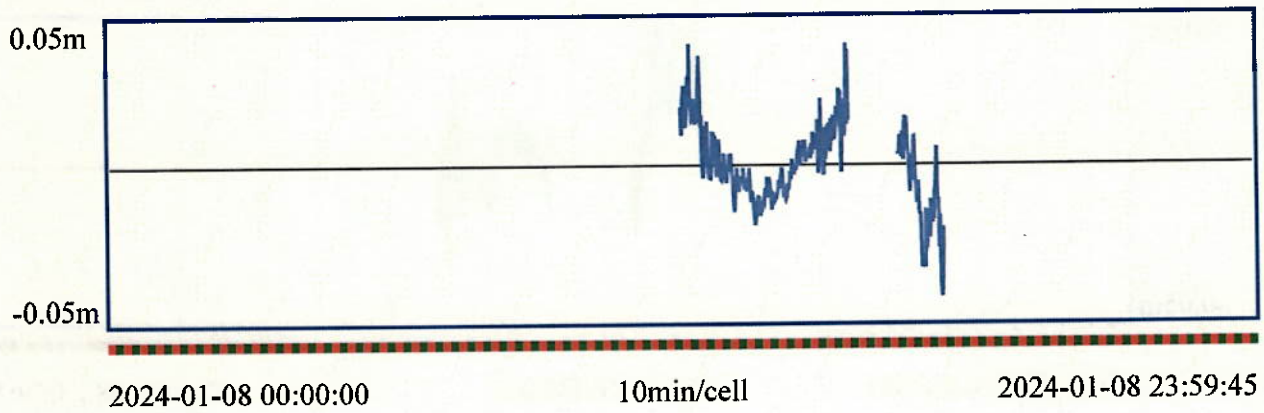

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

G25

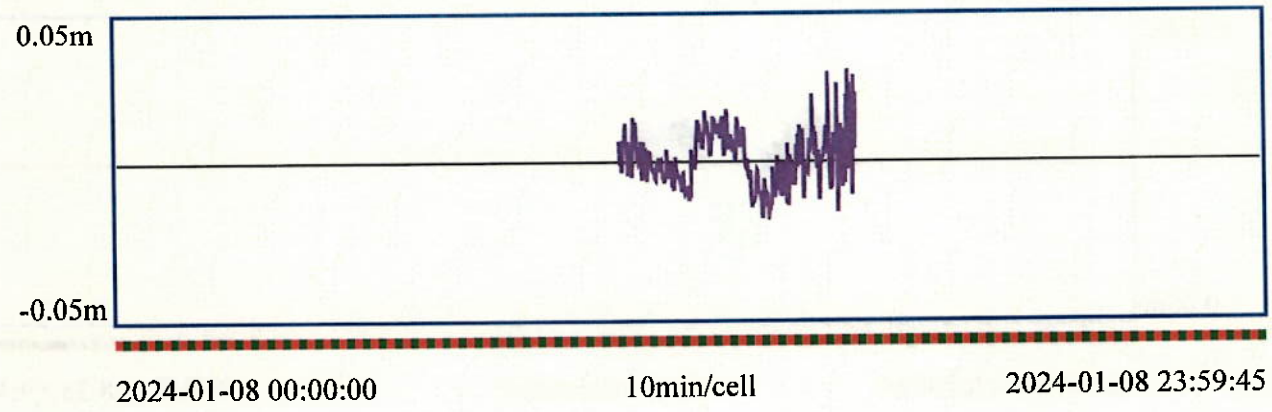

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G26**

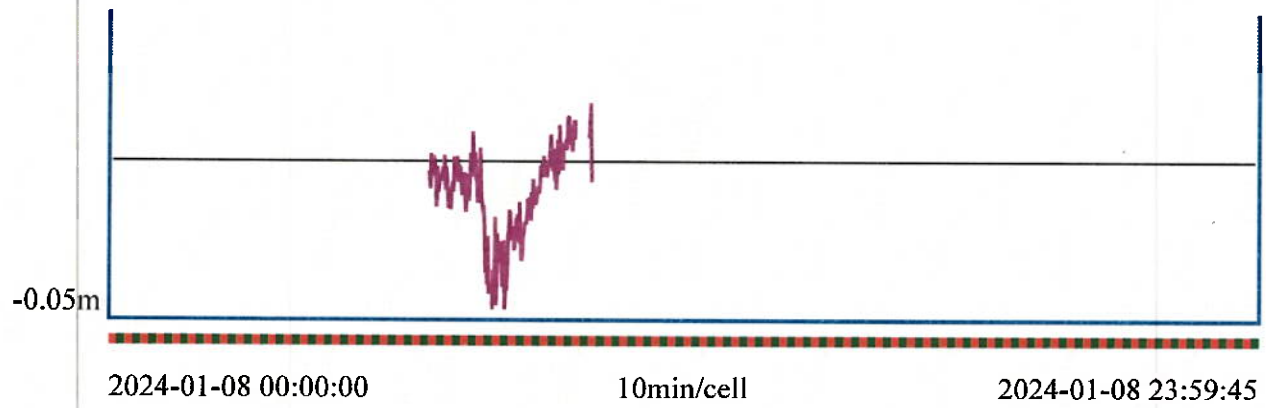

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G28**

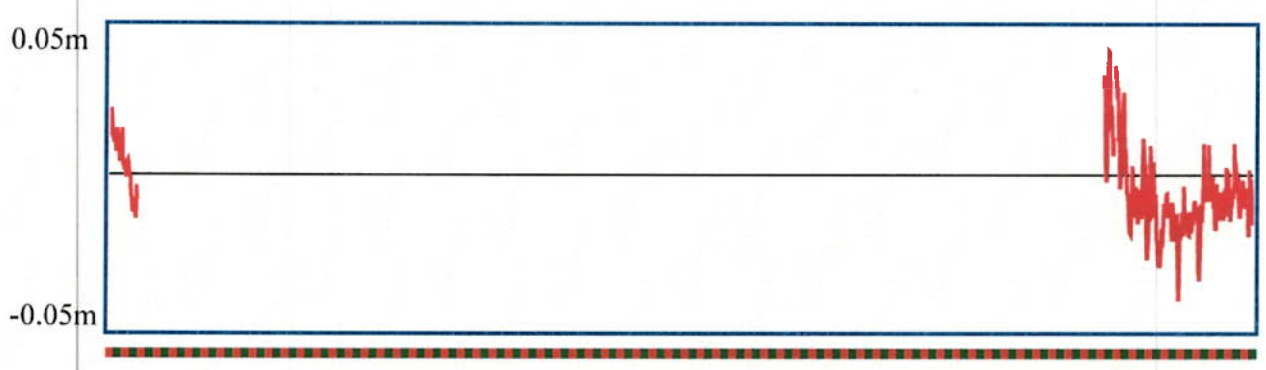

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G29**

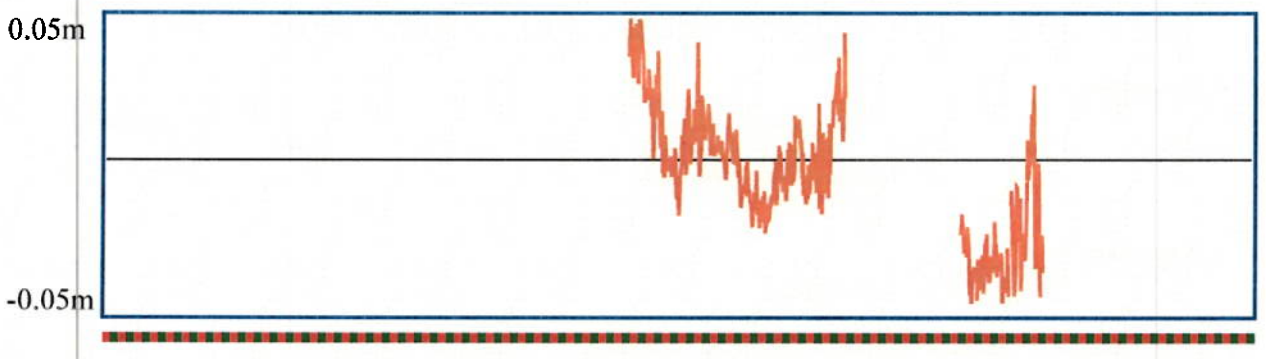

0.05m


-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G30**

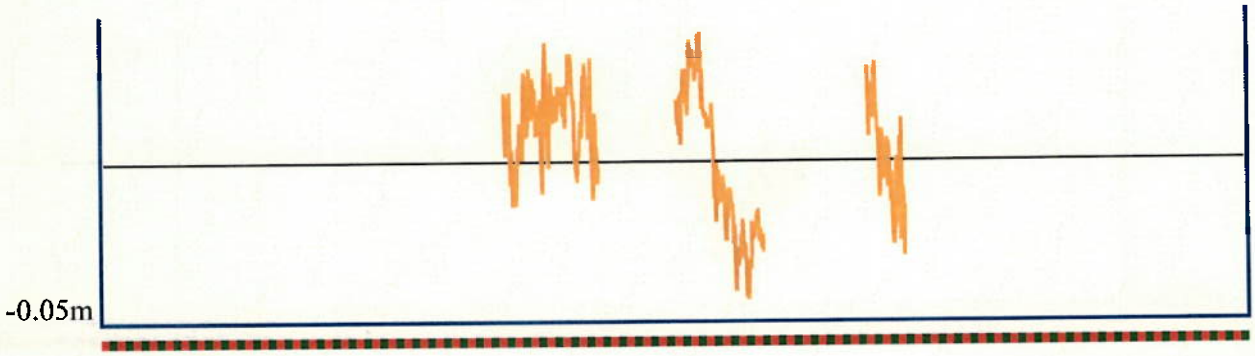

0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G31**


0.05m
-0.05m
2024-01-08 00:00:00
10min/cell
2024-01-08 23:59:45

**G32**


0.05m




## 6 Processing Style

### 6 .1 Static

| | |
|---|---|
| Minimum Obs. Time | 10min |
| Using Broadcast Ephemeris | 200.000000km |
| Using Precise Ephemeris | 2000.000000km |

### 6 .2 Basic Setting

| | |
|---|---|
| Elevation Mask | 15.00° |
| Used Ephemeris | Precise |
| Sampling Interval | 60s |
| Solution Type | Lc Fix |

### 6 .3 Troposphere

| | |
|---|---|
| Model | |
| Minimum Zenith Delay Interval | 2hour |
| Use Observed Met. Data | Allowed |

### 6 .4 Ionosphere

| | |
|---|---|
| Model | Klobuchar |
| Ambiguity Resolution Pass | Allowed |

### 6 .5 Ambiguity

| | |
|---|---|
| Search Mode | Lambda |

### 6 .6 Quality

| | |
|---|---|
| RMS Tolerance | 0.040m |
| RATIO Tolerance | 1.80 |
| Gross Error Tolerance | 3.5 |