



**TERMS OF REFERENCE**  
**FOR THE**  
**SUPPLY AND DELIVERY OF FOUR THOUSAND TWO**  
**HUNDRED (4,200) PCS. RADIOSONDE TRANSMITTER –**  
**METEOMODEM with Free Met. Balloons**

**A. BACKGROUND**

Upper-air soundings complete the required weather parameters in 3 dimensions which are necessary for weather analysis and prediction. Its importance is so great that the equipment used should be of great quality such as the transmitters and weather balloons which measure the different weather parameters up to 12,000 meters above mean sea level and send these data to the receiving stations in the country. The upper-air soundings can be used to deliver real-time data required for local-area weather forecasts such as thunderstorms and rainy days' name a few. These can be of additional help in the formulation of the localized weather forecast in the newly formed five (5) PAGASA Regional Services Divisions in NCR, Northern and Southern Luzon, Visayas, and Mindanao.

**B. APPROVED BUDGET FOR THE CONTRACT (ABC)**

The Approved Budget for the Contract is **Seventy-One Million Four Hundred Thousand Pesos (PhP71,400,000.00)** only inclusive of VAT and all applicable government taxes.

**C. TECHNICAL SPECIFICATIONS:**

Radiosonde Transmitter **METEOMODEM with free Met. Balloons** shall have the following minimum technical specifications:

**General:**

Dimensions: 98\*63\*42mm  
Weight: 36g (including battery)

**Temperature:**

Sensor type: Thermistor  
Measurement range: +60°C to -100°C  
Resolution: 0.01 °C  
Absolute accuracy: 0.3°C  
Repeatability: 0.1°C  
Reproducibility: 0.2°C  
Response Time: <1s  
Measurement rate: 1 Hz

## Humidity:

Sensor Type: Capacitor  
Measurement range: 0% to 100%  
Resolution: 0.1%  
Absolute accuracy: 3%  
Repeatability: 2%  
Reproducibility: 2%  
Response time: <0.3s (1000hPa, 20°C)  
Measurement rate: 1 Hz  
Heated sensor: Icing prevention

## Pressure:

Calculated from GNSS altitude  
Range: 1100 hPa to 3 hPa  
Resolution: 0.1 hPa  
Accuracy barometer: <0.4 hPa from 1100 to 700 hPa  
Accuracy GNSS: <1,0 from 700 to 100 hPa  
                  : 0.3 hPa from 100 hPa to 10 hPa  
                  : 0.1 hPa < 10 hPa  
Reproducibility: 0.2 hPa at 100 hPa  
                  : 0.05 hPa at 10 hPa

## Batteries

Technology: 3V lithium  
Autonomy: >4 h in flight  
Package: 1 battery

## Geopotential Height

Altitude range: >45 km  
Position accuracy:  $\pm 5$  m  
Position resolution: 0.01m

## Wind Measurement

Horizontal wind accuracy: 0.05 m/s  
Wind direction accuracy: 0.3°  
Horizontal wind resolution: 0.01 m/s  
Wind direction resolution: 0.1°  
Measurement: 1 Hz

## Transmitter

Complaint with European standard ETSI EN 302054  
Frequency Range: 400.15 MHz to 406 MHz  
Frequency Step: 200 KHz  
Frequency Setting: by infrared  
Maximum drift: 1 KHz

*"Tracking the sky...helping the country"*

Typical output power: 110 mW  
Modulation: FSK  
Transmission rate: 1 Hz

### Calibration

Factory Calibration: Stored on flash memory  
Ground check: before launch

### METEOROLOGICAL BALLOONS SPECIFICATIONS:

Weight : 350 grams Uncolored  
Neck Size & Diameter: : 120±20mm  
32±3mm  
Brand : **TOTEX (Japan)**

### PACKAGING

*Must be individually packed in a hermetically sealed aluminum bag with anti-insect powder inside.*

**Note:** *A certification from the manufacturer must be attached and submitted by the winning bidder/supplier.*

### D. DELIVERY PERIOD AND PLACE OF DELIVERY

The winning bidder shall supply and deliver the **Four thousand Two Hundred (4,200) pcs. of Radiosonde Transmitters - Meteomodem with Free Met Balloons** on-site in the following **PAGASA Stations**: Before delivery transmitters and Met. balloons shall be inspected by the PAGASA and COA inspectors at PAGASA Central Office Science Garden Complex, Senator Miriam P. Defensor-Santiago Ave., Brgy. Central, Quezon City.

| Name of Station                           | Address   |
|---|---|
| 1. PAGASA-Basco Upper Air Station.        | Basco, Batan Island, Batanes                            |
| 2. PAGASA-Tuguegarao Upper Air Station.   | Capitol Site, Tuguegarao City, Cagayan                  |
| 3. PAGASA- Camiling Upper Air Station.    | PAGASA Agromet Station, Camiling, Tarlac.               |
| 4. PAGASA-Baler Upper Air Station.        | Brgy. Dikisit, Baler, Aurora                            |
| 5. PAGASA-Tanay Upper Air Station.        | Sitio Mayagay, Sampaloc, Tanay Rizal                    |
| 6. PAGASA-Iloilo Upper Air Station        | PAGASA Synoptic Station, Airport Manduriao, Iloilo City |
| 7. PAGASA-Pto. Princesa Upper Air Station | Puerto Princesa City, Palawan                           |

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8. PAGASA-Guiuan Upper Air Station      Synoptic and Radar Station Sapao, Guiuan Eastern Samar
9. PAGASA-Davao Upper Air Station      Brgy. Sasa, Davao City
10. PAGASA-Lagindingan Upper Air Station.      El Salvador City, Misamis Oriental.

Delivery of the total **4,200 pcs. Radiosonde Transmitters - Meteomodem** shall be made by the following schedule:

**1<sup>st</sup> Tranche: First Week of February 2025.**

| Name of Station                       | Qty/Unit     |
|---------------------------------------|--------------|
| PAGASA-Basco Upper Air Station        | 190          |
| PAGASA-Tuguegarao Upper Air Station   | 0            |
| PAGASA-Camiling Upper Air Station     | 0            |
| PAGASA-Baler Upper Air Station        | 190          |
| PAGASA-Tanay Upper Air Station        | 365          |
| PAGASA-Iloilo Upper Air Station       | 0            |
| PAGASA-Palawan Upper Air Station      | 365          |
| PAGASA-Guiuan Upper Air Station       | 150          |
| PAGASA-Davao Upper Air Station        | 365          |
| PAGASA-Laguindingan Upper Air Station | 0            |
| <b>Sub-Total</b>                      | <b>1,625</b> |

**2<sup>nd</sup> Tranche: 1<sup>st</sup> week of July 2025.**

| Name of Station                       | Qty/Unit     |
|---------------------------------------|--------------|
| PAGASA-Basco Upper Air Station        | 250          |
| PAGASA-Tuguegarao Upper Air Station   | 150          |
| PAGASA-Camiling Upper Air Station     | 260          |
| PAGASA-Baler Upper Air Station        | 250          |
| PAGASA-Tanay Upper Air Station        | 405          |
| PAGASA-Iloilo Upper Air Station       | 150          |
| PAGASA-Palawan Upper Air Station      | 405          |
| PAGASA-Guiuan Upper Air Station       | 200          |
| PAGASA-Davao Upper Air Station        | 405          |
| PAGASA-Laguindingan Upper Air Station | 100          |
| <b>Sub-Total</b>                      | <b>2,575</b> |

Failure to deliver within the prescribed period without valid and justifiable reason shall constitute a delay on the part of the winning bidder/supplier which is a ground for the imposition of liquidated damages by Section 68 and Section 3 (Annex "D") of the Revised IRR of RA 9184.

#### **E. PAYMENT TERMS**

The winning bidder/supplier may be allowed to collect partial payment commensurate to the number of goods/items delivered, provided that said deliveries are made according to the schedule of requirements specified above and subject to the complete submission of the documentary requirements prescribed under the accounting and auditing rules and regulations.

#### **F. WARRANTIES**

1. To assure that manufacturing defects shall be corrected by the winning bidder/supplier, warranty security shall be required from the contract awardee for a minimum period of **one (1) year** after acceptance by PAGASA of the delivered goods/supplies.
2. Either retention money shall cover the obligation for the warranty in an amount equivalent to at least one percent (1%) of every progress payment, or a special bank guarantee equivalent to at least one percent (1%) of the total contract price. The said amounts shall only be released after the lapse of the warranty period: Provided, however: That the supplies delivered are free from patent and latent defects and that all the conditions imposed under the contract have been fully met.
3. The winning bidder likewise warrants that it shall strictly conform to all the Terms and Conditions of this Terms of Reference.