



SCRITTURA PRIVATA

Tipo documento

Contract – Purchase Order Terms and Conditions

art. 32 co. 14 - d.lgs. 50/2016 e s.m.i.

Denominazione affidamento

Supply of 18 cryogenic very low noise amplifiers

CUP

C59C200004200001

CIG

8929561AD7

Tipo di procedura

Procedura di affidamento diretto per servizi e forniture, ai sensi dell'art. 1 comma 2 lett. a) della L. 11 settembre 2020, n. 120, come novellata dall'art. 51 della L. 29 luglio 2021, n. 108, disciplina sostitutiva dell'art. 36 comma 2 del d.lgs. 18 aprile 2016, n. 50, vigente per gli affidamenti effettuati sino al 30 giugno 2023.

Atto di affidamento

Determinazione 14 giugno 2022, n. 115

Importo negoziato

90.000,00 EUR

1. Common acronyms currently used and agreed.

INAF - Osservatorio Astronomico di Cagliari: an Italian Public Entity, also the "**Customer**";

Codice / Codice dei Contratti Pubblici: d.lgs. 18 aprile 2016, n. 50 e s.m.i., recante "Attuazione delle direttive 2014/23/UE, 2014/24/UE e 2014/25/UE sull'aggiudicazione dei contratti di concessione, sugli appalti pubblici e sulle procedure d'appalto degli enti erogatori nei settori d'acqua, dell'energia, dei trasporti e dei servizi postali, nonché per il riordino della disciplina vigente in materia di contratti pubblici relativi a lavori, servizi e forniture", the "Italian Public Procurement Regulations" or "**IPPR**";

Fornitore / Affidatario ("**Supplier**"): according to the IPPR art. 45, it is the Company (or individual) that is entitled to sell to a Public Administration;

Punto di consegna/erogazione ("Delivery site"): it is the location where, under **Customer** advice, the product(s) must be delivered.

2. General conditions and agreements

The actual document (the "**Contract**") provides the general terms and conditions of purchase and delivery ("**Terms & Conditions**" or "**T&C**") which will be applied to the below described supplies, including purchase, deliveries and procurement activities. The involved "**Parties**" are:

1. INAF – Cagliari Astronomical Observatory, the "**Buyer**" or "**Customer**"
2. Low Noise Factory AB, the "**Supplier**"

By signing the **Contract** the **Parties** acknowledge and agree with these **T&C** of sales, delivery, warranty and products / services acceptance. **T&C** shall apply only to this specific business relationship, i.e. not for all subsequent transactions, if any. **T&C**, whenever not explicitly accepted by the **Customer** in writing (*digital signature*), are not binding for the **Customer**, even if it does not expressly reject them.

3. Contract amount

Provided that the below described specifications and conditions, including the final acceptance test, will be positively matched, the **Customer** will pay to the **Supplier** the amount of **90.000,00 EUR**

4. Supplied product description. Technical specifications

The goods which will be supplied under this contract, namely the "*low noise amplifiers*" ("**Product**"), will include the items and will have the technical specifications which have been formally accepted by the **Supplier** at the time of submitting the bid price.

The Product must include the items listed below, and has to be provided according to the shipping, insurance and warranty conditions defined by the **Buyer**, as per described to a later paragraph.

The **Supplier** will deliver **18 (eighteen)** very low noise cryogenic amplifiers which must fully comply with the SOW document's technical requirements, file SOW_LNF-AB, which includes:

- RF bandwidth (*not less than*): 18-26GHz;
- Operating temperature: $\approx 15\text{K}$;
- Noise: 11K max* (in the bandwidth of interest at the temperature of 4K);
- Gain: 29dB min*(in the bandwidth of interest at the temperature of 4K);
- Gain Flatness: 31dB \pm 2dB max (in the bandwidth of interest);
- Input Return Loss: 7dB min*(in the bandwidth of interest);
- Output Return Loss: 7dB min*(in the bandwidth of interest);
- Output Power for 1 dB Compression (P1dB): min -13dBm*(in the bandwidth of interest);
- Output third-order intercept point (OIP3): min -3dBm*(in the bandwidth of interest);
- The specifications of all the amplifiers must be as similar as possible;
- Allowable input and output loads: the amplifiers shall be unconditionally stable (shall not oscillate) for any combination of passive input and output loads;
- Bias conditions: Drain voltage shall be in the range 0 to 3.3 V, Drain current shall be in the range 1 to 20 mA, Gate voltage shall be in the range -2.2 to +1.85 V;
- Power dissipation shall be less than 20 mW for operation at $\approx 4\text{ K}$;
- One gate and one drain supply only;
- RF-connectors (input) male K (2.92mm);
- RF-connectors (output) female K (2.92mm);
- DC-connector: 9-pin female Nano-D;
- Impedance: 50 Ω ;
- Pigtail connector Nano-D 9-pin male – cable length: 18 inch - (one for each of the amplifiers of provision in question);
- Dimensions: L (max 38.5mm – min 17.5mm) x H (max 24.5 mm – min 15 mm) x P (max 12 mm – min 6.50 mm);
- Connectors positioning: axial;
- Holes with metric thread for heat sinking: min 3;
- The verification of the RF performance at cryogenic temperatures shall be made at $T < 20\text{ K}$;
- Bias point for optimum low-noise performance for each of the amplifiers shall be provided;
- **Vacuum compatibility**: all materials used in the amplifier shall be compatible with a high vacuum environment;
- **Marking**: using engraving techniques shall permanently mark the amplifiers. The marking shall contain serial number and marking of input, output RF ports.
- **Certificates of product originality**. A product datasheet will be provided, reporting the detailed information on the measurement of each of the amplifiers at room temperature ($\approx 290\text{ K}$) and cryogenic temperature ($\approx 4\text{ K}$). The units must be supplied with 1) measurements of Noise temperature, Gain and the S-parameters S11, S22 at room temperature; 2) Noise temperature and Gain at cryogenic temperature. The measurements of P1dB and OIP3 at cryogenic temperatures are also required for 3 LNA of the supply. The measurement must include, as a minimum, the 16-28 GHz range with a step of 0.1 GHz. The results must be supplied in both forms:
 - Graphs in electronic format using files (e.g.: .pdf, .doc), one for each of the amplifiers;
 - Data in tabular form, seven columns: frequency, mag (S11), mag (S21), mag (S12), mag (S22);



gain with values expressed in dB and noise in Kelvin (K). The file format must be .xls and ASCII (.txt, .dat), one file per device

5. Delivery site

The **Product** must be delivered according to the DDP Incoterms 2020, at the Customer Headquarters Acceptance Site: **INAF-OA Cagliari**, via della Scienza 5 – 09047 Selargius (CA), Italy.

6. Lead time

The **Product** must be available at the delivery site within **3 (three) solar months** from the Contract signature date. Actual motivations must be provided for the delay, and further consequences must be negotiated with the **Customer**.

7. Shipping and handling

Default agreement: DDP INCOTERMS 2020 rules apply.

Packaging, shipping, delivery. According to the above cited DDP rules, the **Supplier** will deliver the **Product** with an appropriate packaging, which should be able to keep it free from transport and handling damages. The **Supplier** take full responsibility to select a suitable Carrier in order to deliver the **Product**, which should be able to keep it free from transport and handling damages.

8. Commercial and Extended Warranty

Warranty. The **Supplier** manufactured, distributed or resold Product must be covered against defects in material and workmanship for **12 (twelve) solar months** from the date of "*on site acceptance test*" (**OAT**) performed by the **Customer**. In the event of a defect during the warranty period, the **Supplier** must, also remotely, troubleshoot the emerging defect **within 2 working days**, being supported by the **Customer's** Technical Staff. If the troubleshooting procedure would give evidence of a hardware defect, the **Customer** will obtain a Return Maintenance Agreement (RMA) number from the **Supplier**, and return the **Product** (or part of it) to the **Supplier** for repair or replacement. Parts or equipment replaced during the warranty period are warranted for the remainder of the original applicable warranty period or one hundred eighty (180) days.

It is agreed that travel expenses / freight charges from **Customer** site to **Supplier** site, and back, are fully covered by this commercial warranty. The commercial warranty shall automatically terminate if the product is used in other than its normal and customary manner, has been subject to misuse, accident, neglect, or damage.

9. Customs - Taxes

According to the above-cited DDP rule, the **Supplier** will take charge of all the taxes and charges, excluding VAT.

10. Anti-corruption obligations

The Italian Corrupt Practices Act and similar anti-corruption and anti-bribery laws in other countries prohibit making, promising, or offering payments or gifts to government Officials to obtain or retain business or to secure any improper business advantage. **Supplier** will not offer or make any payments or provide anything of value to a Government official to influence an official action that awards business, retains business or secures an improper business advantage in connection with the Product(s). In the event of an alleged breach of the anti-corruption obligations, the Supplier shall cooperate in good faith with **Customer** to determine whether an alleged breach occurred. In such case, the Supplier shall furnish to **Customer** all information requested to establish compliance with the Customer's anti-corruption obligations.



11. Factory Acceptance Testing.

The **Supplier** as part of the User Acceptance Testing procedure will provide a factory acceptance testing (FAT). A FAT usually includes a check of completeness, a verification against contractual requirements, a proof of functionality (by either simulation or a conventional function test) and a final inspection.

12. Final inspection and acceptance. Product compliance.

Once received the product, the **Customer** will carry out, within one working week of the receipt, an on-site final inspection and acceptance test (**OAT**). Claims for shipment shortage or damage shall be deemed waived unless presented to Supplier in writing within ten (10) days of delivery of each shipment. Failure to make any claim within thirty (30) days after receipt of each product covered hereunder shall constitute an irrevocable acceptance of the product(s);

If defects are found leading to non-conformity, the **Supplier** or his representative shall be informed in writing about these defects, as well as the reasons for non-conformity. The **Supplier** will replace and/or repair the product at its own fully expenses within 30 working days since the notice. The Customer, on duly justified in writing request, may grant derogations.

13. Payments

The **Supplier** can issue the invoice only upon receiving an explicit clearance from the **Customer**. Customer is obligated to send the clearance for invoicing within 5 working days after receiving the products. If this is not possible in some reason, customer is obliged to ship the goods on their own expense back to the supplier. Once received the invoice, the **Customer** will pay it within 30 solar days, by mean of the below bank account:

IBAN: SE96 5000 0000 0501 1108 0754

SWIFT: ESSESESS

HOLDER: Low Noise Factory AB

People delegated to operate on the above detailed bank account:

Niklas Wadefalk, born in Göteborg on 1973-05-14, legal representative of the Company Low Noise Factory AB.

14. Stamp duty

This contract is subject to the payment of a stamp duty of 16 (sixteen) euros. This amount will be subtracted from the final payment amount.

15. Definition of disputes – Place of jurisdiction / Competent Court

Any appeals in Court must be submitted, within 30 (thirty) days from the day in which the deed was fully known, to the Civil Court of Cagliari.

per Istituto Nazionale di Astrofisica - Osservatorio Astronomico di Cagliari

Il Direttore – **Emilio Carlo MOLINARI**

per Low Noise Factory AB

Il legale rappresentante – **Niklas WADEFALK**

7/5/2022

DocuSigned by:

Niklas Wadefalk

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