

Telephone: **044-22574416**

Extn:

Department of Electrical Engineering
Indian Institute of Technology, Madras
 I.I.T.P.O., MADRAS – 600 036.

Ref. No.

ELE	AMIT	2019	FFU module with replaceable ULPA filters for Class 100 clean room (18 nos)
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Date: 24.07.2019

Due Date: 08.08.2019

Under Certificate of posting

To:

Dear Sirs,

1. Quotations are invited in duplicate for the various items shown below/overleaf/enclosed list.
2. The Quotations duly sealed and superscribed on the envelope with the reference no. and due date, should be addressed to the undersigned so as to reach him on or before the due date stipulated above.
3. The Quotations should be valid for sixty days from the due date and period of delivery required should also be clearly indicated.
4. If the item is under DGS & D Rate contract, Rate Contract Number and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate Contract price. If so, please send copy of the R.C. (Please note that we are not Direct Demanding Officers).
5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable.
6. Local Firms: Quotations should be for free delivery to this Institute. If Quotations are for Ex-Godown, delivery charges should be indicated separately.
7. Firms outside Chennai: Quotations should be F.O.R Chennai. If F.O.R consignor station, freight charge by passenger train / lorry transport must be indicated. If Ex-Godown, packing, forwarding and freight charges must be indicated.
8. The rate of Sales / General Taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, claim for Sales / General Taxes will be admitted at any stage and on any ground whatsoever. The taxes leviable should take into consideration that we are entitled to have Concessional Sales Tax applicable to non-Government Educational Institutions run with no profit motive for which a commission Sales Tax certificates will be issued at the time of final settlement of the bill.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. Payment: Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later.

Specification enclosed and quotation to be sent to the below address:

*Dr. Amitava DasGupta
 Professor,
 Department of Electrical Engineering,
 Indian Institute of Technology, Madras,
 Chennai – 600 036.*

Yours faithfully,

Amitava DasGupta
 HEAD / Project Co-Ordinator

Technical Specifications for FFU module with replaceable ULPA filters for Class 100 clean room (18nos)

It is proposed to procure "FFU module with replaceable ULPA filters" for the Class 100 clean room and the dimension FFU module is shown in the following figures 1 and 2 respectively.

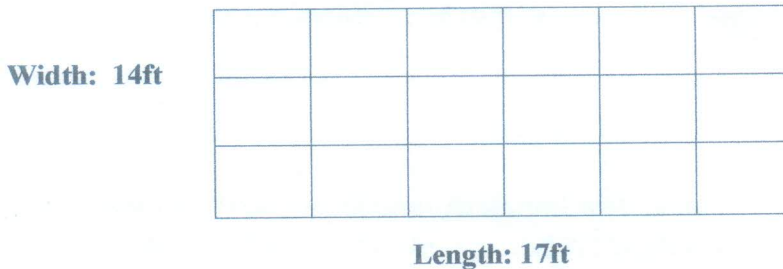


Figure 1. Layout of Clean Room

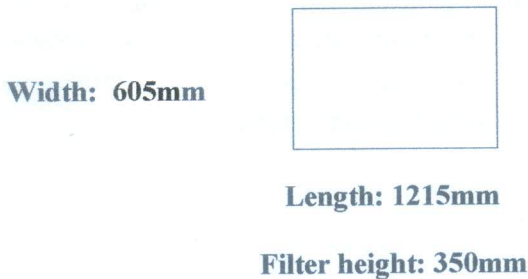


Figure 2. Dimension of FFU Module

The specifications are as below.

FFU Module construction:

- Dimensions (W1215mm/D605mm/H350mm) with tolerance of $\pm 0.10\%$ to 0.30%
- Material of construction: Al-Zn Alloy.
- Filters should be with reusable provision. All materials should be selected for application in the most demanding conditions and should be clean room compatible.
- The Suppliers should have installed his brand and found his item to be working satisfactory at least for two similar kind of semiconductor labs of repute.
- The Modules & suppliers should have appropriate UL certification and ISO classification respectively.
- Module weight should be around 30kg
- Power rating: Single Phase 230V AC/50Hz.

Amitan Dasgupta

Motor:

- Centrifugal with aluminum blade and should be dynamically balanced.
- Speed: 1050±30 rpm maximum speed.
- Torque: KG-cm: ≤ 8.6120 at maximum speed.
- Vibration: ≤ 15μ.
- Noise: ≤ 45 PHON (when measured at 50cm from the filter. 45dB at 100 Hz.
- Efficiency should be minimum 44 to maximum 50%.

ULPA Filter:

- Dimensions (W1210mm/D600mm/H50mm) with tolerance of ±0.10% to 0.30%
- The flow volume(L/M/H)CMM should be (10/15/20) with tolerance of 2% to 8%
- The flow velocity (m/s) should meet at least 3 levels (0.25/0.35/0.45) with tolerance of 2% to 8%
- The power consumption for the above operational levels (watts) should meet at least 3 levels (140/155/170) with tolerance of 2% to 8%
- Pressure drop (External) should be 160 Pa with tolerance of 2% to 5%
- Filtration efficiency at 0.12μm should be 99.999% with 0.001% to 0.003% tolerance.

Amitan Singh