GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
VIKRAM SARABHAI SPACE CENTRE (VSSC)
THIRUVANANTHAPURAM

Tender for Supply FR4 & Polyimide copper cladded laminates and prepregs

Bids to be submitted online

Tender No.: VSSC/PURCHASE UNIT II (AVN)/VS202100309001 dated 07-10-2021

A. Tender Details

Tender No :	**VSSC/PURCHASE UNIT II (AVN)/VS202100309001**
Tender Date :	**07-10-2021**
Tender Classification:	**GOODS**
Purchase Entity :	**PURCHASE UNIT II (AVN)**
Centre :	**VIKRAM SARABHAI SPACE CENTRE (VSSC)**

Procurement of Supply FR4 & Polyimide copper cladded laminates and prepregs

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A.1 Tender Schedule

Bid Submission Start Date :	**05-10-2021 17:00**
Bid Clarification Due Date :	**01-11-2021 11:00**
Bid Submission Due Date :	**09-11-2021 10:30**
Bid Opening Date :	**09-11-2021 11:00**
Price Bid Opening Date :	**23-11-2021 14:00**

B. Tender Attachments

Technical Write-up/Drawings

Document : Annexure

Instructions To Vendors

2. PROFORMA FOR INSTRUCTIONS TO TENDERERS AND TERMS AND CONDITIONS OF TENDER

1. c The term Purchase Order shall mean the communication signed on behalf of the Purchaser by an Officer duly authorised intimating the acceptance on behalf of the Purchaser on the terms and conditions mentioned or referred to in the said communication accepting the tender or offer of the Contractor for supply of stores or plant, machinery or equipment or part thereof.

2. Liquidated Damages
The Delivery Date mentioning in the Contract or Order will be the essence of the Contract. You shall strictly adhere to the delivery schedule mentioned in your quotation. Please confirm acceptance of LD clause and that you will strictly adhere to the delivery schedule.

3. Arbitration
In the event of any disputes, differences or claims arising out of or relating to the interpretation and application of the Contract, such disputes or differences or claims shall be settled amicably by mutual consultations of the good Offices of the respective Parties and recognizing their mutual interests attempt to reach a solution satisfactory to both the parties. If such a resolution is not possible, within 30 days from the date of receipt of written notice of the existence of such disputes, then the unresolved disputes or differences or claims shall be referred to the Sole Arbitrator appointed by the Parties by mutual consent in accordance with the rules and procedures of Arbitration and Conciliation Amendment Act 2015 as amended from time to time. The arbitration shall be conducted in Bengaluru in the Arbitration and Conciliation Centre Bengaluru, Domestic and International, as per its rules and regulations. The expenses for the Arbitration shall be shared equally or as may be determined by the Arbitrator. The considered and written decision of the Arbitrator shall be final and binding between the Parties. The applicable language for Arbitration shall be English only. Work under the Contract shall be continued by the CONTRACTOR during the pendency of arbitration proceedings, without prejudice to a final adjustment in accordance with the decision of the Arbitrator unless otherwise directed in writing by the DEPARTMENT or unless the matter is such that the works cannot be possibly continued until the decision whether final or interim of the Arbitrator is obtained.

4. Force Majeure

Neither the Purchaser nor the Contractor shall be considered default of the performance of their obligations under this contract if such performance is prevented or delayed for any causes beyond the reasonable control of the parties to the contract affected, such as Acts of God, war, riots, civil commotion, illegal strikes, legal lockouts, epidemics, fire accidents, floods, earthquakes, proclamation or regulation or ordinance of any Government thereof, provided notice in writing of any such cause with necessary proof that the obligation under the contract is thereby affected or prevented or delayed, is given within 14 days from the happening of the event. As soon as the cause of force majeure has ceased to exist, the party whose ability to perform his obligation has been affected shall notify the other party of the actual delay that has occurred due to such force majeure conditions.

5. FOREIGN VENDORS ARE NOT PERMITTED TO QUOTE

a.Only Class I and Class II Local suppliers as per Make in India Policy are eligible to participate in the bid

b.The percentage of local content should be specifically mentioned in the offer, without which it will be summarily rejected.

c.Preference will be given to Class I Local supplier and in their absence, Class II Local supplier will be considered.

6. Preference will be given to those tenders offering supplies from ready stocks and on the basis of FOR destination or delivery at site.

7. REJECTED STORES

Rejected stores will remain at destination at the Contractors risk and responsibility. If instructions for their disposal are not received from the Contractor within a period of 14 days from the date of receipt of the advice of rejection, the purchaser or his representative has, at his discretion, the right to scrap or sell or consign the rejected stores to Contractors address at the Contractors entire risk and expense, freight being payable by the Contractor at actuals.

8. The term Stores shall mean what the Contractor agrees to supply under the Contract as specified in the Purchase Order including erection of plants & machinery and subsequent testing, should such a condition is included in the Purchase Order.

9. SECURITY DEPOSIT Wherever, the Purchase Order value is Rs. 5.00 Lakhs or more, on acceptance of the tender, the Contractor shall, at the option of the Purchaser and within the period specified by him, deposit with him, in cash or in any other form as the Purchaser may determine, security deposit not exceeding three percent of the value of the Contract as the Purchaser shall specify. If the Contractor is called upon by the Purchaser to deposit, Security and the Contractor fails to provide the security within the period specified, such failure shall constitute a breach of the Contract, and the Purchaser shall be entitled to make other arrangements for the repurchase of the stores Contracted at the risk of the Contractor in terms of Sub-Clause ii and iii of clause regarding Delivery. b hereof and or to recover from the Contractor, damages arising from such cancellation.

10. Sales Tax and or other duties or levies legally leviable and intended to be claimed should be mentioned in the price bid template. If nothing is mentioned, then it will be presumed that the rate quoted is inclusive of all taxes and duties.

11. TERMS AND CONDITIONS OF TENDER

12. TEST CERTIFICATE Wherever required, test certificates should be sent along with the despatch documents.

13. The Purchaser reserves the right to place order on the successful tenderer for additional quantity up to 25percent of the quantity offered by them at the rates quoted.

14. The authority of the person signing the tender, if called for, should be produced.

15. The purchaser shall be under no obligation to accept the lowest or any tender and reserves the right of acceptance of the whole or any part of the tender or portions of the quantity offered and the tenderers shall supply the same at the rates quoted.

16. PRICES Tender offering firm prices will be preferred. Where a price variation clause is insisted upon by a tenderer, quotation with a reasonable ceiling should be submitted. Such offers should invariably be supported by the base price taken into account at the time of tendering and also the formula for any such variations.

17. a Your offer should be valid for 90 days from the date of opening of the tender.
b Prices are required to be quoted according to the units indicated in the annexed tender form. When quotations are given in terms of units other than those specified in the tender form, relationship between the two sets of units must be furnished.

18. a All available technical literature, catalogues and other data in support of the specifications and details of the items should be furnished along with the offer.
b Samples, if called for, should be submitted free of all charges by the tenderer and the Purchaser shall not be responsible for any loss or damage thereof due to any reason whatsoever. In the event of nonacceptance of tender, the tenderer will have to remove the samples at his own expense.
c Approximate net and gross weight of the items offered shall be indicated in your offer. If dimensional details are available the same should also be indicated in your offer.
d Specifications: Stores offered should strictly confirm to our specifications. Deviations, if any, should be clearly indicated by the tenderer in his quotation. The tenderer should also indicate the Make or Type number of the stores offered and provide catalogues, technical literature and samples, wherever necessary, along with the quotations. Test Certificates, wherever necessary, should be forwarded along with supplies. Wherever options have been called for in our specifications, the tenderer should address all such options. Wherever specifically mentioned by us, the tenderer could suggest changes

to specifications with appropriate response for the same.

19. The tenderer should supply along with his tender, the name of his bankers as well as the latest Income Tax clearance certificate duly countersigned by the Income Tax Officer of the Circle concerned under the seal of his office, if required by the Purchaser.

20. The term Contractor shall mean, the person, firm or company with whom or with which the order for the supply of Stores is placed and shall be deemed to include the Contractors successors, representative, heirs, executors and administrators unless excluded by the Contract.

21. The term Purchaser shall mean the President of India or his successors or assigns.

22. a All available technical literature, catalogues and other data in support of the specifications and details of the items should be furnished along with the offer.
b Samples, if called for, should be submitted free of all charges by the tenderer and the Purchaser shall not be responsible for any loss or damage thereof due to any reason whatsoever. In the event of nonacceptance of tender, the tenderer will have to remove the samples at his own expense.
c Approximate net and gross weight of the items offered shall be indicated in your offer. If dimensional details are available the same should also be indicated in your offer.
d Specifications Stores offered should strictly confirm to our specifications. Deviations, if any, should be clearly indicated by the tenderer in his quotation. The tenderer should also indicate the Make and Type number of the stores offered and provide catalogues, technical literature and samples, wherever necessary, along with the quotations. Test Certificates, wherever necessary, should be forwarded along with supplies. Wherever options have been called for in our specifications, the tenderer should address all such options. Wherever specifically mentioned by us, the tenderer could suggest changes to specifications with appropriate response for the same.

23. ACCEPTANCE OF STORES
a The stores shall be tendered by the Contractor for inspection at such places as may be specified by the purchaser at the Contractors own risk, expense and cost.
b It is expressly agreed that the acceptance of the stores Contracted for, is subject to final approval by the purchaser, whose decision shall be final.
c If, in the opinion of the purchaser, all or any of the stores do not meet the performance or quality requirements specified in the Purchase Order, they may be either rejected or accepted at a price to be fixed by the purchaser and his decision as to rejection and the prices to be fixed shall be final and binding on the Contractor.
d If the whole or any part of the stores supplied are rejected in accordance with Clause No. c above, the purchaser shall be at liberty, with or without notice to the Contractor, to purchase in the open market at the expense of the Contractor stores meeting the necessary performance and quality Contracted for in place of those rejected, provided that either the purchase, or the agreement to purchase, from another supplier is made within six months from the date of rejection of the stores as

aforesaid.

24. As a Government of India Department, this office is exempted from payment of Octroi and similar local levies. Tenderers shall ensure that necessary Exemption Certificates are obtained by them from the Purchase Officer concerned to avoid any payment of such levies.

25. DESPATCH The Contractor is responsible for obtaining a clear receipt from the Transport Authorities specifying the goods despatched. The consignment should be despatched with clear Railway Receipt or Lorry Receipt. If sent in any other mode, it shall be at the risk of the Contractor. Purchaser will take no responsibility for short deliveries or wrong supply of goods when the same are booked on said to contain basis. Purchaser shall pay for only such stores as are actually received by them in accordance with the Contract.

26. GUARANTEE AND REPLACEMENT

a The Contractor shall guarantee that the stores supplied shall comply fully with the specifications laid down, for material, workmanship and performance.

b For a period of twelve months after the acceptance of the stores, if any defects are discovered therein or any defects therein found to have developed under proper use, arising from faulty stores design or workmanship, the Contractor shall remedy such defects at his own cost provided he is called upon to do so within a period of 14 months from the date of acceptance thereof by the purchaser who shall state in writing in what respect the stores or any part thereof are faulty.

c If, in the opinion of the purchaser, it becomes necessary to replace or renew any defective stores such replacement or renewal shall be made by the Contractor free of all costs to the purchaser, provided the notice informing the Contractor of the defect is given by the purchaser in this regard within the said period of 14 months from the date of acceptance thereof.

d Should the Contractor fail to rectify the defects, the purchaser shall have the right to reject or repair or replace at the cost of the Contractor the whole or any portion of the defective stores.

e The decision of the Purchaser notwithstanding any prior approval or acceptance or inspection thereof on behalf of the Purchaser, as to whether or not the Stores supplied by the Contractor are defective or any defect has developed within the said period of 12 months or any other period or as to whether the nature of defects requires renewal or replacement, shall be final, conclusive and binding on the Contractor.

f To fulfill guarantee conditions outilined in a to e above, the Contractor shall, at the option of the Purchaser, furnish a Bank Guarantee as prescribed by the Purchaser

27. PACKING FORWARDING AND INSURANCE The Contractor will be held responsible for the stores being sufficiently and properly packed for transport by rail, road, sea or air to withstand transit hazards and ensure safe arrival at the destination. The packing and marking of packages shall be done by and at the expense of the Contractor. The purchaser will not pay separately for transit insurance, all risks in transit being exclusively of the Contractor and the Purchaser shall pay only for such stores as are actually received in good condition in accordance with the Contract.

3. Conditions for BIDDER FROM A COUNTRY WHICH SHARES LAND BORDER WITH INDIA

1. Any bidder from a country which shares a land border with India will be eligible to bid in this tender, only if the bidder is registered with the Competent Authority. Competent Authority for the purpose of registration shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT).

2.
Validity of Registration: Registration should be valid at the time of submission of bids and should be valid at the time of placement of order.

3. Any false declaration and non-compliance of the above would be a ground for immediate rejection of offer or termination of the contract and further legal action in accordance with the laws.

C. Bid Templates

C.1 Technical Bid - Supply FR4 & Polyimide copper cladded laminates and prepregs

1. FR4 Copper cladded laminates of 0.1 mm thickness, H/1, 24" x 18" G

Item specifications for FR4 Copper cladded laminates of 0.1 mm thickness, H/1, 24" x 18" G

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Resin content	> 59 %	Yes / No / Explain		
2	Construction	1 x 106/1x1080	Yes / No / Explain		
3	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200 deg C [Mandatory]	Yes / No / Explain		
4	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C [Mandatory]	Yes / No / Explain		
5	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
6	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
7	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/ degC	Yes / No / Explain		
8	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/ degC	Yes / No / Explain		
9	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ degC	Yes / No / Explain		
10	CTE, X-, Y-axis Post Tg	14/17 ppm/ degC [Mandatory]	Yes / No / Explain		
11	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		
12	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		

13	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017 [Mandatory]	Yes / No / Explain		
14	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
15	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		
16	Peel strength	>1.25 N/mm [Mandatory]	Yes / No / Explain		
17	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		
18	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
19	Max operating temperature (UL certification)	130 degC	Yes / No / Explain		
20	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS [Mandatory]		-		
21	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
22	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		
23	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		
24	Party shall provide technical data sheet and safety data sheet along with the quote [Mandatory]		-		
25	All items shall be 18” x 24” [Mandatory]		-		

26	Copper shall be high tensile elongation [Mandatory]		-		

2. FR4 copper cladded laminates of 0.15 mm thickness, H/1,24" x 18" G

Item specifications for FR4 copper cladded laminates of 0.15 mm thickness, H/1,24" x 18" G

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Resin content	>58%	Yes / No / Explain		
2	Construction	2 x1080	Yes / No / Explain		
3	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200 deg C [Mandatory]	Yes / No / Explain		
4	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C [Mandatory]	Yes / No / Explain		
5	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
6	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
7	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/ deg C	Yes / No / Explain		
8	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/ deg C	Yes / No / Explain		
9	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ 0C	Yes / No / Explain		
10	CTE, X-, Y-axis Post Tg	14/17 ppm/ 0C [Mandatory]	Yes / No / Explain		
11	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		
12	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		
13	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017 [Mandatory]	Yes / No / Explain		

14	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
15	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		
16	Peel strength	>1.25 N/mm [Mandatory]	Yes / No / Explain		
17	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		
18	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
19	Max operating temperature (UL certification)	130 deg C	Yes / No / Explain		
20	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS [Mandatory]		-		
21	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
22	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		
23	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		
24	All items in the Sl. No. 1 to 14 shall be same make and model No./ Part No. and combined lowest for Sl. No. 1 to 14 is recommended for PO placement [Mandatory]		-		
25	All items shall be 18” x 24” [Mandatory]		-		

26	Copper shall be high tensile elongation [Mandatory]		-		

3. FR4 copper cladded laminates of 0.15 mm thickness, 1/1

Item specifications for FR4 copper cladded laminates of 0.15 mm thickness, 1/1

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Size	18" x 24 " G	Yes / No / Explain		
2	Resin content	>58%	Yes / No / Explain		
3	construction	2 x1080	Yes / No / Explain		
4	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200 deg C [Mandatory]	Yes / No / Explain		
5	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C[Mandatory]	Yes / No / Explain		
6	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
7	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
8	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/ deg C	Yes / No / Explain		
9	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/deg C	Yes / No / Explain		
10	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ deg C	Yes / No / Explain		
11	CTE, X-, Y-axis Post Tg	14/17 ppm/ 0C [Mandatory]	Yes / No / Explain		
12	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		
13	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		

14	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017 [Mandatory]	Yes / No / Explain		
15	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
16	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		
17	Peel strength	>1.25 N/mm [Mandatory]	Yes / No / Explain		
18	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		
19	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
20	Max operating temperature (UL certification)	130 deg C	Yes / No / Explain		
21	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS		-		
22	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
23	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		
24	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		
25	Copper shall be high tensile elongation [Mandatory]		-		

4. FR4 copper cladded laminates of 0.2 mm thickness, H/1

Item specifications for FR4 copper cladded laminates of 0.2 mm thickness, H/1

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Size	18 " x24"	Yes / No / Explain		
2	Resin content	> 54%	Yes / No / Explain		
3	Construction	2 x 3313	Yes / No / Explain		
4	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200deg C [Mandatory]	Yes / No / Explain		
5	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C [Mandatory]	Yes / No / Explain		
6	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
7	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
8	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/deg C	Yes / No / Explain		
9	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/ deg C	Yes / No / Explain		
10	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/deg C	Yes / No / Explain		
11	CTE, X-, Y-axis Post Tg	14/17 ppm/deg C[Mandatory]	Yes / No / Explain		
12	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		
13	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		
14	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017[Mandatory]	Yes / No / Explain		
15	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
16	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		

17	Peel strength	>1.25 N/mm [Mandatory]	Yes / No / Explain		
18	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		
19	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
20	Max operating temperature (UL certification)	130 deg C	Yes / No / Explain		
21	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS [Mandatory]		-		
22	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
23	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		
24	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		
25	Party shall provide certificate of conformation (COC) for each item from manufacturer along with consignment [Mandatory]		-		
26	Copper shall be high tensile elongation [Mandatory]		-		

5. FR4 copper cladded laminates of 0.2 mm thickness, 1/1, 24" x 18" G

Item specifications for FR4 copper cladded laminates of 0.2 mm thickness, 1/1, 24" x 18" G

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Resin content	>54%	Yes / No / Explain		
2	Construction	2 x3313	Yes / No / Explain		
3	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200 deg C [Mandatory]	Yes / No / Explain		
4	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C [Mandatory]	Yes / No / Explain		
5	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
6	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
7	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/ deg C	Yes / No / Explain		
8	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/ deg C	Yes / No / Explain		
9	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ deg C	Yes / No / Explain		
10	CTE, X-, Y-axis Post Tg	14/17 ppm/ 0C [Mandatory]	Yes / No / Explain		
11	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		
12	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		
13	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017[Mandatory]	Yes / No / Explain		
14	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
15	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		
16	Peel strength	>1.25 N/mm [Mandatory]	Yes / No / Explain		
17	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		

18	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
19	Max operating temperature (UL certification)	130 deg C	Yes / No / Explain		
20	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS [Mandatory]		-		
21	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
22	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		
23	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		
24	All items shall be 18” x 24” [Mandatory]		-		
25	Copper l shall be high tensile elongation [Mandatory]		-		

6. FR4 copper cladded laminates of 0.3 mm thickness, H/1, 24" x 18" G

Item specifications for FR4 copper cladded laminates of 0.3 mm thickness, H/1, 24" x 18" G

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Resin content	>50%	Yes / No / Explain		
2	Construction	2 x1652	Yes / No / Explain		

3	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200 deg C [Mandatory]	Yes / No / Explain		
4	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C [Mandatory]	Yes / No / Explain		
5	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
6	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
7	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/ deg C	Yes / No / Explain		
8	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/ deg C	Yes / No / Explain		
9	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ deg C	Yes / No / Explain		
10	CTE, X-, Y-axis Post Tg	14/17 ppm/ deg C [Mandatory]	Yes / No / Explain		
11	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		
12	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		
13	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017 [Mandatory]	Yes / No / Explain		
14	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
15	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		
16	Peel strength	>1.25 N/mm [Mandatory]	Yes / No / Explain		
17	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		
18	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
19	Max operating temperature (UL certification)	130 deg C	Yes / No / Explain		

20	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS [Mandatory]		-		
21	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
22	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		
23	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		
24	All items shall be 18” x 24” [Mandatory]		-		
25	Copper shall be high tensile elongation [Mandatory]		-		

7. FR4 copper cladded laminates of 0.3 mm thickness, 1/1, 24" x 18" G

Item specifications for FR4 copper cladded laminates of 0.3 mm thickness, 1/1, 24" x 18" G

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	resin content	>50 %	Yes / No / Explain		
2	construction	2 x 1652	Yes / No / Explain		
3	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200deg C [Mandatory]	Yes / No / Explain		
4	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C [Mandatory]	Yes / No / Explain		

5	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
6	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
7	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/ deg C	Yes / No / Explain		
8	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/ deg C	Yes / No / Explain		
9	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ deg C	Yes / No / Explain		
10	CTE, X-, Y-axis Post Tg	14/17 ppm/ deg C [Mandatory]	Yes / No / Explain		
11	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		
12	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		
13	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017 [Mandatory]	Yes / No / Explain		
14	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
15	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		
16	Peel strength	>1.25 N/mm [Mandatory]	Yes / No / Explain		
17	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		
18	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
19	Max operating temperature (UL certification)	130 deg C	Yes / No / Explain		
20	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS [Mandatory]		-		

21	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
22	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		
23	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		
24	All items shall be 18” x 24” [Mandatory]		-		
25	Copper shall be high tensile elongation [Mandatory]		-		

8. FR4 copper cladded laminates of 1.6 mm thickness, 24" x 18" G

Item specifications for FR4 copper cladded laminates of 1.6 mm thickness, 24" x 18" G

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	size	18 " x24"	Yes / No / Explain		
2	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200 deg C [Mandatory]	Yes / No / Explain		
3	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C [Mandatory]	Yes / No / Explain		
4	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
5	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
6	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/ deg C	Yes / No / Explain		
7	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/ deg C	Yes / No / Explain		

8	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ deg C	Yes / No / Explain		
9	CTE, X-, Y-axis Post Tg	14/17 ppm/ deg C [Mandatory]	Yes / No / Explain		
10	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		
11	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		
12	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017 [Mandatory]	Yes / No / Explain		
13	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
14	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		
15	Peel strength	>1.25 N/mm [Mandatory]	Yes / No / Explain		
16	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		
17	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
18	Max operating temperature (UL certification)	130 deg C	Yes / No / Explain		
19	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS [Mandatory]		-		
20	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
21	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		

22	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		
23	Party shall provide technical data sheet and safety data sheet along with the quote [Mandatory]		-		
24	All items shall be 18” x 24” [Mandatory]		-		
25	Copper shall be high tensile elongation [Mandatory]		-		

9. FR4 copper cladded laminates of 2 mm thickness, 24" x 18" G

Item specifications for FR4 copper cladded laminates of 2 mm thickness, 24" x 18" G

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200 deg C [Mandatory]	Yes / No / Explain		
2	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C [Mandatory]	Yes / No / Explain		
3	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
4	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
5	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/ deg C	Yes / No / Explain		
6	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/ deg C	Yes / No / Explain		
7	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ deg C	Yes / No / Explain		
8	CTE, X-, Y-axis Post Tg	14/17 ppm/ deg C [Mandatory]	Yes / No / Explain		
9	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		

10	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		
11	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017 [Mandatory]	Yes / No / Explain		
12	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
13	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		
14	Peel strength	>1.25 N/mm [Mandatory]	Yes / No / Explain		
15	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		
16	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
17	Max operating temperature (UL certification)	130 deg C	Yes / No / Explain		
18	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS [Mandatory]		-		
19	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
20	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		
21	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		
22	All items shall be 18” x 24” [Mandatory]		-		

23	Copper shall be high tensile elongation [Mandatory]		-		

10. FR4 copper cladded laminates of 2.4 mm thickness, 24" x 18" G

Item specifications for FR4 copper cladded laminates of 2.4 mm thickness, 24" x 18" G

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200 deg C [Mandatory]	Yes / No / Explain		
2	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C [Mandatory]	Yes / No / Explain		
3	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
4	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
5	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/ deg C	Yes / No / Explain		
6	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/ deg C	Yes / No / Explain		
7	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ deg C	Yes / No / Explain		
8	CTE, X-, Y-axis Post Tg	14/17 ppm/ deg C [Mandatory]	Yes / No / Explain		
9	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		
10	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		
11	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017[Mandatory]	Yes / No / Explain		
12	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
13	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		

14	Peel strength	>1.25 N/mm [Mandatory]	Yes / No / Explain		
15	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		
16	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
17	Max operating temperature (UL certification)	130 deg C	Yes / No / Explain		
18	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS [Mandatory]		-		
19	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
20	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		
21	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		
22	All items shall be 18” x 24” [Mandatory]		-		
23	Copper shall be high tensile elongation [Mandatory]		-		

11. FR4 copper cladded laminates of 3.2 mm thickness, 24" x 18" G

Item specifications for FR4 copper cladded laminates of 3.2 mm thickness, 24" x 18" G

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Size	18" x 24"	Yes / No / Explain		

2	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200 deg C [Mandatory]	Yes / No / Explain		
3	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C [Mandatory]	Yes / No / Explain		
4	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
5	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
6	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/deg C	Yes / No / Explain		
7	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/deg C	Yes / No / Explain		
8	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ deg C	Yes / No / Explain		
9	CTE, X-, Y-axis Post Tg	14/17 ppm/ deg C[Mandatory]	Yes / No / Explain		
10	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		
11	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		
12	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017 [Mandatory]	Yes / No / Explain		
13	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
14	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		
15	Peel strength	>1.25 N/mm [Mandatory]	Yes / No / Explain		
16	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		
17	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
18	Max operating temperature (UL certification)	130 deg C	Yes / No / Explain		

19	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS [Mandatory]		-		
20	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
21	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		
22	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		
23	Copper shall be high tensile elongation [Mandatory]		-		

12. FR4 Prepreg 106, resin content 76 percentage

Item specifications for FR4 Prepreg 106, resin content 76 percentage

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200 deg C [Mandatory]	Yes / No / Explain		
2	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C [Mandatory]	Yes / No / Explain		
3	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
4	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
5	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/ deg C	Yes / No / Explain		

6	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/ deg C	Yes / No / Explain		
7	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ deg C	Yes / No / Explain		
8	CTE, X-, Y-axis Post Tg	14/17 ppm/ deg C [Mandatory]	Yes / No / Explain		
9	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		
10	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		
11	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017Mandatory]	Yes / No / Explain		
12	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
13	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		
14	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		
15	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
16	Max operating temperature (UL certification)	130 deg C	Yes / No / Explain		
17	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS [Mandatory]		-		
18	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
19	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		

20	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		
21	Prepregs shall have shelf life of minimum three months and provide details of storage of prepregs.		-		
22	Date of manufacturing and expiry date shall be mentioned in each packet during delivery [Mandatory]		-		
23	Details of shipment of prepregs attached in Annexure-2		-		
24	Prepregs shall be stored in cold storage (5 deg C) during transit [Mandatory]		-		

13. FR4 Prepreg 1080, resin content 66 percentage

Item specifications for FR4 Prepreg 1080, resin content 66 percentage

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200 deg C [Mandatory]	Yes / No / Explain		
2	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C [Mandatory]	Yes / No / Explain		
3	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
4	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
5	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/ deg C	Yes / No / Explain		
6	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/ deg C	Yes / No / Explain		
7	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ deg C	Yes / No / Explain		

8	CTE, X-, Y-axis Post Tg	14/17 ppm/ deg C[Mandatory]	Yes / No / Explain		
9	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		
10	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		
11	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017[Mandatory]	Yes / No / Explain		
12	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
13	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		
14	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		
15	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
16	Max operating temperature (UL certification)	130 deg C	Yes / No / Explain		
17	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS [Mandatory]		-		
18	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
19	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		
20	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		

21	Prepregs shall have shelf life of minimum three months and provide details of storage of prepregs.		-		
22	Date of manufacturing and expiry date shall be mentioned in each packet during delivery [Mandatory]		-		
23	Details of shipment of prepregs attached in Annexure-2		-		
24	Prepregs shall be stored in cold storage (5 deg C) during transit [Mandatory]		-		

14. FR4 Prepreg 2116, resin content 57 percentage

Item specifications for FR4 Prepreg 2116, resin content 57 percentage

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	170 -200 deg C [Mandatory]	Yes / No / Explain		
2	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	340 deg C [Mandatory]	Yes / No / Explain		
3	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
4	T288 (IPCTM 650 2.4.24.1)	30 minutes [Mandatory]	Yes / No / Explain		
5	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	45 ppm/ deg C	Yes / No / Explain		
6	CTE, Z-axi spost Tg (IPC TM650 2.4.24)	20 ppm/ deg C	Yes / No / Explain		
7	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ deg C	Yes / No / Explain		
8	CTE, X-, Y-axis Post Tg	14/17 ppm/ deg C [Mandatory]	Yes / No / Explain		
9	Z- axis expansion (50-2600C) (IPC TM650 2.4.24)	2.8 % [Mandatory]	Yes / No / Explain		

10	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	4 -5 [Mandatory]	Yes / No / Explain		
11	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.017 [Mandatory]	Yes / No / Explain		
12	Dielectric break down (IPC TM650 2.5.6)	>50 kV [Mandatory]	Yes / No / Explain		
13	Arc resistance (IPC TM650 2.5.1)	>60 s	Yes / No / Explain		
14	Moisture absorption (IPC TM 650 2.6.21)	< 0.15% [Mandatory]	Yes / No / Explain		
15	Flammability (Laminate & prepreg as laminated) (UL 94)	V-0	Yes / No / Explain		
16	Max operating temperature (UL certification)	130 deg C	Yes / No / Explain		
17	All items shall comply IPC-4101E/ 21/24//26/98/99/10/126 (any one of the slash sheets) and RoHS [Mandatory]		-		
18	All items shall suitable for space applications (maximum thermal performance & reliability applications) [Mandatory]		-		
19	All items shall be made up of multifunctional epoxy resin, reinforced with E-glass fabric [Mandatory]		-		
20	All items shall have laser fluorescing and UV blocking for compatibility with Automated optical inspection system (AOI) [Mandatory]		-		
21	Prepregs shall have shelf life of minimum three months and provide details of storage of prepregs.		-		

22	Date of manufacturing and expiry date shall be mentioned in each packet during delivery [Mandatory]		-		
23	Details of shipment of prepregs attached in Annexure-2		-		
24	Prepregs shall be stored in cold storage (5 deg C) during transit [Mandatory]		-		

15. Polyimide Copper cladded laminates of 0.1 mm thickness, H/1, 24" x 18"

Item specifications for Polyimide Copper cladded laminates of 0.1 mm thickness, H/1, 24" x 18"

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	260deg C [Mandatory]	Yes / No / Explain		
2	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	416 deg C [Mandatory]	Yes / No / Explain		
3	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
4	T288 (IPCTM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
5	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	55 ppm/deg C	Yes / No / Explain		
6	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/deg C	Yes / No / Explain		
7	Z- axis expansion (50-260 deg C) (IPC TM650 2.4.24)	< 1.5 % [Mandatory]	Yes / No / Explain		
8	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	3.70 @1 GHz [Mandatory]	Yes / No / Explain		
9	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.0175 @ 1GHz	Yes / No / Explain		

10	Dielectric break down (IPC TM650 2.5.6)	>55kV	Yes / No / Explain		
11	Arc resistance (IPC TM650 2.5.1)	130 s	Yes / No / Explain		
12	Flexural Strength Length direction (IPC TM 650 2. 4.4.B)	58.7ksi	Yes / No / Explain		
13	Flexural StrengthCross direction (IPC TM 650 2. 4.4.B)	66.2 ksi	Yes / No / Explain		
14	Flammability (Laminate & prepreg as laminated)-UL 94	HB	Yes / No / Explain		
15	Relative thermal index- UL 796	140 deg C	Yes / No / Explain		
16	All items shall comply IPC-4101E 41 or 46 and RoHS [Mandatory]		-		
17	All items shall suitable for space applications (maximum thermal reliability and high temperature applications [Mandatory]		-		
18	All items shall be made up of a polyimide and thermoplastic blend resin, fully cured without the use of MDA (Methylenedianiline) [Mandatory]		-		
19	Copper shall be high tensile elongation [Mandatory]		-		
20	Peel strength	>1.25N/mm [mandatory)	Yes / No / Explain		

16. Polyimide Copper cladded laminates of 0.1 mm thickness, 1/1, 24" x 18"G

Item specifications for Polyimide Copper cladded laminates of 0.1 mm thickness, 1/1, 24" x 18"G

Sl No	Specification	Value	Compliance	Offered Specification	Remark

1	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	260 deg C [Mandatory]	Yes / No / Explain		
2	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	416 deg C [Mandatory]	Yes / No / Explain		
3	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
4	T288 (IPCTM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
5	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	55 ppm/deg C	Yes / No / Explain		
6	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/deg C	Yes / No / Explain		
7	Z- axis expansion (50-260deg C) (IPC TM650 2.4.24)	1.5 % [Mandatory]	Yes / No / Explain		
8	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	3.70 @1 GHz [Mandatory]	Yes / No / Explain		
9	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.0175 @ 1GHz[Mandatory]	Yes / No / Explain		
10	Dielectric break down (IPC TM650 2.5.6)	>55kV	Yes / No / Explain		
11	Arc resistance (IPC TM650 2.5.1)	130 s	Yes / No / Explain		
12	Flexural Strength Length direction (IPC TM 650 2. 4.4.B)	58.7ksi	Yes / No / Explain		
13	Flexural StrengthCross direction (IPC TM 650 2. 4.4.B)	66.2 ksi	Yes / No / Explain		
14	Flammability (Laminate & prepreg as laminated)-UL 94	HB	Yes / No / Explain		
15	Relative thermal index- UL 796	140 deg C	Yes / No / Explain		
16	All items shall comply IPC-4101E 41 or 46 and RoHS [Mandatory]		-		

17	All items shall suitable for space applications (maximum thermal reliability and high temperature applications [Mandatory]		-		
18	All items shall be made up of a polyimide and thermoplastic blend resin, fully cured without the use of MDA (Methylenedianiline) [Mandatory]		-		
19	All items shall be 18” x 24” [Mandatory]		-		
20	Copper shall be high tensile elongation [Mandatory]		-		
21	Peel strength	>1.25N/mm [mandatory)	Yes / No / Explain		

17. Polyimide Copper cladded laminates of 0.2 mm thickness, H/1, 24" x 18"

Item specifications for Polyimide Copper cladded laminates of 0.2 mm thickness, H/1, 24" x 18"

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	260 deg C [Mandatory]	Yes / No / Explain		
2	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	416 deg C [Mandatory]	Yes / No / Explain		
3	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
4	T288 (IPCTM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
5	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	55 ppm/deg C	Yes / No / Explain		
6	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/deg C	Yes / No / Explain		
7	Z- axis expansion (50-260 deg C) (IPC TM650 2.4.24)	1.5 % [Mandatory]	Yes / No / Explain		

8	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	3.70 @1 GHz [Mandatory]	Yes / No / Explain		
9	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.0175 @ 1GHz[Mandatory]	Yes / No / Explain		
10	Dielectric break down (IPC TM650 2.5.6)	>55kV	Yes / No / Explain		
11	Arc resistance (IPC TM650 2.5.1)	130 s	Yes / No / Explain		
12	Flexural Strength Length direction (IPC TM 650 2. 4.4.B)	58.7ksi	Yes / No / Explain		
13	Flexural StrengthCross direction (IPC TM 650 2. 4.4.B)	66.2 ksi	Yes / No / Explain		
14	Flammability (Laminate & prepreg as laminated)-UL 94	HB	Yes / No / Explain		
15	Relative thermal index- UL 796	140deg C	Yes / No / Explain		
16	All items shall comply IPC-4101E 41 or 46 and RoHS [Mandatory]		-		
17	All items shall suitable for space applications (maximum thermal reliability and high temperature applications [Mandatory]		-		
18	All items shall be made up of a polyimide and thermoplastic blend resin, fully cured without the use of MDA (Methylenedianiline) [Mandatory]		-		
19	All items shall be 18” x 24” [Mandatory]		-		
20	Copper laminates at Sl. No. 18 to 21 shall be high tensile elongation [Mandatory]		-		

21	Peel strength	>1.25N/mm [mandatory)	Yes / No / Explain		

18. Polyimide Copper cladded laminates of 0.2 mm thickness, 1/1, 24" x 18"

Item specifications for Polyimide Copper cladded laminates of 0.2 mm thickness, 1/1, 24" x 18"

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	260deg C [Mandatory]	Yes / No / Explain		
2	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	416 deg C [Mandatory]	Yes / No / Explain		
3	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
4	T288 (IPCTM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
5	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	55 ppm/deg C	Yes / No / Explain		
6	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/deg C	Yes / No / Explain		
7	Z- axis expansion (50-260 deg C) (IPC TM650 2.4.24)	1.5 % [Mandatory]	Yes / No / Explain		
8	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	3.70 @1 GHz [Mandatory]	Yes / No / Explain		
9	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.0175 @ 1GHz[Mandatory]	Yes / No / Explain		
10	Dielectric break down (IPC TM650 2.5.6)	>55kV	Yes / No / Explain		
11	Arc resistance (IPC TM650 2.5.1)	130 s	Yes / No / Explain		
12	Flexural Strength Length direction (IPC TM 650 2. 4.4.B)	58.7ksi	Yes / No / Explain		
13	Flexural StrengthCross direction (IPC TM 650 2. 4.4.B)	66.2 ksi	Yes / No / Explain		

14	Flammability (Laminate & prepreg as laminated)-UL 94	HB	Yes / No / Explain		
15	Relative thermal index- UL 796	140 deg C	Yes / No / Explain		
16	All items shall comply IPC-4101E 41 or 46 and RoHS [Mandatory]		-		
17	All items shall suitable for space applications (maximum thermal reliability and high temperature applications [Mandatory]		-		
18	All items shall be made up of a polyimide and thermoplastic blend resin, fully cured without the use of MDA (Methylenedianiline) [Mandatory]		-		
19	All items shall be 18” x 24” [Mandatory]		-		
20	Copper shall be high tensile elongation [Mandatory]		-		
21	Peel strength	>1.25N/mm [mandatory)	Yes / No / Explain		

19. Polyimide 106 prepreg

Item specifications for Polyimide 106 prepreg

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	260 deg C [Mandatory]	Yes / No / Explain		
2	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	416 deg C [Mandatory]	Yes / No / Explain		
3	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		

4	T288 (IPCTM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
5	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	55 ppm/ deg C	Yes / No / Explain		
6	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/ deg C	Yes / No / Explain		
7	Z- axis expansion (50-260 deg C) (IPC TM650 2.4.24)	1.5 % [Mandatory]	Yes / No / Explain		
8	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	3.70 @1 GHz [Mandatory]	Yes / No / Explain		
9	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.0175 @ 1GHz[Mandatory]	Yes / No / Explain		
10	Dielectric break down (IPC TM650 2.5.6)	>55kV	Yes / No / Explain		
11	Arc resistance (IPC TM650 2.5.1)	130 s	Yes / No / Explain		
12	Flexural Strength Length direction (IPC TM 650 2. 4.4.B)	58.7ksi	Yes / No / Explain		
13	Flexural StrengthCross direction (IPC TM 650 2. 4.4.B)	66.2 ksi	Yes / No / Explain		
14	Flammability (Laminate & prepreg as laminated)-UL 94	HB	Yes / No / Explain		
15	Relative thermal index- UL 796	140 deg C	Yes / No / Explain		
16	All items shall comply IPC-4101E 41 or 46 and RoHS [Mandatory]		-		
17	All items shall suitable for space applications (maximum thermal reliability and high temperature applications [Mandatory]		-		

18	All items shall be made up of a polyimide and thermoplastic blend resin, fully cured without the use of MDA (Methylenedianiline) [Mandatory]		-		
19	All items shall be 18” x 24” [Mandatory]		-		
20	Prepregs shall have shelf life of minimum three months and provide details of storage of prepregs. Date of manufacturing shall be mentioned in each packet during delivery [Mandatory]		-		
21	Prepregs shall be stored in cold storage (5 deg C) during transit [Mandatory]		-		

20. Polyimide1080 prepreg

Item specifications for Polyimide1080 prepreg

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Glass transition temperature (Tg) by DSC (IPC TM650 2.4.25)	260 deg C [Mandatory]	Yes / No / Explain		
2	Decomposition temperature (Td) by TGA 5 % weight loss (IPC 2.4.24.6)	416 deg C [Mandatory]	Yes / No / Explain		
3	T260(IPC TM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
4	T288 (IPCTM 650 2.4.24.1)	60 minutes [Mandatory]	Yes / No / Explain		
5	CTE, Z-axis Pre Tg (IPC TM650 2.4.24)	55 ppm/deg C	Yes / No / Explain		
6	CTE, X-, Y-axis Pre Tg (IPC TM650 2.4.24)	13/14 ppm/deg C	Yes / No / Explain		
7	Z- axis expansion (50-260 deg C) (IPC TM650 2.4.24)	1.5 % [Mandatory]	Yes / No / Explain		

8	Dielectric constant, Dk (Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	3.70 @1 GHz [Mandatory]	Yes / No / Explain		
9	Loss tangent, Df Laminate & prepreg as laminated) @ 1 GHz (IPC TM650 2.5.5.9)	0.0175 @ 1GHz[Mandatory]	Yes / No / Explain		
10	Dielectric break down (IPC TM650 2.5.6)	>55kV	Yes / No / Explain		
11	Arc resistance (IPC TM650 2.5.1)	130 s	Yes / No / Explain		
12	Flexural Strength Length direction (IPC TM 650 2. 4.4.B)	58.7ksi	Yes / No / Explain		
13	Flexural StrengthCross direction (IPC TM 650 2. 4.4.B)	66.2 ksi	Yes / No / Explain		
14	Flammability (Laminate & prepreg as laminated)-UL 94	HB	Yes / No / Explain		
15	Relative thermal index- UL 796	140deg C	Yes / No / Explain		
16	All items shall comply IPC-4101E 41 or 46 and RoHS [Mandatory]		-		
17	All items shall suitable for space applications (maximum thermal reliability and high temperature applications [Mandatory]		-		
18	All items shall be made up of a polyimide and thermoplastic blend resin, fully cured without the use of MDA (Methylenedianiline) [Mandatory]		-		
19	All items shall be 18” x 24” [Mandatory]		-		

20	Prepregs shall have shelf life of minimum three months and provide details of storage of prepregs. Date of manufacturing shall be mentioned in each packet during delivery [Mandatory]		-		
21	Prepregs shall be stored in cold storage (5 deg C) during transit [Mandatory]		-		

21. Temperature Recorder

Item specifications for Temperature Recorder

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	It shall record temperature from packing to delivery at VSSC including transit		-		

Common Specifications (Applicable for all items)

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Sample technical evaluation	Party shall provide 20 sheets of 18"x24" of 0.2 mm, 1/1 of FR4 & Polyimide of the quoted items for technical evaluation at VSSC free of cost, if desired by VSSC.	Yes / No / Explain		

Supporting Documents required from Vendor

1. Party shall provide certificate of conformation (COC) for each item from manufacturer along with consignment

2. Party shall provide technical data sheet and safety data sheet along with the quote

3. Party shall provide make, model No./ Part No. and country of origin of the quoted items

5 additional documents can be uploaded by the vendor

C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	Prepregs shall be stored in cold storage (5 deg C) during transit	Yes / No / Explain	
2	I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfils fulfils all requirements in this regard and is eligible to be considered.	Yes / No / Explain	
3	P & F charges, if any, please mention percentage.	Yes / No / Explain	
4	Installation Charges, if any	Yes / No / Explain	
5	Freight charges, if any. If yes, please mention the percentage	Yes / No / Explain	
6	PO ordering address in full with Contact Persons Name, E-mail id, Phone No. [also attach your Quotation in PDF format without prices details].	Yes / No / Explain	
7	You should update the address of your Principle/ agent [if applicable] in the new E procurement portal immediately.	Yes / No / Explain	
8	Foreign vendors are not permitted to quote 1. Only Class -I and Class-II Local suppliers as per make in India policy are eligible to participate in the bid. 2. The percentage of local content should be specifically mentioned in the offer, without which will be summarily rejected 3. Preference will be given to Class-I Local Supplier and in their absence, class-II Local supplier will be considered.	Yes / No / Explain	
9	Taxes and other costs, if any. [Please Specify the rates]. Note: All Tax invoices issued by Suppliers / Service Providers on or after July 01, 2017 shall invariably bear their GST registration number (GSTIN) and the applicable GST rates. In the absence of which, the invoices shall not be processed for payment.	Yes / No / Explain	

10	VSSC is a Public Funded Research Institution under the administrative control of Department of Space and is eligible for partial exemption of IGST @ 5% against IGST CONCESSIONAL CERTIFICATE.	Yes / No / Explain	
11	Delivery Terms [Normal delivery terms - FOR Destination (for Indigenous cases).	Yes / No / Explain	
12	Delivery Period [Please Specify the period, LD Clause applicable]	Yes / No / Explain	
13	Payment [Within 30 days after receipt and acceptance for indigenous cases].	Yes / No / Explain	
14	Quote Validity: Minimum 180 days [for Two Part Tender] from the date of Tender opening.	Yes / No / Explain	
15	Liquidated Damages @ 0.5% per week subject to maximum of 10% of order value is applicable beyond the promised delivery schedule.	Yes / No / Explain	
16	This tender is proposed as a DOMESTIC PUBLIC TENDER. This tender is restricted only to Class-I and Class-II Local Suppliers as defined under DPIIT Order dtd 04/06/2020- Preference to Make in India Order-2017 Revision. Non-Local Suppliers need not quote. Foreign OEMs/Agents quoting on behalf of Foreign OEMs are not permitted to quote. High Sea Sales Quotes not permitted. The bids shall be in INR only.	Yes / No / Explain	
17	This is a TWO-PART tender i.e. Techno-Commercial Bid (Part-I) and Price Bid (Part-II) shall be submitted separately. All technical and commercial terms and conditions shall be furnished in the Techno-Commercial Bid while price shall be indicated only in the Price Bid. Uploading price details anywhere else other than the price-bid shall lead to unconditional rejection of the tender. Please make note of the same. Tenderers are advised NOT TO UPLOAD any documents revealing the price of the main equipment, accessories, spares or AMC in technical & Commercial bid. They are however, requested to upload UNPRICED BIDS (i.e. Price details masked) showing appropriate breakup of components of main equipment, individual accessories and spares as desired.	Yes / No / Explain	

18	Purchase preference to eligible vendors are applicable as per extant notifications issued by the Government of India. The Class-I/Class-II Local suppliers, at the time of submitting their offer, shall also indicate percentage of local content and provide self certification that the item (s) offered meets the local content requirement for Class-I/Class-II Local Suppliers as the case may be. They shall also give details of location (s) at which the local value addition is made.	Yes / No / Explain	
19	The vendor have to compulsorily submit the compliance statement online otherwise their offer will not be considered for further evaluation. Before entering the compliance statement, vendors are advised to refer the detailed specification provided.	Yes / No / Explain	
20	The Technical Specification/ Drawing/ Product Catalogues/ Works Carried by vendor/ Make offered etc. as a single PDF file without any financial details has to be uploaded online mode by the vendor.	Yes / No / Explain	
21	In cases if the item(s) offered exceed Rs. 10 Crores, the Class-I / Class-II Local Suppliers shall provide a Certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content. False Declarations will be in breach of the Code of Integrity under Rule 175 (1) (i) (h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.	Yes / No / Explain	
22	Technical Bids will be opened at the scheduled due date & time. No further intimation will be sent in this regard. The schedule for price bid opening shown is only indicative. Price bids will only be opened in the case of parties who have been techno-commercially accepted, the details of which will be communicated at a later stage.	Yes / No / Explain	

23	If any of the bidders submit any forged or false documents along with the Tender, such tenders will be summarily rejected and such bidders will be blacklisted for all future tenders.	Yes / No / Explain	
24	Security Deposit: Successful Tenderer shall submit Security Deposit equivalent to 3% of the order value valid for a period of 60 days beyond the date for completion of the Purchase Order shall be furnished. This security deposit is collected towards the performance of the Contract. The said Security Deposit shall be submitted either in the form of Bank Guarantee or Fixed Deposit receipts from Nationalised/Scheduled Banks. [Mandatory. Otherwise offer will not be considered for evaluation]. No exemption is applicable for MSE vendors from submission of Security Deposit.	Yes / No / Explain	
25	Any other terms	Yes / No / Explain	

C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	Remark
1	FR4 Copper cladded laminates of 0.1 mm thickness, H/1, 24" x 18" G	200.00 Nos.		-		
2	FR4 copper cladded laminates of 0.15 mm thickness, H/1,24" x 18" G	200.00 Nos.		-		
3	FR4 copper cladded laminates of 0.15 mm thickness, 1/1	100.00 Nos.		-		
4	FR4 copper cladded laminates of 0.2 mm thickness, H/1	200.00 Nos.		-		

5	FR4 copper cladded laminates of 0.2 mm thickness, 1/1, 24" x 18" G	500.00 Nos.		-		
6	FR4 copper cladded laminates of 0.3 mm thickness, H/1, 24" x 18" G	200.00 Nos.		-		
7	FR4 copper cladded laminates of 0.3 mm thickness, 1/1, 24" x 18" G	300.00 Nos.		-		
8	FR4 copper cladded laminates of 1.6 mm thickness, 24" x 18" G	200.00 Nos.		-		
9	FR4 copper cladded laminates of 2 mm thickness, 24" x 18" G	500.00 Nos.		-		
10	FR4 copper cladded laminates of 2.4 mm thickness, 24" x 18" G	50.00 Nos.		-		
11	FR4 copper cladded laminates of 3.2 mm thickness, 24" x 18" G	500.00 Nos.		-		
12	FR4 Prepreg 106, resin content 76 percentage	600.00 Nos.		-		
13	FR4 Prepreg 1080, resin content 66 percentage	2600.00 Nos.		-		
14	FR4 Prepreg 2116, resin content 57 percentage	800.00 Nos.		-		

15	Polyimide Copper cladded laminates of 0.1 mm thickness, H/1, 24" x 18"	50.00 Nos.		-		
16	Polyimide Copper cladded laminates of 0.1 mm thickness, 1/1, 24" x 18"G	50.00 Nos.		-		
17	Polyimide Copper cladded laminates of 0.2 mm thickness, H/1, 24" x 18"	100.00 Nos.		-		
18	Polyimide Copper cladded laminates of 0.2 mm thickness, 1/1, 24" x 18"	200.00 Nos.		-		
19	Polyimide 106 prepreg	100.00 Nos.		-		
20	Polyimide1080 prepreg	400.00 Nos.		-		
21	Temperature Recorder	3.00 Nos.		-		

Common charges (Applicable for all items)

Customs Duty	
IGST	