

**NATIONAL INSTITUTE OF TECHNOLOGY
KURUKSHETRA-136119**

INVITATION OF TENDERS

For supply of

1. 8 Mbps Internet Leased Line
2. Campus wide Networking through Wi-Fi
3. CHNS/O Elemental Analyser

The Tender documents alongwith detailed specifications of equipments can be had by hand or post from the Stores Section of the Institute on any working day on payment of Rs.500/- by cash or by Demand Draft payable to the Director, National Institute of Technology, Kurukshetra. The Document Fee of Rs.500/- may be deposited alongwith the Tender through DD in favour of the Director NIT, Kurukshetra in case the document downloaded from the website of the Institute. The Tenders without Earnest Money will be rejected.

Tender Reference	:	SO/NITK/Tender/2008	
Date of Commencement of Sale of Tender document	:	25.02.2008	
Date of Pre Bid Meeting	:	10.03.2008 at 11.30 a.m.	Any amendment in tender document after pre bid meeting shall be indicated on Institute's website only and no advertisement will be given in Newspaper.
Last date and Time for Receipt of tenders	:	25.03.2008 upto 2.30 p.m.	
Time and date of opening of tenders	:	25.03.2008 at 3.00 p.m.	
Place of opening of Tenders	:	Office of the Stores Officer, NIT Kurukshetra.	

**INSTRUCTIONS TO TENDERERS
&
CONDITIONS OF CONTRACT**

1. **System of Tendering**

Two bid system (Technical & Commercial bids should be submitted in separate covers in following manner):

- (i) Bid containing technical specifications and Earnest Money Deposit.
- (ii) Bid containing financial offer.

The envelopes should be marked as Technical Bid and Financial Bid with reference numbers and submitted in one cover.

These bids will be opened in two stages on different dates. The bid containing technical specifications and Earnest Money deposit will be opened at Ist stage and if the same is found according to required specifications, the bid containing financial offer shall be opened in IInd stage

- 2. Tender must be sent in a properly sealed envelope with tender number and due date subscribed on the envelope addressed to the Stores Officer, NIT, Kurukshetra.
- 3. The price should be quoted on prescribed price schedule. All corrections must be attested by the tenderer.
- 4. All the columns of the tender form shall be duly and properly filled in separately. The rates and units shall not be overwritten in the price schedule. The rates shall be quoted both in figures and words. The Tender should be signed by the authorized signatory of the firm.
- 5. The tenderer shall deposit earnest money as specified in Notice inviting tenders alongwith Technical Bid in the form of Bank Draft in favour of Director, National Institute of technology, Kurukshetra payable at any Scheduled/Nationalised Bank at Kurukshetra. The tenders without Earnest Money shall be rejected.
- 6. In case the Tender Document is downloaded from the website of the Institute for submission of the tender, the Tender Document Fee of Rs. 500/- may be deposited alongwith tender through Demand Draft in favour of the Director, NIT Kurukshetra, otherwise the tender may be rejected.
- 7. The successful tenderer shall furnish the Performance Security for an amount of 5% of total value of the equipment in shape of Bank Guarantee in favour of Director, National Institute of technology, Kurukshetra of any Scheduled/Nationalised Bank for the period of completion of performance obligations and warranty period.

8. The required delivery period must be mentioned against each item. After the order has been placed, the goods must be delivered within the stipulated period or by the delivery period extended by the Director. In case of late delivery of goods the Director is entitled to recover as penalty from the tenderer a sum @ 0.5% of the total value of the goods for every week or part thereof and the maximum 10% of the total value of the goods for which the consignment is delayed beyond the due date.
9. The payment will be made after receipt of goods according to specifications, its installation and good working order. In case the goods are rejected these have to be removed by the supplier at his own cost. The rejected goods must be replaced by the supplier within 15 days of the dispatch of registered notice intimating that the goods have been rejected failing which the order may be cancelled and security forfeited.
10. No payment will be made in advance for any supplies under this tender. No claim for any duty, not stipulated in tender will be admitted at any stage.
11. The valid documentary proof of Sales Tax, VAT/Service Tax Registration No. & details of Income Tax registration (PAN) should be submitted alongwith tender. The taxes must be quoted clearly and separately. If the taxes are not quoted separately, it will be presumed that the rates quoted are inclusive of taxes. The rates quoted should be firm and include all charges for delivery FOR KURUKSHETRA inclusive of packing, forwarding and Insurance charges. The material may be dispatched "FREIGHT PAID" in all cases where the offer is F.O.R. destination.
12. The consignment must be insured not exceeding at the rate of 1% of the value against the risk of breakdown and damage in transit with an Insurance Company if the goods are likely to get damaged in transit. In the absence of insurance the entire responsibility shall rest with the supplier and the Director shall not be bound to pay for such items, broken or damaged in transit.
13. In case of imported goods, the country of origin, maker's name and Brand must be mentioned alongwith the FOR price. Payment of Custom Duty & Excise Duty is exempted to this Institute for the equipments required for research purpose only.
14. In case of goods controlled by the Government, the tendered rates shall not be higher than the controlled rates.
15. Standard warrantee of minimum One Year or more should be mentioned in the tender. A list of users where similar equipment has been supplied in the past should be furnished with the tender.
16. Director of the Institute reserves the right to accept or reject any tender without assigning any reason.

17. The institute reserve the right to verify/seek confirmation of all original documentary evidence submitted by the venders in support of the tenders, specifications for eligible criteria. In case any information furnished by vender is found false/incorrect the tender will be rejected. The descriptive literature with full technical data and drawing/photos must be furnished alongwith the tender.
18. In case of dispute the decision of the Director shall be final. All above conditions will be enforced unless written orders of the Director are obtained relaxing any specific condition in any particular instance.
19. The tender shall remain valid for **90 days** from the date of opening of tender. Fax or conditional tenders shall not be accepted.
20. **Tender received beyond the fixed date and time shall not be accepted.**
21. The tenderers are required to quote their lowest rates in the very first instance and there shall be no negotiation in purchases. In case only one tender is received or only one tender remains according to specifications of the required goods, negotiations will be carried out.

PRICE SCHEDULE

Having examined the tender documents, the receipt of which is hereby duly acknowledged, we offer to supply the goods and services in conformity with the said tender documents at the rates shown below:

1	2	3	4	5	6	7	8	9	10	11
Sr. No	Particulars of the items	Unit	Ex-works, Ex-godown or C.I.F.	Customs Duty/excise Duty inclusive, if exclusive rates be given	Packing forwarding Octroi inclusive, if exclusive rates be given	Whether Sales Tax inclusive, if exclusive rates be given	Total Cost F.O.R. Kurukshetra	Delivery Period	Particulars of Manufacturers and Country in which manufactured	Remarks

N.B.: The price column should be properly filled. In case nothing is mentioned in the columns the price will be considered inclusive of Taxes, Excise Duty, packing and forwarding Octroi etc.

Dated the _____ Date of _____

Address with seal

Signature

SCHEDULE OF REQUIREMENTS

Sr. No.	Name of the Equipment	Qty.	Delivery Period	Earnest Money (in Rs.)
1.	8 Mbps Internet Leased Line	As per list	4 Weeks or period suitable to the bidder.	1,20,000/-
2.	Campus wide Networking through Wi-Fi	1 System	12 Weeks or period suitable to the bidder.	1,20,000/-
3.	CHNS/O Elemental Analyser	1 No	6-8 Weeks or period suitable to the bidder.	42,000/-

Specifications of 8 Mbps Internet connectivity Leased Line

8 Mbps Internet connectivity Leased Line for one year

A) Band Width charges/or Annual Port Charges

8 Mbps of Internet Bandwidth (8 Mbps Internet Connectivity Leased Line (1:1 uncompressed and unshared) on MPLS network up to NIT Kurukshetra dedicated on Optical fiber link. MRTG at NIT Kurukshetra for peer bandwidth management.

B) Local Loop charges

- a) One time installation & Configuration charges
- b) Annual rentals (Recurring charges)
- c) Any other charges (To be specified)
- d) WPC and other clearance charges

C) Hardware charges

NITK will not purchase any hardware and ISP will have to provide all the required hardware.

1. Qualifying Conditions for Eligible Bidder: -

- Liaisoning (if required) with other firm(s) for obtaining point to point connectivity between ISP node and NIT shall be the responsibility of quoting firm.
- The ISP should have a valid Category A ISP license from Govt. of India (Attach a copy of license).
- ISP must have DOT license to set up and operate International gateways. ISP must have distributed minimum 100 Mbps of International Internet bandwidth to its clients (Attach certificate).
- The list of existing enterprise customers of Internet Bandwidth (4 Mbps or more) should be provided along with feedback.
- The quotation should clearly indicate the different components of the total charges-recurring (annual) and non-recurring (one time) for bandwidth and equipment supplied along with mode of payment i.e. whether quarterly / half-yearly / annual or one time (if any).
- Compliance of terms with any deviation should be clearly indicated in remarks in separate deviation sheet

- The ISP should have a fully functional Customer Service Centre in this region, which is operational 24 hours. (Attach Certificate)
- The bidder would insure that the local loop provisioning does not violate regulations as laid by Government of India/TRAI in respect of such links/networks. Bidder will be responsible for making all the payments towards the local loop charges/rentals/WPC charges etc.
- Vendor should submit the quotation in two bid system i.e. Technical bid and Commercial bid. Commercial bid of those Vendors will be considered who will qualify technically.
- Vendors not complying with above conditions or not providing complete information as described shall not be considered.
- The client reserves the right to carry out the capability assessment of the bidder and the client's decision shall be final in this regard.
- The firm must mention clearly the requirement of Hardware and Software (server, operating system etc.) from NIT to make this Internet connectivity operational.
- The Mode of payment of Bandwidth charges will be subject to the following conditions on various tasks as under:

Bandwidth charges will be paid quarterly in advance. For this the ISP will raise the bills at-least one month in advance before the start of the next quarter.

ISP will be responsible for making payments related to WPC and other clearance charges.

2. DELIVERY PERIOD & INSTALLATION:

The delivery period of the said tasks/services should be adhered to as will be mentioned in the Award of Contract. Bidder should quote the minimum and maximum period he will take to install/operate the link at NITK. The supply shall actually be deemed to have been completed on the actual date of installation.

3. WARRANTY PERIODS:

- The Vendor will be responsible for the comprehensive maintenance during the warranty period of one year after the acceptance of installation & testing of hardware for which NIT will not make extra payment.
- The vendor will do preventive maintenance once a quarter for upkeep of the Systems running. The schedule will have to be adhered to strictly by him.
- The response time for attending the faults will be four hours after they are reported to the Vendor. The Vendor will rectify the faults within 24 hours failing which; the vendor will arrange temporary replacements. The services shall be provided 24 hours & 7 days in a week.

4. RESPONSIBILITIES UNDER THE CONTRACT:

The ISP would be responsible for the following:

- To provide 8 Mbps Internet connectivity (Leased Line) at NITK. Internet Router Port at ISP Gateway for required Bandwidth and minimum 32 IP addresses including Reverse Lookups configured at these IP's.
- Liaisoning with BSNL for obtaining point-to-point connectivity between ISP node and NITK. (If required)
- Installation, commissioning, configuring of the link and hardware (Mux, Modems and Router etc).
- Maintenance support service (24 hours and 7 days a week) for Bandwidth and equipment.
- MRTG graph for bandwidth monitoring at Router in NITK.

5. ISP will be required to sign Service Level Agreement having the following:

- 8 Mbps Internet bandwidth at all the time.
- Packet Losses: Less than 1 % (Average over 1000 ping) at any given point of time to any part of globe.
- Latency: Less than 350 ms from NITK to ISP's tier 1 peering point.
- Network Availability: More than 99.9 % per month.
- Reports for performance, monitoring /usage to be submitted by the ISP on weekly or monthly basis or as per requirement of NITK.
- The 8Mbps leased circuit will be utilized for critical services like Web Servers, Mail Servers etc. apart from normal Internet usage. To ensure uninterrupted critical services, the ISP will ensure redundant alternative leased circuit route (e.g. ring topology).

In any case, downtime shall not be more than 2 hours failing which penalty to the tune of 400% shall be imposed.

In case of the above parameters going out of specifications, NITK will be compensated adequately in respect of the extended time for the loss of hours in service.

Also, if services are not found satisfactory, NITK reserves the right to cancel the contract with one-month notice.

SPECIFICATIONS OF CWN THROUGH WI-FI**BoM for NIT Kurukshetra (Turn-Key project) Campus Wi-Fi Network
using Mesh wireless dual frequency radio**

S. No.	Particulars - Item Description	UoM	QTY
I	HARDWARE SUPPLY		
1	Dual Band (2.4 GHz/5.7 GHz) Mesh wireless Wi-Fi Router and Intelligence Access Point (as per the detailed specification) with power adapter (only OEM make and supply)	No.	40
2	12 Ft. Ethernet to RJ45 Cable (only OEM make & supply) for Intelligent Access Point	No.	14
3	Helical Antenna (as per the detailed specification)	No.	40
4	Power Divider (as per the detailed specification)	No.	40
5	12 dBi Omni Antenna (as per the detailed specification)	No.	40
6	RF Cable Assembly (for Antenna connectivity)	No.	40
7	3 Mtr. pole mount structure for mounting the radio (The tower should be able to with stand Air speed of 60 miles/hour).	No.	40
8	UTP CAT-6 cable (only OEM make & supply) (approx. length)	Box (300 mtr.)	14
9	Armoured Power cable for power supply to Radio equipment (approx. length)	Mtr.	2400
10	Weather proof metal enclosure to house the power points	No.	40
11	HDPE Pipe	mtr.	1800
12	PVC Pipe (3/4")	mtr.	3000
13	Soft Digging	mtrs.	2100
14	Hard Digging	mtrs.	300
15	GI pipe 1" dia	mtrs.	300
II	SOFTWARE SUPPLY		
1	Mesh Management base Software for Duo Radio with 31 licenses to manage the mesh radios (of OEM radio)	Set	1

III	CABLE LAYING, INSTALALTION AND COMMISSIONING SERVICES		
1	Underground Conducting for UTP LAN Cable in HDPE pipes (approx. length)	Mtr.	1800
2	Underground Power Cable lying in thick PVC HDPE pipes (approx. length)	Mtr.	2000
3	Underground GI conducting (below the tar roads) for UTP/Power cabling (approx . length)	Mtr.	300
4	Earth digging and refilling after the work (approx. Length)	Mtr.	2100
5	Road cutting, digging and refilling after the work (approx. Length)	Mtr.	500
6	PVC conducting on the wall for LAN cabling (approx. Length)	Mtr.	500
7	PVC conducting on the wall for power cable (approx. Length)	Mtr.	500
8	UTP connectors supply, crimping and termination (approx.)	No.	200
9	Installation of Mesh Wireless Radio, Antennas and configuration	No.	40
10	Installation of Mesh Management software and configuration	Unit	01

Note:

1. Any other item not mentioned above but required for successful commissioning of above network will have to be provided by the vendor.
2. Any underground cable should be enslieved in the GI/HDPE pipe.
3. All protocols with reference to their corresponding RFCs should be compulsory specified.
4. Separate earthing should be made for each and every switch.
5. A detailed documentation for layout, node identification tag, etc. configuration of the AP/Routers must be submitted by the vendor.
6. All the radio equipments which are - Access Points / Antenna / RF Cables should all be from the same manufacturer
7. The Wireless Access Point should be able to be managed through Secure Shell protocol (SSH), Telnet, HTTPS, SNMP, Console Port (Hyperterminal).
8. The Access Points should have LEDs to indicate operating state/error or warning condition, activity over Ethernet and Activity over the radio
9. The actual quantity of active and passive component may vary depending upon the layout/design of the wireless network or the availability of network or the availability of fund. Vendors are also requested to visit the site if required on any of the Institute working days.
10. Proposed Wireless layout enclosed in the tender document is tentative. Actual design may vary as per the design proposed by the vendor but in any case the signal strength should not be less than 50% of the max. Value, for which vendor will make mandatory survey of NIT Kurukshetra campus after award of contract
11. Uptime of the network should be 99% with the condition that user site service rectification is done within 24 hours
12. Three years warranty is required for all equipments. During warranty i.e three years one residential engineer be placed in NIT Kurukshetra or the firm will make suitable arrangement so that the services run uninterruptedly
13. These are the minimum technical requirement. Higher specification can be accepted

Detailed Technical Specifications

<u>Wi-Fi Mesh Radio (I-1)</u>	
Wireless Standards	802.11a/b/g/i/s/e
Frequency Bands	2.4GHz and 5.7GHz ISM bands
Radio Resource Management	Self configuring/Self healing/Self optimization
Software	Management software for configuration and administration
Channel width Supported	20 MHz
Duplexing	TDD
Number of radio's supported	Single and /or dual on the single physical radio unit
Access Method	CCK/OFDM
Modulation	CCK for 802.11b, OFDM for 802.11 g/a
Maximum Transmit Power	30 dBm
Data Transfer Rate	54 Mbps or better
Mesh Protocol	Mesh Connecx protocol
EIRP	35dBm for 2.4 GHz, 34 dBm for 5.8 GHz
Omni/Directional	Support for both Omni and /or Directional antenna through N connector on the
Gain	Omni-8dBi or 12 dBi for 2.4 GHz, 10 dBi for 5.8 GHz, Directional-13 dBi for 2.4 Ghz, upto 15 dBi for 5.8 GHz
Beam width	360 deg for Omni,
Antenna Polarization	Linear/Circular Polarisation
Port availability	Two Ports-one each for 2.4 GHz and 5.8 GHz respectively
Radio approval and safety standards	FCC Part 15 & 90, UL, CSA, Wi-Fi or equivalent
Weather resistance NEMA compliant	All weather resistance NEMA Compliant or IP67/IP76 Compliant
AC Input Power	240 V AC with +/- 20% variation at 50 Hz
Maximum temperature range	To work in the temperature range of -10° deg C to + 60 deg C
Mesh Network performance	Support of minimum 3 to 5 hops without significant drop in performance
Voice/data/Video support	IEEE 802.11e QOS, weighted fair queuing and IP precedence bits (TOS) support via DSC.
Security Authentication	WEP/WPA/WPA2/EAP/802.1x based. User authentication, 802.11s draft standards
Encryption	802.11i, TKIP for WPA, AES for WPA2, MAC and protocol based filtering, IP filtering, IPSec/L2TP enabled, VPN pass through, Broadcast strom and port filtering
Sensitivity at different data rates	For 802.11 a radio

Management Support	
GUI support, Web based and Telnet Management, NMS/EMS enabled with software, Ethernet port for management	
Mesh Networking	
Roaming methodology between APs	Mesh Connex routing with Layer 1 situational awareness, Layer 2, Hybrid proactive/ reactive routing
Roaming between APs with same/different mesh network, IEEE 802.11s enabled, Self healing and load balancing feature,	

HELICAL ANTENNA (I-3)	
1. Frequency Range	2.4-2.5 GHz.
2. Usage	For short range links and for Wide-angel coverage applications
3. Gain	Should have 12 dBi gain
4. Polarization	Right –circular
5. Return loss	Better than 15 dB
6. Impedance	50 Ohms
7. Connector	N-type Jack
8. Dimensions (mm)	90 x 90 x 250 or lesser
9. Weight	350 gms or lesser
10. Physical Construction	Should be robust and all weather proof housing with Fibre glass radome
11. Azimuth and Elevation adjustment	Antenna should provide the adjustments in the mount.

Omni-directional 12 dBi gain Antenna (I-5)

Frequency range	2400~2500MHz
VSWR	≤1.4
Gain	12dBi
Max. power	150W
Polarization	Vertical
Electrical downtilt	0°
E-plane half power beamwidth	9°
Max. wind velocity	60m/s
Impedance	50Ω
Ground	Direct ground
Connector	N-female
Length	≤1.1m
Weight	1 Kg or lesser
Radome material	Fiberglass

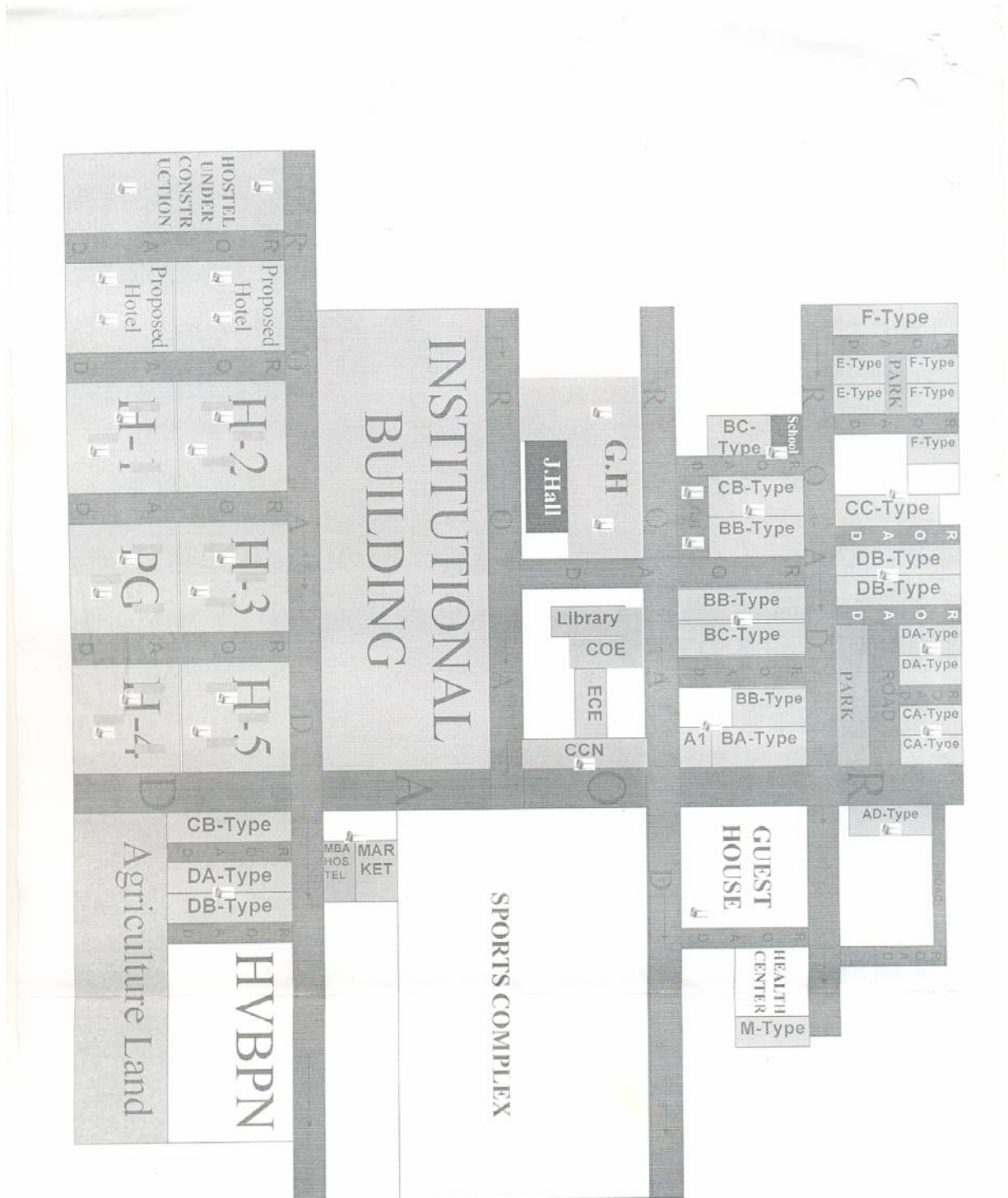
<u>2 Way Power Dividers(I-4)</u>	
Frequency range	2.4-2.5 GHz
Insertion Loss	0.2dB(Max.)
Design	Passive component with stripline design
Usage	To enable a single radio to share & provide RF feed from 2 antenna
Return Loss	19 dB
Impedance	50 Ohms
Amplitude balance	+/- 0.2 dB
Connectors	SMA Jack
Dimensions (mm)	14 x 40 x 37 or better
Net Weight	30 gms or lower

<u>UTP CABLE (I-8)</u>	
Type	Unshielded Twisted Pair, TIA / EIA 568-B.2, Category 6
Material:	
Conductors	23 AWG solid bare copper
Insulation	Polyethylene
Pair Separation	Cross member fluted spline
Jacket	Flame Retardant PVC
Packing	Box of 305 meters
Delay Skew	45ns / 100m MAX.
Operating temperatures	-20 ⁰ C to + 60 ⁰ C
Approvals	UL Verified
Performance characteristics	Attenuation, Pair-to-pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR

<u>RJ-45 Patch CORDS (I-2)</u>	
Type	Unshielded Twisted Pair, TIA / EIA 568-B.2-1, Category 6
Conductor	24 AWG 7 / 32, stranded copper
Length	7-feet or 3 feet
Plug Protection	Anti Snag

Terms and conditions

1. The Supplier must be a manufacturer or system integrator having a direct purchase and support agreement with the OEM of Access Point, Wireless Radio, Antenna etc. and should have tested and supplied the similar type of required equipments/system of at least 50% of Wireless LAN in any reputed organization. The equipments offered for supply must be of the most recent series models incorporating the latest improvements in design. The models should have been released on or after 2006 and be in satisfactory operation for 6 months as on the date of tenders opening.
2. The supplier should have consistent minimum turn over of Rs.2 crore for the last 3 years in the field of networking and wireless networking. Certified copy of CA must be enclosed alongwith tender.
3. The supplier should have a 24 x 7 assistance center in India and must have service centers of their own within 200 – 300 kms. Radius and qualified engineers to handle the project. The details of service centers and information on service support facilities required after the warranty period may also be given in the tender.
4. The supplier also should have the valid sales tax registration No. for the logistic support center in India for spares and replenishment.
5. Copies of original documents defining the constitution or legal status, place of registration and suppliers place of business of the company or firm or partnership etc. should be furnished.
6. The supplier should furnish a brief write up, backed with adequate data, explaining his available capacity and experience (both technical and commercial) for supply of the required systems and equipment within the specified time and completion after meeting all their current commitments.



SPECIFICATIONS FOR CHNS/O ELEMENTAL ANALYSER

1. Detector range (for C, H, N, S, O) : 0.01 – 100 %
2. Furnace / Combustion Temperature : 1100⁰C/1800⁰C
3. Analysis Time : CHN – 5 min. / CHNS– 7 min./ Oxygen – 3 min
4. GC Column type & Length : Packed Column, 2 Mtr for CHNS
: Packed Column, 1 Mtr for Oxygen
5. GC Oven Temperature : 40-110⁰C
6. The Analyser must be compatible with Microbalance for weighing samples. The sensitivity of the microbalance should be upto 6 decimal place or more with automatic weight transfer facility.
7. The Analyser should work on the principle of continuous flow **Thermocatalytic Combustion**, followed by **Time Resolved True Gas Chromatographic Separation & Thermal Conductivity Detection (TCD)** of at least five elements i.e., C, H, N, S and O in various field upgradeable modes as CHNS/O, CHNS, CHN, CNS, CN, N & O only in sub ppm level (100 ppm).
8. Analyser should be operated and controlled through PC using latest operating software and should also be capable to calculate Gross Heat Value (GHV) and Net Heat Value (NHV) for fuel characterization.
9. The Analyser should have the provision for ash removal /extraction from furnace and reactor.
10. The Analyser should have the facility of viewing the flame of combustion. The Analyser should use either EPC or MFC for regulating the pressure for carrier and combustion gas.
11. Sample feeding must be via 60 positions **Auto Sampler** for solid and liquid samples and the sample introduction via tin / silver boats along with liquid and solid sample preparation / sealing device.
12. Analyser must be quoted with the kit for 2000 consumables for CHNS, CHN, CNS , CN and oxygen analysis. The reactor to be supplied must be pre configured and pre filled for CHNS, CHN, CNS, CN & oxygen for efficient usage.
13. Branded Pentium IV PC with Colored printer.