

नार्दन कोल्डफिल्ड्स लिमिटेड  
एक मिनी रत्न कम्पनी  
सामग्री प्रबन्धक विभाग  
पो० ओ० सिंगरौली कोलियरी  
जिला सिंगरौली , म०प्र० 486889  
फैक्स नं० 07805-266388 /266640



Northern Coalfields Limited  
(A Mini Ratna Company)  
PO- Singrauli Colliery,  
Distt- Singrauli, MP- 486 889  
(An ISO 14001,ISO 9001,OHSAS-18001 &  
SA 8000 Certified Company)  
Materials Management Wing  
Tel : 07805-266413/256615



Ref: No.63634 040 /315A1025/

Dated 15 /07/2016

**FORMAL ORDER**

To

M/S Convergent Wireless Communications Private Ltd.,	Email : mktg@convergentindia.com
11/1,KHR HOUSE, 2 <sup>nd</sup> Floor, Behind SBM,	PCC: BY REGISTERED POST
Cunningham Road	Vendor Code :
Bangalore- 560052	

Sub : This office E-Procurement Tender No. NCL/SGR/MMD/Sec.III/315A1025/18 dtd. 29.04.2015 for Supply, Installation and Commissioning of IP based Radio Communication Network between NCL Hq, Singrauli and different projects /Units of NCL alongwith five years CAMC , opened on 05.06.2015 (Tender ID: 2015\_NCL\_11199\_1 )

Ref : Your offer submitted on e-procurement portal (Bid ID : 29885 submitted on 27.05.2015 )  
:Your letter No. 08092015/16/04 dtd. 10.09.2015 , CWCP/NCL/08-09/2015/15-16/05 dtd. 11.09.2015 ,  
08092015/16/06 dtd. 29.01.2016 , CWCP/NCL/08-09/2015/15-16/06 dtd. 23.05.2016 and letter No.  
CWCP/NCL/letter/May/03 dtd. 30.06.2016.

Dear Sirs,

With reference to the above, we hereby place our Formal Supply Order on you for supply , Installation and Commissioning of IP based Radio Communication Network Network between NCL Hq, Singrauli and different projects /Units of NCL alongwith five years CAMC . The supply shall be governed by the specification, prices, terms & conditions mentioned here under and also unless otherwise specified as per General Terms & Conditions enclosed with the NIT.

**SCOPE OF SUPPLY:** Supply , Installation and Commissioning of IP based Radio Communication System between NCL Hq, Singrauli and different projects /Units of NCL comprises the followings :

Sl. No	Description	Unit/Qty.	Basic Unit Price (in Rs.)	Extended value (in Rs.)
1	a)Radio Network System (complete with all accessories as per breakup indicated in Annexure-I)	In one module	2,16,19,235.00	2,16,19,235.00
	b)Installation & Commissioning Charges including painting of existing 06 Nos. towers	Per unit	10,00,000.00	10,00,000.00
	c)CAMC charges for 5 years after warrantee period of one year	Per unit	27,50,000.00	27,50,000.00
Total Basic Value				2,53,69,235.00

Supply of materials are as per details given at Annexure – I and their specifications are as per Annexure-II.

**MAJOR TERMS & CONDITIONS:**

**PRICE BASE:** Prices are on FOR destination basis . Packing & Forwarding charges @0.6% and Freight & Insurance charges @0.9% shall be payable extra on the total value indicated in Annexure-I . The prices shall remain firm till completion of supplies.

**EXCISE DUTY & CESS THERE ON:-** Not Applicable . However, NCL shall avail CENVAT CREDIT for item Sl. No. 1 & 2 in respect of the following Projects & Qty. for which firm shall provide Cenvatable Invoice:

Item No.	Item Desc	Nigahi	Jayant	Jhingurda	Total	Min. Cenvat Amount Per Unit(included in basic price)
1	IP based out door type Radio Equipment-400/450 Mbps	2 nos.	3 nos.	3 nos.	8 nos.	27500.00
2	IP based out door type Radio Equipment-200/250/300 Mbps	4 nos.	4 nos.	-	8 nos.	23500.00

In case minimum Cenvat Credit passed on to NCL is lower than the amount mentioned above, the difference shall be recovered from your supply bills.

Above items being imported in nature, you shall be required to submit a certificate from your Auditor certifying that the custom duty for full ordered qty. of above items has been paid as per prevailing Custom Rates and refund, if any, shall be passed on to us.

NCL shall also avail Cenvat Credit for following items to be installed in the production Area as per details as under based on the dealer's invoice for such items enabling NCL to get Cenvat Credit otherwise the individual Minimum claimable CENVAT amount shall be deducted from the bill of the firm :

Item No.	Item Desc	Nigahi	Jayant	Jhingurda	Total	Min. Cenvat Amount Per Unit
4	Managed L3 Switch	01	01	01	03 nos.	Rs. 20152/- per unit
6	PTZ DOME Out door IP camera & IP based PA system along with housing and other required accessories	01	01	01	03 nos.	Rs. 20250/- per unit
7	UPS,2 KVA	01	01	01	03 nos.	Rs. 4365/- per unit
8 a)	Solar PCU( power Conditioning Unit) MPPT( maximum Power Point Tracker) Base: 1 KVA	01	01	-	02 nos.	Rs. 4170/- per unit
8 b)	Solar Power unit	-	-	01	01 no.	Rs.7860/-Per unit
10	Self-Supporting Tower	01	01	-	02 nos.	Rs.19749/- Per unit
11	CAT 6 STP cable	400	350	300	1050 mtrs	Rs. 6.70/- per Mtr
14	HDPE Pipe : 1 Inch Dia	400	350	300	1050 mtrs	Rs. 4.98/- per mtr
15	Portable cabin	01	01	-	02 nos.	Rs. 11572/- per unit

CENVAT Credits shall also be available on Service Tax applicable on Installation & commissioning charges & CAMC charges.

**SALES TAX:-** CST @ 2 % shall be payable extra on the items indicated in Annexure-I against Form "C".

**Entry Tax :** Entry Tax shall be paid directly by NCL to the Govt. Authority as applicable at the time of supply. Present rate is @1%.

**Installation & Commissioning Charges-** Installation and commissioning of the equipment at site will be done by you. Installation / Inspection report to this effect would be issued by GM(E&T) , NCL, Singrauli or his authorized representative. Installation and commissioning charges which includes painting of existing 06 Nos. Towers/ Mast:73m at HQ/SGR,100m at Tipajharia,53 m at Bina , 46m at DCH , 40m at KHD and at KKR shall be payable extra @ Rs. 10,000,00.00 (Rs. Ten lakhs only). Service tax on commissioning charges shall be payable extra as applicable. Present rate is @15%.

**DELIVERY PERIOD:-** Delivery of the complete system should be completed within 03-04 months form date of receipt of order and installation and commissioning should be completed within 05 months form date of receipt of order or handing over the site whichever is later.

**CONSIGNEE:-** The Depot Officer, Central Stores, Jayant, Northern Coalfields Limited, PO: Jayant Colliery, Dist.- Singrauli (MP).

**SECURITY DEPOSIT:** You will be required to submit Security deposit @ 10% of the awarded contract/order(landed value) which includes landed value of the equipment on FOR Destination , entry tax & CAMC & installation charges) i.e. Rs. 26,91,217.00 in the form of Bank Draft drawn in favour of Northern Coalfields Ltd. payable at SBI, Morwa Branch (Code : 3767), Singrauli (MP) or at any scheduled bank located at MORWA, Singrauli (MP), or in the form of Bank Guarantee of any Scheduled Bank / Nationalized Bank in the prescribed format of NCL (Annexure III) & it shall remain valid for a period of 12 months from the date of issue.

Security Money shall be refunded within 30 (thirty) days of satisfactory execution of the contract. For unsatisfactory performance and/or contractual failure, the security money shall be forfeited.

**PAYMENT TERMS:**

- (i) **For Equipment:** 80% payment of material value (Radio Networking System complete) shall be released within 21 days of receipt and acceptance of the consignment at the consignee's end or submission of bills complete in all respect , which is later and on receipt and acceptance of PBG by the consignee. Balance 20 % and 100% installation and commissioning charges which includes painting of existing 06 Nos. Towers shall be released within 21 days after successful installation/commissioning and final acceptance of the equipment.
- (ii) For CAMC Charges : CAMC charges is to be released on half yearly basis .

**Bankers Name & Account No.:-** Corporation Bank , Corporate Banking Branch-Mission Road , Bangalore ,  
Bank Account No. & IFSC Code:- '043800401130004 & CORP0000438

**PAYING AUTHORITY:** The Area Finance Manager (HQ), Northern Coalfields Limited, PO-Singrauli Colliery - 486 889, Dist. -Singrauli (M.P)

**SUBMISSION OF BILLS:** 100% bill with taxes & duties stamped and pre-receipted shall be submitted in triplicate to the Paying Authority with the following documents:

- (i) Consignment Note.
- (ii) Challan.
- (iii) Copy of Bills.
- (iv) Guarantee/Warranty Certificate.
- (v) Performance Bank Guarantee @ 10%.
- (vi) Bi-partite CAMC Agreement.
- (vii) Copy of the Inspection Note.
- (viii) Any other document required as per order duly authenticated.

Note:- A set of above documents should be submitted to the consignee.

You are requested to indicate ECC No., Range, Division and CST Regn. No./TIN No. of the consignee in the cenvatable invoice as per following details:

Sl. No.	Name of the Project / Unit	TIN No.	Centralized Excise Regn. for NCL, Singrauli	Range	Division
1	Central Stores	23377300176	AABCN4884HEM011	Waidhan	Satna

**PACKING:** Consignment should be securely packed & marked as per standard practices/ BIS Norms to withstand the rigorous of transport to prevent any loss/damage or pilferage in transit and ensure safe arrival at destination.

**MODE OF DESPATCH & ROAD PERMIT:** Road transportation on Door Delivery basis at your risk. At present no road permit is required to send the material for M.P to NCL.

**LOWEST PRICE CERTIFICATE:** You shall certify on the body of each bill that the “prices charged are the lowest and is the same as applicable to other Government departments / Public Sector Undertakings , CIL and its subsidiaries & other Organisations”.

**INSPECTION:** Final inspection shall be carried out at consignee's end by the authorized representative of E&T Deptt. and the same shall be final. The stores found defective or not in accordance with the supply order specification will be rejected and intimated for free replacement within 30(thirty) days from the date of intimation.

**RISK PURCHASE:** In the event of failure of supplier to deliver or dispatch the stores within the stipulated date / period of the supply order, or in the event of breach of any of the terms and conditions mentioned in the supply order, Northern Coalfields Limited have the right to purchase the stores from elsewhere after due notice to the defaulting supplier at the risk and cost of the defaulting supplier. It is mentioned clearly that in the event of failure of the supplier as detailed above, the cost as per risk purchase exercise may be recovered from the bills against any other supplies pending at NCL and also in any other Subsidiary Company/Coal India Ltd.

**LIQUIDATED DAMAGE CLAUSE:** In the event of failure to deliver or dispatch the stores within the stipulated date/period in accordance with the samples and/or specification mentioned in the supply order and in the event of breach of any of the terms & conditions mentioned in the supply order, NCL shall have the right:

- a. To recover from the successful tenderer as agreed liquidated damages, a sum of 0.5% (half percent) of the price of any stores which the successful tenderer has not been able to supply as aforesaid for each week or part of a week during which the delivery of such stores may be in arrears limited to 10% (ten percent). Where felt necessary the limit of 10% can be increased to 15% at the discretion of Head of the Materials Management Division
- b. To purchase elsewhere after due notice to the successful tenderer on the account and at the risk of the defaulting supplier the stores not supplied or others of similar description without canceling the supply order in respect of the consignment not yet due for supply or
- c. To cancel the supply order or a portion thereof and if so desired to purchase the stores at the risk and cost of the defaulting supplier and also
- d. To extend the period of delivery with or without penalty as may be considered fit and proper the penalty, if imposed shall not be more than agreed liquidated damage referred to in clause (a) above,
- e. To forfeit the security deposit fully or partly
- f. Whenever under this contract, a sum of money is recoverable from and payable to the suppliers, NCL shall be entitled to recover such sum by appropriating in part or in whole for deducting any sum or at any time thereafter may become due to the successful tenderer in this or any contract should this sum be not sufficient to cover the full amount recoverable, the successful tenderer shall pay NCL on demand the remaining balance. The supplier shall not be entitled to any gain on any such purchase.

**FORCE MAJEURE:** If the execution of the contract/supply order is delayed beyond the period stipulated in the contract/supply order as a result of outbreak of hostilities, declaration of an embargo or blockage or fire, flood, acts of nature or any other contingency beyond the supplier's control due to act of God, then the NCL may allow such additional time by extending the delivery period as he considers to be justified by the circumstances of the case and its decision in this regard shall be final. If and when additional time is granted by the purchaser, the contract/supply order shall be read and understood as if it had contained from its inception the delivery date as extended. Power failure will not be considered as a force majeure conditions.

M/S Convergent Wireless Communications Private Ltd.,

- (a) The successful bidder will advise, in the event of his having to resort to this clause, by a registered letter, duly certified by the local chamber of commerce, or statutory authorities, the beginning and end of the causes of the delay, within 15 days of the occurrence and cessation of such force majeure conditions. In the event of delay last out of force majeure, NCL will reserve the right to cancel the contract, and provisions governing termination of contract as stated in the bid documents will apply.
- (b) For delay arising out of Force majeure, the bidder will not claim any extension in completion date for a period exceeding the period of delay attributable to the causes of force majeure and neither NCL nor the bidder shall be liable to pay extra cost provided it is mutually established that the force majeure conditions did actually exist.

**Comprehensive Annual Maintenance Contract(CAMC) charges:**

The following will be the charges for Comprehensive Annual Maintenance Contract for 05 years which shall start after successful completion of 01 years warranty period ;

CAMC charges for	1 <sup>st</sup> Year (after warrantee period of 01 years) (in Rs.)	2 <sup>nd</sup> Year (in Rs.)	3 <sup>rd</sup> Year (in Rs.)	4 <sup>th</sup> Year (in Rs.)	5 <sup>th</sup> Year (in Rs.)
IP based Radio Communication Network	Rs. 5,50,000.00	Rs. 5,50,000.00	Rs. 5,50,000.00	Rs. 5,50,000.00	Rs. 5,50,000.00

Service Tax as applicable during CAMC period shall be paid extra. Present rate is 15.00%. Detailed terms & conditions of CAMC shall be as indicated in Annexure-II.

**PRICE FALL CLAUSE:** The price charged for the stores supplied against this order by you shall in no event exceed the lowest price at which you sell or offer to sell the stores of identical description to any other organization during the period of contract.

If the supplier at any time during the period of contract reduces the sale price, sells or offers to sell such stores to any other organization at a price lower than the priced chargeable under this contract, the supplier shall forthwith notify such reduction of sale price to the Northern Coalfields Limited and the price payable under the contract for stores supplied after the date of coming in force of such reduction in sale price shall stand correspondingly reduced.

**WARRANTY/GUARANTEE:** You shall give a warranty for satisfactory performance of the supplied materials for a period of 12 months from the date of successful installation & commissioning of Radio Network System. You shall be responsible for any defect that may, under the condition provided for by the contract and under proper use, arise due to faulty materials, design or workmanship and shall remedy such defect at his own cost. If it becomes so necessary for the supplier to replace or to renew any defective part, such replacement or renewal shall be made by the supplier 100% free of cost without any extra cost to Northern Coalfields Limited. The new goods should be supplied on FOR destination basis free of cost. Foreign supplier will bear all costs connected to replacement of spares from & up to ultimate Consignee in case any replacement is required on receipt of spares and within Warranty period.

Warranty replacement should be completed within a reasonable period maximum within one month from the date of claim for Indigenous goods and within three months from the date of claim for Imported goods free of cost up to ultimate Consignee's end. All cases of warranty replacements will be decided on the basis of joint inspection of the failed goods held between the user's representative and the supplier's representative. Tenderers are also requested to certify that their products are exact replacement of/fully interchangeable to the original parts and will fit and function on the equipment for which these are intended for and conform to performance guarantee as per OEM standards.

**PERFORMANCE BANK GUARANTEE (PBG):** You are required to submit the Performance Bank Guarantee for 10% of the total value of the equipment (including CAMC & installation charges ) on landed basis inclusive of applicable taxes & duties i.e. Rs. 26,91,217.00. The performance guarantee for 10% (ten percent) of order value will be taken in the form of a Bank Guarantee in Prescribed Format (**Annexure-IV enclosed**) valid for warranty period of one year + CAMC period of 05 years + 03 months (i.e. for 75 months) from the date of installation/Commissioning of the Equipment at site to cover both satisfactory performance and warranty period.

You shall have the option to get converted the Security Deposit amount into the Performance Bank Guarantee or submit Performance Bank Guarantee separately. In case Performance Bank Guarantee is submitted separately, security deposit shall be released against submission of Performance Bank Guarantee.

The Performance Bank Guarantee shall be released after fulfillment of all contractual obligation including warranty / guarantee conditions stipulated in the contract. For unsatisfactory performance and/or contractual failure, NCL shall have the full right to invoke/encash the Performance Bank Guarantee.

The Performance Bank Guarantee shall be issued by a scheduled Bank in the format attached as Annexure-IV and shall be irrevocable and unconditional and NCL shall have the powers to invoke/encash it notwithstanding any dispute or difference between supplier and NCL pending before the court, tribunal, arbitrator or any other authority.

**IDENTIFICATION MARK:**-Manufacturer's distinctive identification mark /symbol must be clearly embossed / punched / engraved on the equipment at a visible place, which is not subjected to normal wear and tear, for convenience of identification any time.

**Manufacturer Test Certificate:** Manufacturer's test certificate must be enclosed along with supplies.

**Jurisdiction of Court:-** Any dispute arising out of this order will be subject to the jurisdiction of Singrauli Dist. Court (MP) only.

This order is also governed by the General Terms & Conditions of supply of stores enclosed with the NIT and all the terms & conditions thereof will be applicable unless otherwise specified in this order.

**Integrity Pact:-** The Integrity Pact signed & submitted by you along with offer shall remain valid & applicable against this contract (copy enclosed)

You are requested to kindly acknowledge receipt and acceptance of order within 15 (Fifteen) days of issue of order. In case no reply is received, it will be presumed that the order has been accepted by you.

Yours faithfully,

(M.M. Sarewar)  
Chief Manager (Purchase) /

(N S Saini )  
Chief Manager(MM)I

*For and on behalf of Northern Coalfields Limited Singrauli.*

**Encl:-**

1. Technical Specification & their specification – Annexure-I & Annexure-II
2. Format for Bank Guarantee for Security – Annexure-III.
3. Bank Guarantee Format for Performance Bank Guarantee – Annexure-IV
4. Integrity Pact

**Copy forwarded to:-**

1. The Chief Vigilance Officer, NCL, Singrauli.
2. The Chief General Manager / General Manager- Jhingurda/Bina/Kakri/ Khadia/ Dudhichua/ Jayant/CWS Jayant/ Nigahi/Amlohri/ Block-B/K'shilla
3. Staff Officer (E&T) - Jhingurda/Bina/Kakri/Khadia/Dudhichua/Jayant/CWS Jayant/ Nigahi/Amlohri./Block-B/K'shilla
4. Consignee: The Depot officer, Central Stores , Jayant.
5. Paying Authority: The Area Finance Manager, NCL, NSC, Jayant.
6. The GM (Fin)/GM (MM)/HOD, NCL, Singrauli.
7. The GM (MM)/I/c, BCCL/ECL/CCL/MCL/SECL/WCL/CPDIL/CIL.

**B.C. No. :**

1. Budget of Rs. 2,37,49,667.30 given from other P&M\_E&T fund kept at HQ, vide No. NCL/HQ/C&B/Cap/other P&M\_E&T/2016-17/05 dtd. 01.07.2016 which is for equipment value including installation charges.
2. BC for CAMC charges given vide no. HQ/BC/Rev/Misc/P55/683 dtd. 04.07.2016 for Rs. 632500.00 for each financial year stating from 2017-18 to 2021-22.
3. FC No. AFM(HQ)/2015-16/Msc/637 dtd. 4.07.2016

This issues with the approval of competent authority.

(M.M. Sarewar)  
Chief Manager (MM)

(N.S.Saini)  
Chief Manager(MM)II

**ANNEXURE-I**

**Complete set of supply of IP based Radio Communication Network shall comprise of the following items :**

Sl. No.	Item Description	Tendered Quantity	Unit Price offered (in ₹)	Extended Value(in ₹)
1	IP based out door type Radio Equipment-400/450 Mbps or better bandwidth Point to Point unlicence band 5.8 GHz with surge protectors/suppressor, Synchronization unit, GPS rceiver, grounding kit for LPU, Lightning Protection unit (LPU), pigtails, PoE adaptors, Aviation lamps, dual polarized dish antenna with mounting brackets & fixtures, N&N cables and other accessories as required (2 kits per link) etc. 'Cambium' Make	13.00 Nos	342000.00	4446000.00
2	IP based out door type Radio Equipment-200/250/300 Mbps or better bandwidth Point to Point unlicence band 5.8 GHz with surge protectors/suppressor, Synchronization unit, GPS rceiver, grounding kit for LPU, Lightning Protection unit (LPU), pigtails, PoE adaptors, Aviation lamps, dual polarized dish antenna with mounting brackets & fixtures, N&N cables and other accessories as required etc. 'Cambium' Make.	28.00 Nos	294000.00	8232000.00
3	Managed L2 switch 'Techroute' make	9.00 Nos	54315.00	488835.00
4	Managed L3 Switch , 'Techroute' make	10.00 Nos	268700.00	2687000.00
5	1000 BASE T SFP Gbic Module ( compatable with L2 & L3 switch) , 'Techroute' make	18.00 Nos	11400.00	205200.00
6	PTZ DOME OUTDOOR IP CAMERA and IP based PA system, alongwith HOUSING and other required Accessories , 'Bosch' make	4.00 Nos	270000.00	1080000.00
7	UNINTRUPTED POWER SUPPLY(UPS): 2KVA , 'Emerson' make	19.00 Nos	58200.00	1105800.00
8	a)Solar PCU (Power Conditioning Unit) MPPT(maximum power point tracker ) Base : 1KVA	2.00 Nos	48650.00	97300.00
	b)Solar power unit	1.00 Nos	91700.00	91700.00
9	LED Aviation Lamp	2.00 Nos	9050.00	18100.00
10	Self-supporting Tower with required earthling ,	6.00 Nos	307200.00	1843200.00
11	CAT 6 STP CABLE , Molex make	3050.00 Mtr	78.00	237900.00
12	a)Network management / monitoring software , Everest make.	1.00 No	294000.00	294000.00
	b)48 inch Monitor Display , LG/Samsung make	1.00 No	82600.00	82600.00
13	Galvanised Steel Wire Rope 16 mm dia for Guyed Mast	1600.00 Mtrs	166.00	265600.00
14	HDPE Pipe :1 inch Dia standard/reputed make	3000.00 Mtrs	58.00	174000.00
15	Portable Cabin 2mx2mx2.26m. for Repeater station Jayant dump & Nigahi dump	2.00 Nos.	135000.00	270000.00
<b>Total Value for Radio Network Equipment with all accessories</b>				<b>2,16,19,235.00</b>
<b>Rs. Two crores Sixteen lakhs nineteen thousand Two Hundred Thirty Five only</b>				

**ANNEXURE-II**

**Item-wise detailed technical specifications of IP based Radio Communication Network**

S I N	
1	<b>IP based out door type Radio Equipment-400/450 Mbps or better bandwidth Point to Point unlicence band 5.8 GHz with surge protectors/suppressor, Synchronization unit, GPS rceiver, grounding kit for LPU, Lightning Protection unit (LPU), pigtails, PoE adaptors, Aviation lamps, dual polarized dish antenna with mounting brackets &amp; fixtures, N&amp;N cables and other accessories as required etc. as per technical details indicated below -</b>
	Frequency: Radio should opreate in india ISM Band i.e. from 5825 to 5875 MHz as per WPC Regulation
	Band Support: Radio Must support 5.8GHz
	NLOS,nLOS operation: Radio Must support NLOS,nLOS condition
	Throughput: System should support maximum of 400/450 Mbps or better aggregate throughput
	Channel Bandwidth: Radio must support Channel Bandwidth of- 5,10,15,20,30,40 and 45 Mhz,
	Channel Spacing: System must support the channel step size of 1 MHz or better
	Channel Selection: Dynamic Spectrum optimization or manual intervention, Automatic Selection on start-up,Continual Self-optimization to avoid interference
	Max Output power at antenna port: Up to 27 dBm or better, Varies with modulation mode and setting
	Modulation: Radio must have Fast predictive Adaptive modulation featuring 13 modulation/FEC coding levels ranging from BPSK to 256 QAM dual payload MIMO
	Duplex Scheme: Radio should have the support for Synchronized Time Division Duplex (TDD) and Half Duplex Frequecny Division Duplex(HD-FDD); dynamic or fixed transmit/receive ratio
	Archiotecture: Single Cable between IDU & ODU distance not less than 90 Meters
	Sensitivity: -95 dBm or better
	Distance Coverage: Upto 62.13 Miles (100 KM)
	VLAN Support: VLAN support based on IEEE 802.1Q
	Farme size: System should support the jumbo frame size of 9600 Bytes
	QoS: 802.1P and DSCP(TOs and DSCP both work on Layer 3 .TOs provides very limited option
	Queue support: It is mandatory for the system to support 8 QOS queue level
	Synchronous Ethernet: System must support or at least should have the roomap for IEEE 1588v2 and Synchronous Ethernet
	Security: 128 bit AES authentication,FIPS 197 Certified, optional 256-Bit AES Encryption,Identity-Based user account,Configurable password rules,User Authentication and Radius Support
	Packets Per Second: 800,000 PPS to achive the constant latency with maximum load condition
	Bandwidth: System should be able to configure symmetric & asymmetric bandwidth.Upload and download percentage should be user configrable.
	MIMO-B: System must have the support for 2 x 2 MIMO-B technology to increase the throughput
	LAN Interface: System must have 1000Base(T) half/full duplex, rate auto negotiated (802.3 compliant)
	IPv6 support: System must support IPv6 & IPv4 Dual stack support
	Split Frequency Support: System should provide the flexibility to configure different TX and RX frequency for master and slave radio
	Spectrum analyzer mode : Built in Spectrum analyzer. Running spectrum should not affect the link performance



	Support for Dynamic Spectrum Optimization: System should support DSO Technology to deliver the hitless performance. There must not be any outage in case of Spectrum analyzer run
	NLOS Performance: System must support 1024 subcarrier for superior performance in NLOS condition
	Management: System should have support of IPv4/IPv6, UDP, TCP, IP, ICMP, Telnet, SNMP, HTTP, FTP, System should have support of NETWORK MANAGEMENT with HTTP, HTTPS, Telnet, FTP, SNMPv2c, SNMPv3.
	Management VLAN: System should have the support of VLAN 802.1ad (DVLAN Q-in-Q), 802.1Q with 802.1p priority, dynamic port VID
	ARQ: System should have the support of ARQ
	Ethernet Latency : Latency should be below 10ms with 90% Load condition
	Antenna Type: External Dual Polarized Antenna support of desired gain
	GPS synchronization: System should support GPS synchronization technique to eliminate interference
	Operation Temp: 40°C to 60°C Outdoor, 20°C to 40°C Indoor or better
	Wind survival: Minimum 300 km/h or better
	Ingress Protection: IP66 and IP67
	Certificates: EN, UL
<b>2</b>	<b>IP based out door type Radio Equipment-200/250/300 Mbps or better bandwidth Point to Point unlicence band 5.8 GHz with surge protectors/suppressor, Synchronization unit, GPS receiver, grounding kit for LPU, Lightning Protection unit (LPU), pigtailed, PoE adaptors, Aviation lamps, dual polarized dish antenna with mounting brackets &amp; fixtures, N&amp;N cables and other accessories as required etc. as per technical details given below-</b>
	Frequency: Radio should operate in India ISM Band i.e. from 5825 to 5875 MHz as per WPC Regulation
	Band Support: Radio Must support 5.8GHz
	NLOS, nLOS operation: Radio Must support NLOS, nLOS condition
	Throughput: System should support maximum of 250 Mbps and software upgradeable to 400 Mbps without any hardware to change in future
	Channel Bandwidth: Radio must support Channel Bandwidth of- 5, 10, 15, 20, 30, 40 and 45 Mhz,
	Channel Spacing: System must support the channel step size of 1 MHz or better
	Channel Selection: Dynamic Spectrum optimization or manual intervention, Automatic Selection on start-up, Continual Self-optimization to avoid interference
	Max Output power at antenna port: Up to 27 dBm, Varies with modulation mode and setting
	Modulation: Radio must have Fast predictive Adaptive modulation featuring 13 modulation/FEC coding levels ranging from BPSK to 256 QAM dual payload MIMO
	Duplex Scheme: Radio should have the support for Synchronized Time Division Duplex (TDD) and Half Duplex Frequency Division Duplex (HD-FDD); dynamic or fixed transmit /receive ratio
	Architecture: Single Cable between IDU & ODU distance not less than 90 Meters
	Sensitivity: -95 dBm or better
	Distance Coverage: Upto 62.13 Miles (100 KM)
	VLAN Support: VLAN support based on IEEE 802.1Q
	Frame size: System should support the jumbo frame size of 9600 Bytes
	QoS: 802.1P and DSCP (TOS and DSCP both work on Layer 3. TOS provides very limited option)
	Queue support: It is mandatory for the system to support 8 QOS level
	Synchronous Ethernet: System must support or at least should have the roadmap for IEEE 1588v2 and Synchronous Ethernet
	Security: 128 bit AES authentication, FIPS 197 Certified, optional 256-Bit AES Encryption, Identity-Based user account, Configurable password rules, User Authentication and Radius Support
	Packets Per Second: 800,000 PPS to achieve the constant latency with maximum load condition

	Bandwidth: System should be able to configure symmetric & asymmetric bandwidth.Upload and download percentage should be user configurable.
	MIMO-B: System must have the support for 2 x 2 MIMO-B technology to increase the throughput
	LAN Interface: System must have 1000Base(T) half/full duplex, rate auto negotiated (802.3 compliant)
	IPv6 support: System must support IPv6 & IPv4 Dual stack support
	Split Frequency Support: System should provide the flexibility to configure different TX and RX frequency for master and slave radio
	Spectrum analyzer mode : Built in Spectrum analyzer. Running spectrum should not affect the link performance
	Support for Dynamic Spectrum Optimization: System should support DSO Technology to deliver the hitless performance. There must not be any outage in case of Spectrum analyzer run
	NLOS Performance: System must support 1024 subcarrier for superior performance in NLOS condition
	Management: System should have support of IPv4/IPv6, UDP, TCP, IP, ICMP, Telnet, SNMP, HTTP, FTP, System should have support of NETWORK MANAGEMENT with HTTP, HTTPS, Telnet, FTP, SNMPv2c, SNMPv3.
	Management VLAN: System should have the support of VLAN 802.1ad (DVLAN Q-in-Q), 802.1Q with 802.1p priority, dynamic port VID
	ARQ: System should have the support of ARQ
	Ethernet Latency : Latency should be below 10ms with 90% Load condition
	Antenna Type: External Dual Polarized Antenna support of desired gain
	GPS synchronization: System should support GPS synchronization technique to eliminate interference
	Operation Temp: 40°C to 60°C Outdoor, 20°C to 40°C Indoor or better
	Wind survival: Minimum 300 km/h
	Ingress Protection: IP66 and IP67
	Certificates: EN, UL
	<b>ANTENNA SPECIFICATION</b>
	Frequency MHz: 4940 - 5875
	Gain (dBi): 29 or better
	VSWR (Max): 1.8:1
	Horizontal Plane BW (Degrees): 6° to 10° or better
	E vertical Plane BW (Degrees): 6° to 10° or better
	Polarization : Linear
	Maximum Power Handling ): 100 watts or better
	Impedance (Ohms): 50
	Front to Back Ratio (dB): >32
	Cross Polarization Discrimination (dB): >30
	Mechanical Downtilt: 30 Deg
	Connector Termination: N (F)
	Temperature Range (Degree C): -40 to + 70 or better
	Humidity: 95 % No Condensation
	Ingress Protection: IP 67
	<b>Surge Protection, Synchronization unit, GPS Receiver</b>
	Transfer rate: 1000 Base T
	Connectors: RJ 45
	Protection mode: Line-to-line and line-to-ground

	Response time: 5 nanoseconds typical
	Mounting: Pole mount 1-3" (25-75 mm) or wall mount
	Metal enclosure: Projected 10-year operational life
	Operating temperature: -40° F (-40° C) to +140° F (+60° C) or better
	Humidity: 100% condensing
	SURGE RATING: 10/1000 micro sec. 150 Amps min, 8/20 micro sec 1500 Amps min
	Ingress protection: IP66/ IP67 (Dust and Water Intrusion Protection)
	<b>GROUNDING WIRE for surge protector/suppressor</b>
	Grounding Wire should be Heavy Gauge
	Should be of Pure Copper & cover with PVC
	Should be AWG 10 or 6mm <sup>2</sup>
<b>3</b>	<b>Managed L2 switch as per technical details indicated below-</b>
	Switch: Managed Layer 2 switch with 24 x 10/100/1000 BaseT ports and 4 SFP+ uplink ports
	Layer 2 Security : Rate limiting/Shaping based on Port, IP address and MAC address – Port based ACL Time based ACL (It should be possible to enforce access list based on the time of day. It should allow the network administrator to define, permit and deny access). MAC to IP address binding, Port to MAC address binding, MAC based rate limiting DHCP Snooping. DHCP option 82 with Port/VLAN ID. Port based security802.1x,Port based network access control BPDU Guard or equivalent, Per port broadcast, multicast storm control. 1 to many port mirroring
	L2 Protocols : Support for IEEE 802.1D (STP & RSTP), IEEE 802.1Q, 802.1w, 802.1s Support for IEEE 802.3ad Link aggregation, Multilink aggregation or equipment's and load sharing. Support for IEEE 802.1AB LLDP Port//MAC based VLAN Per VLAN STP MVRP
	Switch Management : – Command Line Interface (CLI) – SNMPv1, SNMPv2, SNMPv3 – Secure Shell (SSH1&2), SCP, SFTP and Telnet – Support for TFTP, NTP – RADIUS authentication enabled centralized control of switch – Web based management
	Multicast & QoS features: IGMP v1, v2,v3 and IGMP snooping
	Hardware : – Wirespeed Storm control – Wire speed ACL enforcement – ASIC based hardware for high performance – Nonblocking architecture – Bidirectional Forwarding Detection – IPV6 support – Out of band IP base management port – sflow/netflow support.
	Power supply and redundancy : Standard power supply along with power cable. Redundant power supply
	Certification: TEC certified or IPv6 ready logo certified

<b>4</b>	<b>Managed L3 Switch as per technical details indicated below-</b>
	<p>Architecture: The switch should have 24 x 10/100/1000 BaseT ports and 4 SFP+ uplink ports to support 10G</p> <p>The Switch should support Stacking via standard interfaces for a scalable solution</p> <p>Should support 10G SR, LR, 1000 Base- SX, LX and T ports</p> <p>Should have at least 88 Gbps switching bandwidth</p> <p>Should have switching throughput of up to 65 million pps</p> <p>MAC Address table size of 8000 entries</p> <p>The Switch should be 19" Rack-Mountable</p>
	<p>Resiliency and high availability:</p> <p>Should support IEEE 802.3ad Link Aggregation Control Protocol (LACP)</p> <p>Should support IEEE 802.1s Multiple Spanning Tree Protocol</p> <p>Should support Redundant Power Supply</p> <p>Should support load sharing algorithm for bridged and routed traffic</p> <p>Should monitor and detect link failure on uplink interfaces and can propagate the failure to downlink interfaces so that servers connected to those downlink interfaces can switch over to secondary interfaces.</p>
	<p>Layer 2 and Layer-3 features:</p> <p>Should support IEEE 802.1Q ( 1000 VLAN IDs) and 250 VLANs simultaneously</p> <p>Should support Multiple VLAN Registration Protocol (MVRP, IEEE 802.1ak) for dynamic registration and deregistration of VLANs on ports in a VLAN bridged network</p> <p>Should support Jumbo frames of 9000 bytes</p> <p>Should support IPv4 Static IP routing and RIP with support for OSPF in future</p> <p>Should support IPv6 static routing</p> <p>Should support VRRP for redundancy</p> <p>Should support Multicast VLAN Registration (MVR) to distribute multicast streams across an Ethernet ring-based Layer 2 network and reduce the amount of bandwidth consumed by the multicast traffic</p>
	<p>Security:</p> <p>Should support MAC address limiting (per port and per VLAN) and MAC address move to detect MAC movement and MAC spoofing on access interfaces</p> <p>Should support port and VLAN Access control lists</p> <p>Should support IEEE 802.1X - Port, Multiple supplicant, VoIP VLAN</p> <p>Should support DHCP snooping, DHCP server and relay for Layer 2 VLANs and Layer 3 interfaces</p> <p>Should support Dynamic ARP inspection (DAI), IP source guard</p> <p>Should support broadcast, unicast and multicast (BUM) storm control</p> <p>Should support TACACS+ or MAC RADIUS authentication for secure switch CLI logon</p> <p>Should support SSHv2 and HTTPs allowing secure access to the switch</p>
	<p>Convergence and QoS:</p> <p>Should support IGMP v1, v2, v3 and IGMP snooping</p> <p>Should support Multicast VLAN Registration Protocol (MVR)</p> <p>Should support Multicast Listener Discovery (MLD) snooping enables the switch to monitor MLD messages between IPv6 multicast routers and hosts</p> <p>Should support Link Layer Discovery Protocol (LLDP) with the capability to manage the PoE budget requirements</p> <p>Should support LLDP-MED (Media Endpoint Discovery) with voice over IP (VoIP) integration</p> <p>The switch should support at least 8 queues to ensure multiple level of traffic prioritization (data, voice, video)</p>

	<p>Advance Features:</p> <p>Should support Policing/Rate-limiting of traffic to CPU</p> <p>Should support port security with Sticky MAC Addresses</p> <p>Should support 802.1ag Ethernet OAM, IEEE 802.3ah Link Fault Management (LFM) and Time domain reflectometry (TDR)</p> <p>Should have Dynamic Host Control Protocol (DHCP) Zero Touch feature enables a device to retrieve configuration files from the remote DHCP server during initial deployment with no end-user intervention</p> <p>Should be able to automatically configure ports with security, QoS, and other parameters based on the type of device connected to the port with profiles like Wireless access point, PC, PC plus IP phone, Layer 3 uplink, and Layer 2 uplink.</p> <p>Should be able to eliminate the complexities involved in configuring class of service (CoS) across the network by offering templates with preconfigured CoS values based on typical application requirements for key traffic classes</p> <p>Should detect Ethernet link failures and correcting the failures in less than 50 ms by forming a Ethernet protection ring.</p> <p>Should support Private VLAN to split a broadcast domain into multiple isolated broadcast subdomains and Q-in-Q to extend a Layer 2 Ethernet connection between two customer sites</p>
	<p>Manageability:</p> <p>Web User Interface, CLI</p> <p>Should support Port mirroring and mirror traffic that is traversing interfaces or a VLAN on the switch to a different location for analysis</p> <p>Should support IPv6 management features like neighbour discovery ( RFC 4861), Telnet, SSH, SNMP, NTP, DNS</p> <p>Should store multiple configuration and image files</p> <p>Should have the capability to revert to the last known good state if the switch image, configuration and the backup configuration files become damaged beyond repair</p> <p>Should support automatic configuration over the network from a pre-existing configuration file that is created and stored on a configuration server</p> <p>Should support automatic software download feature using the DHCP message exchange process to download and install software packages.</p> <p>Should support standard SNMP v1, v2 &amp; v3</p>
	Certification: TEC certified or IPv6 ready logo certified
<b>5</b>	<b>1000 BASE T SFP Gbic Module ( compatible with L2 &amp; L3 switch) as per technical details indicated below -</b>
	Transceiver supporting dual data-rate of 1.25Gbps/1.0625Gbps and 20km transmission distance with SMF
	1310nm FP laser and PIN photodetector for 20km transmission
	Digital Diagnostic Monitoring, Internal Calibration or External Calibration
	Compatible with RoHS
	3.3V single power supply
	Operating case temperature : Standard : 0 to +70°C
<b>6</b>	<b>PTZ DOME OUTDOOR IP CAMERA and IP based PA system, alongwith HOUSING and other required Accessories as per technical details indicated below -</b>
	Sensor: 1/4 inch HAD CCD / CMOS or better
	Scan Mode: Progressive/ Interlace
	Zoom: 35X/36X Optical and 12X Digital or better
	Lens: 3.4mm to 119mm /122.4mm or better
	Horizontal View Angle: 1.7° to 55.8°

	Day/Night: Auto Mechanical IR filter
	Minimum Sensitivity: Day: 0.1 lx (colour) Night: 0.01lx (mono) or better
	Resolution: >540 TVL
	Signal/Noise Ratio: 50 dB or better
	Shutter/IRIS/Focus: Automatic with manual override
	Manual Shutter Speeds: 1 to 1/10000 sec. or better
	Exposure Control: Auto, Manual, Slow AE
	Video Compression: H.264
	Multi Streaming/Multicast: Up to 10 or higher simultaneous unicast video users plus unlimited multicast users
	Dual Encoding/ Resolution: D1/4SIF/CIF - 2 Streams and 2SIF/CIF - 4 Streams or SIF/CIF- 6 Streams,
	Supported Protocols: UDP, TCP, HTTP,FTP, DHCP, IGMP, SNMP, NTP and as required
	Network Interface: 10/ 100BASE-TX Fast Ethernet RJ45 or better
	Time: Real-time clock
	Analytics: Motion Detection, Edge based preferable
	Pan Range: 360° Continuous Rotation
	Tilt Range: 0° to 180° or better
	Pan/Tilt Speed: 0.1°/s to 80°/s or better
	Power: Compatible for PoE (IEEE 802.3af) / 24VAC/24VDC
	Housing: Vandal Resistant die-cast aluminium
	Bubble Construction: Optical grade Polycarbonate
	Temperature: -5°C to 50°C or better
	Humidity: 80% and above (Non-condensing)
	Ingress Protection: IP66/IP67
	Certification/Regulatory: UL/EN & FCC
	IP version: IPv4 and IPv6 compatible
	Accessories: Camera housing/enclosure, Power adapter and other accessories as required

<b>7</b>	<b>UNINTRUPTED POWER SUPPLY(UPS): 2KVA as per technical details indicated below -</b>
	RATING: 2 KVA On line UPS
	INPUT : Nominal Voltage/Frequency: 230 VAC,(+20% to -35%) single phase/ 50 Hz(+/- 6%)
	RECTIFIER Type: Full Wave
	CHARGER Type: SMPS based
	Nominal VoltageRegulation: +/- 1%
	Ripple (without battery): <2%
	Charging Method: CVCC
	BATTERY Capacity: Suitable for 120 min backup
	Type:Sealed ,maintenance free, nonspillable
	OUTPUT: Nominal Voltage: 230 VAC, single phase (step less adjustable)
	Regulation:+/- 1%
	Frequency:50 Hz (+/- 0.1Hz) in Free Running mode, (+/-3Hz) in Synchronous mode
	Waveform: True Sine Wave
	Overload Capacity:125% for 60 sec
	ENVIRONMENTAL: Ambient Temp.: 0 to 40 deg C Humidity: Up to 90% RH, Non Condensing
	PROTECTION: I-Built-in overload/short circuit protection II-DC over voltage / under voltage protection
	Alarm feature: Audible and visible alarms
	Control panel Indications: LED status display for On Line, On Battery, Replace Battery , Overload indicators, battery charge level indication, loading level indication, etc.
<b>8</b>	<b>Solar power System as per technical details indicated below -</b>
	<b>a) Solar PCU (Power Conditioning Unit) MPPT(maximum power point tracker ) Base : 1KVA Qty= 02</b>
	Photovoltaic Input: Nominal Input Voltage:42V Maximum Power point Voltage:32V + 2V Maximum PV Module:1000W No.of Charge Controlar:1
	Charge controlar: Charger type:MPPT Charger Swiching element:MOSFET Input Voltage Range:30-42 V Peak Output Current :40A Peak output Power:1KW
	Grid Input: Nominal Voltage:230 V AC Normal Mode:100V to 280V UPS Mode:180V to 265 V

	<p>Battery:  Type:Manitenance Free (VRLA)  Capacity:40AH  Nominal Voltage:24V  Float Voltage (V/Battery):13.7V + 0.2V  Boost Voltage (V/Battery):14.4V + 0.2V</p>
	<p>Inverter:  Swiching element:MOSFET  Nominal Output Voltage:230V AC  Nominal Power:1KVA  Efficiency:85% or Better  Noise:&lt; 50 dB  Cooling:Natural/ Forced Air  Operating Temprature:0 to 50 deg.C</p>
	<p>Protection: Input :Under/Over Voltage, Output:Over load,Short Circuit  Battery: Reverse Polarity</p>
	<p>Indication: Mains On, Solar On, Mains MCB Trip, Low battery, Over load, Short Circuit</p>
	<p>Feature:  -User selectable switch for UPS Mode and Normal Mode selection as per load requirement  -The battery can to be charged through either Solar System /Panel or by 230 V AC as per requirement</p>
	<p><b>b) Solar power unit as per technical details indicated below -</b></p>
	<p>Solar panel with redudent facility (1+1 hot standby), 24 Volt DC, 10Amp capacity)</p>
	<p>Batteries 2 sets 24Volt (2 x 12 volt), 40 AH</p>
	<p>Solar pannel directly connected to Battery for charging</p>
	<p>24 volt DC to Dc converter connected to battery for providing two number of output for feeding the required load/equipment (2 nos. of radio equipment)</p>
	<p>Note: This solar unit is to be used for isolated / remote location where electric power is not available.</p>
<b>9</b>	<p><b>LED Aviation Lamp as per technical details indicated below -</b></p>
	<p>Photometric Data:  Night Mode:Red  Vertical Beam Spread: &gt; 3 °  Horizontal Coverage: 360 °</p>
	<p>Electrical Specifications:  Input Supply:220V AC with SMPS Supply  Operational Voltage: 24 V DC, 48 V DC, 230 V AC</p>
	<p>Light Characteristics:  ICAO Type (International Civil Aviation Organization ):Type "B/C"  Light Source:LED Cluster  Light Color:RED  Intensity: &gt; -2000 cd  Horizontal Divergence:360 °  Lamp Life: &gt; 1,00,000 hrs</p>
	<p>Physical Characteristics:  Body Material:Cast Aluminium  Lense Material:Polished Acrylic  Mounting:Hot Dip Galvanized Structure</p>



	<p>Operation:  On/Off Level:Automatic  Illumination Technology:Photons generation with LED conduction  Lifespan of LEDs: &gt; &gt; 1,00,000 hrs. Approx.  Color Technology of LED:Red Light Emitting Diode</p>
	<p>Environmental :  Temperature Range: - 20 ° C to + 50 ° C  Waterproof:Through EPDM Gasket and Sealant  Environment Protection Standard for Light: IP 65 Standard  Environment Protection Standard for Control Panel: IP 55 Standard</p>
<b>10</b>	<b>Self-supporting Tower with required earthing , as per technical details indicated below -</b>
	Height of Tower : 27 mtr to 30 mtrs
	Wind velocity sustainability: Minimum 200 km/h or better
	Type of Tower: 3 Legged Tubular Self Supporting Tower
	Material to be Used for Legs: Vertical Pipe 2" Dia
	Type of Pipe: Medium Pipe
	MS Cross Bracing should be 10/12 mm rod or better
	Ladder: Built In.
	Bolts and Nuts: Dip Galvanized
	Protective Coating for the tower: Hot Dip Galvanized as per standards.
	Painting of Tower: Two coat of painting as per standards (International Orange and White).
	Foundation Material: Pre fabricated grillage. Civil work to be done according to weight of the tower.
	Tower Should consist of Lightning arrestor
	Tower Should consist of Aviation Lamp
	<b>EARTHING STRIP as required</b>
	Earthing Strip Should be 25 X 3 mm thick
	Earthing Strip Should be Galvanized
	Earthing Strip Should be connected from Copper Plate to Lightning Arrestor
<b>11</b>	<b>CAT 6 STP CABLE , as per technical details indicated below -</b>
	Network Supported: 10 / 100 Ethernet, 155 Mbps, ATM, 1000 Mbps IEEE 802.3ab Ethernet, and proposed Cat 6 Gigabit Ethernet.
	Approvals: TIA/EIA 568-b.1, IEEE 802.3AB
	Performance Characteristics: Pair-to-pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR for 4-connector channel
	Standards: EIA /TIA -568-A, TSBs-36 TSB -40
	Category: Cat-6
	No. of Pairs: 04 twisted pairs with proper colour coding
	Gauge: 24 WG or better
	Conductor: Solid Copper
<b>12</b>	<b>Network Management system with 48" monitor including hardware &amp; Monitoring Software</b>
	<b>a) Network management / monitoring software as per technical details indicated below -</b>
	Automatic discovery, scheduled rediscovery, topology discovery, manual addition of nodes / links, etc.
	Individual / grouped control on data collection periodicity, time frame, maintenance settings, etc.
	Pictorial representation of network in multi-layer format using colour coded icons and links with drill down facility and information display on mouse over.

	Special UI for getting all relevant information onto single screen from various angles (Faults / System performance / Network performance / Device performance...) that can be adjusted as per the preferences of each user.
	Polling, trap and syslog based fault detection, multimode notification through SMS / email / SNMP / pop-up / audio file, with support for acknowledgement & escalation based on pre-defined time periods. Support for instant diagnosis (SNMP, Ping, Telnet etc..) and adding comments / notes for each problem.
	Intelligent and Proactive Fault Monitoring: a) Event Correlation & Root Cause Analysis b) Minimizes System Disruptions and Maximizes IT Availability
	Map View
	Multi Level Notifications, Acknowledgement and Escalations
	SNMP Trap Based Monitoring
	Device and resource (CPU, Memory, Port) level tracking and reporting of performance parameters (like utilization, inbound / outbound traffic, error rate, etc..) and presentation in views and reports.
	Isolate the source of problem degradation across heterogeneous N/w, servers & applications a) Predictive Thresholds b) Prevents Slowdowns and Downtime Episodes c) Proactively manages Network, Server, Application, d) Services Performance and ensures Quality of Service e) Capacity Planning f) Future Predictions g) Base Lining
	Individual access control based on user login as per the role and responsibility of each user for a subset of the network with multiple levels of privileges like read-only, operator, administrator, etc.
	Real-time reports should be available on: availability • Network utilization • Network throughput • CPU usage • Packet loss • Disk utilization • Memory used • Error rate • Down time • Event Report • Network
	Conversion of reports and pre-configured auto-reports into PDF format
	Graph size change facility from small to large within the Reports Configuration page.
	<b>b) 48 inch Monitor Display as per technical details indicated below -</b>
	Display Type:LED Panel
	Display Size:48"
	Refresh Rate / Frame Rate:50/60 Hz
	Aspect Ratio: 16:9 (Real Aspect Ratio for Digital Contents)
	Resolution:1920 x 1080Pixels (FHD)
	Contrast Ratio: 5000:1 or better
	Brightness: 400 cd/m2 or better
	Response Time: 8ms or better
	Viewing Angle: 176-180 horizontal; 178 vertical
	Display Colours: 16.7M or better
	Input/Output: HDMI Ports, USB 3.0/2.0, AV IN, RF IN

	Audio: 2 Speakers, 10W+10W, Mono,Stereo,Dual
	Power Sply: 230V,50Hz
<b>13</b>	<b>Galvanised Steel Wire Rope 16 mm dia for Guyed Mast , as per technical details indicated below</b>
	Installation : Guy wire.
	Type : Stranded
	Material : High strength steel
	Overall Diameter : 16 mm
	Construction : 1 × 19 (Galvanized) or Suitable guy Mast
	packing : 1000 meter per reel
<b>14</b>	<b>14. HDPE Pipe :1 inch Dia , as per technical details indicated below -</b>
	Material: High Density Polyethylene
	Nominal size: 1"
	Inner Diameter: 0.917"
	Outer Diameter: 1.315"
	Wall thickness: 0.188"
	packing : 1000 meter per reel or as per standard
	color: Black
<b>15</b>	<b>Portable Cabin 2mx2mx2.26m. for Repeater station Jayant dump &amp; Nigahi dump , as per technical details indicated below -</b>
	6'x6'x7'6" Security Guard Cabin: (It includes 1 door, 2 windows size 3' x 3' , concealed wiring, 1 tube light, 1 fan, 1 mobile charging point, light above the door, vinyl flooring)
	BASE FRAME: 50x50 mm square pipes. & cross members for nesting are used 50x50 mm square pipes. 18 mm water proof ply mounted with vinyl flooring.
	ROOF FRAME: M.S. 18 swg Corrugated sheet welded with M.S. frame structure. Top inner ceiling decorated with 8 mm MDF board.
	SIDE WALLS: M.S. framework with square pipes & wall thickness 50 mm.
	Exterior wall: 20 swg M.S. bended sheet welded on M.S. frame
	Internal wall: 8 mm MDF board
	CORNER POST: Made of specially 50mm x 50mm square pipe.
	DOOR: Frame work by tubular pipe of 40 x 20 mm. External wall made by 20 swg. M.S. sheet & inner wall decorated by 8 mm MDF board, with suitable looking arrangement.
	SHADE: 20swg M.S. Sheet above the door with a depth of 6".
	ELECTRICAL: All wiring shall be concealed and shall be PVC insulated copper wires of ISI quality, gauge 2.5 sq mm used for light, socket & 4 sq mm for main incoming supply, 5 amp plug with switches, light & overhead light above the door.
	PAINTS: All components are internally & externally painted with two coats of red oxide & two coats P. U. Paint.
<b>16</b>	<b>Installation and Commissioning , as per scope of work indicated below -</b>
	Laying of HDPE pipe and STP cable along with tower
	Installation & commissioning of Self Supporting Tower including required accessories material for AML,CWS, JRD,JNT, K/SHEELA & Repeater station JNT dump / NGH dump as per specification of tower.
	Installation and Commissioning of Supplied Materials
	Software Programming of Wireless Network Management and Integration with Existing OFC Network Switches
	Panting of existing Towers/Mast:73m at HQ/SGR,100m at Tipajharia,53 m at Bina , 46m at DCH , 40m at KHD and at KKR

**Other terms & conditions:** Quantities of accessories may vary at the time of actual execution of work i.e. installation of radio network system. Therefore the indicated quantities of against each accessory may vary in latitude of  $\pm 10\%$ . Accordingly payment of additional items will be made on the basis of actual quantity used within  $\pm 10\%$  of quantity duly certified by CM (E&T)/HOD.

### Special Terms & Conditions

S/N	DESCRIPTION
1	You shall be required to post at least one competent Service Engineer / technical person at NCL, HQ, Singrauli, during the warrantee and CAMC period, and will report to GM (E&T)/HOD(E&T), NCL Hq or his authorized representative.
2	Sufficient spares & accessories for all the items to be kept at central location for smooth operation and maintenance of Radio network system and essential items (Radio, network Switch & Fiber modules etc.) for immediate replacement during warranty and CAMC period.
3	Free training to engineers / supervisors / technicians from each project / unit should be given by you during installation & commissioning at site.
4	You have to arrange transportation / maintenace van for quick mobilization of maintenance team / personnel to attend breakdown of the equipments / system & for smooth maintenance / repair of radio network system in the mining zone/area during warranty and CAMC period. No transportation will be provided by NCL.
5	Office accommodation to maintenance personnel at HQ Singrauli will be provided by NCL during installation / warranty / CAMC period. However, no residential accomodation will be provided by NCL during installation / warranty / CAMC period.
6	Any additional software required other than those provided at the time of commissioning shall be paid at free of cost during contact period.

<b>Terms and conditions of Comprehensive Annual Maintenance Contract (CAMC) of IP based radio Wireless Network system</b>
(i) SCOPE OF WORK: (i) All repairs/replacement/servicing/fixing of the entire IP based radio network system shall be carried out only by you and Northern Coalfields Limited (NCL) shall not permit or allow any other party other than you to handle or deal with the equipment.
(ii) Repair/replacement/servicing shall mean system testing, repair and maintenance of entire/total equipment for proper functioning of radio network system. The CAMC includes repairing & maintenance of radio equipments, network switch, UPS and other associated items e.g. antennas, surge protecters, LPU, earthing, STP cable, HDPE pipe etc. The CAMC charges also include the expenses for preventive maintenance and routine checkup and attending to breakdown calls as and when required.
(iii) The contract is comprehensive and includes replacement, fitment, maintenance and repair of all type of spare parts (Components/printed circuit board /power supply units/connectors & Electronics sub systems etc.), for replacement of defective parts and repair of the existing IP based radio network system. No extra charges will be payable by NCL on account of these spares.
(iv) Any additional software required other than those provided at the time of commissioning for incorporating major additional facilities shall be charged extra. However any modification of software for the change in class of service and to provide same additional facilities within the existing software provided in the system shall be covered under CAMC.
(v) POSTING OF SERVICE ENGINEER: One competent service engineer / Technical person are to be posted at NCL Hq Singrauli by you during CAMC along with necessary spares and accessories for smooth functioning of the entire radio network system. The service engineer will report to GM (E&T) / HOD (E&T) or his authorized representative. Additional manpower for maintenance of radio system will be provided by the contractor as when required.
(vi) Stock of SPARES: The CAMC holder will keep stock of necessary spares of radio network system with their service engineer posted at NCL command Area for smooth functioning of the radio network system. Sufficient spares to be kept in stock for immediate replacement / repair.
(vii) PENALTY CLAUSE: Note : If the particular radio link is not working due to breakdown of radio set or its accessories / associated items (Switches, antenna, Radios, & Cable etc.), the particular radio link will be considered under breakdown for the purpose of calculation of penalty. (a) Penalty for non-functioning of the radio link will be calculated by the formula given below, if the radio equipment or its accessories / associated items is not repaired within 24 hours and will be deducted from the AMC charges. $\text{Penalty} = 2 \times [ (\text{Annual AMC charge} \times \text{Number of radio link under breakdown} \times \text{Number of breakdown days}) / 365 \times \text{Total number of radio links covered in CAMC}]$ (b) In case of breakdown of any radio link then same must be restored within 24 Hrs.  (c) The day to day record for the breakdown time will be kept at NCL HQ Singrauli for the performance of the radio network system and to be informed to GM (E&T)/HOD (E&T) or his representative for his final record for deduction of penalty against the bill of the tenderer.
(viii) VALIDITY OF CONTRACT: The contract for offered radio network system will be valid for a period of five years from the expiry date of warranty of radio network system.
(ix) CAMC CHARGES : a) The Comprehensive Annual maintenance charges for the IP based radio network system shall be for 5 years. (b) The CAMC charges for the radio network system shall be firm during the contract period. (c) The service tax shall be paid at the prevailing rates on production of documentary proof. (d) All other taxes & levies as may be applicable due to or under the law from time to time shall be inclusive of CAMC charges.

<p>(x) PAYMENT OF MAINTENANCE CHARGES:  (a) The payments of CAMC charges will be made half yearly after the successful completion of the work. Bills may be rendered by you at the end of the six months and shall be paid by the company within 21 days of their receipt.</p>
<p>(xi) PAYING AUTHORITY: The payment shall be made by the Area Finance Manager of NCL,HQ. The bill may be submitted for payment to GM (E&amp;T)/HOD) or their authorised executive looking after the work at E&amp;T, NCL HQ.</p>
<p>(xii) OPERATION OF THE CONTRACT: The contract will be operated by the authorized representative of GM (E&amp;T)/HOD of the company.</p>
<p>(xiii) PRICE FALL CLAUSE: If the tenderer at any time during the period of contract concluded reduces the CAMC charges of the similar type (similar model) of machine and offers it to other Govt./Public Sector organization/CIL or its subsidiaries at a price lower than the price chargeable under the contract the tenderer shall forthwith notify such reduction of CAMC charges to the undersigned and the AMC charges payable under the contract for such machine after the date of coming in force of such reduction shall stand correspondingly reduced.</p>
<p>(xiv) PRICE CERTIFICATE: You will certify that the prices charged by them under the contract are not higher than the prices charged by them for similar machine (similar model) to other Govt. department/Public Sector undertaking, including CIL and its subsidiaries.</p>
<p>(xv) ALTERATIONS: Any alteration to the equipment, such as shifting the position of radio equipments whether requiring additional equipment or not, shall be made only by the contractor.</p>
<p>(xvi) COMPENSATION: The contractor shall be responsible to their employees who work on radio network system, situated in the company's premises in different projects/units/HQ at various location for any injury sustained by them.</p>
<p>(xvii) TERMINATION OF CONTRACT: The contract may be rescinded and the security deposit and other dues of this work or any other work done under the company may be forfeited and brought under the absolute disposal of the company if in the opinion of the company (i) either the work is not progressing satisfactorily or is not likely to be completed within the stipulated time or (ii) if the contractor fails to comply with the terms and conditions of the tender.</p>
<p>(xviii) SAFETY: The safety of the workman engaged by the Contractor/CAMC holder is the sole responsibility of the Contractor / CAMC holder. The Contractor/CAMC holder shall make all possible measures for safety as per statutory provisions. Any compensation on account of damage of person or properties of the CAMC holder or other contractor of CAMC holder, has to be been born by the CAMC holder. It shall be governed as per statutory requirement.</p>
<p>(xix) ACCOMODATION: The required office accommodation will be provided to maintenance persons / engineers / technicians posted at NCL Hq Singrauli for maintenance/repair of radio network system, however the required office furniture like chairs &amp; tables for sitting of service engineers, and Almirah for storing etc. will be arranged by the contractor/CAMC holder. The residential accommodation for maintenance persons will be the responsibility of the contractor/CAMC holder.</p>
<p>(xx) LABOUR LICENSE : The Contractor/CAMC holder must obtain &amp; process the labour license, if they are engaging more than 19 persons as per law &amp; same has to be produced to the Engineer.</p>
<p>(xxi) CHILD LABOUR : The Contractor/CAMC holder shall abide by the provisions of OHSAS:18001 and SA:8000. For example, child labor shall not be engaged, no unwilling worker will be engaged by force, payment shall be made as per minimum wages declared by Gov. time to time permissible working hours as per rule, good healthy working environment etc.</p>
<p>(xxii) ADJUSTMENT OF THE DUES : If any sum found due from any payable to the company by the contractor in connection with this contract or any other contract/contracts, the company shall have right and liberty to adjust the same out of the due under other contract.</p>
<p>(xxiii) TRANSPORT: NCL will not provide any kind of transport facilities to the Service Engineer of the CAMC holder. The Contractor / CAMC holder will provide a vehicle two/maintenance van as and when required at central location (NCL Hq) for quick mobilization of maintenance team / personnel to attend breakdown of the radio system &amp; for smooth maintenance / repair of radio network system in the mining zone/area.</p>

(xxiv) SETTLEMENT OF DISPUTE : It is incumbent upon the contractor to avoid litigation and disputes during the course of execution. However, if such disputes take place between the contractor and the department, effort shall be made first to settle the disputes at the company level.

(a) The contractor should make request in writing to the engineer in-charge for settlement of such disputes/claims within 30 (thirty) days of arising of the cause of disputes/claims falling which no disputes/claims of the contractor shall be entertained by the company.

(b) If the difference still persists, the redressal of the dispute may be sought in the court of law.

(xxv) JURISDICTION OF COURT: Jurisdiction of court shall be of the relevant District and High Court of the state of MP for this particular contract agreement.

(xxvi) P.F. CLAUSE: The contractor shall have to ensure implementation of CMPF and MISC. Provisions Act, 1948 and allied scheme framed there under in respect of the worker deployed by him and will have to recover statutory dues and deposit the same alongwith Employer's Contribution (contractor share) to the respective CMPF Office and to submit statutory returns under intimation to the principal employer. The registration no. of the coal mines in which the workers engaged by the contractor are working has to be furnished in the statutory returns to be submitted to the concerned CMPF Office stated as "Contractor's workers". The contractor shall have to submit an affidavit alongwith the tender that they will abide by this clause.

OR

Those contractor who are registered under EPF scheme and their employees covered under the said scheme may continue to operate under EPF scheme. They should furnish such proof.

(xxvii) FORCE MAJOUR CLAUSE: The contractor shall not be liable for failure to perform any of its obligations arising out of this contract if such failure results from any natural calamities like fire, storm, earth quake, floods etc. or explosion, accident, strikes, lockouts, industrial dispute, labour trouble, civil-commotion, riots etc.

(xxviii) AWARENESS OF ACTS, RULES & REGULATIONS: The contractor/CAMC holder shall familiarize himself and fully comply with provisions of all the Acts/Rules/Regulations and orders of the State/Central Govt. applicable to the work, e.g. Payment of wages Act, Workmen's Compensation Act, Contract Labour (R&A) Act etc. and shall be fully responsible and liable for due observance of the same. The company (NCL) shall have no responsibility/liability and the company shall be fully indentified by the contractor against all such claims.

(M.M. Sarewar)  
Chief Manager (MM)

(N.S.Saini)  
Chief Manager(MM)II

**NORTHERN COALFIELDS LIMITED  
SINGRAULI**

**ANNEXURE – II**

**MINIMUM CENVAT AMOUNT PER UNIT**

M/s GMMCO Limited, Singrauli will provide cenvatable invoice and the Minimum Cenvat Amount per unit shall be as follows:

ED : Not applicable. However, NCL shall avail CENVAT CREDIT for item Sl. No. 1 & 2 in respect of the following Projects & Qty. for which firm shall provide Cenvatable Invoice:

Item No.	Item Desc	Nigahi	Jayant	Jhingurda	Total	Min. Cenvat Amount Per Unit
1	IP based out door type Radio Equipment-400/450 Mbps	2 nos.	3 nos.	3 nos.	8 nos.	27500.00
2	IP based out door type Radio Equipment-200/250/300 Mbps	4 nos.	4 nos.	-	8 nos.	23500.00

NCL shall also avail Cenvat credit for remaining items to be installed in the production Area as per details as under based on the dealer's invoice for such items enabling NCL to get Cenvat Credit otherwise NCL may deduct the individual Minimum claimable CENVAT amount from the bill of the firm :

Item No.	Item Desc	Nigahi	Jayant	Jhingurda	Total	Min. Cenvat Amount Per Unit
4	Managed L3 Switch	01	01	01	03 nos.	@Rs. 20152/- per unit
6	PTZ DOME Out door IP camera & IP based PA system along with housing and other required accessories	01	01	01	03 nos.	@Rs. 20250/- per unit
7	UPS,2 KVA	01	01	01	03 nos	@Rs. 4365/- per unit
8 a)	Solar PCU( power Conditioning Unit) MPPT( maximum Power Point Tracker) Base: 1 KVA	01	01	-	02 nos.	@Rs. 4170/- per unit
8 b)	Solar Power unit	-	-	01	01 no.	@Rs.7860/-Per unit
11	Self Supporting Tower	01	01	-	02 nos.	@ Rs.19749/- Per unit
12	CAT 6 STP cable	400	350	300	1050 mtrs	@Rs. 6.70/- per Mtr
14	HDPE Pipe : 1 Inch Dia	400	350	300	1050 mtrs	@Rs. 4.98/- per mtr
15	Portable cabin	01	01	-	02 nos	@Rs. 11572/- per unit

CENVAT Credits shall also be available on Service Tax applicable on Installation & commissioning charges & CAMC charges.



नार्दन कोल्डफिल्ड्स लिमिटेड  
एक मिनी रत्न कम्पनी  
सामग्री प्रबन्धक विभाग  
पो० ओ० सिंगरौली कोलियरी  
जिला सिंगरौली , म०प्र० 486889  
फैक्स नं० 07805-266388 /266640



Northern Coalfields Limited  
(A Mini Ratna Company)  
PO- Singrauli Colliery,  
Distt- Singrauli, MP- 486 889  
(An ISO 14001,ISO 9001,OHSAS-18001 &  
SA 8000 Certified Company)  
Materials Management Wing  
Tel : 07805-266413/256615



### ANNEXURE-III

#### FORMAT FOR BANK GUARANTEE FOR SECURITY

In consideration of M/s Northern Coalfields Limited (a subsidiary of Coal India Limited) Singrauli, PO- Singrauli Colliery, Distt. Singrauli (MP) (herein after called “the company”) having agreed to exempt M/s.....from the demand, under terms and conditions of an agreement/ order No. ....date .....made between the company and the said contractor (s) for ..... (Herein after called “ the said description of the agreement/ order”) of Security Deposit for the due fulfillment by the said contractors(s) of the terms and conditions contained in the said agreement, on production of a Bank Guarantee for Rs.....(Rs.....) Only.

1. We, .....(indicate the name of the Bank with address) ( Herein after referred to as “the Bank” ) at the request of the contractor(s) do hereby undertake to pay to the company an amount not exceeding Rs.....against any loss or damage caused to or would be caused to or suffered by the company by reason of any breach by the said contractor(s) of any of the terms or conditions contained in the said agreement.
2. We, .....(indicate the name of Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the company stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the company by reason of breach by the said contractor (of any of the terms and conditions contained in the said agreement or by reason of the said contractor(s) failure to perform the said agreement. Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.....
3. We undertake to pay to the company any money so demanded notwithstanding any dispute or disputes raised by the said contractor(s) in any suit or proceeding pending before any court or Tribunal relating there to our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the said contractor (s) shall have not claim against us for making such payment.
4. We..... (Indicate the name of bank) further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continued to be enforceable till all the dues of the company under or by virtue of the said agreement have been fully paid and its claim satisfied or discharged or till the company certifies that the terms and conditions of the said agreement have been fully and properly carried out by the said contractor(s) and accordingly discharges this Guarantee. Unless a demand or claim under this Guarantee is made on us in writing on or before the .....we shall be discharged from all liability under this Guarantee thereafter.
5. We, .....(indicate the name of bank) further agree with the company..... to the company shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and

conditions of the said agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the company against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reasons of any such variation, or extension being granted to the said contractor(s) or for forbearance, act or omission on the part of the company or any indulgence by the company to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for would, but for this provision, have effect of so relieving us all. The Bank further agrees that in case this guarantee is required for a longer period and it is not extended by the Bank beyond the period specified above, the bank shall pay to the company the said sum of Rs.....or such lesser sum as may then due to the company and the company may demand.

6. This Guarantee will not be discharged due to the change in the constitution of the Bank or the said contractor(s).
7. The Bank has under its constitution power to give this Guarantee and Mr..... who has signed it on behalf of the Bank have authority to do so.
8. We, .....lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the company in writing.

Dated the .....day of.....

Signature of the authorized person  
For and on behalf of the Bank

नार्दन कोल्डफिल्ड्स लिमिटेड  
एक मिनी रत्न कम्पनी  
सामग्री प्रबन्धक विभाग  
पो० ओ० सिंगरौली कोलियरी  
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Northern Coalfields Limited  
(A Mini Ratna Company)  
PO- Singrauli Colliery,  
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SA 8000 Certified Company)  
Materials Management Wing  
Tel : 07805-266413/256615



## ANNEXURE-IV

### FORMAT FOR PERFORMANCE GUARANTEE

M/s .....a company having its office at..... (hereinafter called the supplier) has entered into a Contract No.....with Northern Coalfields Limited (hereinafter called the Purchaser) to supply equipment on the terms and conditions contained in the said contract.

It has been agreed that hundred percent (100%) payment of the value of the contract will be made to the Supplier in terms of the said Contract on the seller furnishing to the Purchaser, a Bank Guarantee for the sum of Rs.....equivalent to 10% of the value of the contract by the seller, as Security for the due and faithful performance of the terms of the said contract and against any loss or damage caused to or would be caused to or suffered by purchaser by reason of any breach by the said supplier of any of the terms or conditions contained in the said contract.

1. We,.....Bank Ltd. do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the Purchaser stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Purchaser by reason of any breach by the said Supplier of any of the terms or conditions contained in the said contract or by reason of the Supplier's failure to perform the said contract. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. We shall not withhold the payment on the ground that the seller has disputed its liability to pay or has disputed the quantum of the amount or that any arbitration proceeding or legal proceeding is pending between purchaser and the supplier regarding the claim. However, our liability under this guarantee shall be restricted to an amount not exceeding .....
2. We, .....Bank Ltd further agree that the guarantee herein contained shall come into force from the date here of and shall remain in full force and effect during the period that would be taken for the performance of the said contract and that it shall continue to be enforceable till all the dues of the purchaser under or by virtue of the said Contract have been fully paid and its claims satisfied or purchaser certifies that the terms and condition of the said Contract have been fully and properly carried out by the said Supplier and accordingly discharges the guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the .....(date to be given) ..... months from the date of the Bank Guarantee, we shall be discharged from all liability under this guarantee thereafter.
3. We, ..... Bank Ltd. further agree with said Purchaser that the Purchaser shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said contract/ agreement or to extend time of performance by the said Supplier(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Purchaser against the said Supplier and to forbear or enforce any of the terms and conditions relating to the said contract and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said supplier or for any forbearance act or omission on the part of the purchaser or any indulgence by the Purchaser, to the said supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us. The Bank further agrees that in case this guarantee is required for a longer period and it is not extended by the said supplier beyond the period specified above, the Bank shall pay to the Purchaser the said sum of

Rs..... (Specify the amount) or such lesser sum as may then be due to the purchaser and as the Purchaser may demand.

4. We,.....Bank Ltd lastly undertake not revoke this guarantee during its currency except with the previous consent of the Purchaser, in writing.
5. The Bank has under its constitution power to given this guarantee and Mr. .... , Manager, who has signed it on behalf of the Bank has authority to do so.
6. This Bank Guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

Dated .....Day of.....

Signature of the authorized person  
For and on behalf of the Bank

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