

المواصفات الفنية الخاصة بالمناقصة العامة

رقم المناقصة : (٢٠١١/٣٢)

الخاصة بشراء وتوريد وتشغيل عدد (٤٠) محطة BTS

الخاصة بنظام IP/WLL مع التدريب

المؤسسة العامة للاتصالات السلوكية واللاسلكية

الإدارة العامة للمشتريات والمخازن

إدارة المشتريات - قسم العقود والمناقصات

**General Technical Specification for the supply of
(40) BTS Based on IP/WLL(CDMA2000 1X)**

1. General Requirements:

1.1 The specification gives the technical requirement of (40) BTS Based on IP/WLL (CDMA2000 1X technology) over mixed transport medium of optical and/or Microwave links.

1.2 The offer must be complete with all necessary accessories, interface and components on a ready for use basis.

1.3 The offer must be include the price for every part of equipment.

1.3 The system should support the full mobility as well as restricted mobility (per sector).

1.4 The BTS'S to be supplied should work in chain with the BTS'S of the independent (IP/WLL) system which it's BTS connected to the local PSTN thru (V5.2multi) protocol with the possibility to be interfaced to NGN network and provide IP services, besides to the other services (voice ,data , fax) for the fixed wireless terminals.

1.5 Tenderer shall specify the initial and ultimate capacities of the said equipment taking into consideration the traffic per subscriber as 0.05E and the G.O.S of service as 1% taking into consideration the overload traffic recommended by the ITU-T 541.The equipment shall use the modern and latest generation of CDMA2000 1X.

1.6 The system should have the possibility of smooth migration to EV/DO the offer shall include details on this regard.

1.7 All functional cards of the offered equipment shall be designed to be plug in modules and shall be safe at plug in and out of cards while power is on.

1.8 Tenderer shall guarantee to set right any defect in Software/Hardware free of charge for a period of 2 years from the date of PAC.

1.9 The system (hardware & software - license) shall be of modular design for cost effective future expansion.

1.10 Tenderer shall provide the methods used in dimensioning the equipment and calculations of:

- Radio coverage/capacity/ noise.
- Traffic.
- Radio cell- sites (BTS).

- Frequency planning.
- Others.

1.11 Operating frequency bands are: up 824 MHz down 849 MHz(class B) and other CDMA frequencies should be supported.

1.12 The offered BTS's must interwork with the existing CDMA2000 1X system.

1.13 The capacity of each BTS shall not be less than 1500 subs.

- The capacity calculation shall be based on the following parameters:

- Voice 95%.
- Data 14.4 kbps 3%.
- Data 153.6 kbps 2%.

2. General Specifications:

2.1 The BTS, ANTENNAS, shall meet the following specification:

a. BTS: The tenderer shall give a detailed specification of the transmitters & receivers of the BTS.

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|-------------------------------------|--|
| - Capacity in single cabinet | to be defined by tenderer |
| - Max. Capacity | to be defined by tenderer |
| - Transmission power | 20W/FA (state the adjustable range of power) |
| - Receiving sensitivity | -127 dbm |
| - Channel processing | to be defined by tenderer |
| - Transmission mode | E1/STM-1 |
| - Power supply voltage rating | -43 ~ -58 VDC |
| - Power consumption (1FA/3 sectors) | Less than 1000 W |
| - Data rate | 153.6 kbps |
| - Max. Carriers without (TD) | support 2 FA/3 sectors 90 ⁰
1 FA/6 sectors |
| - Sector Max. Carriers with (TD) | 1 FA/3 sectors 90 ⁰ |
| - Max. Trunk | 16 E1 |
| - Type of Amplifier | support HPA and LPA
(details are required) |
| - Cooling | Fan with air filters |
| - RF interface | 50 ohm normal impedance |
| - Noise figure | 5dB Max |
| - Dynamic range | not less than- 65dB/1.23 MHz |
| - Conducted spurious emission | to be defined by tender |



- | | |
|------------------------------|---|
| - Transmitter& receiver spec | to be defined by tender |
| - Efficiency | above 85% |
| - Temperature rating | -5 ⁰ C ~ 55 ⁰ C |
| - Humidity | upto 95% |
| - Noise | Less than 65dBA level noise
from 1.2~ away |
| - Dust | 0 ~ 50 ug/m ³ |

b. Antennas:

- a) The antennas system offered shall be the optimum type consistent with the specified transmission performance, the channel capacity, the radio frequency environment used and any others.
- b) The antennas system shall consist of antennas, wave guides, splitters, connectors, impulse suppressors, as well as all necessary mounting structure and accessories.
- c) The antennas proposed shall be 90⁰ sector type.
- d) The tender shall state the following characteristics of the antennas
- The Isotropic gain over the entire frequency band.
 - The VSWR over the operating frequency.
 - The Radiation pattern of both direct and cross- polarization for the antennas.
- e) The tender shall include information's about the following:
- Mechanical details of antenna fixing and planning frames together with the Horizontal & Vertical angular adjustments.
- All antenna mounting frames shall be of galvanized steel, and all accessories such as hunger kits, bolts, nuts shall be either of this material or stainless steel.
- f) Feeders:
- The tenderer shall state details of the feeder characteristic and parameters.
 - The length of feeder cables should be 300m for every side.

2.2 The BTS shall meet all the international interfacing including the following interfaces:

BTS Interfaces E1/IP over E1\ ATM/standard Abis& (FE\FE)

2.3 The system shall meet the following international standards:

- MS minimum performance standard 1S ~ 98C

- | | |
|------------------------------------|-----------------------|
| - BTS minimum performance standard | IS ~ 97D |
| - Vocoder& speech service | IS-96C,IS-733,IS-127 |
| - Data service standard | IS-99,IS-658,IS-707A |
| - IOS standard | IS-2001 (3G IOS V4.0) |
| - MS-BTS | IS-2000 |
| - BTS-BSC | Abis standard |

2.4 Tenderer shall provide all stated specifications including all the different subsystem or components.

3. Configuration of the offered BTS's:

3.1 The offer shall be complete including all of the hardware equipment, software, components, accessories, installation materials, antennas, connectors, clips, fest equipment, services etc.

3.2 The purchaser (PTC) reserves the right to modify the configuration and to purchase all or only some of the equipment and materials offered according to the purchaser's requirement.

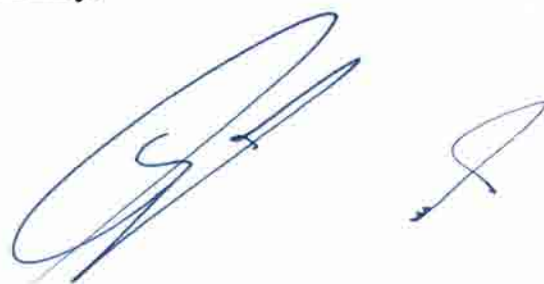
4. Overall equipment description:

- The tenderer are required to provide detailed and comprehensive technical description of the system:
- The tenderer shall also provide the future plan to develop the equipment.

4.1: System overview:

The equipment overview shall include but not limited to the following:

- BTS capacity, coverage, voice quality.
- Mean power x-mission- Max power x- mission- band width.
- Frequency re-uses- sector/cell-Erlang/sector.
- System blockage (G.O.S)-guard band-system security.
- Soft& Hard handoffs-external interface-types of signaling.
- Equipment configurations- equipment components- equipment dimensioning.
- Channel spacing- voice encoding-operating frequency bands.
- Equipment redundancy- equipment reliability.



4.2: The equipment features:

The tenderer shall provide all the equipment features including:

- Balance capacity and Q.O.S.
- Power control modes.
- Improvement of system reliability.
- Operation & Maintenance radio.
- Traffic Management.
- Network Management system facilities.
- Configuration Management.
- Fault Management.
- Performance Management.
- Diagnostic Management.
- Supporting remote maintenance control.
- Remote downloading.
- Over voltage and lightening protection.
- Sending an external alarm through the system from BTS to BSC.
- support power off remotely from BSC.

4.3: Equipment compatibility:

Tenderer shall confirm that the entire equipment is compatible with ITU-T&3GPP2 standards and any other international standards.

- Equipment shall interwork with existing CDMA2000 1X BSC.
- Equipment shall interwork (hand off) with another CDMA2000 1X BTS.
- Equipment shall be able to operate in hostile radio environments with high EM fields e.g closed to microwave transmitters.
- System shall be able to operate in close proximity with other radio system such as GSM etc.
- System shall be able to provide all features and services same as or better than that offered by Fixed Networks, the range of services and features that the system is capable to offer by the system, shall be stated.

4.4: Network Planning and optimization:

Tenderer shall explain by figures, maps, drawings how the offered equipment is co-related with network planning and optimization in order to facilities for:

- Project engineering.
- Satisfying the demands on Wireless coverage.
- Reducing the No of BTS's.
- Cut down cost.
- In case of optimization:
 - Balance of traffic.
 - Increase of capacity.
 - Decrease of call drops.
 - Expansion of coverage.

5. Sub systems:

5.1: Alarms:

- All BTS's and power supply system shall be supervised and controlled from the centralized supervisory system, by means of visual and audible-alarms.
- The alarm items to be indicated shall not be limited to the following:
 - a) A.C power failure.
 - b) Low batt. Voltage.
 - c) Rectifier failure.
 - d) Low transmitter power.
 - e) Low receiver level.
 - f) Bit Error Rate when exceeding the threshold level.
 - g) No data.
 - h) Transmission link failure.
 - i) GPS failure .
 - j) Humidity .
 - k) Smoking alarm .
 - l) Door status .
 - m) Temperature .
 - n) Air condition.

5.2: Tenderer shall state if solar power can be used at the BTS cell-sites where commercial power supply is not available.

5.3: Over voltage and lightening protection:

As the equipments will be installed in mountainous area with high incidence of lightning, tenderer shall state protection measure taken to

prevent equipment damages, and take over the proper of electrical and rack side of equipment, wave guides, outer conductor of feeder, and GPS feeder, and secure their connection to the main earth, and as well as an additional protective devices in the 3 phase AC voltage, fuse box for the same.

6. Services:

The tenderer is fully responsible for the following:

- a. RF engineering.
- b. Site survey.
- c. Network planning and optimizing.
- d. Supervision of installation.
- e. Commissioning of the equipment.
- f. The acceptance test shall be carried out by the tenderer and PTC engineers.

7. Tool kits, and measuring instruments:

7.1 The Tenderer shall submit a quotation that includes tools and test equipment necessary for the installation, operation and maintenance of every part of the equipment.

7.2 Optimization and planning tools without analysis software as the following:

- Two laptops(360G Hard,4G Ram ,Core I5) &GPS .

8. Spare parts:

Tenderer shall include in his offer recommended spare parts (10% of the solution hardware) for all types of cards for five years operation after the warranty period with quantities and unit prices mentioned.

9. Training:

9.1- Bidders shall include proposals to provide adequate and sufficient professional (Basic and advanced) training to (10) PTC persons abroad.

9.2 Training shall include, but not limited, to:

System configuration, system operation and maintenance, system security, software maintenance and upgrades, hardware preventative and remedial maintenance, network planning, optimization, and installation.

9.3 Two training modules shall be prepared for two different groups (each of 5) on separated times in the Bill of Materials. The structure of each module should be detailed in the offer.

10. Manufacture supply records:

The tenderer shall provide the supply record and the No. of lines of the offered equipment working in his country and other world wide countries.

11. Country of origin:

The tenderer shall state the country of origin for the manufacturing of all parts, elements and component for the offered system.

12. Documents:

-The tenderer shall provide one original and three copies (1+3) of full sets of technical documents giving detailed description of the equipment and specification.

-Tenderer shall also supply sets of manufacture for dimensioning, installation, operation and maintenance of all the equipment.

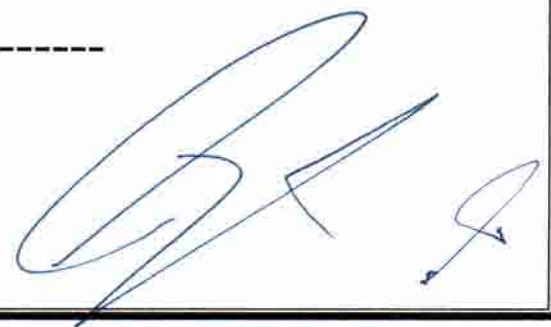
13. Support services:

- Supporting remote maintenance.
- Network planning and project engineering.
- System upgrade.
- New services and features.
- Training personals.
- Others.

14. Long term support:

The supplies shall undertake to provide live time support for the software and for the repair maintenance of the hardware when required by the purchaser and to make available necessary spare parts for a period of 10 years with the prices that shall be agreed upon provided, however that the prices shall not exceed the prices stated in the offer.

----- The End -----



طوا
 قع المقترحة لخطة المؤسسة لتوسعة الهاتف اللاسلكي الثابت IP-WLL لعام ٢٠١١

المحافظة	م	اسم الموقع	السعة	ملاحظات
اب	1	قرعد	1,500	
	2	جبل بعدان	1,500	
صنعاء	3	جبل ظفار	1,500	
	4	بيغان	1,500	
ذمار	5	الرشيدة	1,500	
	6	اسبيل	1,500	
	7	الدين	1,500	
عمران	8	الزافن	1,500	
	9	جبل الطليلي	1,500	
	10	بني الحراسي	1,500	
ريمة	11	قرن جمع	1,500	
	12	جبل مزهر	1,500	
لحج	13	جبل جالس	1,500	
	14	جبل ثمر	1,500	
الجوف	15	المتون	1,500	
	16	جبل منيف	1,500	
تعز	17	جبل ميراب	1,500	
	18	جبل الوازعيه	1,500	
شبوّة	19	الحاله	1,500	
	20	ميفعه	1,500	
المحويت	21	جبل عكبير	1,500	
	22	ملحان	1,500	
	23	جبل براش	1,500	
الضالع	24	جبل ناصه	1,500	
	25	الشعيب	1,500	
	26	الضبيات	1,500	
حجة	27	طلان	1,500	
	28	المحابشه	1,500	
مارب	29	البلق	1,500	
	30	هيلان	1,500	
الحديدة	31	جبل راس	1,500	
	32	رخيه	1,500	
سينون	33	وادي سر	1,500	
	34	سنا	1,500	
	35	لبنت و الحيثر	1,500	
عدن	36	جبل راس منكل	1,500	
	37	الدامغ	1,500	
صعده	38	الاحمر	1,500	
	39	النوعه	1,500	
	40	مرع	1,500	
اجمالي السعات			54,000	