

**General Technical Specifications
For Supply 30-Links
IP Microwave Systems**

General Technical Specifications

30 Links IP Digital Microwave Systems

Systems General Technical Specifications:

- 1- Frequencies Band: 13 GHz.
- 2- Frequency Band: 12.75 – 13.25 MHz (ITU-R F.497-5 CEPT) Sub Band A .
- 3- T/R Spacing: 266 MHz.
- 4- Flexible Interface System: (SDH,PDH, LAN).
- 5- System Capacity :- 300Mbps license FOR SDH 6 Links 63E1 +4 Port LAN & 100 Mbps for PDH Links (32E1 and 4Port LAN)
- 6- Configuration Type: 1+1HSB& 1+0 see the table (1) with license hardware & software .
- 7- The microwave link should support System packet services capacity upgradeable by software license up to 200 Mbps for PDH.
- 8- SDH Systems with MUX (E1 + ETHERNET)
- 9- The offered IDU should be Modular (nodal) for SDH links & compact or modular for PDH links.
- 10- The system should support at least 32*E1 G.703, 120 Balanced for PDH.
- 11- The system should support at last 4 ports 10/100 Base-T Ethernet for all links.
- 12- Support Hitless (errorless) switching with hot-standby,SD&FD for SDH links.
- 13- The system should support hitless ACM (QPSK until 256 QAM) (Ready from the first day).
- 14- Equipment's should support Loop Facilities: Software Base Band, IF and RF Loopback.
- 15- Equipment's should support Enable / Disable tributaries (That means any disabled tributaries won't work (shutdown) until someone enable it software).
- 16- Equipment's should support High Tx. Power up to 2 dBm (depend on capacity and modulation type). High Gain and High System Performance (S.G 85 at 13 GHz, 56 MHz, 256 QAM (dB measured at Ant. port) BER = 10⁻⁶).
- 17- Support Power Control: ATPC, MTPC and ACM (ready from the first day)
- 18- Low Power Consumption IDU+ODU 50 W
- 19- High level of service reliability and flexibility.
- 20- Regulatory: CEPT.
- 21- Frequency Stability: ± 6 ppm or less.
- 22- Support one ODU type for all traffic capacity upgrading requirement.
- 23- Weather proofing Outdoor Unit, high wind resistance and low weights.
- 24- The microwave link should support local management control: Using a Local Terminal connected via serial or Ethernet interface. And Support Remote IDU Access.
- 25- History Alarm Facilities.
- 26- Aux. Data Channel: LAN, 64Kbit/s G.703, V11/V.28,Asy.RS232C.
- 27- Power Source: ± 40 to ±60 Volts D.C (Auto detection).
- 28- Operation Temperature Range: IDU&ODU (-10 to +55 °c)
- 29- Operation Humidity: for IDU 95% at +35°C and 100% for ODU.
- 30- Support Multiservice aggregation is the capability of accepting many source streams from different applications (voice, data, circuit emulated services [CES]) and technologies (TDM, Ethernet) and adapting them to the transport layer (PWE3) in future .
- 31- The bidder should explain all value-added licenses with description.
- 32- The bidder shall submit detailed specifications of hardware and software upgrading capability.
- 33- The bidder shall mention all the available features built-in and supported by the offered equipment's, even the ones not mentioned in this document.
- 34- The offer should give the prices per unit price for all the items that included in the offer and for all the boards that can be installed on the system even those not included in the offer.
- 35- The Supplied system (Software and hardware) should be latest version and shall comply with the requirements of this specification and meet, but not limited to, all of the latest relevant ITU-R, ITU-T Recommendations, IEEE standards, FCC, ETSI, ITEF, OIF, and MEF specification and certifications and any other related standards.

ACCESSORIES :-

The contractor shall supply all necessary Installation materials, documentation, tools, like (but not limited) for:

- 36- Tributaries Cables for each site with Connectors (5meter).
- 37- Installation Materials for each site (DDF Frames, VS Tool, IF Connectors, Ground Kits, Racks 19 inch 42U, IF Surge Protected Arresters and E1 surge protected arresters, etc.).
- 38- IF Cable Type: 8D-FB (Or equivalent), 300m/Link for 1+1 & 150m/ link 1+0).
- 39- Power cables (5Meters), inter-connection cabling, local management cable, etc.
- 40- System Configuration Software LCT (CD- ROM).
- 41- Installation, operation, maintenance and other related documents
- 42- Warranty for spare part and repair faulty units at list 10 years.

Antenna Types and diameters:

- 43- Andrew HP with Radom
- 44- 0.6 m for 15 links 13 GHz.
- 45- 0.3 m for 15 links 13 GHz.

Spare parts:-

- 46- Spare Parts 20% from the total quantity (just from IDU&ODU)
- 47- 6 Cards SDH Interface STM-1 Optical Fiber - Dual S-1,1,FC-PC

- TRAINING :-

- Location: manufacturer's training center
- Number of trainees: 4
- Total working days: 12 working days
- Hotel, Accommodation, daily allowance and the local transportation in the country of the training (manufacturer's country) for each trainee shall be the responsibility of the bidder (12 working days + weekends).
Also all other training expenses for training class shall be the responsibility of the bidder.

N0.	LINK - NAME	System Type	Capacity E1	F.B GHz	Antenna Diameter (m)	Conf. Type
1	LINK-1	SDH	63E1 with LAN	13	0.3	1+1
2	LINK- 2	SDH	63E1 with LAN	13	0.3	1+1
3	LINK-3	SDH	63E1 with LAN	13	0.3	1+1
4	LINK-4	SDH	63E1 with LAN	13	0.6	1+1
5	LINK-5	SDH	63E1 with LAN	13	0.6	1+1
6	LINK-6	SDH	63E1 with LAN	13	0.6	1+1
7	LINK-7	PDH	32E1 with LAN	13	0.6	1+0
8	LINK-8	PDH	32E1 with LAN	13	0.6	1+0
9	LINK-9	PDH	32E1 with LAN	13	0.6	1+0
10	LINK-10	PDH	32E1 with LAN	13	0.6	1+0
11	LINK-11	PDH	32E1 with LAN	13	0.6	1+0
12	LINK-12	PDH	32E1 with LAN	13	0.6	1+0
13	LINK-13	PDH	32E1 with LAN	13	0.6	1+0
14	LINK-14	PDH	32E1 with LAN	13	0.6	1+0
15	LINK-15	PDH	32E1 with LAN	13	0.6	1+0
16	LINK-16	PDH	32E1 with LAN	13	0.6	1+0
17	LINK-17	PDH	32E1 with LAN	13	0.6	1+0
18	LINK-18	PDH	32E1 with LAN	13	0.6	1+0
19	LINK-19	PDH	32E1 with LAN	13	0.3	1+0
20	LINK-20	PDH	32E1 with LAN	13	0.3	1+0
21	LINK-21	PDH	32E1 with LAN	13	0.3	1+0
22	LINK-22	PDH	32E1 with LAN	13	0.3	1+0
23	LINK-23	PDH	32E1 with LAN	13	0.3	1+0
24	LINK-24	PDH	32E1 with LAN	13	0.3	1+0
25	LINK-25	PDH	32E1 with LAN	13	0.3	1+0
26	LINK-26	PDH	32E1 with LAN	13	0.3	1+0
27	LINK-27	PDH	32E1 with LAN	13	0.3	1+0
28	LINK-28	PDH	32E1 with LAN	13	0.3	1+0
29	LINK-29	PDH	32E1 with LAN	13	0.3	1+0
30	LINK-30	PDH	32E1 with LAN	13	0.3	1+0

Table (1)