

SCHEDULE A

Broadband Services: Availability and Quality Specifications

1. Broadband Services

- (a) The USF Service Provider shall provide Broadband Service in all of the identified areas in Schedule C as being mandatory for USF Network and USF Broadband Service penetration. For the purposes of this Schedule A:

“Broadband Service” means an always-on service for the provision and delivery of Internet Services and Internet Applications Services, conforming to Internet Protocols, between customer equipment at an end user’s premises in the USF Broadband Service Area and the Internet at Broadband Data-Rates and in accordance with the USF Broadband Quality of Service requirement.

- (b) For the purposes of this Schedule A, there is no restriction on the technology which may be used to provide the Broadband Service. The following defined terms are applied in the service description:

“Broadband Data-Rate” means a minimum data transfer rates of 256 kbps in the downstream (towards the end user) direction with a concurrent minimum delivery rate of 64 kbps in the upstream (away from the end user) direction;

“Internet Protocol” means any set of communication standards defined from time to time by the international body presently known as the Internet Engineering Task Force or its successors from time to time or which are in common usage from time to time for the Internet;

“USF Broadband Quality of Service” has the meaning set out in this Schedule A to the SSA; and

“USF Broadband Service Area” means all of the Areas identified in Schedule C as being mandatory for USF Broadband Penetration.

- (c) **Internet Service** –The USF Service Provider must offer Internet Service. Each subscriber of this service shall be provided with access to the Internet:
- i) for both incoming and outgoing Internet traffic;
 - ii) available from one or more computers at the subscriber’s premises;
 - iii) at the Broadband Data-Rates; and

- iv) based on appropriate ITU standards.
- (d) **Internet Applications Service** –
 - i) Each subscriber of Broadband Service, shall be provided with access to common Internet applications, including:
 - a) “**email service**”, meaning a service that provides subscribers with an e-mail address from which they can receive and transmit e-mails worldwide. The service may be provided either through email servers at the USF service provider’s premises or through email servers of third parties on the global Internet.
 - b) “**web browsing service**”, meaning a service that allows subscribers to access information on the World Wide Web;
 - c) “**file transfer service**”, meaning a service that provides subscribers with the ability to download files from Internet sites;
 - d) “**Domain Name System (DNS) service**”, meaning a service that allows subscribers terminals to translate domain names to Internet Protocol addresses;
 - e) Virtual Private Network, Intranet and other relevant services that enable e-commerce and on-line banking applications; and
 - f) real-time video streaming, chat and other similar services supporting on-line education.
 - ii) At the sole option of the USFCo and in accordance with its policies, the Internet Application Services will support an Intranet application connecting each user of the Educational Broadband Center with an educational intranet to be developed by government.
- (e) **Subscriber Technical Support** – Each subscriber to Broadband Service, and each user of the Community Broadband Center and Educational Broadband Center, shall be provided with technical support in accordance with the following:
 - i) initial and ongoing technical support, which will assist users:
 - a) in configuring computer hardware and software settings as necessary in order to use the Internet Services; and
 - b) in resolving technical problems that they experience when using the Internet Services.

- ii) Subscribers to Broadband Services shall also be provided with a toll-free telephone number (the “Subscriber Technical Support Hotline”) that subscribers can call to report any trouble they are experiencing with the service and obtain real-time technical assistance to resolve the trouble they are experiencing.

2. Service Availability

- (a) The Service Provider shall ensure that the Broadband Services are maintained and continued, and meet applicable service standards and quality of service requirements, throughout the term of the Agreement.
- (b) The availability of the Broadband Services shall be effectively advertised to the public in the USF Areas, and the USF Service Provider shall publish its service plans and tariffs.
- (c) Subscriber contracts for the Broadband Services shall be of a standard form approved in advance, if required, by PTA.

3. Quality of Service

- (a) In addition to the service requirements identified in this Schedule A, the USF Broadband Services shall be provided in accordance with all quality of service requirements specified in the USF Service Provider’s Licences, and any other quality of service requirements established by the PTA.
- (b) The USF Broadband Service Provider must provide the Broadband Service at a contention ratio of no worse than 25:1 (calculated by dividing the per user bit rate by the downstream value of the Broadband Data-Rate).

4. Rollout and Maintenance Obligations

- (a) The Broadband Service will be available in accordance with the USF Broadband Project Implementation Milestones set out in Schedule D.
- (b) The USF Broadband Service Provider must ensure that the Broadband Services are maintained and continue to meet the USF Broadband Quality of Service, throughout the Term of the Agreement.

5. Quality of Service Standards

Parameters	General Threshold
Session Initiation Success Ratio (SISR)	0.98
Session Completion Success Ratio (SCSR)	0.97
Maximum packet loss (IPLC or DPLC) Maximum packet loss at customer premises with packet size of 1000 Bytes	< 3%
Service Transfer Time (STT, hours) – with clear accounts	4
Reconnection Time (hours) After Clearing Arrears (RTACA)	½
Planned redundancy in Network Elements for 50% capacity	90%
End-to-end Network capacity Maximum Loading Factor	80%
Round Trip (RT) End-to-End latency (ms) [worst case around the world, e.g. Karachi to New York to Karachi, applicable for fiber-optic connectivity]	350
Round Trip (RT) End-to-End latency (ms) [worst case between any two points within Pakistan, applicable for fiber-optic connectivity]	90
Maximum cumulative down time in any calendar month on (IPLC or DPLC) traffic	< 5 hours