		WLAN Router + ADSL NT	
	Type	Answer	Reference/ Explanation

1 INTRODUCTION

1.1	The subject of the specification is a DSL router which automatically logs into the ADSL service and makes possible to use the WAN connection for several users simultaneously on its LAN interfaces involving an embedded IEEE 802.11b and IEEE 802.11g compliant WLAN Access Point, referred as device in this document. The device refers to the Access Point part in the Wireless section and to the other parts in the wired section.	I		
1.2	The device can be connected to the ADSL NT and can be dial in for Internet connection.	I		
1.4	The device provides analogue port(s) (voice gateway) for IP telephony via this device using SIP protocol..	I		
1.9	The device shall be on piec of device, ie. The packaging can contain - beside the device - only the necessary communication and power supply cabling, but not other electrical element.	M		

2 GENERAL REQUIREMENTS

2.1 Documentations, software

2.1.1	Detailed technical descriptions shall be attached for offered device and by Bidder.	M		
2.1.2	Detailed hardware installation manual shall be attached for all offered device by Bidder.	M		
2.1.3	Detailed software configuration manual shall be attached for all offered device by Bidder.	M		

2.2 Other

2.2.1	The Bidder shall provide three (3) pieces of the device offered if invited by the Purchasing Directorate to test its devices.	M		
2.2.2	If the Bidder changes any software (firmware, driver or utility) or documentation part, the Bidder provide the changes on CD/DVD free of charge to Magyar Telekom Ltd. PKI-FI.	M		
2.2.4	The Bidder shall specify the firmware version of the device offered for the evaluation and for testing.	M		
2.2.5	The Bidder shall specify the hardware version of the device offered for the evaluation and for testing.	M		

4 WLAN + LAN

4.1 Introduction

4.1.1	The WLAN system has two main components, the Access Point and the Stations.	I		
4.1.2	The Access Point shall translate data transmitted between wireless and wired media and physically connected to a wired network. The data consist of Ethernet frames. The Access Point provides one (central) end of the radio connection. The Access Point is part of the device and embedded into it.	I		

4.2 Wireless system of the device
4.2.1 General requirements of the device

4.2.1.1	Wi-Fi Certification assures tested and proven interoperability among wireless computer equipment; this certification gives consumers and business buyers confidence that wireless LAN products bearing the Wi-Fi logo have passed rigorous interoperability certification requirements. Such Wi-Fi products include PCMCIA Cards for notebooks, PCI Cards for desktops, USB modules, embedded Stations in different electronic equipment and wireless base stations like access points and gateways. Wi-Fi CERTIFIED products support a maximum data rate of either 11 Mb/s (802.11b), 54 Mb/s (802.11a) or 54 Mb/s (802.11g).	I
4.2.1.2	The device shall have Wi-Fi certification and the Bidder shall submit a copy of the certification.	M

4.2.2 Data rate

4.2.2.1	The device shall provide the ability to set radio data rate to operate at. Data rates available shall be according to IEEE 802.11b and IEEE 802.11g.	R

4.2.3 Performance

4.2.3.4	Access Point shall provide ability to manually set the channel to operate.	M
4.2.3.5	Access Point shall be able tos select channel to operate automatically.	R
4.2.3.6	The device's radio module's operating frequency range and number of operating channels shall conform to IEEE 802.11b standard with regard to the ETSI regulatory domain specific requirements.	M
4.2.3.7	The device's radio module's operating frequency range and number of operating channels shall conform to IEEE 802.11g standard with regard to the ETSI regulatory domain specific requirements.	M
4.2.3.12	The device shall have at least one external (outside of the boksz of the device) antenna	M
4.2.3.13	The antenna position shall be able to be adjusted at least around one axis.	M
4.2.3.14	The Bidder shall specify the receiver sensitivity for each data rate of the device tested by 3rd party organisation.	Q
4.2.3.15	The Bidder shall specify the maximum output power of the device tested by 3rd party organization.	Q
4.2.3.16	The maximum effective isotrop radiated power (EIRP) of the radio system of the device (including antenna cable, and antenna if included) shall comply with ETS 300-328,	M
4.2.3.17	The Bidder shall provide a the receiver sensitivity for the corresponding BER value for each data rate.	Q

4.2.4 Network interfaces

4.2.4.1	The physical layer (layer 1) parameters shall conform to IEEE 802.11 (Local and Metropolitan Area Network Standard, 802.11 Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications, ANSI/IEEE Standard, 1999) standard.	M
4.2.4.2	The physical layer (layer 1) parameters shall conform to IEEE 802.11b (Local and Metropolitan Area Network Standard, Higher speed Physical Layer (PHY) extension in the 2.4 GHz band, ANSI/IEEE Standard, 1999) standard.	M
4.2.4.3	The physical layer (layer 1) parameters shall conform to IEEE 802.11g radio module is offered the module's operating frequency range and number of operating channels shall conform to IEEE 802.11g (Local and Metropolitan Area Network Standard, 802.11 Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications: Amendment 4: Further Higher Data Rate Extension in the 2.4 GHz Band, IEEE Standard, 2003) standard.	M

| 4.2.4.4 | The data link layer (layer 2) parameters shall conform to IEEE 802.2 (IEEE 802.2. Local Area Networks Standard, 802.2 Logical Link Control. ANSI/IEEE Standard, October 1985) and IEEE 802.3 (Local Area Networks Standard, 802.3 Carrier Sense Multiple Access with Collision Detection. ANSI/IEEE Standard, October 1985) standards. | M |

4.2.5 Wireless security

4.2.5.1	The device shall provide capability to modify its SSID.	M
4.2.5.2	An Access Point works in open system mode, when it broadcast its SSID to collect Stations. An Access Point works in closed system mode, when it does not broadcast its SSID, but receives Association requests from Stations having the right SSID.	I
4.2.5.3	The device shall provide setting to open system mode operation.	M
4.2.5.4	The device shall provide setting to closed system mode operation.	R
4.2.5.5	The device shall have the ability to use static 64 bit (40 bit) WEP key.	M
4.2.5.6	The device shall have the ability to use static 128 bit (104 bit) WEP key.	M
4.2.5.7	The device shall have the capability to set 4 different WEP key for 64 bit (40 bit long key to submit) and 128 bit (104 bit long key to submit) settings.	R
4.2.5.9	The Bidder shall specify all the supported security features of the offered device not required in this specification.	Q

4.3 The Wired system of the device

4.3.1 Network Interfaces

4.3.1.1 Ethernet interface

| 4.3.1.1.1 | The device shall support Ethernet interface towards the LAN and WAN network. | M |
| 4.3.1.1.2 | The device shall support Fast Ethernet interface towards the LAN and WAN network. | R |

4.3.1.2 Ethernet (10BaseT) and/or Fast Ethernet (100BaseTX) interface

| 4.3.1.2.1 | The physical layer (layer 1) parameters of each port shall conform to IEEE 802.3 (Local Area Networks Standard, 802.3 Carrier Sense Multiple Access with Collision Detection. ANSI/IEEE Standard, October 1985) standard. | M |
| 4.3.1.2.2 | The data link layer (layer 2) parameters of each port shall conform to IEEE 802.2 (IEEE 802.2 Local Area Networks Standard, 802.2 Logical Link Control. ANSI/IEEE Standard, October 1985) and IEEE 802.3 (Local Area Networks Standard, 802.3 Carrier Sense Multiple Access with Collision Detection. ANSI/IEEE Standard, October 1985) standards. | M |

4.3.1.3 Mode and speed of operation

| 4.3.1.3.1 | The half or full duplex operation of each port shall be supported acccording to to IEEE 802.3 (Local Area The half or full duplex operation shall be supported acccording to to IEEE 802.3 (Local Area Networks Standard, 802.3 Carrier Sense Multiple Access with Collision Detection. ANSI/IEEE Standard, October 1985) standard. | M |
| 4.3.1.3.2 | The mode of operation of each port shall be manually set and Auto-Negotiated conforming to IEEE 802.3 (Local Area Networks Standard, 802.3 Carrier Sense Multiple Access with Collision Detection. ANSI/IEEE Standard, October 1985) standard. | M |

4.3.2 Connectors

| 4.3.2.1 | The connector must be RJ45 female and shall conform to MSZ EN 60603-7:2000 (Nyomtatott áramköri csatlakozók 3 MHz alatti frekvenciákra. 7. rész:Ellenőrzött minőségű, 8 sarkú, közös csatlakozási jellegű, helyhez kötött és függő csatlakozók termékelőirása /IEC 603-7:1990/) standard. | M |

4.3.2.2	The wired port of the Access Points connected to the embedded hub/switch is handled in this document as one internal (i.e. not external) LAN port.	I
4.3.2.7	The device shall have 2 external LAN ports.	M
4.3.2.8	The connector of the WAN interface must be RJ11 female and shall conform to MSZ 25021:1999 (Terminal Equipment (TE). Attachment requirements for pan-European approval for connection to the analogue Public Switched Telephone Networks (PSTNs) of TE (excluding TE supporting the voice telephony service) in which network addressing, if provided, is by means of Dual Tone Multi Frequency (DTMF) signaling) standard to connect to the splitter of the PSTN/ISDN line.	M
4.3.2.10	The physical layer of the WAN interface shall be compliant with ITU-T recommendation G.992.1.	M

4.4 IP level settings

4.4.1	The device shall have default static IP address on its LAN interface.	M
4.4.2	The device shall have the functionality to PPPoE dial in and to get IP address on its WAN interface.	M
4.4.3	The device shall have the functionality to store user name and password used for PPPoE dial in.	R
4.4.4	The device shall have the functionality to set static IP address on its WAN interface.	R
4.4.5	The device shall have the functionality to provide dynamic IP address (from DHCP) via its LAN (including WLAN) interface.	M
4.4.6	The device shall provide functionality to specify DHCP pool to allocate IP address from.	R
4.4.7	The device shall provide functionality to define static IP address on devices located on the LAN ports	R
4.4.8	The device shall provide means to enable the usage of VPN pass through for IPSec usage through its WAN and (W)LAN interfaces.	R
4.4.9	The device shall be able to be configured as a virtual server so that from WAN side accessing the device for HTTP services via its WAN IP address can be automatically edirected to local server running HTTP server in the LAN. (eg. for accessing the camera)	R
4.4.10	The device shall support dynamic DNS service, which allows to alias the dynamic wan IP address of the device after dialing in using PPPoE to the ISP to a static hostname.	R

4.5 Firewall

4.5.1	The device shall provide capability to apply filtering between WAN and LAN interfaces based on the MAC address of the clients on the LAN side for at least the WLAN stations associated to the embedded Access Point.	M

4.6 Router functions

4.6.1	The device shall have static routing capabilities.	R

5 MANAGEMENT

5.2	The device shall have functionality to manage its configuration through standard web browser.	M
5.3	The device shall provide means to check the credentials before allowing access to its configuration area.	M

5.4	The device shall have functionality to manage its configuration through standard web browser using SSL certificate to increase security.	R
5.5	The device shall have functionality to save/backup and load/restore its configuration to/from a storage media.	R
5.6	The device shall have functionality to upgrade its firmware both by loading a single file and via the standard TFTP protocol.	R
5.7	The Bidder shall specify all the means of upgrade the device's firmware.	R
5.8	The device shall have means to query its dynamically allocated IP address on the uplink interface.	R
5.9	The device shall provide status infromation about the network connection.	R
5.10	The device shall be able to generate syslog information to a configured server.	R
5.13	The embedded ADSL NT shall store valid ATU-R Data register values as it is specified in ITU-T Recommendation G.992.1.	M
5.14	The ATU-R Data register value of "serial number" shall be unique for each ADSL NT.	M
5.15	Any DSLAM used by T-Com shall be able to read the ATU-R Data register values of the embedded ADSL NT through the DSLAM's management system.	M
5.16	The embedded ADSL NT shall have "Dying Gasp" function as it is specified in ITU-T Recommendation G.992.1.	M
5.17	The embedded ADSL NT shall support "DSL Forum TR-069: CPE WAN management protocol (May 2004)".	R
5.18	The configuration needed to be able to have Internet access shall be according to the requirements of Magyar Telekom.	M
5.19	The configuration settings for the embedded ADSL NT will be given before contracting the supplier.	I

6 ADSL NT REQUIREMENTS

6.1 General requirements

6.1.1	This section specifies the general requirements for ADSL system used in T-Com' network. ADSL system consists of two main element: DSLAM and ADSL NT. Both of them shall support all requirements specified in this section.	I
6.1.2	The ADSL system shall work in coexistence with ISDN BRA or POTS type service in the same wire, simultaneously.	M
6.1.3	The ADSL system shall work over ISDN-BRA system using 2B1Q line coding (ISDN BRA system is implemented according to ETSI TS 102 080/ANNEX A:1998) on the same line simultaneously without interference according to ETSI TS 101 388 (2002-5).	M
6.1.4	The ADSL system shall use Frequency Division Duplexing (FDD) for separation of the upstream and downstream signals, as it is specified in ITU-T Recommendations G.992.1, G.992.3 and G.992.5.	M
6.1.5	To provide interoperability between embedded ADSL NT and DSLAM, Handshake Procedures for Digital Subscriber Line transceivers shall be supported according to ITU-T Recommendation G.994.1. (1999, February 20)	M

6.1.6		M
	In the ADSL system ATM shall be used as basic encapsulation method for data transmission. ATM Layer shall be implemented according to ITU-T Recommendation G.992.1.	

6.2 ADSL operation mode

6.2.1	The embedded ADSL NT shall be implemented according to ITU-T Recommendation G.992.1 Annex B (1999-06).	M
6.2.2	The embedded ADSL NT shall support ADSL2 operating mode according to ITU-T Recommendation G.992.3 Annex B (2005-01).	M
6.2.3	The embedded ADSL NT shall support ADSL2+ operating mode according to ITU-T Recommendation G.992.5 Annex B (2005-01).	M

6.3 Bit rate

6.3.1	Operating in ADSL mode, ADSL system shall support downstream data rate from 32 kbit/s to 8 Mbit/s and upstream data rate from 32 kbit/s to 800 kbit/s, and both downstream and upstream data rate shall be adjustable in 32 kbit/s increments	M
6.3.2	Operating in ADSL2 mode, ADSL2 system shall support downstream data rate from 32 kbit/s to 8 Mbit/s and upstream data rate from 32 kbit/s to 800 kbit/s, and both downstream and upstream data rate shall be adjustable in 32 kbit/s increments.	M
6.3.3	Operating in ADSL2+ mode, ADSL2+ system shall support downstream data rate from 32 kbit/s to 16 Mbit/s and upstream data rate from 32 kbit/s to 800 kbit/s, and both downstream and upstream data rate shall be adjustable in 32 kbit/s increments.	M
6.3.4	If the line parameters are changing, rate adaptivity shall be performed automatically.	M

6.4 Performance

6.4.1	The embedded ADSL NT shall meet the requirements specified in this section when connected to any type of DSLAM used by T-Com.	I
6.4.2	Operating in ADSL and ADSL2 mode, ADSL system shall be able to operate on loop ranges and under noise conditions as it is defined in ETSI TS 101 388 v1.3.1 (2002-05) Chapter 5, Transmission performance objectives and test methods.	M
6.4.3	Performance of line transmission system (BER) shall be 10^{-7} or better in normal operation.	M
6.4.4	The Bidder shall provide performance test reports of their embedded ADSL NT if any available.	M

6.5 Interoperability

6.5.1	The embedded ADSL NT shall be interoperable with all type of DSLAMs used by T-Com, as it is specified in DSL Forum Technical Report TR-067, ADSL Interoperability Test Plan (May 2004).	M

6.6 PSD masks

6.6.1	Operating in ADSL mode, embedded ADSL NT shall support the PSD masks defined in ETSI TS 101 388 v1.3.1, Chapter 4.2.2, FDD ADSL over ISDN.	M

6.6.2	Operating in ADSL2 mode, embedded ADSL NT shall support the PSD mask defined in ITU-T Recommendation G.992.3, Annex B.2.2, FDD ADSL over ISDN.	M
6.6.3	Operating in ADSL2+ mode, embedded ADSL NT shall support the PSD mask defined in ITU-T Recommendation G.992.5, Annex B.2.2, FDD ADSL over ISDN.	M

6.7 Micro Interruptions

6.7.1	According to ETSI TS 101 388 v1.3.1, the ADSL transceiver shall not be reset by a micro interruption event of duration t = 10ms, which shall occur at an event frequency of 0,2 Hz.	M

6.8 Longitudinal Conversion Loss (LCL)

6.8.1	Operating in ADSL and ADSL2 mode the LCL at the U-R interface shall be greater than 40 dB over the 120 kHz up to 1104 kHz frequency range, according to the DSL Forum Technical Report TR-067.	M
6.8.2	Operating in ADSL2+ mode the LCL at the U-R interface shall be greater than 40 dB over the 120 kHz up to 2208 kHz frequency range, according to the ITU-T Recommendation G.992.5, Annex B.4.	M

6.9 Splitter

6.9.1	The embedded ADSL NT shall not incorporate an internal splitter.	M
6.9.2	The embedded ADSL NT shall include a high pass filter at its ADSL line input. The high pass filter should be implemented according to ITU-T Recommendation G.992.1.	M

6.10 ATM

6.10.1	The embedded ADSL NT shall support UBR traffic class.	M
6.10.2	The embedded ADSL NT shall support 1/32 as the default VPI/VCI values.	M
6.10.3	The embedded ADSL NT shall support VPI values from 0 to 127.	M
6.10.4	The embedded ADSL NT shall support VCI values from 32 to 127.	M
6.10.5	The embedded ADSL NT shall support LLC-SNAP encapsulation method according to IETF RFC2684.	M

7 ENVIRONMENTAL REQUIREMENTS

7.1 Environmental Features

7.1.1	The classification of the groups and their strictness of environmental features shall be EN 60721-3, where their domesticated versions are the Standard serials MSZ EN 60721-3.	I

7.2 Storage

7.2.1	The storage is envisaged in weather protected location, however, neither temperature nor humidity control will be provided. The equipment shall comply with the Standard MSZ EN 300 019-1-1 Class 1.2. (Weather-protected, not temperature-controlled storage location). This specification is a combination of classes 1K4/1Z2/1Z3/1Z5/1B2/1C2/1S3/1M2 of the Standard MSZ EN 60721-3-1. Temperature range: -25....+55 °C Relative humidity: 10...100 %	R

7.3 Transportation

7.3.1	The transportation is considered to be normal public transportation, where no special precautions have been taken.	R
	The equipment shall comply with the Standard MSZ EN 300 019-1-2 Class 2.3. (Public transportation)	
	This specification is a combination of classes 2K4/2B2/2C2/2S2/2M2(2M3) of the Standard MSZ EN 60721-3-2.	
	Temperature range: -40...+70 °C	
	Relative humidity: 10...100 % (combined with rapid changes in the temperature)	

7.4 Operation

7.4.1 Operation of equipment

7.4.1.1	The equipment is supposed to be indoor equipment that is placed at the subscribers.	R
	There is no risk of biological attacks and the equipment is exposed to normal urban air pollution and insignificant vibration and shock.	
	The indoor equipment shall comply with the Standard MSZ EN 300 019-1-3 Class 3.2. (Partly temperature-controlled location) which is a combination of classes 3K5/3Z2/3Z4/3B2/3C2(3C1)/3S3/3M2 of the Standard MSZ EN 60721-3-3.	
	Specified temperature limits: -5....+45 °C	
	Relative humidity: 5....95 %	

7.4.2 Test conditions

| 7.4.2.1 | The environmental resistance tests shall be carried out in accordance with the relevant parts of Standard MSZ EN 300 019-2. | R |

8 ENVIRONMENTAL PROTECTION REQUIREMENTS

8.1	The offered equipment shall not contain components, materials and fittings that cause negative environmental impact during transportation, storage or operation.	M
8.2	The equipment shall be provided in accordance with the Directive 2002/95/EC of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment.	M
8.3	The Bidder shall give a list of names, types and mass or mass percent of materials of enclosure, components, etc.	M
8.4	The Bidder shall give a list for wrapping materials. Only recycling materials shall be used for wrapping.	R
8.5	In case if the Bidder (manufacturer) of the equipment has a certificate of MSZ EN ISO 14001 or other environmental management system, a copy of the certificate shall be attached to the Bid.	R

9 SAFETY REQUIREMENTS

9.1 General safety requirements

9.1.1	The equipment, its sub-systems and accessories shall comply with the general life- and material safety requirements. The Bidder shall guarantee that precautions will be taken in order to prevent any injuries or damages due to the following hazards (MSZ EN 60950 and MSZ EN 41003): - electric shock, - energy hazards, - fire, - mechanical or heat hazards, - radiation hazards, - laser hazards, - chemical hazards.	M
9.1.2	Only equipment shall be allowed for installation that comply with the relevant requirements in safety Standards (compliance evaluation procedure: IKIM 79/97.(XII.31.) Ministerial Decree or LVD 73/23/EEC). The safety test report of the equipment and of its local power supply (if exists) shall be attached to the Bid according to EN 60950.	M
9.1.3	Markings and/or identity labels shall be placed on the equipment and on their subsystems. The labels have to be placed on a visible place and have to contain durably the following information: - type, - manufacturer's name, - power supply voltage, - fabrication number and year of production, - classes of equipment - protection against electric shock (at class II. equipment the symbol, too), - CE marking.	R
9.1.4	Bidders should provide a list containing all other safety Standards and documentation used, if any.	Q
9.2 Electrical Safety Requirements		
9.2.1	With respect to electrical safety, the equipment and its power supply (if exists) SHALL comply with specifications in Standards MSZ EN 60950-1 and MSZ EN 41003.	M
9.2.2	The system of protection against electric shock, requirements for earthing and equipotential bonding shall be established according to specifications in Standard MSZ ETS 300 253 and MSZ 2364 series of standards.	R
9.2.3	The degree of protection of the equipment (refer to Standard MSZ EN 60529) shall be in accordance with the place of application. (The equipment are supposed to be indoor equipment which are placed at telecommunication buildings.)	R
9.2.4	Bidders shall indicate the protection method against electric shock applied for the components of equipment and the system as a whole, and safety requirements to be followed during the installation.	R
9.2.5	Plugs and socket-outlets shall comply with the specifications in Standards MSZ EN 60320-1 and MSZ 9871-2.	R
9.2.6	Appropriate safety signs according to Standard MSZ 453 shall be used on equipment parts and housings where dangerous voltages may appear.	R

10 STRUCTURAL AND FIRE PROOFING REQUIREMENTS

10.1	Bid shall be made for such individually covered table/wall mounted model or models, by which the required services, tailored to the needs of the place of use, can be implemented.	R
10.2	The Bidder shall give the largest outer and installation dimensions of the offered units (and basic accessories, such as for e.g. network adapter, etc.), the features of the equipment and their weight referring to the complete assembly.	Q
10.3	The Bidder shall give in details all the information to know regarding the installation and operation, the specific knowledge of the place of use, including eventual limitations. The installation /operation documentation shipped with the offered equipment shall contain all the necessary important information required for the appropriate and safety operation.	Q
10.4	The outer cover of the units or equipment, offered in the bid, shall be resisting to mechanical damaging impacts that may occur during implementation/installation and operation.	R
10.5	The structural design (construction) of the offered equipment and the materials chosen shall not cause injury to persons, or damage, or deterioration to objects, if properly used. The technical characteristics of the basic components used shall comply with the requirements undertaken in or deriving from the technical specifications of the product.	R
10.6	The equipment offered in the bid shall have natural cooling.	R
10.7	The surface temperature of the parts that can be touched of the offered operating equipment shall not exceed the value stipulated in Table 16 of Section 5.1 of Standard MSZ EN 60950:1995.	R
10.8	The outer cover of the offered equipment shall meet the relevant requirements of Flammability Class V-1 according to Standard MSZ EN 60950.	R

11 RELIABILITY

11.1	The Bidder shall give the reliability (MTBF) data guaranteed by him for the equipment.	M

12 TECHNICAL CONFORMANCE TESTS

12.1	All offered equipment of the Supplier shall comply with the technical specifications stipulated in the tender. This compliance will be checked in the frame of the Technical Conformance Tests.	I
12.2	The evaluation of the submitted bids – carried out on the basis of the bid and the available documents – will be also the pre-qualification procedure within the Technical Conformance Tests. Contract will be concluded only with Bidder(s) who has/have been qualified as "acceptable" in the pre-qualification.	I
12.3	In the frame of the Technical Conformance Tests the laboratory tests will be carried out only for the equipment of the selected Bidder and after the conclusion of the contract with him.	I
12.4	The Technical Conformance Tests will be carried out by PKI Telecommunications Development Institute. The equipment exposed to the applied testing stresses and loads shall comply with all requirements marked with {M} and all those requirements that have been agreed in the contract.	I
12.5	A negative (unsatisfactory) conclusion of the Technical Conformance Tests may lead to or result in the termination of the Contract.	I

13 CONFORMANCE TESTS OF THE MODIFIED (HARDWARE AND/OR SOFTWARE) VERSIONS OF THE CONTRACTED EQUIPMENT

13.1	During the lifetime of the contract the Supplier shall inform the Magyar Telekom in advance if any modifications would be carried out on the equipment to be supplied under the contract.	I
13.2	The modified equipment is considered as „new version of equipment" that shall be tested for technical conformance.	I
13.3	The Technical Conformance Tests of the new version of equipment will be carried out by PKI Telecommunications Development Institute.	I
13.4	The new version of equipment may be supplied, put into operation and can be used for service after having approval from the PKI Telecommunications Development Institute.	I

14 POWER SUPPLY REQUIREMENTS

14.1 General requirements

14.1.1.1	The power supply of the equipment can be with the following voltages: 230 V AC	I

14.2 Power supply requirements of equipment supplied with AC

14.2.1 Voltage applied

14.2.1.1	The equipment must operate from 230V nominal voltage, 50 Hz nominal frequency, one phase AC mains.	M

14.2.2 Normal service voltage and frequency range

14.2.2.1	The equipment must operate according to the normal specification if the power supply voltage (measured between the zero and the phase in RMS) is in the following range: 207 ... 253 V The frequency in the normal operation voltage range must be between 48	M

14.2.3 Abnormal service voltage under steady voltage conditions

14.2.3.1	The equipment should not suffer any physical or electrical damage if the voltage of the power supply (in RMS value) is within the following range: 0 ... 207 V In this case the frequency must be between 45 and 55 Hz.	M

14.2.4 Returning to the normal service voltage range

14.2.4.1	Following the abnormal voltage power supply according to the above point or mains failure the equipment must again operate according to its specification without requiring for this any action (restart).	M

14.2.5 Short time voltage interruption

14.2.5.1	The equipment must operate according to its specification even in that case if the continuity of AC power supply breaks for not longer time than 20 ms.	R

14.2.6 Input over current protection

14.2.6.1	The equipment must have built-in over current protection feature (fuse, circuit breaker).	R

14.2.7 Inrush current

14.2.7.1	The inrush current of the equipment must not exceed the value stipulated in the Standard MSZ ETS 300 132-1 (ETS 300 132-1)	R

14.2.8 Power consumption

14.2.8.1	The Bidder must provide the power consumption of the equipment according to the standard EN 62018.	Q

15 EMC REQUIREMENT

15.1 General EMC requirements

15.1.1 From Electro Magnetic Compatibility (EMC) point of view the equipment shall comply with the M European Union's Directive 89/336/EEC, or with the equivalent Hungarian regulation, i.e. the 31/1999 (VI.11.) GM-KHVM and the modifying 61/2004 (IV.24.) GKM-KHVM joint decree, as well as with the European Union's Directive 5/1999/EC applicable to R&TTE equipment.

15.2 EMC Test Report

15.2.1 The Bidder shall attach the EMC Test Report to prove that all the equipment meet the above M requirements.

16.1 Preliminary settings

16.1.1 The Bidder must take it into account that the compulsory prerequisite of taking any of the M tests is that devices be delivered by the Bidder in a preconfigured state, according to the following settings:

WLAN settings
SSID: SVo_54
Wep keys:
1 st. position: 128 bit, hexa: 12345678901234567890123456
3 rd. position: 40 bit, hexa: 0987654321
3 rd. position active
Operation mode: simultaneously 802.11b and 802.11g support

WAN operation mode
PPPoE dial in
username:---(leave this field blank)
password: --- (leave this field blank)

LAN side operational settings
DHCP pool for a range of 10 users

ADSL settings:
Operation mode: G.992.1 (G.DMT) Annex B, G.992.3 (ADSL2) Annex B and G.992.5 (ADSL2+) Annex B „enabled", all others are „disabled"
ATM parameters: VPI=1, VCI=32, traffic class=UBR without limitation, encapsulation=LLC
Bitswapping: enabled
Trellis coding: enabled