

ADSL CO POTS Splitter

ATF111R

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1 Introduction

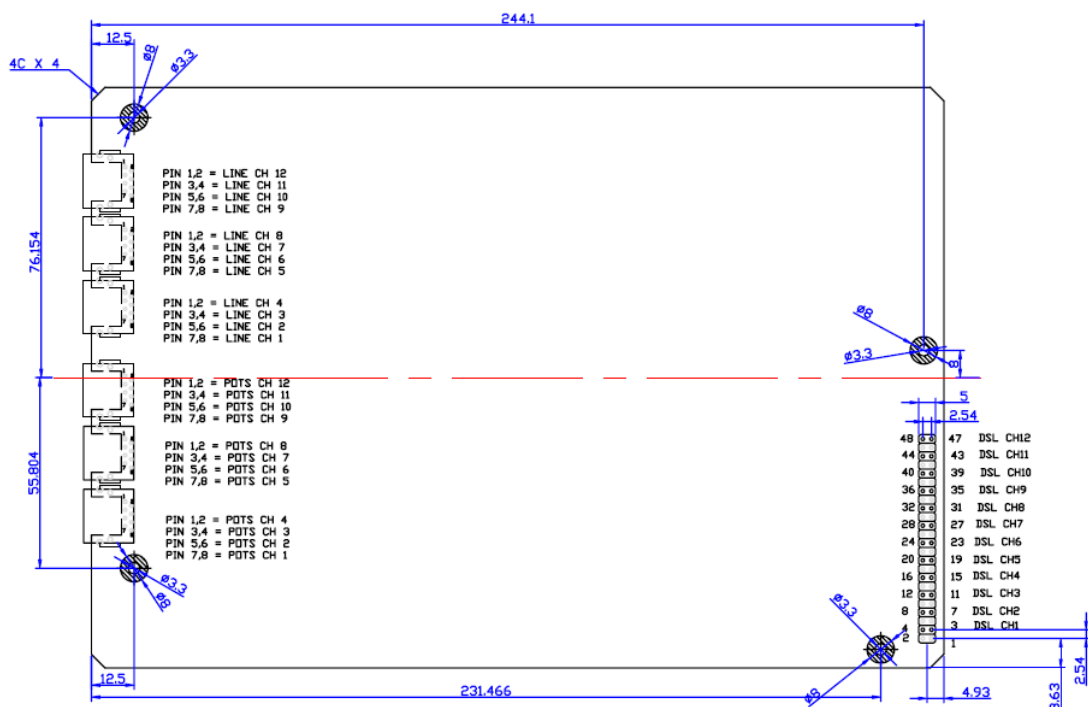
This section describes specifications and testing methods for an ADSL CO POTS splitter, this splitter consists 12 channels of low pass filter.

Because the CO POTS splitter connects directly to the subscriber loop media, it must also provide some protection for externally induced line hits or faults which could damage any attached equipment or endanger humans interaction with the installed equipment.

2 Definitions in alphabetical order of nouns

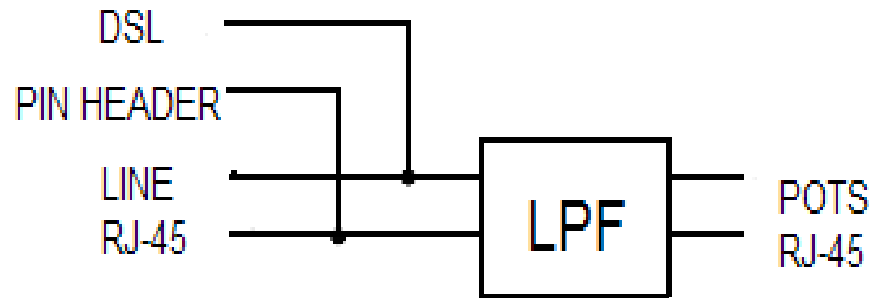
- ATU-R: ADSL transceiver unit at remote terminal end (i.e. CP)
- CO-POTS: Central office plain old telephone service.
- R-POTS: A remote plain old telephone service.
- xDSL: Digital subscriber line (including ADSL, HDSL, SDSL, VDSL)

3 Dimension



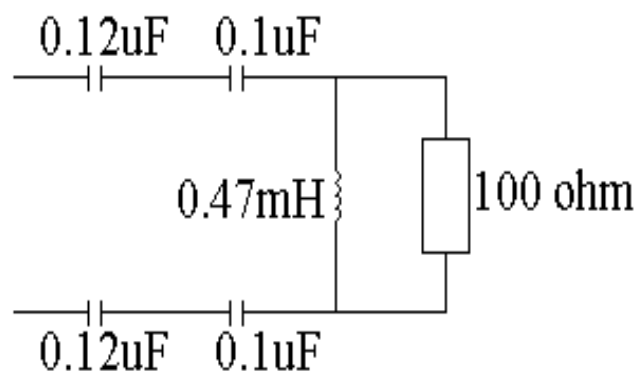
4 Technical requirement

4.1 Schematic



4.2 ZHP defined

To facilitate resting of the POTS splitter independently of the actual modem or specific vendor, one ZHP-r is defined in below figure to allow proper termination of the xDSL port during voice band testing. The ZHP-r is valid only for voice band frequencies.



5 Electrical characteristics

5.1 DC characteristics

This section contains the DC specifications, such as the loop DC current, the ringing, the TIP-to-RING DC voltage, the loop DC resistance, the isolation resistance. All requirements must be met in the presence of all POTS loop currents ranging from 0 to 120mA.

5.1.1 Loop DC current

The POTS splitter should ensure normal operation for loop DC currents ranging from 0 to 120mA.

5.1.2 Ringing

The POTS splitter should accept the following ringing signals.

Ringing frequency: 20-30Hz

Ringing AC: maximum 103Vrms

5.1.3 TIP-to-RING DC voltage

The POTS splitter should accept POTS tip-to-ring DC voltages of 0 to minus 60V.

5.1.4 DC resistance

The tip-to-ring DC resistance, or at the POTS interface with the ATU-R interface shorted, shall be less than or equal to 25 OHM.

5.1.5 Isolation resistance

The DC resistance from tip-to-ground and ring-to-ground at the POTS interface with the ATU-R interface opened, shall be greater than or equal to 10M OHM.

5.2 AC characteristics

The section contains the AC specifications of the voice band, such as the insertion loss, the attenuation variation, the delay distortion, the return loss, the longitudinal balance and the termination, and methods for measuring them. In addition it contains specifications and measurement methods for the out band and the ADSL band.

5.2.1 Insertion loss

For the test loops and using the test set-up shown in Figure I, the insertion loss from the source to the termination shall be measured with and without the splitter/ZHP-r combination inserted.

The increase in insertion loss at 1KHz on the test loops, due to the addition of the splitter/ZHP-r, shall be less than specified in Table I.

Description	Loss (1KHZ)
TELE port to LINE port	<1dB

Table I

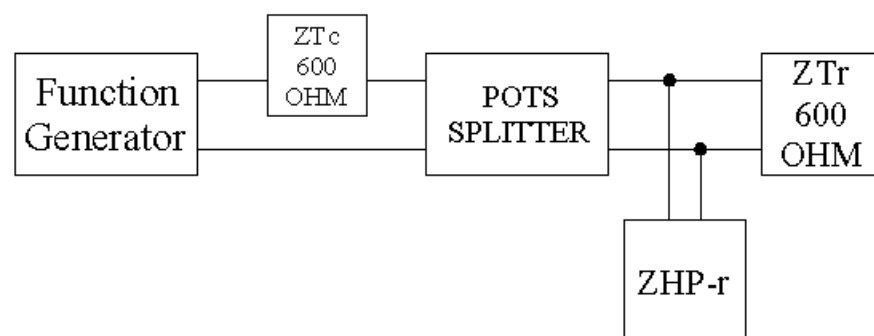


Figure I

5.2.2 Attenuation distortion in voice-band

The variation of insertion loss with frequency shall be measured using the test set up in Figure I. The defined ZHP-r will be attached to the xDSL port of the splitter. If the splitter is an internal part of the ATU, then the modem remains attached as the xDSL load. The increase in attenuation distortion, relative to the 1KHz insertion loss, caused by the POTS splitter with the ZHP-r (or modem) load, shall be less than that specified in Table II.

Description	Loss (Note) 200Hz-4.0KHz
TELE PORT TO LINE PORT	+/-1dB

Table II

5.2.3 Delay distortion

The delay distortion of the POTS splitter shall be measured using Figure I. The increase in delay distortion caused by the POTS splitter in the test loops shall be less than that specified in Table III.

Description	Delay Distortion 200 – 4000Hz
TELE PORT TO LINE PORT	200uS

Table III

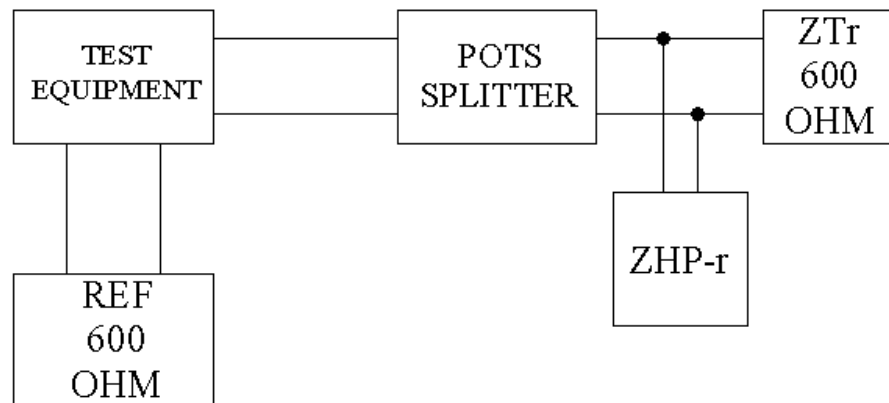
5.2.4 Return loss

The Figure II defines the test configuration and the values of the test components that shall be used for impedance measurements in the voice band for the POTS splitter units. The return loss of each splitter under the specified conditions shall be as follows TableIV:

Frequency	Return Loss
300~3.4KHz	>14dB
500~2KHz	>18dB

Table IV

TELE PORT



LINE PORT

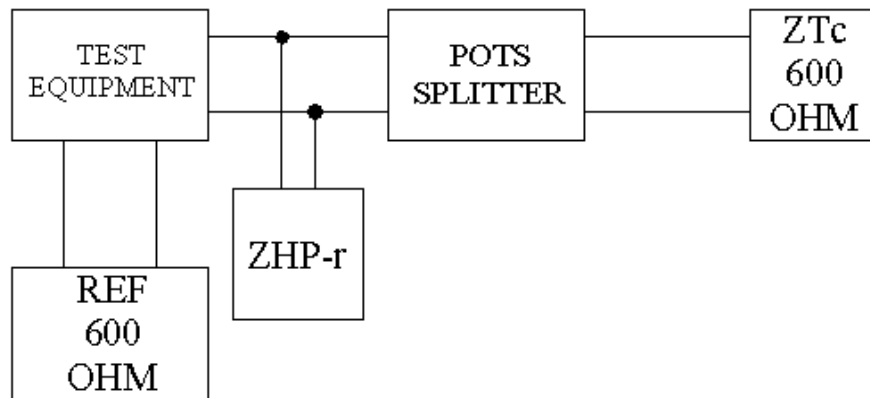


Figure II

5.2.5 Longitudinal balance

This method shall be used to test a POTS splitter when it is treated as a separate entity. The longitudinal balance of the POTS splitter (without loops), measured in either direction between the POTS and line port, as a two port device. The xDSL port shall be open. Because of the maintenance signatures, the applied longitudinal voltage shall be maximum 3Vp-p. The balance shall be greater than 40dB for frequencies between 15Hz to 50Hz, greater than 46dB between 50Hz to 600Hz and greater then 52dB from 600Hz to 3.4KHz.

Figure III show the test setup for the external remote POTS splitter.

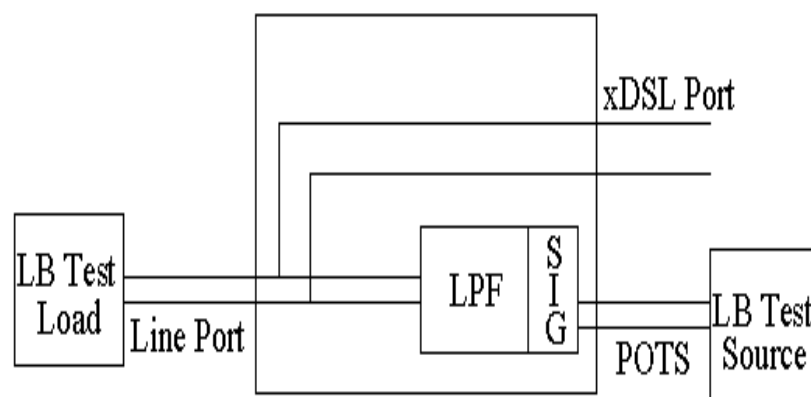


Figure III

5.2.6 ADSL band attenuation

The insertion loss of the low-pass filter and ZHP-r measured as shown in Figure IV shall be greater than 35 dB from 32K to 500kHz , greater than 55dB from 500KHz to 2.2MHz.

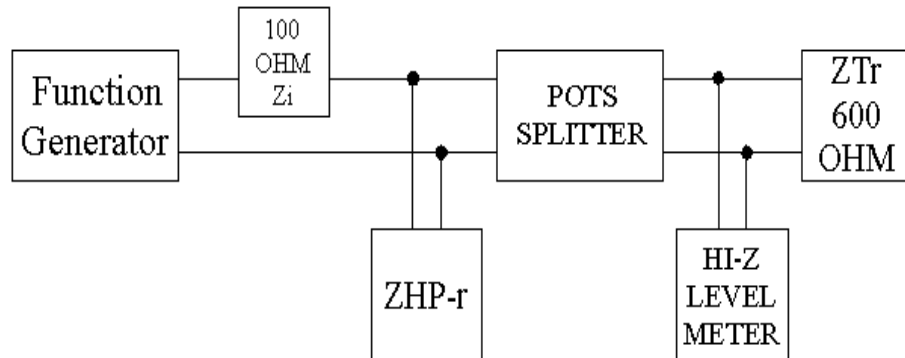


Figure IV

6 Environmental conditions:

Operating Temperature: 0 ~ 70°C

Storage Temperature: -25 ~ 75°C

Relative Humidity: up to 85% for 0 ~ 35°C

7 Reference:

ITU K.21	Resistibility of subscribers terminal to over-voltage and over-currents
ITU K.20	Resistibility of telecommunication switching equipment to over-voltages and over-currents.
ANSI T1.413	Network and customer installation interface
ETS 300 001	Attachment to public switched telephone network