P/N: AD-8039J

Feature

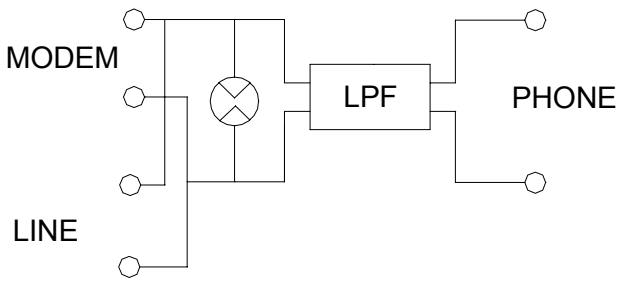
- Compact package, includes connectors for ease of installation
- Design for G.dmt Application
- 100 mA DC Loop Current Capacity
- Operating Temperature: -10℃ to+ 60℃.
- Storage Temperature: -25℃to +75℃.

Specifications (Operating Temperature 5~40℃, Relative Humidity 20~90%)				
POTS Port Impedance	600Ω		DC Resistance each line	12.5Ω Max
Insertion Loss @1KHz	-0.3dB Max		Attenuation @30~300KHz	-65dB Min
Billing tone(12KHz±80Hz)	3dB~5dB		@300~1104KHz	-65dB Min
Attenuation Distortion (dB, ref 1KHz)			Longitudinal Balance 0.2 ~1KHz	-58 dB Min
200Hz~3400Hz	+/- 0.6 dB		1KHz~3KHz	-53 dB Min
3400Hz~4000Hz	+/- 1.0 dB		Isolation resistance tip/ring	5M ohm Min
Return Loss 200Hz~500Hz	-14 dB Min		POTS trip and ring DC Voltage	0-105V
500Hz~2000Hz	-18 dB Min			
2000Hz~3400Hz	-14 dB Min			
Delay Distortion @0.6-3.2KHz	100uS Max			

Dimension

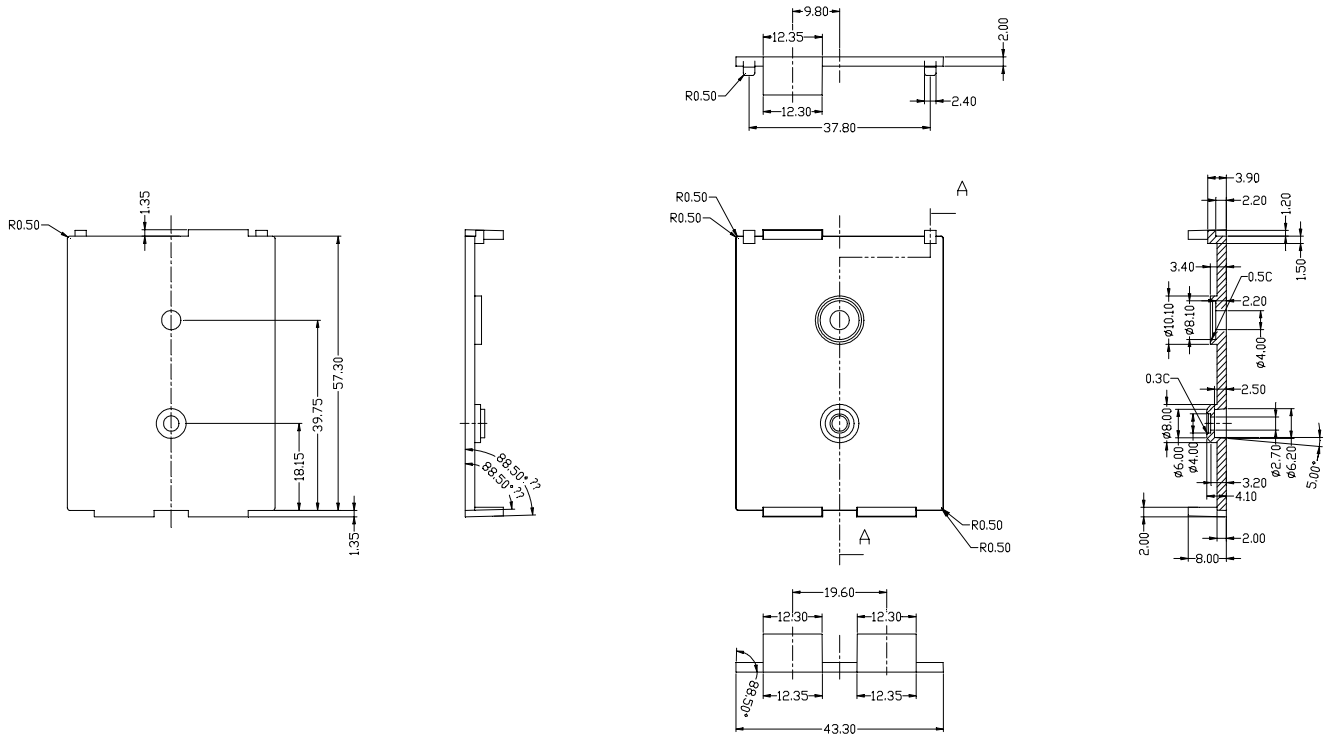
Connector	Function	Style	Tip	Ring
J1	Modem	RJ11	Pin3	Pin4
J2	Line	RJ11	Pin3	Pin4
J3	Phone	RJ11	Pin3	Pin4

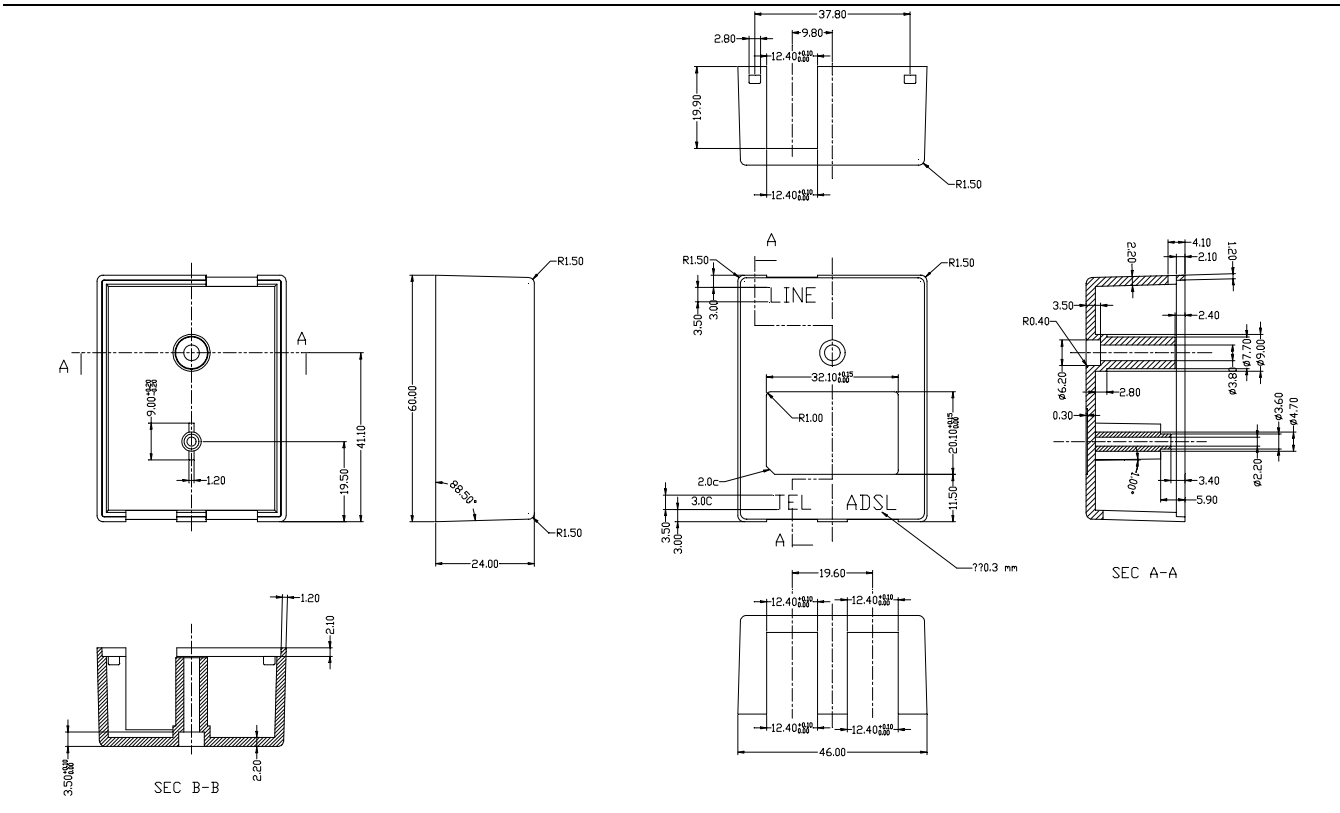
Schematic



P/N: AD-8039J

Mechanical





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E.4 Type 4 – Type for Japan

E.4.1 Introduction

§E.4 describes specifications and testing methods for a POTS splitter appropriate to Japan. Both a central office (CO) POTS splitter and a remote (R) POTS splitter shall conform to them.

E.4.1.1 Frequencies and Level of Voice-band Signal

The frequencies and level of the voice-band signal provided by the local switch (LS) are as follows.

- Signal frequency: 0.2- 4.0 kHz
- Signal level: maximum of+3 dBm

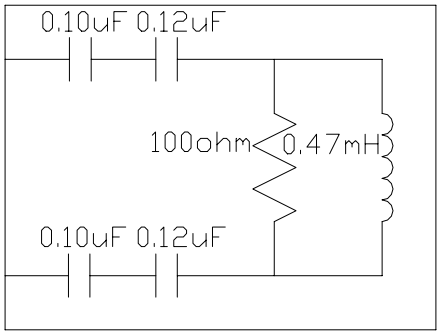
A signal of+36 dBm at 400 Hz may be used as a howler signal.

E.4.1.2 External CO POTS Splitter Function

The external CO POTS splitter may be located some distance form the ATU-C modem. To protect against DC faults, DC blocking capacitors should be included in the xDSL port of the POTS splitter. These capacitors configure parts of the input to the xDSL HPF function, so they must be included when the input impedance is calculated. If the POTS splitter function is included entirely within the modem, the capacitors should be included as part of the HPF function.

E.4.1.3 ZHP Definition

To facilitate testing of the POTS splitter independently of the actual modem or specific vendor, two ZHP's are defined to allow proper termination of the xDSL port during voice band testing. The ZHP's are valid only for voice band frequencies. They shall be as shown in Figure E-19.



ZHP Remote end(ZHP-r)

E.4.2 DC Characteristics

This paragraph contains the DC specifications, such as the loop DC current, the ringing, the L1-to-L2 DC voltage, the loop DC resistance, the isolation resistance, the L1-to-L2 capacitance, and the capacitance to ground, and the methods for measuring them.

All requirements included in 1. must be met in the presence of all POTS loop currents ranging from 0 to 130 mA.

E.4.2.1 Loop DC Current

The POTS splitter should ensure normal operation for loop DC currents ranging form 0 to 130 mA

E.4.2.2 Ringing

The POTS splitter should accept the following ringing signals.

- Ringing frequency: 15 – 30 Hz
- Ringing AC: maximum 100 Vrms
- Ringing DC (AC superimposed on DC): maximum minus 60 V

E.4.2.3 L1-to-L2 DC Voltage

The POTS splitter should accept POTS L1-to-L2 DC voltages of 0 to minus 60 V. In addition, it should be able to withstand a POTS L1-to-L2 DC voltage of up to 120 V for at least 10 s.
In addition, the Recommendation K.20 and K.21 may be considered to ensure the POTS splitter availability when the Surge voltage is applied to the POTS splitter.

E.4.2.4 DC Resistance

The L1-to-L2 DC resistance, at the PSTN interface with the U-C interface shorted, or at the POTS interface with the U-R interface shorted, shall be less than or equal to 40 Ω.

E.4.2.5 Isolation Resistance

The isolation resistance of the POTS splitter should remain intact under the following conditions.

E.4.2.5.1 L1-to- L2 Isolation Resistance

The L1-to-L2 isolation resistance at the PSTN interface with the U-C interface opened, or at the POTS interface with the U-R interface opened, shall be greater than or equal to 10 MΩ.

E.4.2.5.2 Isolation Resistance to Ground

The isolation resistance ground at the PSTN interface with the U-C interface opened, or at the POTS interface with the U-R interface opened, shall be greater than or equal to 10 MΩ.

E.4.2.6 Capacitance

The capacitance of the POTS splitter should satisfy the following requirements.

E.4.2.6.1 L1-to-L2 Capacitance

The L1-to-L2 capacitance at the PSTN interface or the POTS interface shall be as follows:

POTS splitter, either CO or Remote without the modem connected.	250nF Max (DC – 30Hz)
Modem input allowance, including the DC blocking capacitors at the CO end.	35nF Max (DC – 30Hz)
Modem with integral POTS splitter function or – external POTS splitter with both HPF and LPF functions, are the sum of the above	285nF Max (DC – 30Hz)

E.4.2.6.2 Capacitance to ground

The capacitance to ground at the PSTN interface with the U-C interface opened, or at the POTS interface with the U-R interface opened, shall be less than 1.0 nf

E.4.3 AC Characteristics

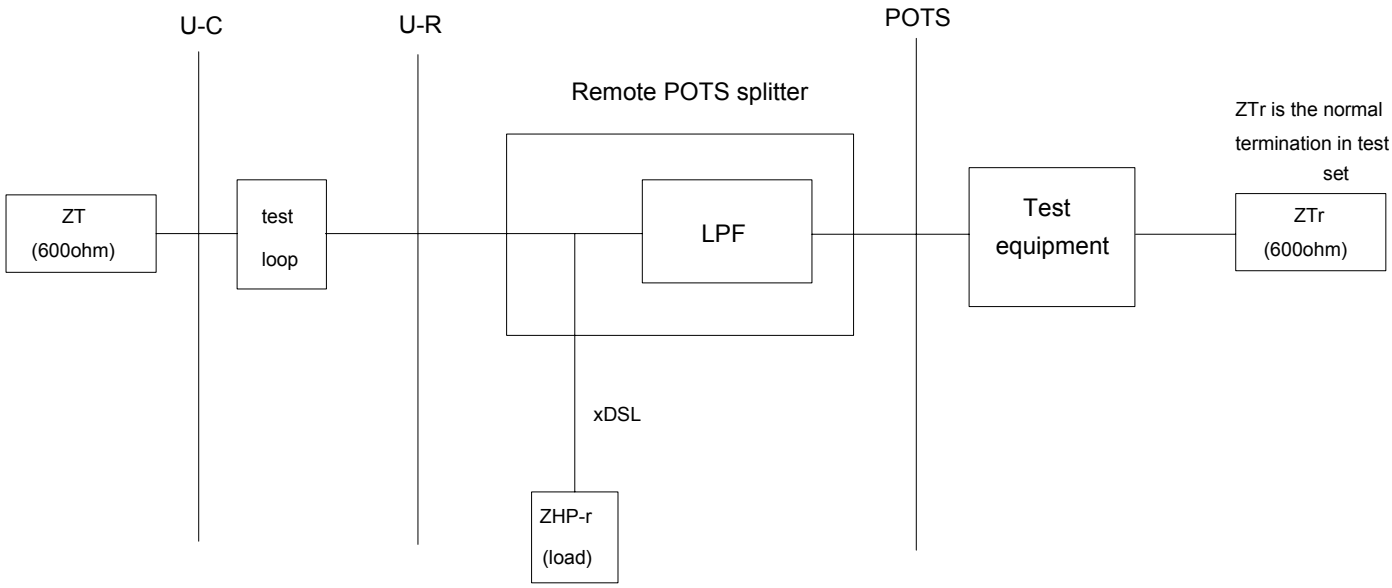
This paragraph contains the AC specifications of the voice band, such as the insertion loss, the attenuation variation, the delay distortion, the return loss, the longitudinal balance, the distortion caused by harmonics, and the termination, and the methods for measuring them. In addition it contains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

E.4.3.1 Voice Band

This section describes the AC characteristics in the voice band.

E.4.3.1.1 Insertion Loss(at 1KHz)

The insertion loss of the POTS splitter should be less than or equal to ± 1.0 dB. Using the test set-up shown in Figure E-20 and Figure E-21 , the insertion loss form the source to termination shall be measured with and without the POTS splitter/ZHP combination inserted.

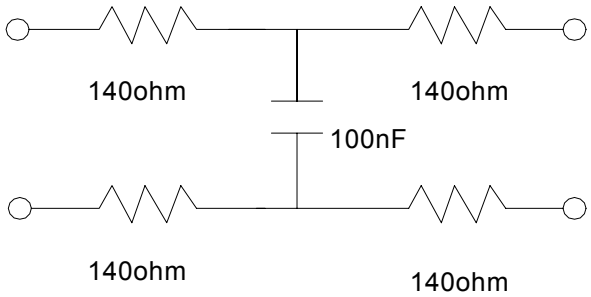


Where:

ZHP-c = the impedance of R ADSL modem specified in Figure E-19

NOTE – The test loop is specified in Figure E-22

Figure E-20 – Transmission measurements in the voice band for the R POTS splitter.



Note: This test loop model is valid only for voice band frequencies.

Figure E-22 Test loop definition

E.4.3.1.2 Attenuation Distortion in Voice-Band Variation

The variation of insertion loss value form that measured with 1kHz shall be measured using the test set-up in Figure E-20 and Figure E-21. The attenuation of the POTS splitter between 0.2 and 3.4 kHz should be less than ±1.0 dB and between 3.4 and 4.0 kHz should be less than ±1.5dB

E.4.3.1.3 Delay Distortion

The increase in the delay distortion cause by the POTS splitter shall be as follows.

0.6 – 3.2 kHz: maximum of 200 μs

0.2 – 4.0 kHz: maximum of 250 μs

The delay distortion of the POTS splitter shall be measured using Figure E-20 and Figure E-21

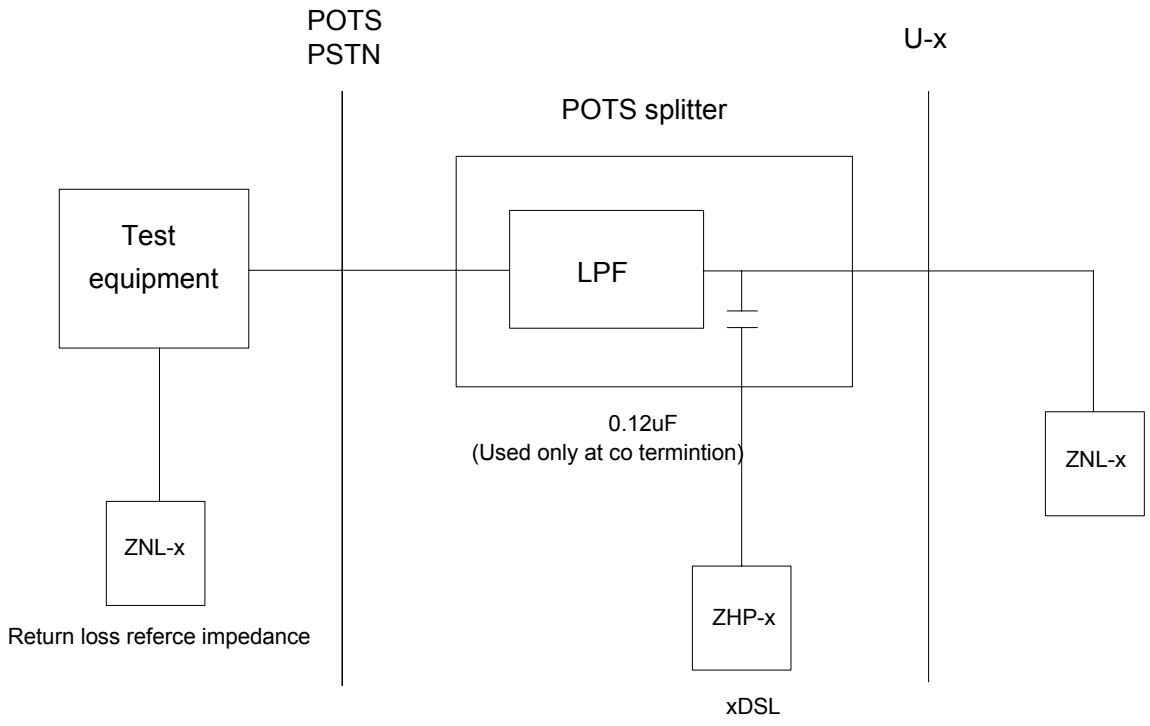
E.4.3.1.4 Return Loss

Figure E-23 defines the configuration and the values of the test components that shall be used for impedance measurements in the voice band for both the CO and R POTS splitter units. The return loss of each splitter under the specified conditions shall be as follows

11dB(0.2 – 1.5 kHz)

10dB(1.5 – 2.0 kHz)

9dB(2.0 – 3.4 kHz)



Where

- ZNL-c = 150 Ω + (830Ω ⁄⁄72 nF)
- ZNL-r = 150 Ω + (72nF ⁄⁄(830Ω + 1uF)
- ZHP-c = the impedance presented to the POTS connection by an ATU-C through the capacitance of the POTS splitter DC blocking capacitors.
- ZHP-r = the impedance presented to the POTS connection by an ATU-R

NOTE: The DC blocking capacitors are only for voice band frequencies.

Figure E-23 – Impedance measurements in the voice band for the CO and R POTS splitters.

E.4.3.1.5 Distortion Caused by Harmonics

The distortion contributed by the low-pass filter shall be measured using the test configurations in Figure E-20 and
FigureE-21.
With an applied tone set as per IEEE 743, then, at a level of –9 dBm, the second and third order intermediation distortion products shall be at least 57 dB and 60 dB, respectively, below the received signal level.

E.4.3.1.6 Longitudinal Balance

The longitudinal balance of the POTS splitter shall be greater than 58 dB for frequencies ranging form 0.2 to 3.4 kHz and a DC bias current of 50 mA will be applies.

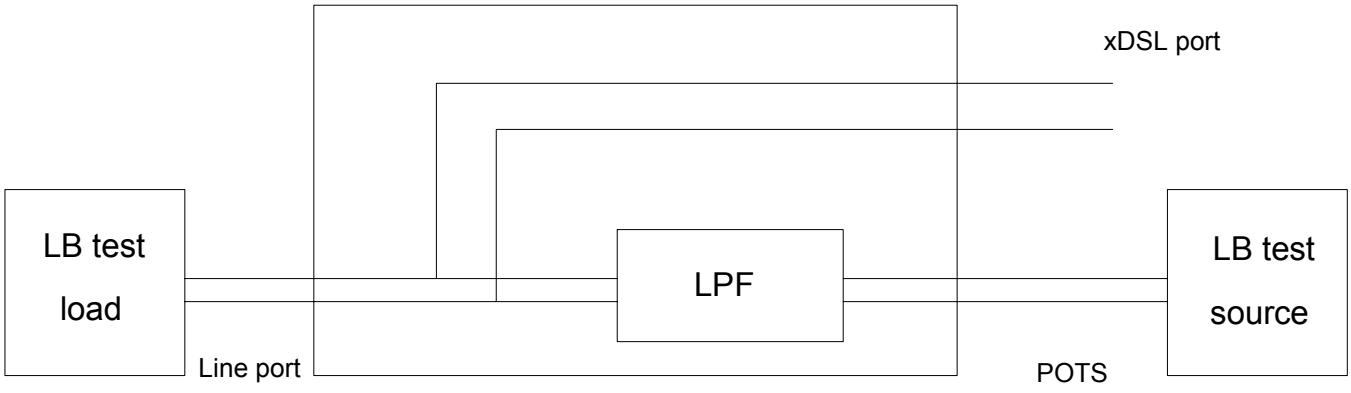


Figure E-25- Longtiudinal balance remote test setup per IEEE 455

E.4.3.2 Out Band

The band between the voice band and ADSL band is defined as the out band in §E.4. In Japan, the out band is used with pulse metering (16 kHz) OVS signals (7.8 kHz), and OFFTALK-services (0 – 7.0 kHz). These specifications an measurement methods of the Out Band require further study.

E.4.3.3 ADSL Band

This paragraph describes the AC characteristics in the ADSL band.

E.4.3.3.1 ADSL Band Attenuation

The attenuation in the stop band of the low-pass filter (i.e., the difference in attenuation measured with and with and without the low-pass filter), shown in Figure E-27, shall be greater than 65 dB for frequencies ranging from 25 kHz to 300 kHz and 55 dB for frequencies ranging from 300 kHz to 1104 kHz with an input level of 10 dBm.

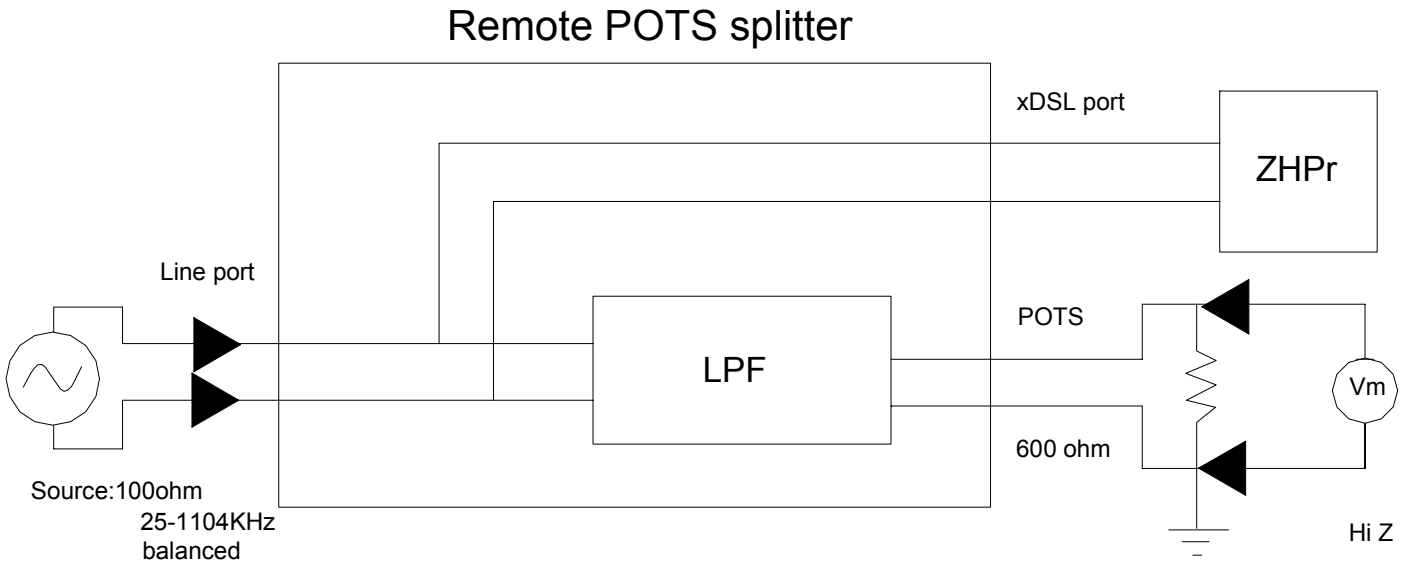


Figure E-27 – Measurement of the R POTS splitter attenuation in the ADSL band.

E.4.3.3.2 Input Impedance

The insertion loss caused by the low-pass filter in the band from 25 kHz to 1104 kHz between nominal impedances with an input level of – 10 dBm, as shown in Figure E-28 and Figure E-29 shall be less than 0.35 dB.

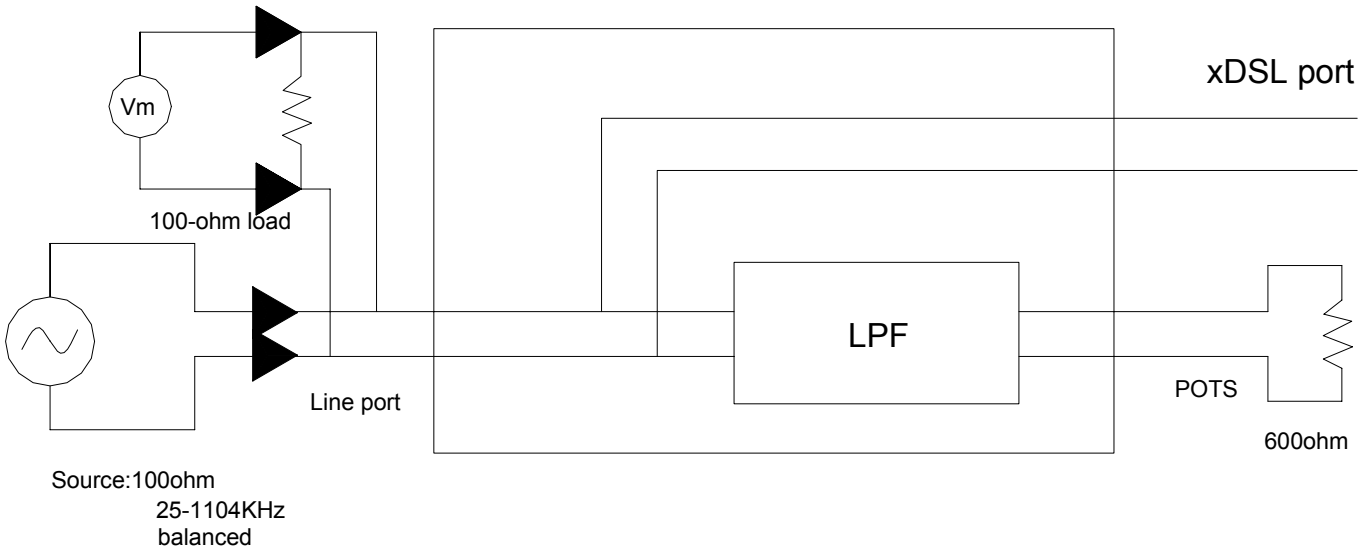
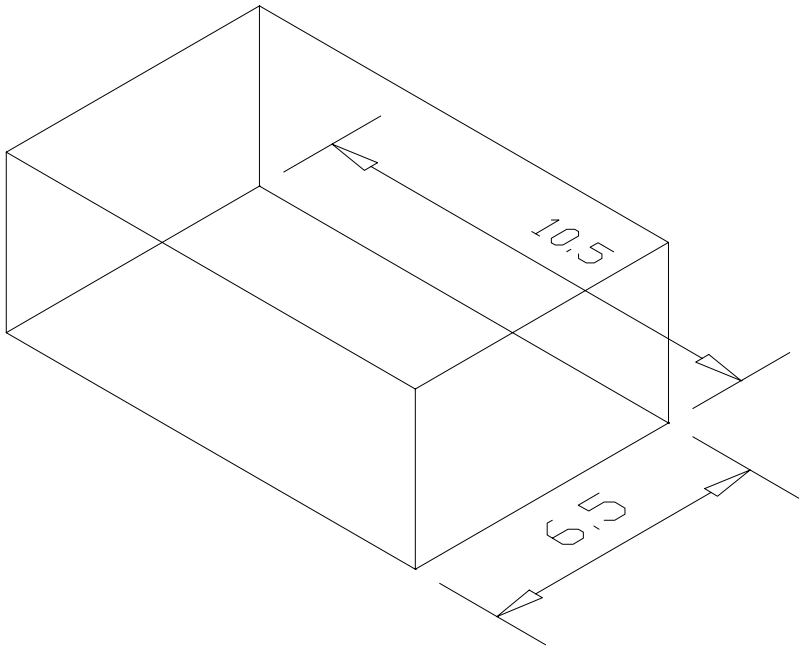


Figure E-29 – Measurement of loading effect of the R POTS splitter in the ADSL band.

Packing



Length 10.5cm X Width 6.5cm X High 4cm
Thinkness:0.3cm