

# 50 Ω SMA Wideband Pick-Off Tee PT-45A

Advanced TLP/HMM/HBM Solutions

- Wideband pick-off tee for TLP/VF-TLP measurements
- General purpose voltage probe 45:1
- Nominal pick-off transfer coefficient -33 dB
- DC to 10 GHz bandwidth ( $\pm 2$  dB)
- Insertion loss typ. 0.2 dB at 5 GHz
- max. 2.5 kV peak pulse voltage (1.6  $\mu$ s pulse width)
- max. 10 V DC (port 1, port 2 to port 3)

## 1 Description

The wideband pick-off tee can be used to measure the voltage amplitude of incident and reflected waves in a 50 Ω transmission line. Pulse input and output are electrically equivalent and can be also changed in the setup.

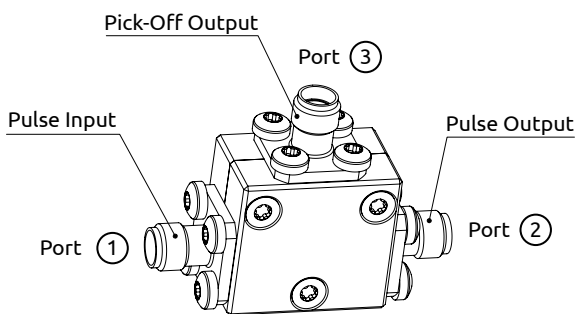


Figure 1: PT-45A connectors

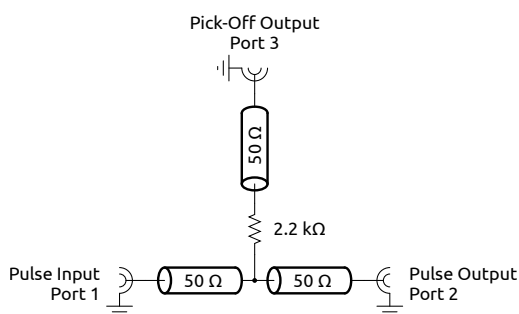


Figure 2: PT-45A schematic diagram

**Input (Port 1):** 50 Ω pulse force input.

**Output (Port 2):** 50 Ω pulse force output.

**Pick-Off Output (Port 3):** This output must be terminated with 50 Ω. Normally it is directly connected to the oscilloscope input. The pick-off voltage transfer coefficient is calculated  $k = (R+50)/50$  where  $R = 2.2$  kΩ, which results in a voltage transfer coefficient of  $k = 45$ . The voltage transfer coefficient  $k$  can be calculated also from Fig. 4 using  $k = 1/(10^{(S31/20)})$ , with S31 in [dB].

**CAUTION:** IF THE MAXIMUM INPUT VOLTAGE OF THE OSCILLOSCOPE IS 5 V THEN THE MAXIMUM ALLOWED TLP VOLTAGE IN THE 50 Ω TRANSMISSION LINE IS  $5 \times 45 = 225$  V. A HIGHER SIGNAL LEVEL MAY DAMAGE THE OSCILLOSCOPE INPUT. IT IS RECOMMENDED TO CONNECT AN ADDITIONAL ATTENUATOR IN SERIES, ACCORDING TO YOUR REQUIREMENTS.

## 2 Electrical Characteristics

### 2.1 Frequency Response (50 Ω S-Parameter)

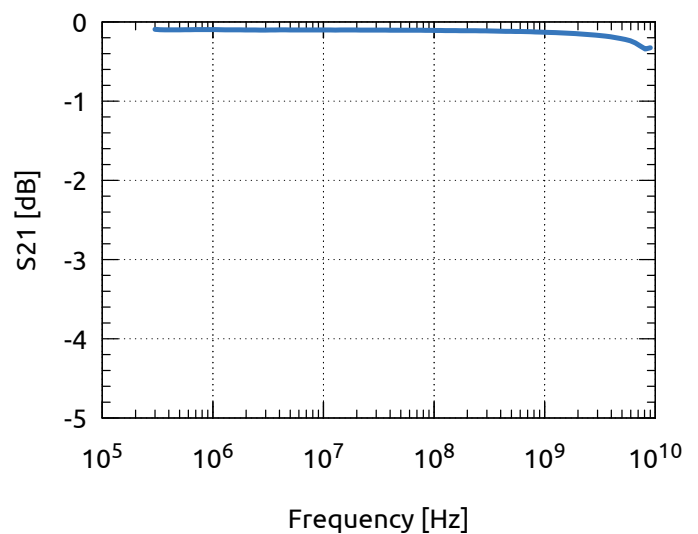


Figure 3: Typical insertion loss of the PT-45A from port 1 to port 2 (Fig. 1)

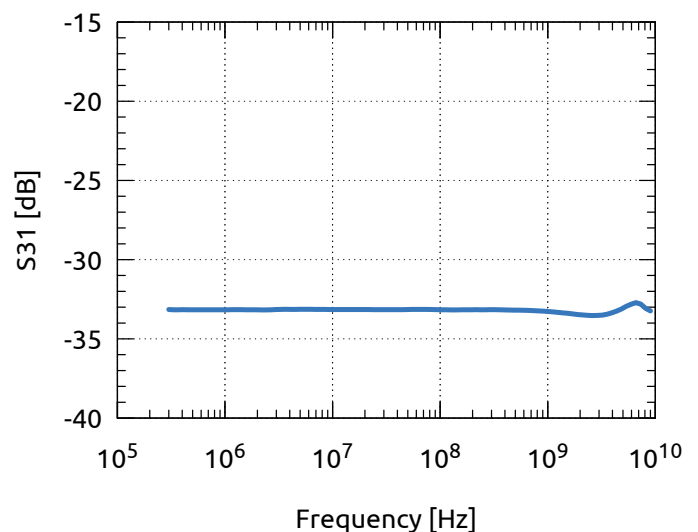


Figure 4: Typical transfer characteristic of the PT-45A from port 1 or port 2 to port 3 (Fig. 1)

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## 3 Ordering Information

Pos.	Description	Part No.
01	50 $\Omega$ SMA Wideband Pick-Off Tee ( $k = 45$ )	PT-45A

### General

The product data contained in this data-sheet is exclusively intended for technically trained staff. You and your technical departments will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to such application. Our products are solely intended to be commercially used internally and should not be sold to consumers. This data-sheet is describing the specifications of our products for which a warranty is being granted by HPPI GmbH. Any such warranty is granted exclusively pursuant the terms and conditions of the respective supply agreement. There will be no guarantee of any kind for the product and its specifications. For further information on technology, specific applications of our product, delivery terms, conditions and prices please contact HPPI:

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