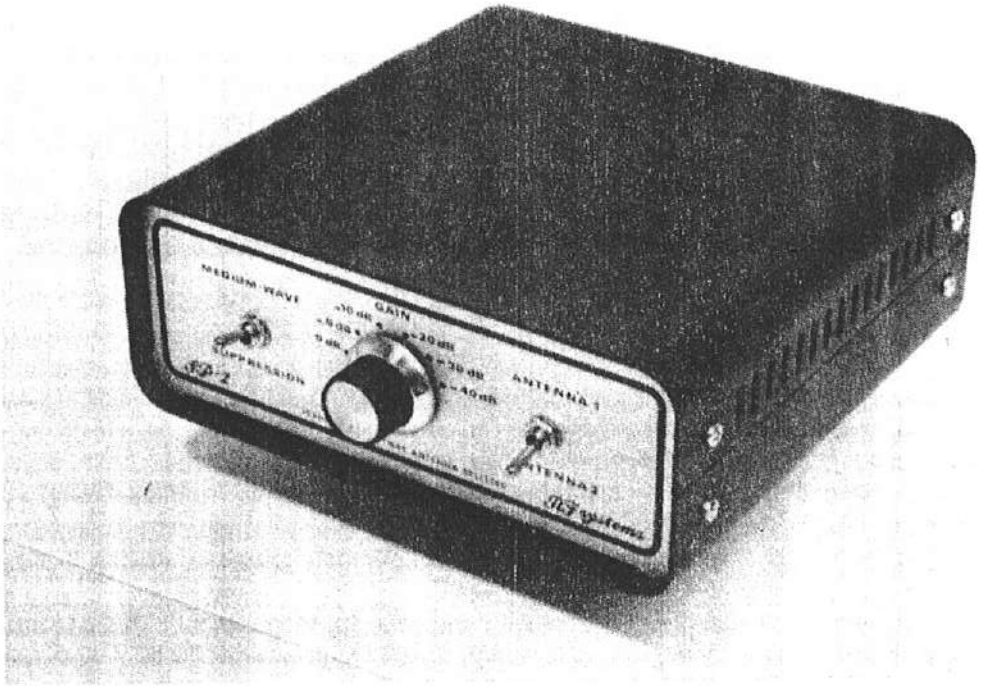
SP-2 2-WAY ANTENNA SPLITTER by RF-Systems Inc.



INTRODUCTION

The SP-2 unit offers the following features:

* Two receivers can be connected to one antenna without mutual interaction.
* Switchable mediumwave supression filter
* Frequency range: 50 kHz - 50 MHz
* Two switchable antenna inputs
* Isolation between receivers is greater than 40 dB, ensuring totally independent tuning, without unwanted spurious products or loss in sensitivity.
* Isolation between antenna inputs is greater than 40 dB. Unused input is short-circuited, thus preventing static build-up and possible damage to the receiver's input circuits.
* Circuitry ensures constant impedance of 50 ohms, hence optimum receiver-antenna matching.
* Standing Wave Ratio (SWR) better than 1.1 : 1

OPERATION

The SP-2 from RF-Systems Inc. is a specially designed two-way antenna splitter for long-, medium- and shortwave reception, plus the lower VHF bands. The SP-2 allows two receivers to be connected to one antenna, but unlike other units, this splitter ensures there is NO interaction between the receivers as a result. The isolation between the receivers is better than 30 dB, which ensures totally independent tuning of each radio within the frequency range of 50 kHz through to 50 MHz. This high level of isolation prevents unwanted spurious whistles due to oscillator-radiation and loss of sensitivity caused by the input circuitry of the second receiver.

SIX STEP ATTENUATOR

A constant impedance attenuator is incorportated in the SP-2. It offers a wide range of attenuation steps, i.e. 0 dB, -6 dB, -10 dB, -20 dB, -30 dB and -40 dB. This gives far more flexibility when listening for weaker signals. The attenuator allows the user to reduce the level of strong incoming signals, which cause overloading or intermodulation effects in many receivers, even of a professional class. Although it may seem strange at first, switching in some attenuation will allow weaker signals to be heard above the background noise. Too much signal is as bad as too little for most modern receivers.

MEDIUM WAVE SUPPRESSION

Mediumwave transmitters are used in many countries for domestic broadcasting. As a result, signal levels from transmitters of 50 kilowatts or more can cause blocking- and intermodulation effects, even though the receiver is tuned to another part of the dial. These signals can be reduced by the SP-2's step attenuator, but this will also reduce overall sensitivity to signals on frequencies outside the mediumwave band. The solution is to be more selective. The SP-2 has a built-in switchable mediumwave rejection filter, which gives more than 40 dB (7 "S" points) rejection only over the entire mediumwave range (530 - 1604 kHz). Since these unwanted local signals are filtered out before they reach the receiver's input terminals, maximum sensitivity in the longwave (50 kHz - 530 kHz) and shortwave/lower VHF bands (1604 kHz - 50 MHz) becomes possible. This feature alone makes the SP-2 worthwhile, even if only one receiver is connected to the unit.

TWO ANTENNAS

The polarisation of received signals changes constantly, due to propagation effects. A signal received best on a horizontal antenna can suddenly fade out, and at the same moment, reception on a vertically polarised antenna improves. Listeners interested in getting the best from their equipment are therefore advised to set up two antennas, one horizontal, the other vertical. Both antennas can be connected to the SP-2. A switch on the front panel makes it possible to instantly switch between Antenna 1 or Antenna 2 without having to unscrew any connectors The antenna which is not selected is short circuited. This prevents any static build up which could cause damage to sensitive receiver input circuitry. The metal cabinet of the SP-2 provides an effective shield against external interference sources, such as nearby flourescent lights.
The system impedance remains constant at 50 Ohms, irrespective of how much attenuation has been selected. This prevents loss of sensitivity loss due to reflections. The patented splitting transformer ensures the loss introduced by connecting the SP-2 is extremely low: < 0,5 dB above 3 dB power division.

CAUTION !

Permanent damage to the SP2 will occur if an attempt is made to transmit radio frequency energy through the unit. This antenna-splitter has been designed for reception-only installations. If the unit is connected to an amateur radio transceiver, precautions should be taken to ensure that the transmitter has been disabled.

SPECIFICATIONS

Frequency range:	50 kHz - 50 MHz +/- 3 dB (10 kHz - 110 MHz possible with reduced performance)
Antenna inputs:	2, switchable. The antenna input not selected is short circuited.
Isolation between antenna inputs:	> 40 dB
Receiver outputs:	2, independent of each other. Isolation between receiver outputs greater than 40 dB (0.05 - 8 MHz), and greater than 30 dB (8 MHz - 50 MHz)
Wideband step attenuator:	offering the following positions: 0 dB, -6 dB, -10 dB, -20 dB, -30 dB, -40 dB.
Mediumwave rejection filter:	switchable on front panel. Frequency range 530 - 1604 KHz. Attennuation 55 dB (typ) at 1 MHz
Impedance:	50 ohms. SWR < 1,1 : 1
Max permissible power allowed:	0.5 Watts
Unit insertion loss :	<0,5 dB above 3 dB power division
Connectors:	4 x SO 239
Cabinet:	metal, black/aluminium
Dimensions:	160 x 60 x 150 mm
Weight:	900 grams