WSDU-2X4LR

High Dynamic 2 Section 4 Way Multicoupler for Broadcast Signals 100 kHz … 4000 MHz

Features

- 2 independent RF sections
- wideband
- high dynamic
- lossless signal distribution

Applications

- product development, production, product verification, quality assurance
- broadcast signal distribution
- AM, FM, IBOC, DAB, DVB-T, GNSS, SDARS

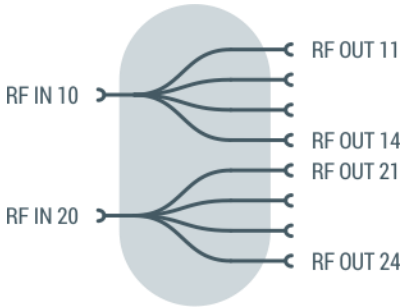
At a Glance

Multicouplers are needed to distribute common broadcast signal sources to many outputs without loss in level and low distortion. Modern infotainment components (devices under test) DUTs need a lot of different RF signals for a complete operation. Due the large operating frequency range and the high dynamic range, the WSDU-2X4LR is the fitting solution to multiply RF-signals to up to 4 ports in 2 independent sections.

The WSDU-2X4LR is the right solution for innovative broadcast signal distribution systems that must cover the frequency range for all signal types, beginning with the AM range up to SDARS satellite radio.

Simplified Block Diagram

The WSDU-2X4LR has two identical distribution sections. Each section distributes the signals from one input to 4 equal outputs without loss in level.



Lossless 1 to 4 Signal Distribution

The signals at the inputs are amplified by using broadband low-noise amplifiers with a wide dynamic range -weak signals are linearly amplified even if they occur next to signals with very strong levels-. As a result, the distributed input signals are made available at the four outputs in each section without any loss in level.
The hardware structure of the distribution offers optimal phase and amplitude balance performance. All inputs and outputs have N female connectors.

High Port-to-Port Isolation

WSDU-2X4LR features a high port-to-port isolation. The connected receivers are prevented from affecting each other, e.g., via local oscillators or synthesizers.

RF Specification

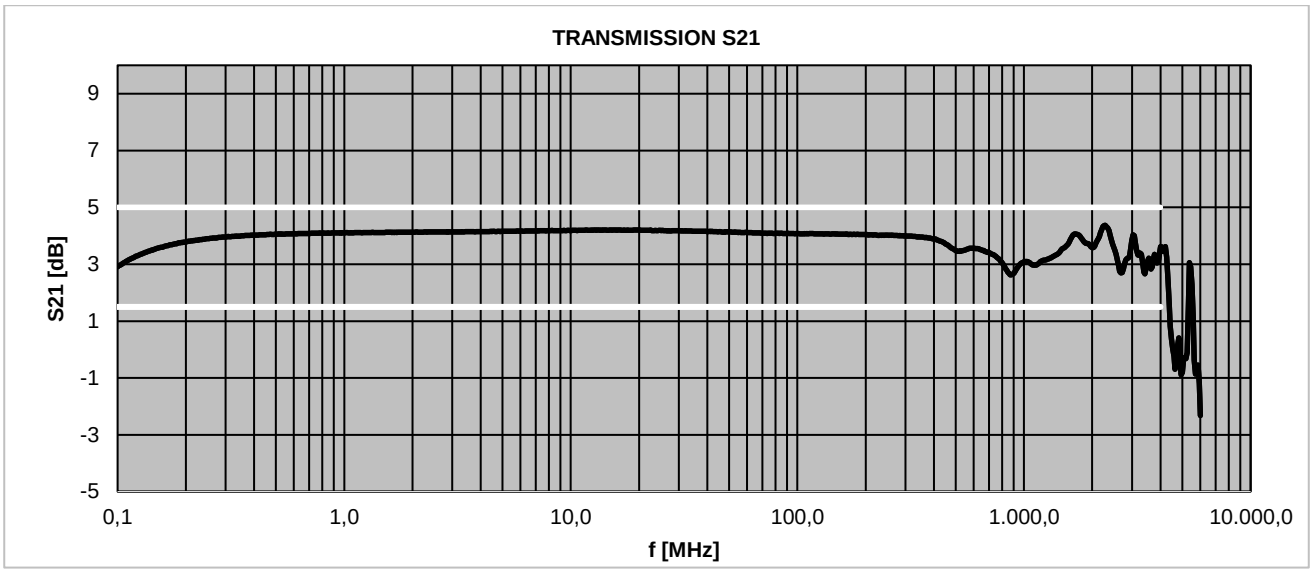
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
number of RF sections	n_{SEC}		2			
impedance	Z_{IN}/Z_{OUT}		50		Ω	
low frequency	f_{MIN}		100	150	kHz	
high frequency	f_{MAX}	4000	4500		MHz	
gain	S_{21}	-0,5	1	3	dB	
input return loss	S_{11}		-15	-10	dB	500 kHz ≤ f ≤ 3000 MHz
output return loss	S_{22}		-15	-10	dB	f ≤ 3000 MHz
reverse isolation	S_{12}		-64		dB	
output isolation	S_{23}		-25	-23	dB	neighboured outputs (d=1)
	S_{23}		-48		dB	distance > 1
section isolation	S_{21SEC}		-90		dB	
1 dB compression	P_{1dB}	+7	+8		dBm	f ≤ 500 MHz
	P_{1dB}	+5	+7			500 MHz < f ≤ 3000 MHz
3rd order intercept	OIP3[1]	+16	+20		dBm	f = 1000 MHz
	OIP3[1]	+15	+18		dBm	f = 2000 MHz
	OIP3[1]	+13	+16		dBm	f = 3000 MHz
noise figure	NF		10	13	dB	
maximum input power	$P_{in\ max}$			+15	dBm	CW, no damage
DC voltage	U_{DC}			20	V	input and outputs
ESD discharge resistor	R_{ESD}		4.7		kΩ	input and outputs
RF connectors	X_{RF}		N female			

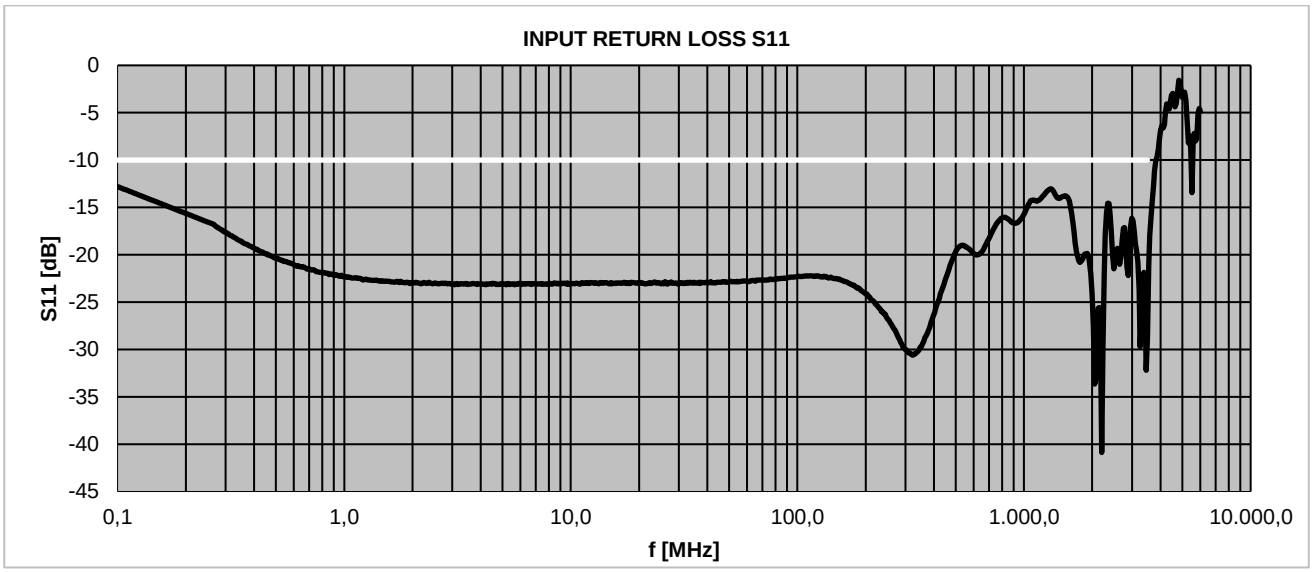
Note 1: frequency space 100 MHz

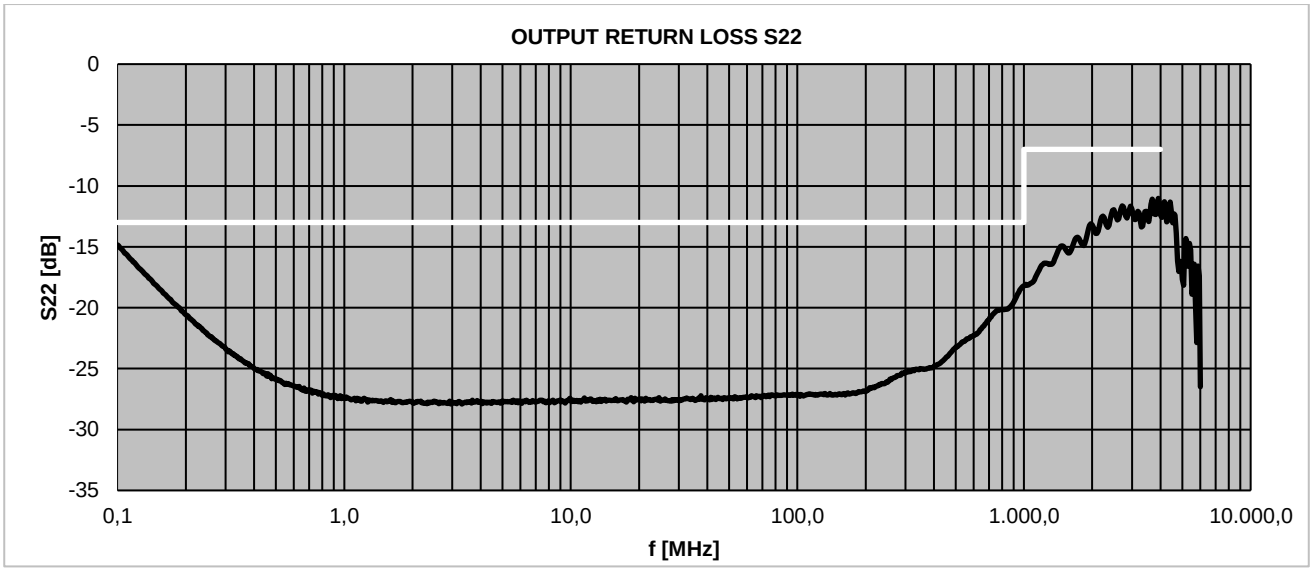
Common Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
AC supply variant						
voltage supply range	U_{AC}	90	230	260	V	50 / 60 Hz AC
power consumption	P		15	50	W	
power socket	X_{AC}		IEC-60320 C14			country specific mains cable
Dimensions and weight						
dimensions	W x H x D		approx. 482 x 44 x 145		mm	19” 1 U, without connectors and handles
weight	m		2.9		kg	
Environment Conditions						
operating temp. range	T_o	+5		+45	°C	
storage temp. range	T_s	-40		+70	°C	
Product conformity						
Electromagnetic compatibility	EU: in line with EMC directive (2014/30/EC)					applied harmonized standards: EN 61326-1 (for use in industrial environment), EN 61326-2-1, EN 55011 (class B), EN 61000-3-2, EN 61000-3-3
Electrical safety	EU: in line with low voltage directive (2014/35/EC)					applied harmonized standard: EN 61010-1
Ordering information	WSDU-2X4LR		P/N: 1107.6252.1			

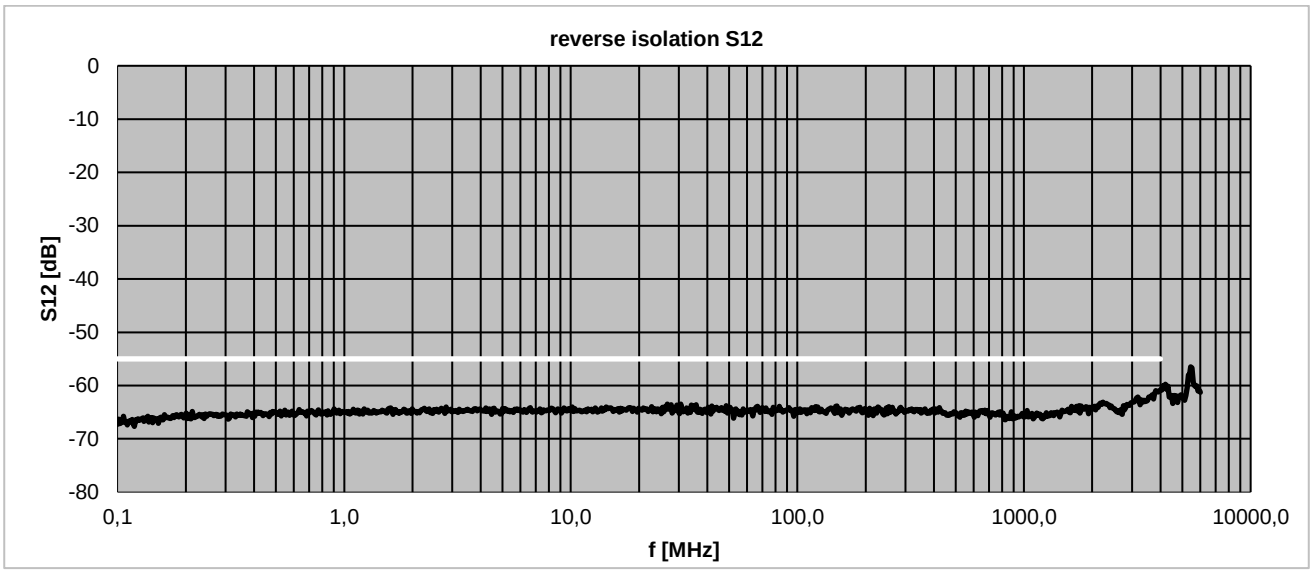
S-Parameters (typical responses)

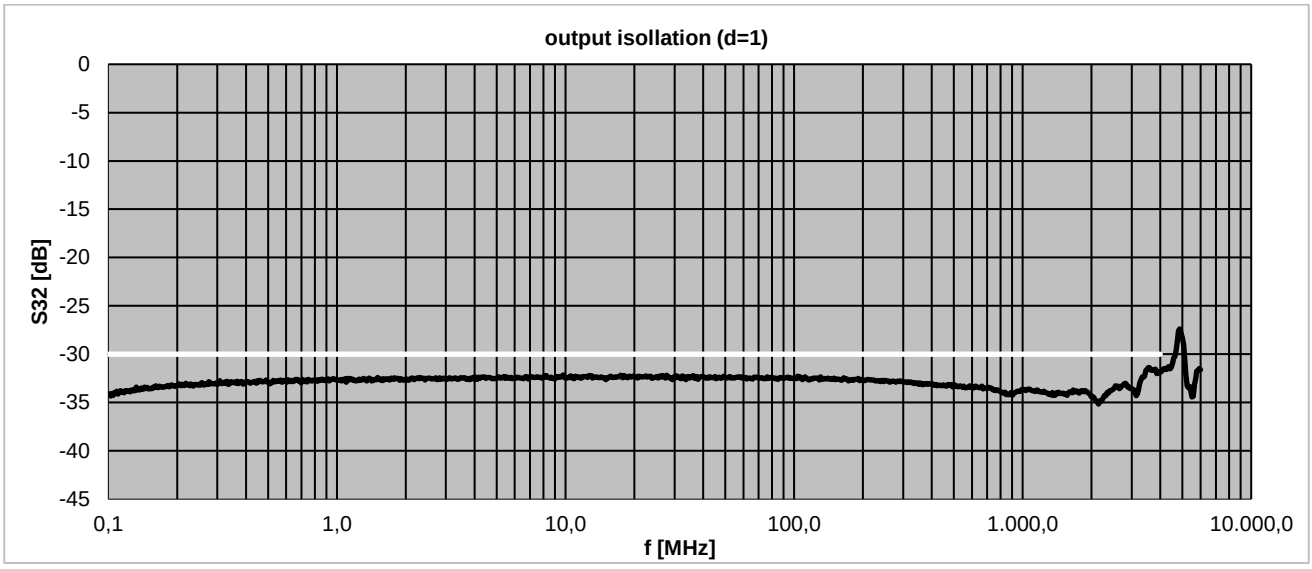


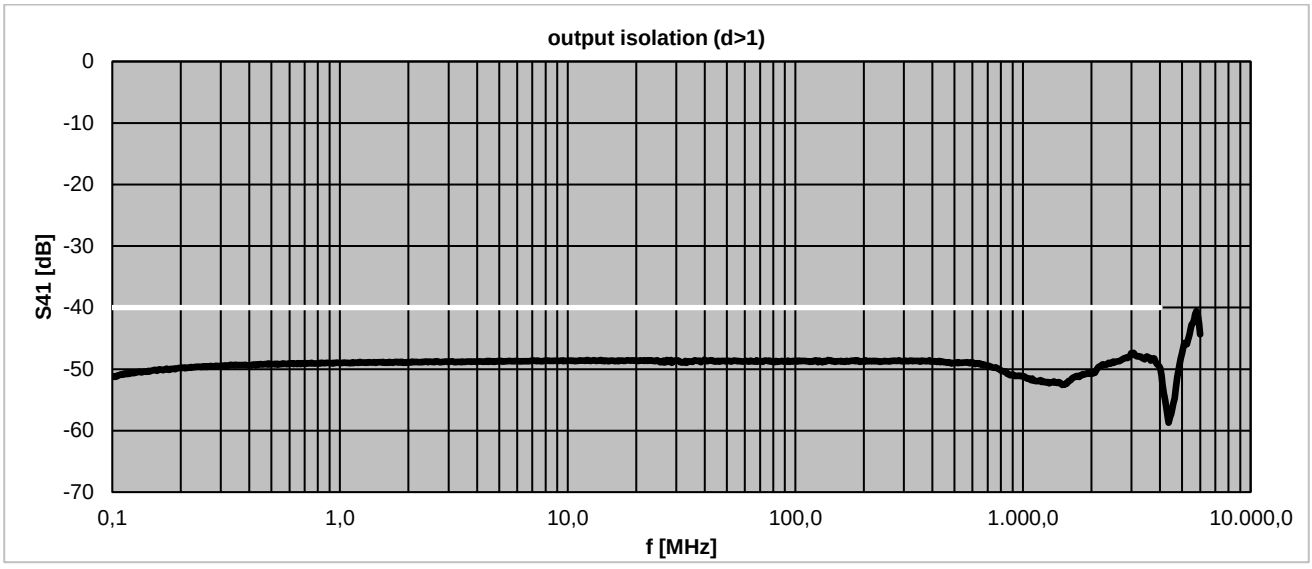


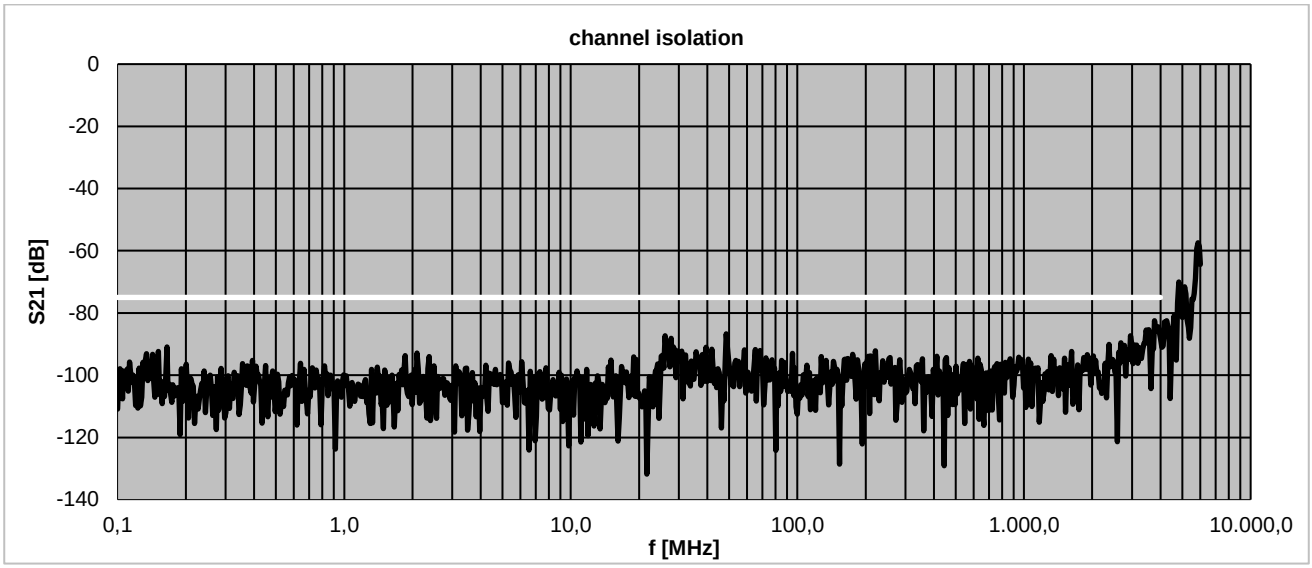


Isolations (typical responses)

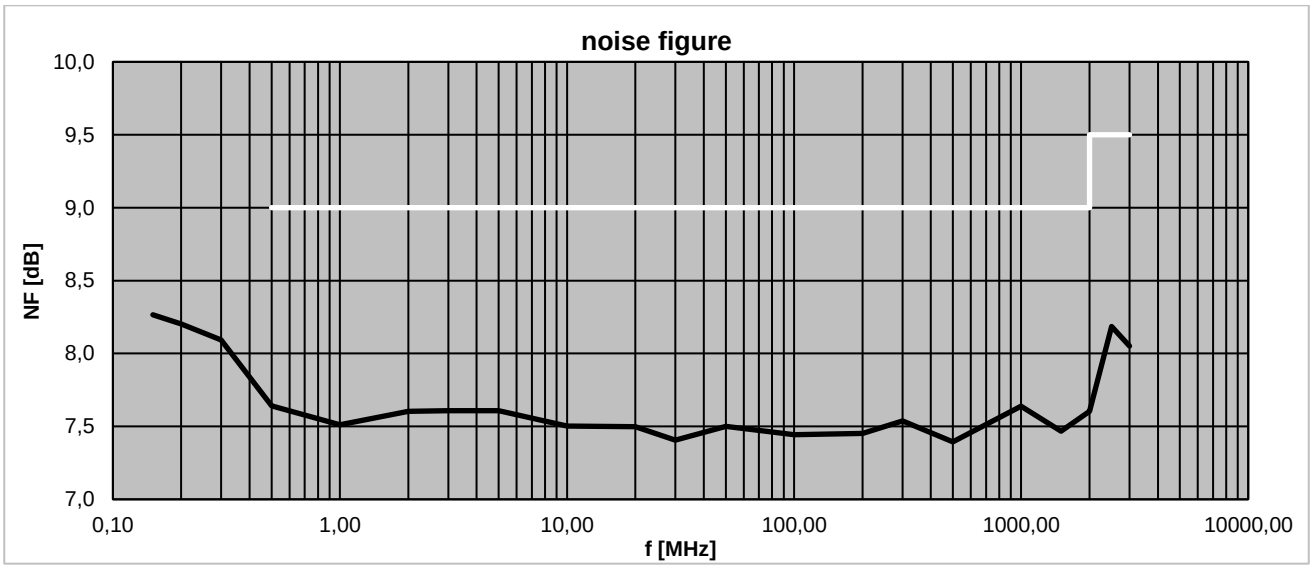


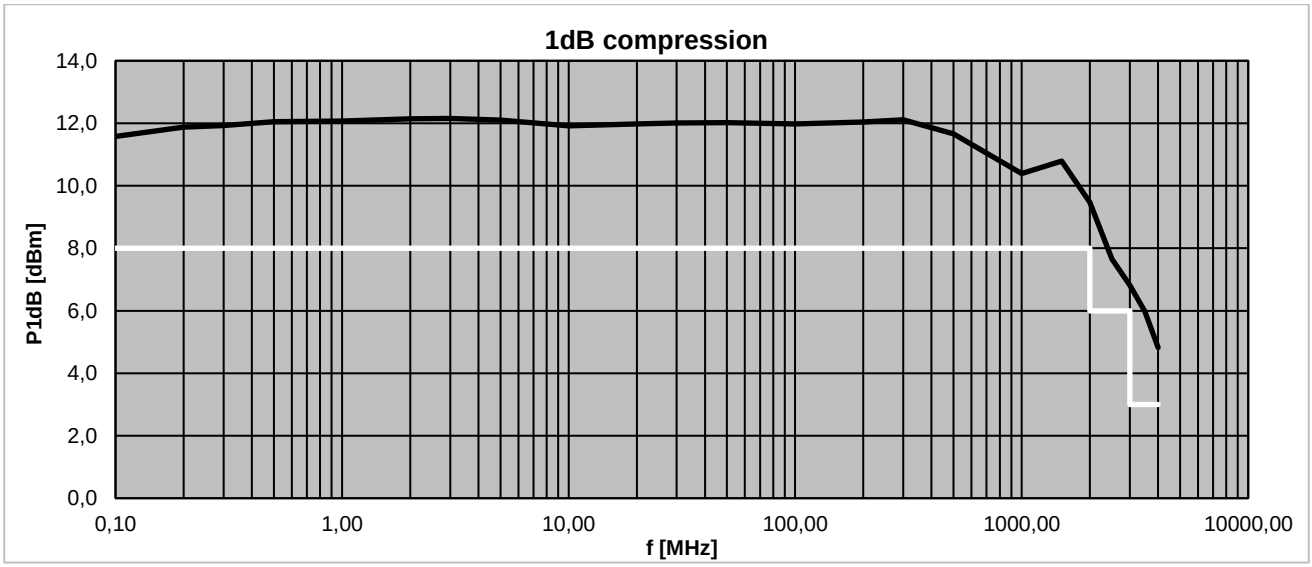


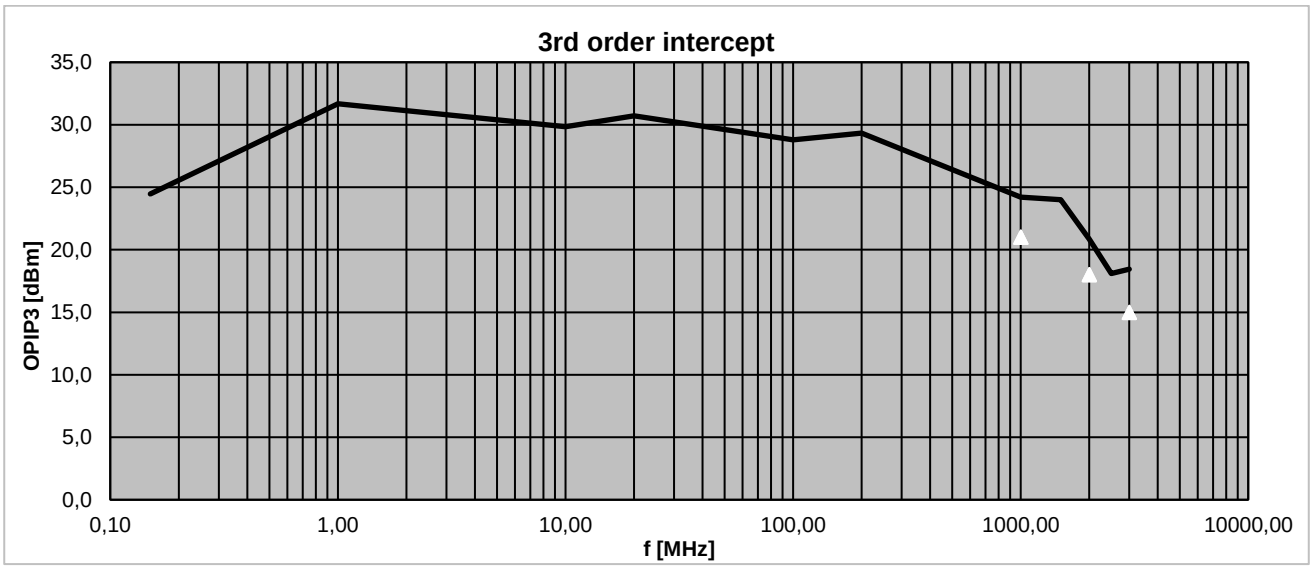


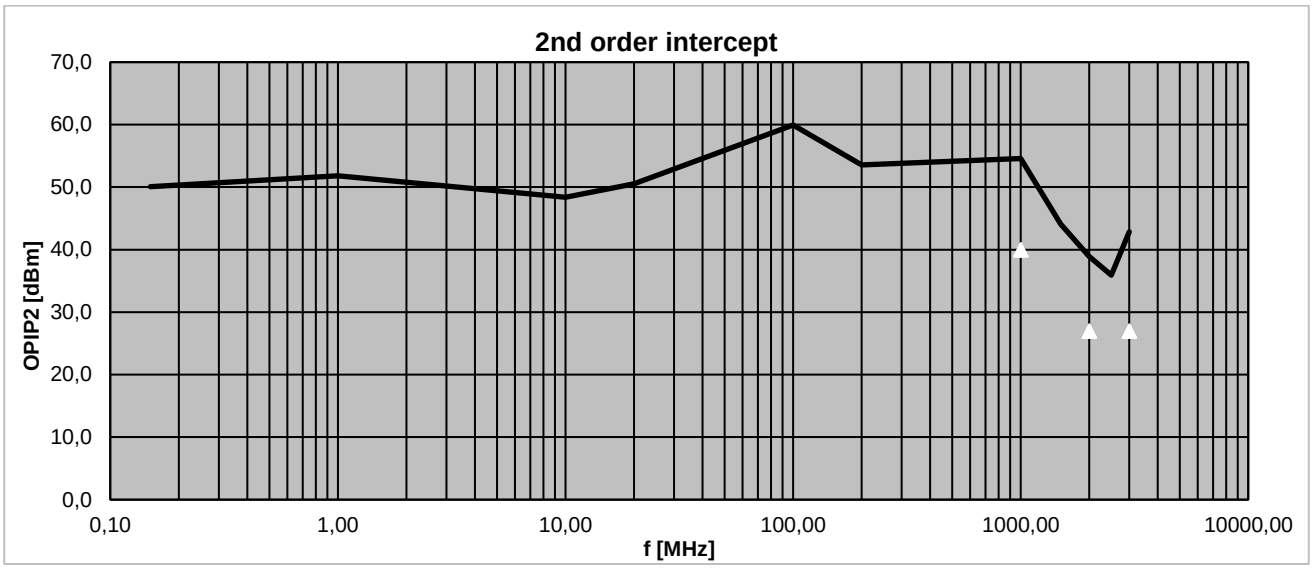


Dynamic Range (typical responses)






3rd order intercept
35,0
30,0
25,0
20,0
15,0
10,0
5,0
0,0
OPIP3 [dBm]
0,10
1,00
10,00
100,00
1000,00
10000,00
f [MHz]

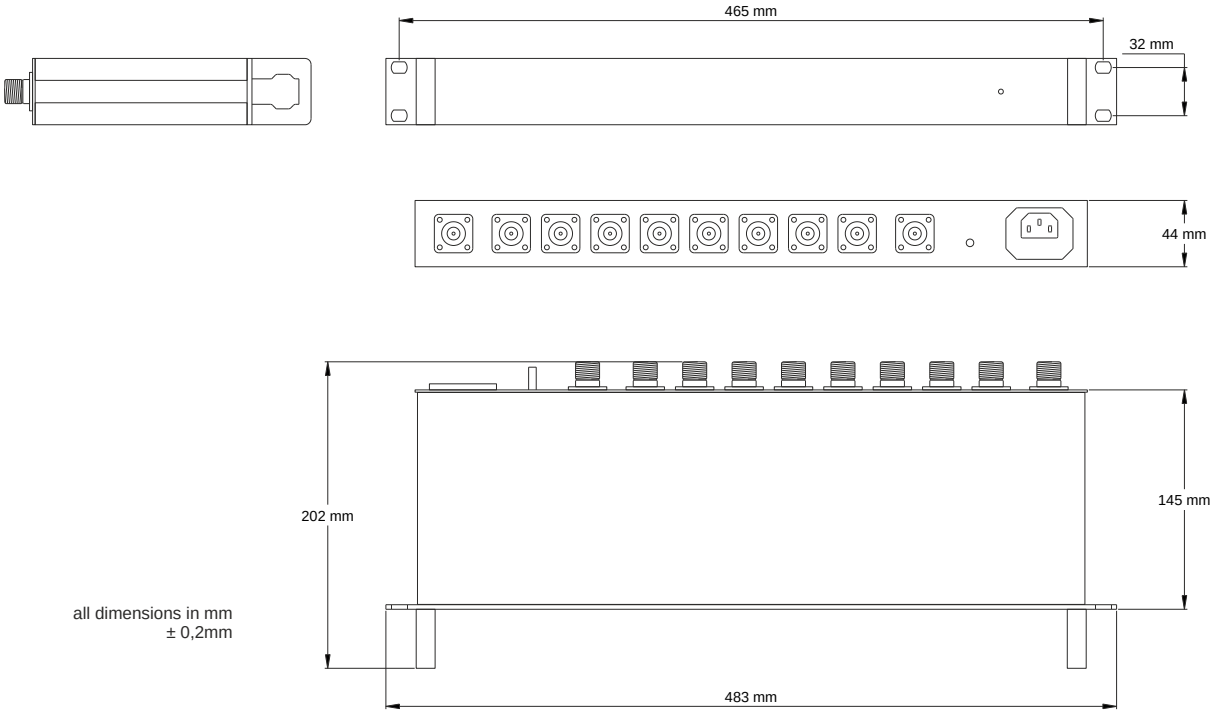

2nd order intercept
70,0
60,0
50,0
40,0
30,0
20,0
10,0
0,0
OPIP2 [dBm]
0,10
1,00
10,00
100,00
1000,00
10000,00
f [MHz]

Appearances

Front View

Rear View (variant with AC power supply)

Dimensions



all dimensions in mm
± 0,2mm

Related Products

Product	P/N	Description
WSDU-1X8LR	1107.6152	High Dynamic 8 Way Multicoupler for Broadcast Signals 100 kHz … 4000 MHz AC or DC power supply
WSDU-2X4LR	1107.6252	High Dynamic 2 Section 4 Way Multicoupler for Broadcast Signals 100 kHz … 4000 MHz AC or DC power supply
WSDU-1X8R	1107.6102	High Dynamic 8 Way Multicoupler 100 kHz … 4000 MHz AC or DC power supply
WSDU-2X4R	1107.6202	High Dynamic 2 Section 4 Way Multicoupler 100 kHz … 4000 MHz AC or DC power supply
WSDU-1X8AR	1807.6302	8 Way High Dynamic Signal Conditioning Multicoupler 100 kHz…4000 MHz AC or DC power supply
WSDU-1X8SR	1502.6102	High Dynamic 1X8 Shortwave Signal Distribution Unit 200 kHz … 30 MHz AC or DC power supply Variant with LAN remote interface with SNMPv2 trap function available
WSDU-2X4SER	2306.6102	2-Section 4-Way Signal Distribution Unit Section A: 200 kHz … 30 MHz Section B: 20… 8000 MHz AC or DC power supply Variant with LAN remote interface with SNMPv2 trap function available
WSDU-1X8ER	1501.6302	Extremely Wideband 1 to 8 Signal Distribution Unit 20 … 8000 MHz AC or DC power supply Variant with LAN remote interface with SNMPv2 trap function available
WSDU-2X4ER	1501.6202	Extremely Wideband 2 Section 1X4 Signal Distribution Unit 20 MHz… 8000 MHz AC or DC power supply Variant with LAN remote interface with SNMPv2 trap function available
WSDU-1X8UR	2109.6002	Ultra-Wideband 8-Way Signal Distribution Unit 100 kHz … 18 GHz AC or DC power supply LAN remote interface with SNMPv2 trap function