WSDU-1X8R

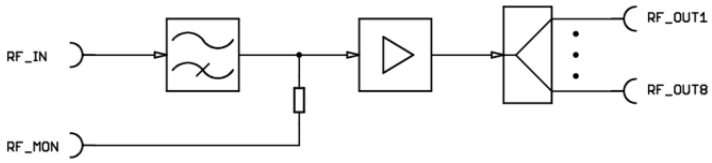
High Dynamic 8 Way Multicoupler 100 kHz … 4000 MHz

Features

- wideband
- high dynamic
- lossless signal distribution
- auxiliary input / output
- optional input high pass
- variants with AC or DC supply

Applications

- antenna signal distributions
- broadcast signal distribution
- AM, FM, DAB, DVB-T, GNSS, SDARS
- radio monitoring
- direction finding



Scope

WSDU-1X8R is a wideband multicoupler that distributes signals from a common input to 8 outputs. The frequency range extends from 100 kHz up to more than 4000 MHz.
The device is available in variants with AC or DC power supply.

Lossless 1 to 8 Signal Distribution

The RF input the signal is 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 signal is made available at the eight outputs of the multicoupler without any loss in level.
The hardware structure of the distribution offers best phase and amplitude balance performance.
All RF inputs and outputs have N female connectors.

Wideband Distribution Systems

The wide frequency range makes WSDU-1X8R ideal for production, research and development and all applications, where several signals in a wide frequency range have to be distributed.
It is particularly useful for signal distributions for several broadcast standards in R&D or production for infotainment devices.
The compact 1 U design makes WSDU-1X8R ideally suited for use as a tabletop unit or in racks.
In applications where higher output counts are needed, the compact and cost-efficient slot-in module WSDU1X8 is in combination with the SR6-11C platform is available.

Signal Path Tests

The auxiliary port of WSDU-1X8R offers RF monitoring or test signal injection for signal path tests in extensive RX or distribution systems.

Variants for AC and DC Supply

WSDU-1X8R is available in two variants for supply the unit with AC or DC power. Both variants cover a wide voltage supply range.

Optional High Pass Filter

Optional WSDU-1X8R can be equipped with a high pass filter at the RF input for an effective suppression of unwanted signals in the VLF range.

RF Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z_{in} / Z_{out}		50		Ohm	
low frequency	f_{min}		100	150	kHz	
	f_{min}			20	MHz	with high pass filter option
high frequency	f_{max}	4000	5000		MHz	
gain	S_{21}	0.5	2.5	4.0	dB	
gain flatness	ΔS_{21}		±1		dB	
VLF suppression[2]	S_{21}		-60		dB	@ 1MHz with high pass filter option
input return loss	S_{11}		-17	-10	dB	f ≤ 3000 MHz
	S_{11}		-8		dB	f > 3000 MHz
output return loss	S_{22}		-17	-10	dB	
reverse isolation	S_{12}		-90	-75	dB	
output isolation	S_{23}		-28	-23	dB	distance = 1
	S_{23}		-60		dB	distance > 1
amplitude balance	dS_{23}		±0.3		dB	f ≤ 2500 MHz
phase balance	φ_{23}		±3		deg	f ≤ 2500 MHz
1 dB compression	P_{1dB}	+6	+8		dBm	f < 1000 MHz
	P_{1dB}	+4	+7		dBm	1000 MHz < f ≤ 2000 MHz
	P_{1dB}	+2	+4		dBm	2000 MHz < f ≤ 3500 MHz
3rd order intercept	OIP3[1]	+19	+22		dBm	f = 1000 MHz
	OIP3[1]	+14	+16		dBm	f = 2000 MHz
	OIP3[1]	+11	+14		dBm	f = 3000 MHz
2nd order intercept	OIP2[1]	+37	+60		dBm	f = 1000 MHz
	OIP2[1]	+20	+30		dBm	f = 2000 MHz
	OIP2[1]	+20	+23		dBm	f = 3000 MHz
noise figure	NF		9		dB	f < 500 kHz
	NF		8.0	9.5	dB	500 kHz ≤ f ≤ 2000 MHz
	NF		9		dB	f > 2000 MHz
monitor coupling	$S21_{MON}$		-30		dB	bi-directional
input power	P_{in}			+15	dBm	CW, no damage
maximum DC voltage	U_{DC}			20	V	all RF ports
ESD discharge resistor	R_{ESD}		4.7		kΩ	all RF ports
RF connectors	NF		N female			

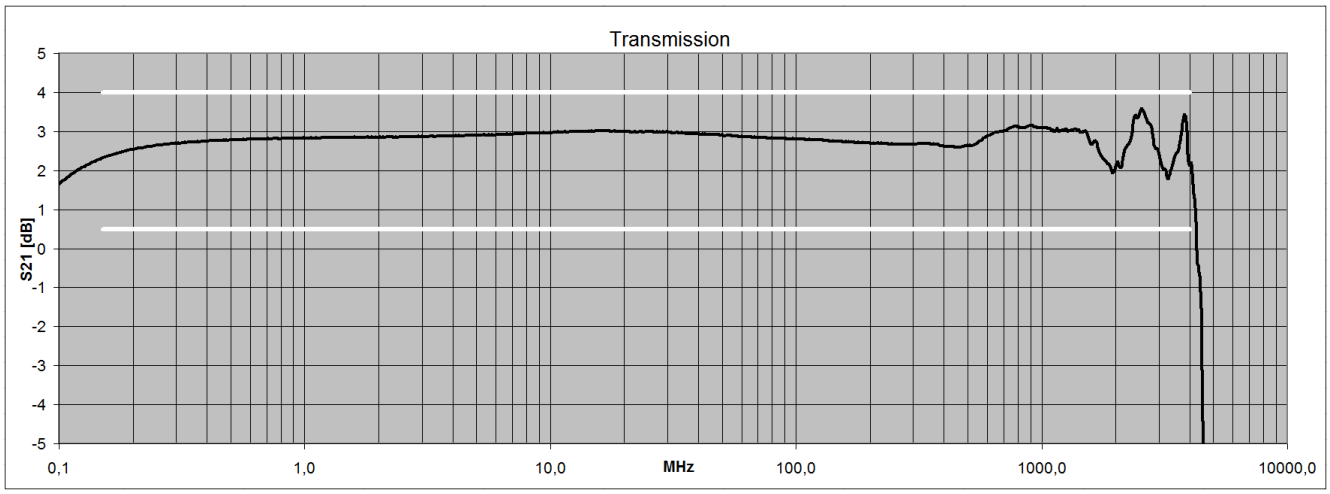
Note 1: Frequency space 100 MHz

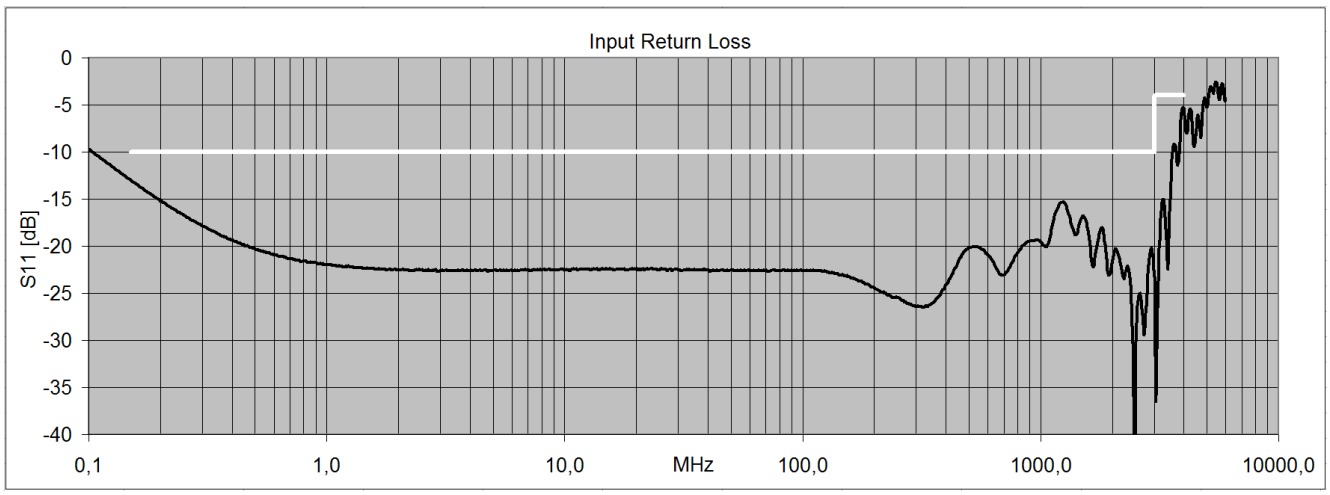
Note 2: High pass filter option reduces high frequency to approx. 3600 MHz.

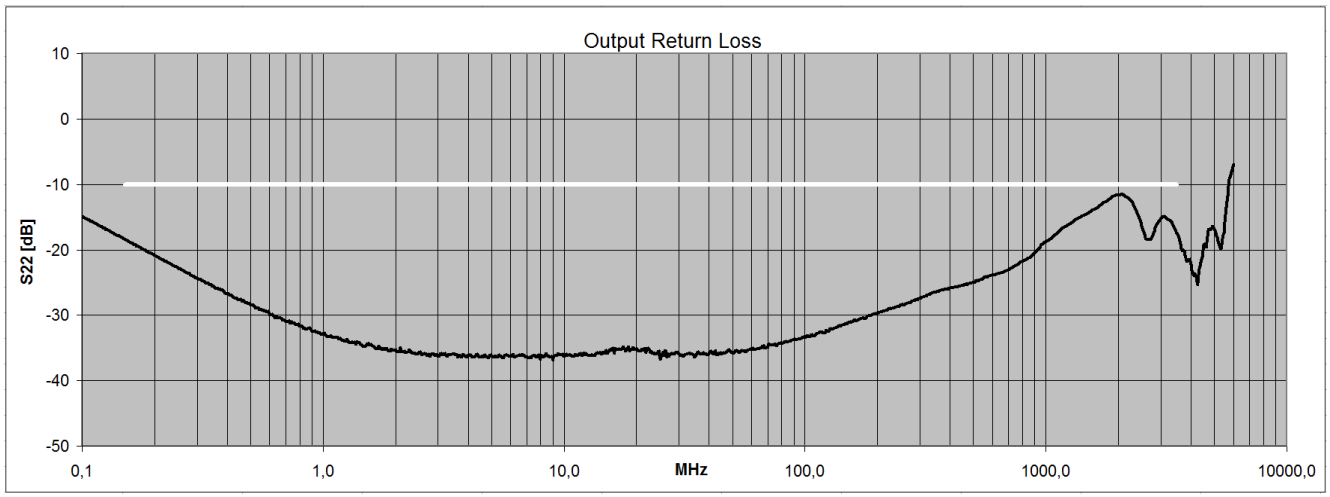
Common Specification

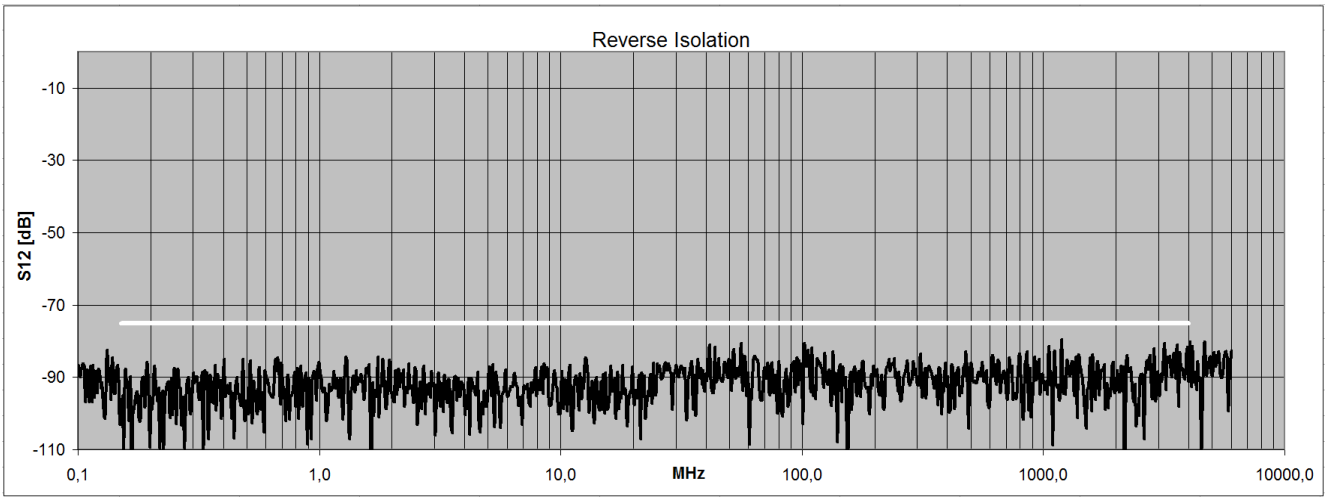
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
AC supply variant						
voltage supply range	U_{AC}	90	230	260	V	50 / 60 Hz AC
power consumption	P		18	50	W	
power socket	X_{AC}	IEC-60320 C14				country specific mains cable
DC supply variant						
voltage supply range	U_{DC}	18	24	28	V	
current consumption	I_{DC}		450		mA	@ 24 V
power socket	X_{DC}	3 pole XLR male				
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		3.5		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-1X8R	P/N: 1107.6102.1				variant with AC supply
	WSDU-1X8R	P/N: 1107.6102.3				variant with DC supply
	WSDU-1X8R-O1	P/N: 1107.6102.O1				Option: 20 MHz high pass filter

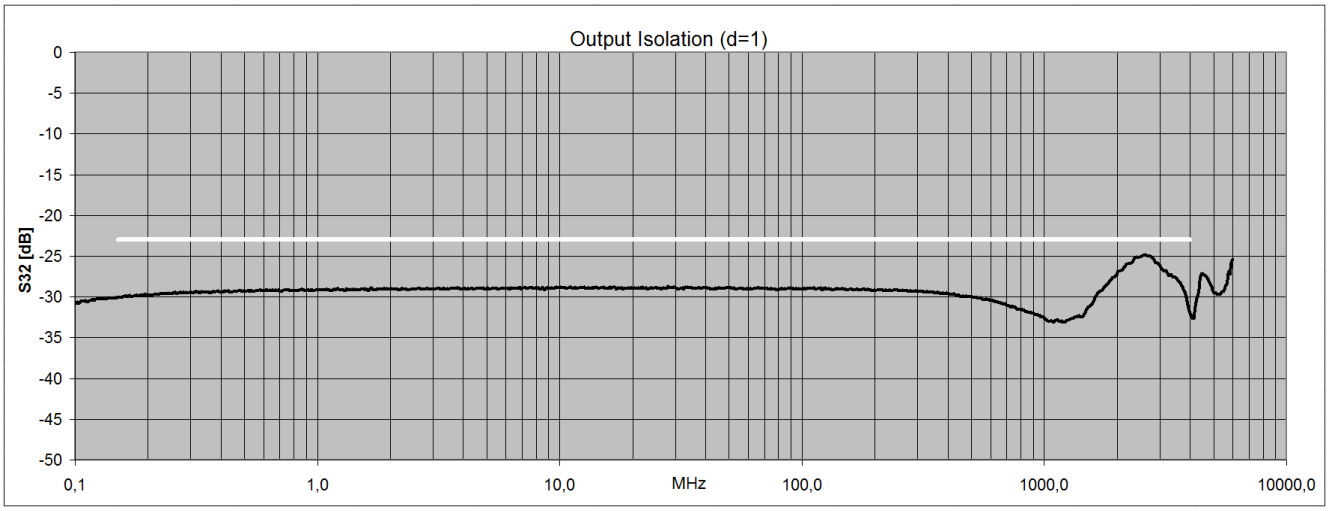
S-Parameters (typical responses)

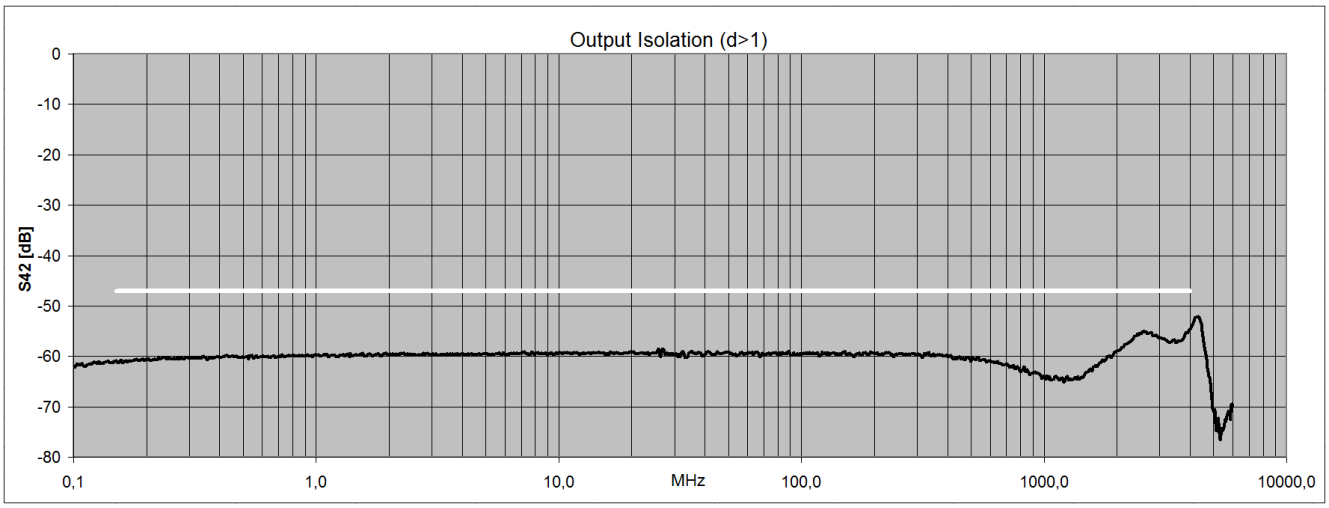




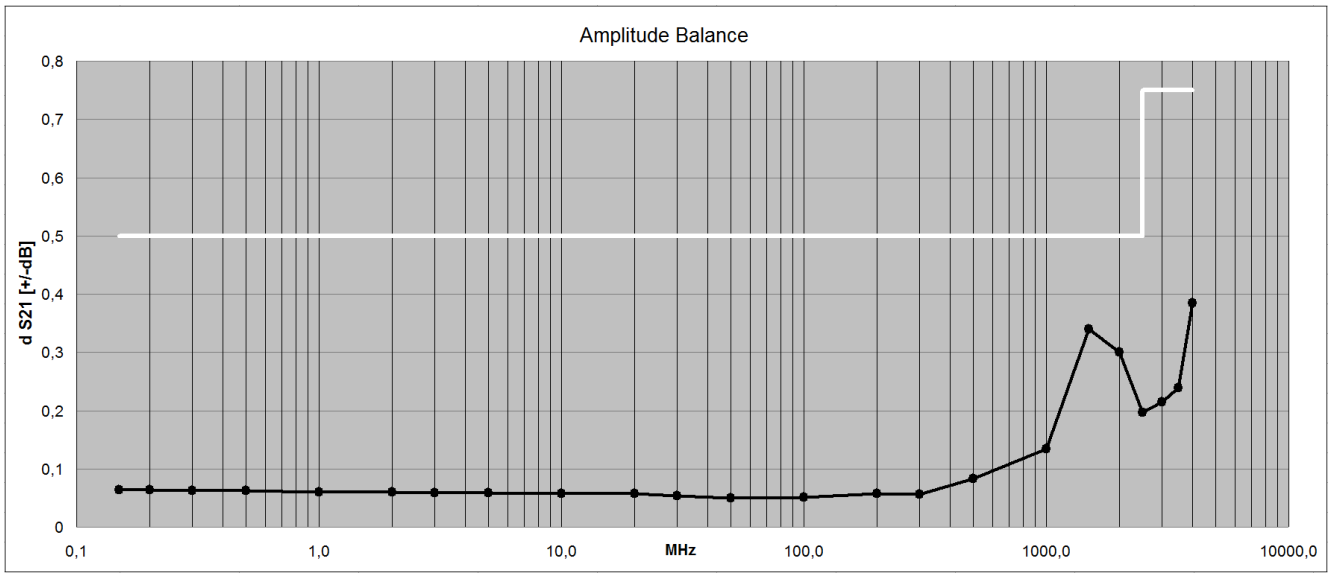


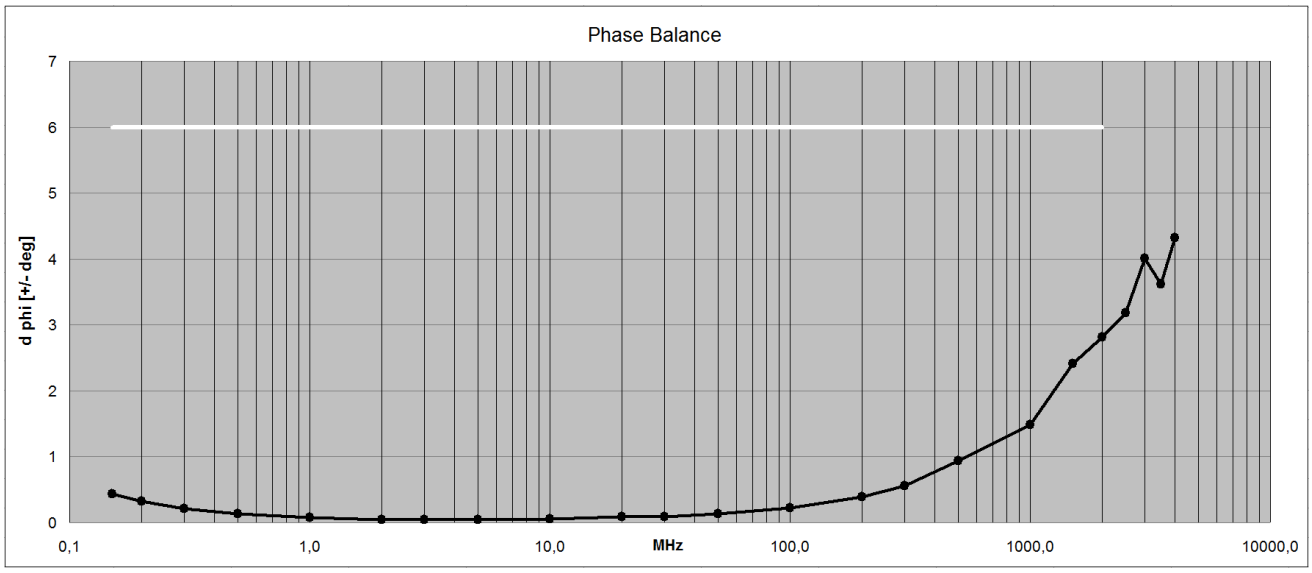

Reverse Isolation
S12 [dB]
-10
-30
-50
-70
-90
-110
0,1
1,0
10,0
MHz
100,0
1000,0
10000,0


Output Isolation (d=1)
S32 [dB]
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
0,1
1,0
10,0
MHz
100,0
1000,0
10000,0

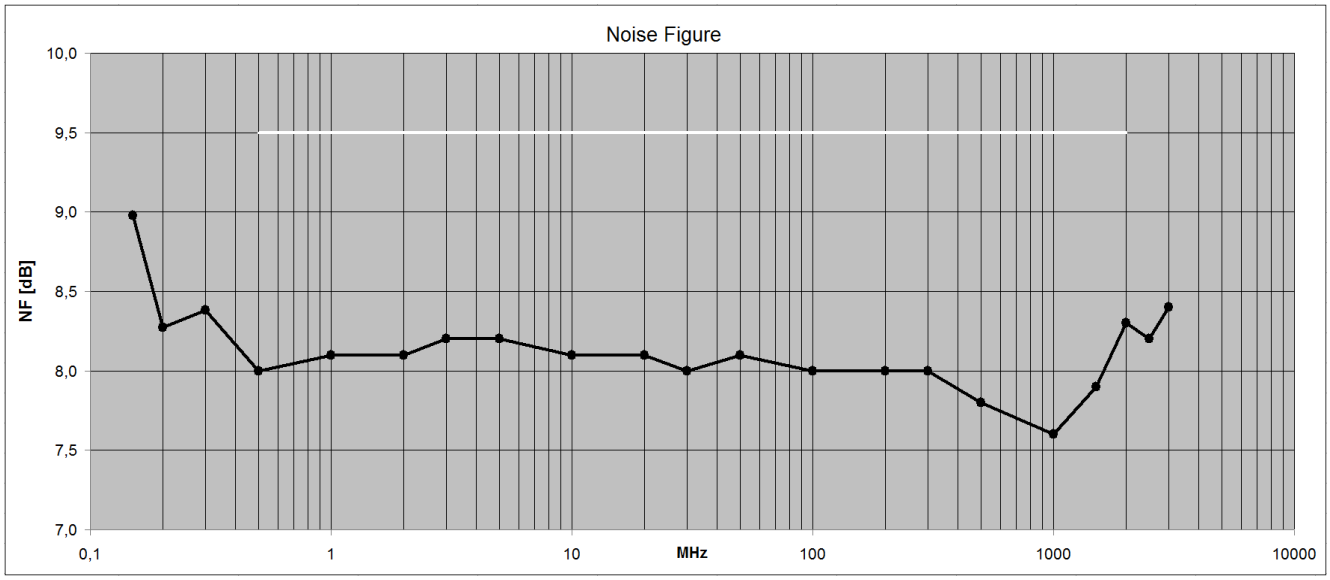

Output Isolation (d>1)
S42 [dB]
0
-10
-20
-30
-40
-50
-60
-70
-80
0,1
1,0
10,0
MHz
100,0
1000,0
10000,0

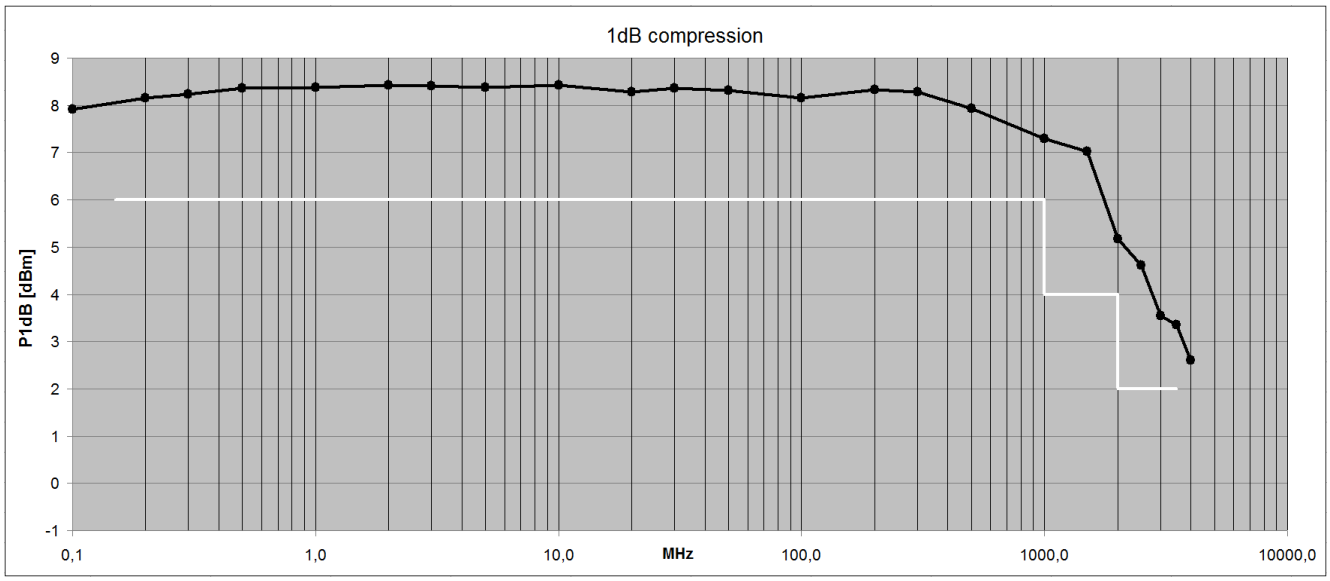
Output Balance (typical responses)

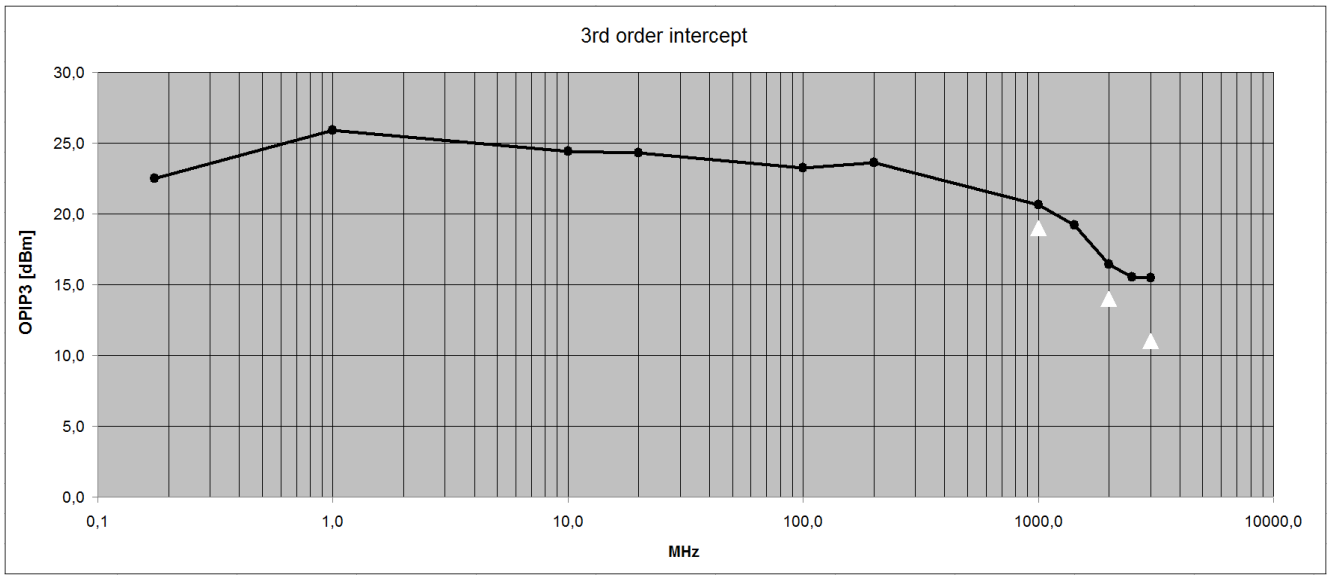


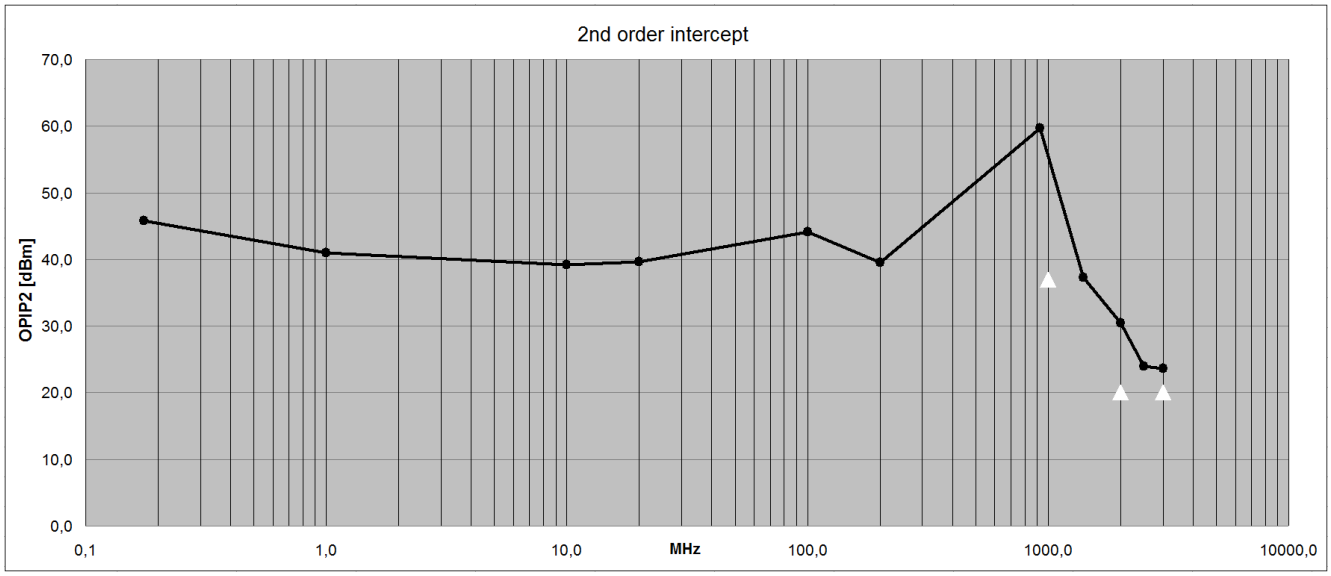


Dynamic Range (typical responses)






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

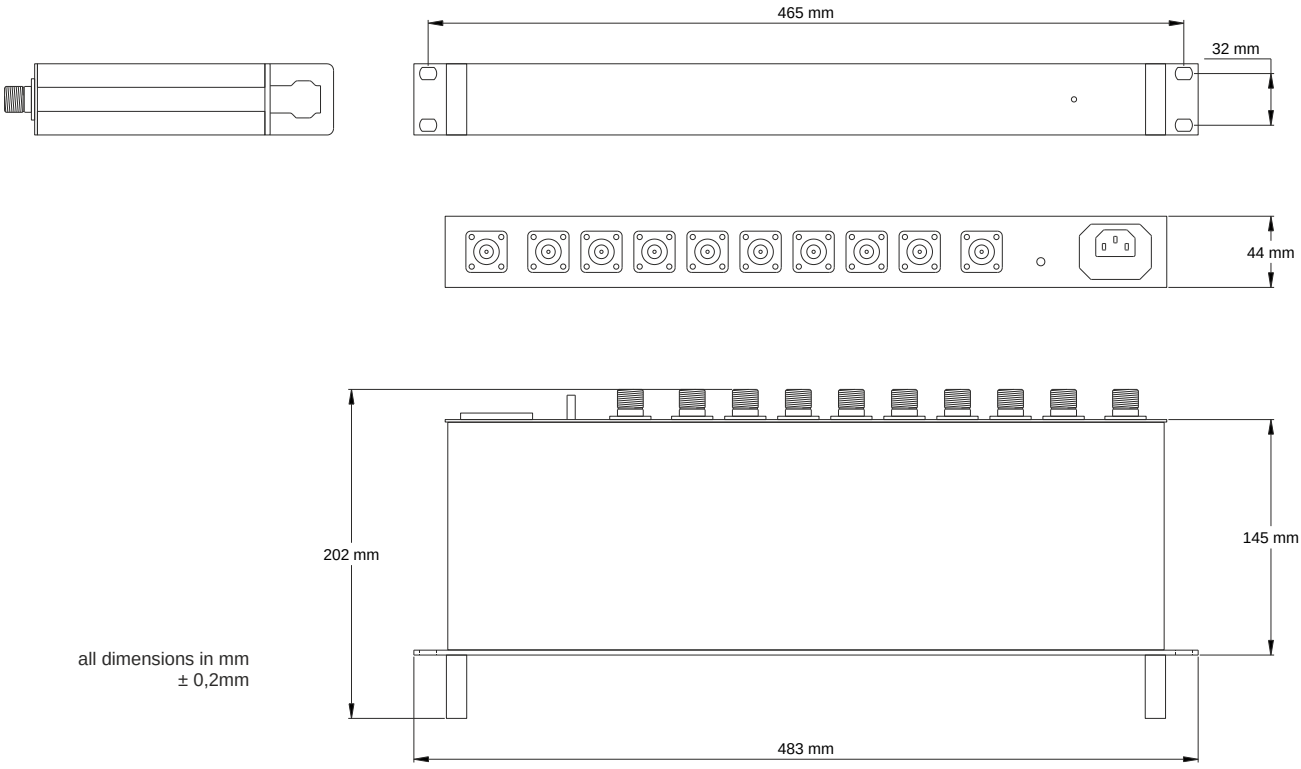

2nd order intercept
OPIP2 [dBm]
70,0
60,0
50,0
40,0
30,0
20,0
10,0
0,0
0,1
1,0
10,0
MHz
100,0
1000,0
10000,0

Appearances

Front View

Rear View (variant with AC power supply)

Dimensions



all dimensions in mm
± 0,2mm

Related Products

Product	P/N	Description
WSDU-1X8R	1107.6102.1	High Dynamic 8 Way Multicoupler 100 kHz … 4000 MHz. 90…260 V AC power supply.
WSDU-1X8R	1107.6102.2	High Dynamic 8 Way Multicoupler 100 kHz … 4000 MHz. 18…28 V DC power supply.
WSDU-2X4R	1107.6202.1	High Dynamic 2 Section 4 Way Multicoupler 100 kHz … 4000 MHz. 90…260 V AC power supply.
WSDU-2X4R	1107.6202.2	High Dynamic 2 Section 4 Way Multicoupler 100 kHz … 4000 MHz. 18…28 V DC power supply.
WSDU-1X8SR	1502.6102	High Dynamic 1X8 Shortwave Signal Distribution Unit 200 kHz … 30 MHz, 90…260 V AC power supply. Variant with LAN remote interface with SNMPv2 trap function available.
WSDU-1X8SR	1502.6102	High Dynamic 1X8 Shortwave Signal Distribution Unit 200 kHz … 30 MHz, 18…28 V 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, 90…260 V AC 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, 18…28 V 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, 90…260 V AC 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 MHz… 8000 MHz, 18…28 V DC power supply. Variant with LAN remote interface with SNMPv2 trap function available.