

WSDU-2X4SER

Extremely Wideband 2-Section 4-Way Signal Distribution Unit,
200 kHz ... 30 MHz / 20 ... 8000 MHz

Features

- 2 independent RF sections
- Section A: 200 kHz ... 30 MHz
 - High dynamic short-wave section
 - Input bandpass filter
 - Lighting protection
- Section B: 20 MHz ... 8000 MHz
 - Extremely wideband section
- Variants with AC or DC supply
- Optional remote interface with BITE



Applications

- Antenna signal distributions
- Radio monitoring
- Direction finding
- R&D

Scope

WSDU-2X4SER is an extremely wideband multicoupler devices that distributes signals from one common input to 4 outputs each in two independent sections. Section A is optimized for shortwave signals with the highest demands on dynamics and linearity. Section B is optimized for extremely high bandwidth. The device is available in variants with AC or DC power supply.

Lossless 1 to 4 Signal Distributions

The RF input the signal is amplified by using innovative 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 four outputs of each section without any loss in level.

The hardware structures of the distributions offer best phase and amplitude balance performance. All RF inputs and outputs have N female connectors.

Variants for AC and DC Supply

WSDU-2X4SER is available in two variants for supply the unit with AC or DC power. Both variants cover a wide voltage supply range.

Device Monitoring

WSDU-2X4SER device is equipped with a built-in device monitoring capability which offers optical signalization of the device health as standard.

For remote monitoring a variant with LAN and USB remote interfaces is available. Via the remote interfaces information about operating points of the internal wideband amplifier stages, the module temperature and the device identification can be queried in form of ASCII strings.

The variant with remote monitoring supports SNMP (simple network management protocol) which enables monitoring without any effort, even in complex environments. The WSDU-2X4SER is able to identify failures and to inform the supervising system automatically.

RF Specification

Section A: 200 kHz ... 30 MHz

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z_{IN}/Z_{OUT}		50		ohms	
low frequency	f_{MIN}		200	300	kHz	
high frequency	f_{MAX}	30	35		MHz	
gain	S_{21}	+2	+3	+4	dB	
input return loss	S_{11}		-25	-14	dB	VSWR < 1.5
output return loss	S_{22}		-20	-14	dB	VSWR < 1.5
reverse isolation	S_{12}		-30	-27	dB	
o-o isolation	S_{23}		-34	-27	dB	adjacent channel
o-o amplitude balance	dS_{23}		± 0.02		dB	
phase balance	Φ_{23}		± 0.3		deg	
attenuations	S_{21_50k}		-25	-17	dBr	@ 50 kHz, rel. S_{21} @ 10 MHz
	S_{21_60M}		-22	-17	dBr	@ 60 MHz, rel. S_{21} @ 10 MHz
	S_{21_80M}		-40	-30	dBr	@ 80 MHz, rel. S_{21} @ 10 MHz
2 nd order intercept	OIP2 ²	+65	+85		dBm	
3 rd order intercept	OIP3 ¹	+22	+25		dBm	$f < 500$ kHz
	OIP3 ¹	+26	+29		dBm	500 kHz $\leq f < 1$ MHz
	OIP3 ¹	+32	+39		dBm	$f \geq 1$ MHz
1 dB compression	P_{1dB}	+15	+18		dBm	$f < 1$ MHz
	P_{1dB}	+17	+20		dBm	$f \geq 1$ MHz
noise figure	NF		7	9	dB	
maximum input power	P_{in}			+25	dBm	CW, no damage
maximum DC voltage	U_{DC}			24	V	all RF ports
ESD discharge resistor	R_{ESDI}		100		k Ω	RF input
ESD discharge resistor	R_{ESDO}		10		k Ω	RF outputs

Note 1: test frequency pairs for OIP2: 1.0 / 1.3 MHz, 2.5 / 3.5 MHz, 12 / 15 MHz, 22 / 27 MHz. output level 2 x 0 dBm.

Note 2: test frequency pairs for OIP3: 290 / 310 kHz, 490 / 510 kHz, 0.9 / 1.1 MHz, 2.8 / 2.9 MHz, 29.8 / 29.9 MHz. output level 2 x 0 dBm.



Section B: 20 MHz ... 8000 MHz

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z_{in} / Z_{out}		50		Ohm	
low frequency	f_{min}		15	20	MHz	
high frequency	f_{max}	8000	8500		MHz	
gain	S_{21}	3	4	5.5	dB	$f \leq 1$ GHz
	S_{21}	1.0	3.5	5.5	dB	1 GHz < $f \leq 7$ GHz
	S_{21}	0	3.5	5.5	dB	$f > 7$ GHz
gain flatness	ΔS_{21}		± 2		dB	
input return loss	S_{11}		-15	-9	dB	
output return loss	S_{22}		-17	-13	dB	$f \leq 2$ GHz
	S_{22}		-13	-10	dB	$f > 2$ GHz
reverse isolation	S_{12}		-70	-55	dB	
output isolation	S_{23}		-30	-20	dB	distance = 1
	S_{23}		-50		dB	distance > 1
amplitude balance	dS_{23}		± 0.4		dB	
phase balance	ϕ_{23}		± 2		deg	
1 dB compression	P_{1dB}	+2.5	+6.0		dBm	$f \leq 3$ GHz
3 rd order intercept	$OIP3^1$	+17	+21		dBm	$f \leq 1$ GHz
	$OIP3^1$	+13	+17		dBm	1 GHz < $f \leq 4$ GHz
	$OIP3^1$	+10	+15		dBm	$f > 4$ GHz
2 nd order intercept	$OIP2^2$	+25	+40		dBm	40/60 MHz, 1000/1100 MHz
	$OIP2^2$	+16	+30		dBm	3000/3100 MHz, 3900/4000 MHz
noise figure	NF		9	11	dB	$f < 100$ MHz
	NF		8	9.5	dB	100 MHz $\leq f \leq 7$ GHz
	NF		8.5	10.5	dB	$f > 7$ GHz
input power	P_{in}			+10	dBm	CW, no damage
maximum DC voltage	U_{DC}			20	V	all RF ports
ESD discharge resistor	R_{ESD}		4.7		k Ω	all RF ports

Note 1: $P_{in} = 2 \times -10$ dBm, specified and tested for $\Delta f = 50$ MHz

Note 2: $P_{in} = 2 \times -10$ dBm, specified and tested for mentioned frequency pairs

OIP2 & OIP3 values are the average value of the upper and lower intermodulation distortion.

Common Specification

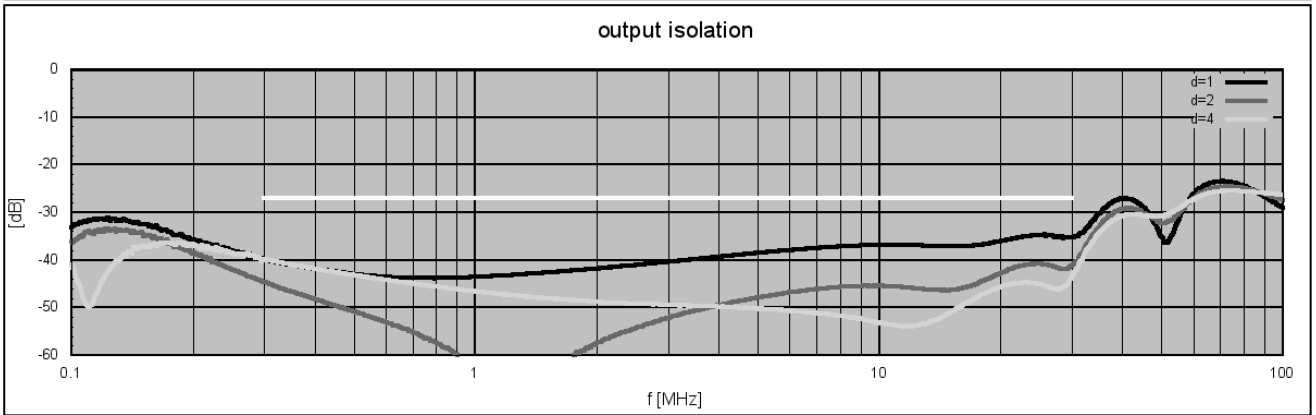
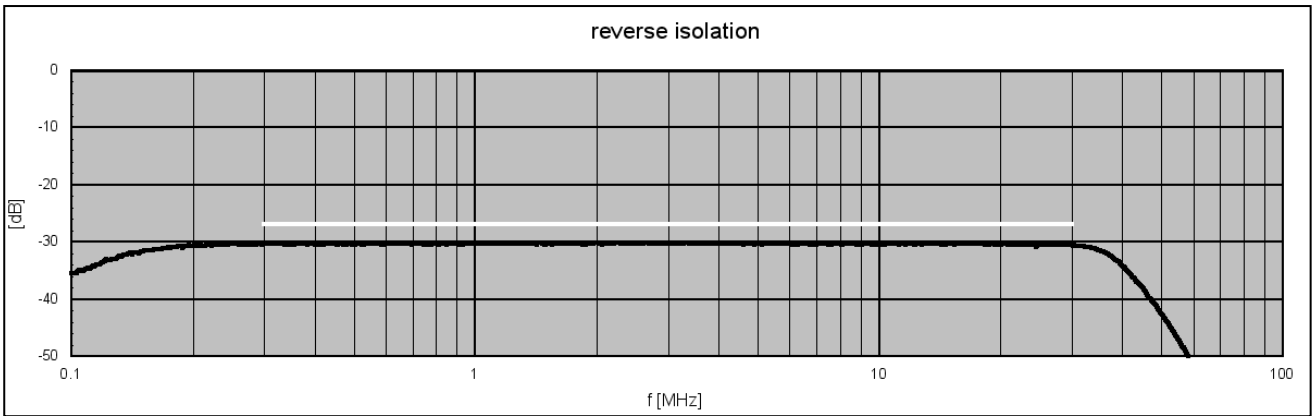
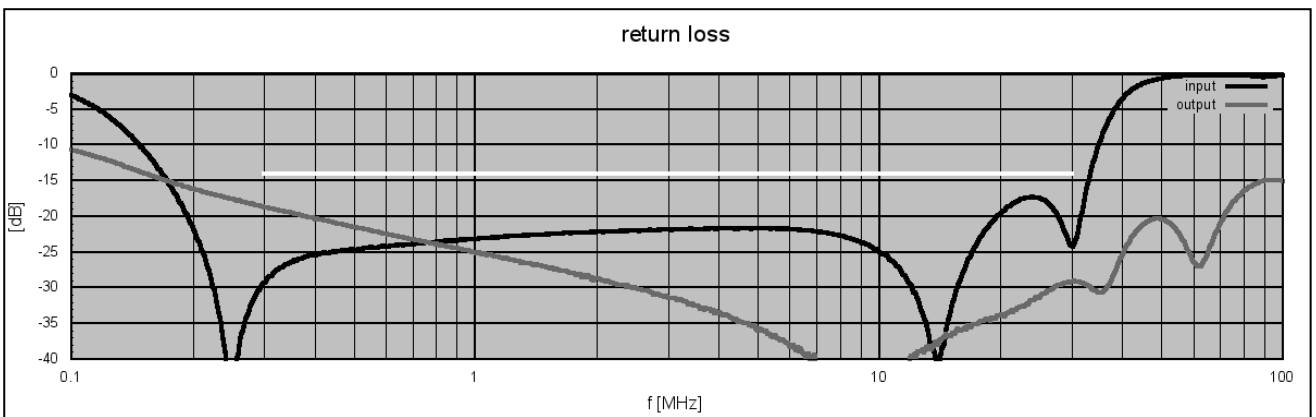
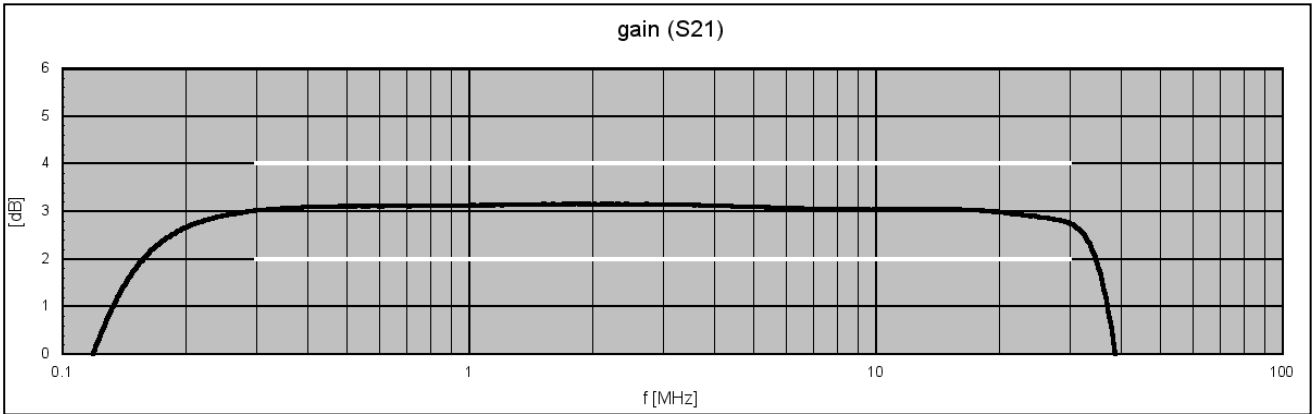
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
RF connectors		N female				
AC supply variant						
voltage supply range	U _{AC}	90	230	260	V	50 / 60 Hz AC
power consumption	P		13	20	W	
power socket	X _{AC}	IEC-60320 C14				country specific mains cable
DC supply variant						
voltage supply range	U _{DC}	18	24	28	V	
current consumption	I _{DC}		500		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 265			mm	19" 1 U, without connectors and handles
weight	m		4.5		kg	
Environment conditions						
operating temp. range	T _o	+5		+45	°C	
storage temp. range	T _s	-40		+70	°C	
Remote interfaces (variant with remote device monitoring)						
remote ports	LAN	10/100BaseT	TCP/IP			RJ45 on rear side
	LAN	SNMPv2 trap function				
	USB	2.0 (high speed)				USB type B
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-2X4SER	P/N: 2306.6102.1		variant with AC supply		
	WSDU-2X4SER	P/N: 2306.6102.2		AC supply with device monitoring		
	WSDU-2X4SER	P/N: 2306.6102.3		variant with DC supply		
	WSDU-2X4SER	P/N: 2306.6102.4		DC supply with device monitoring		

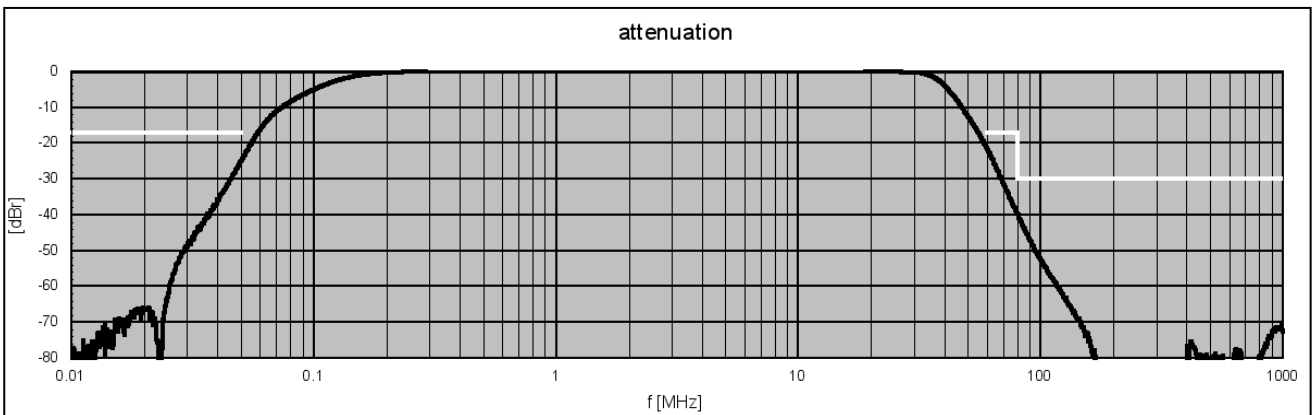
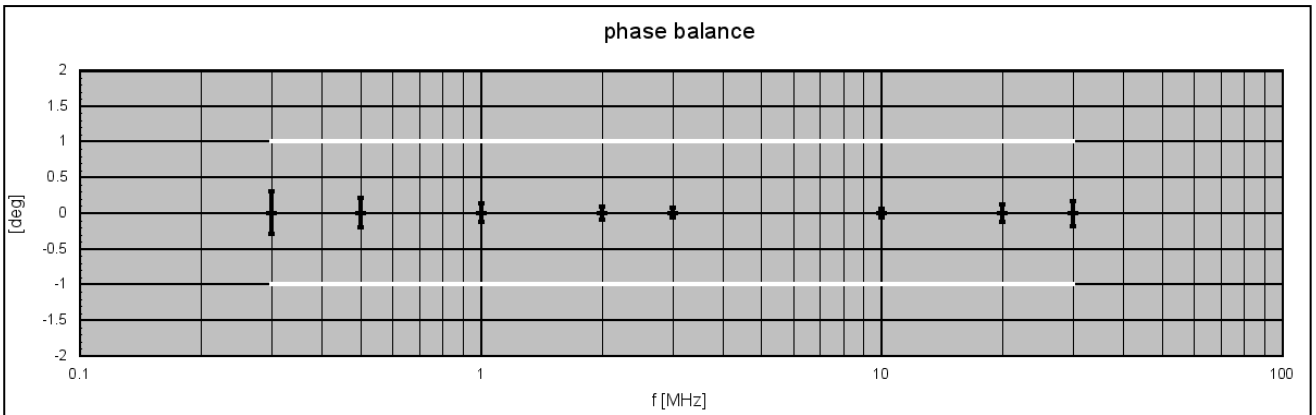
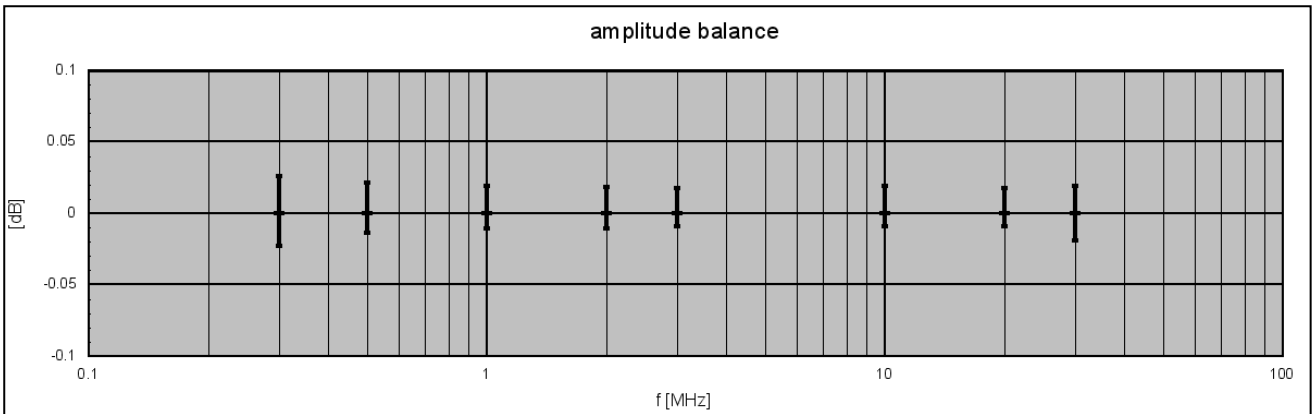
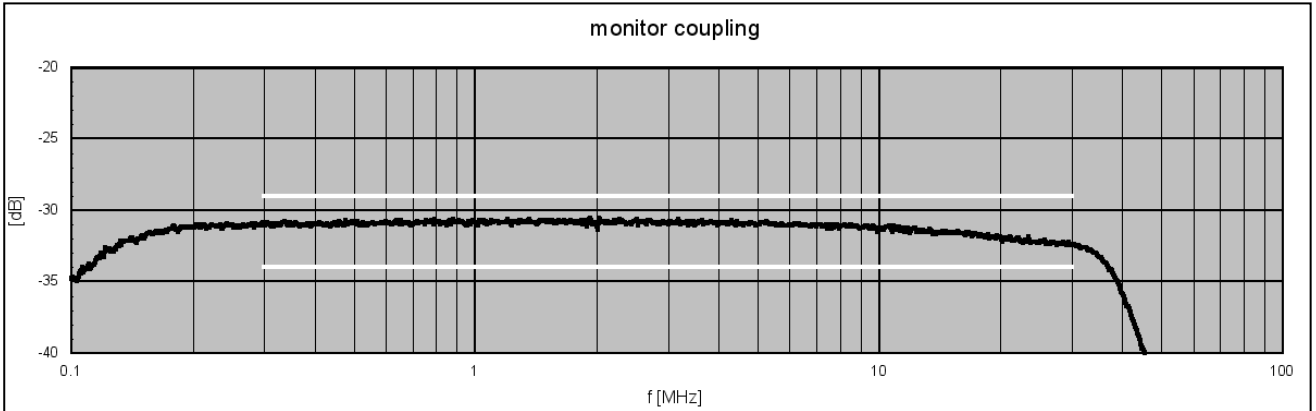


S-Parameters

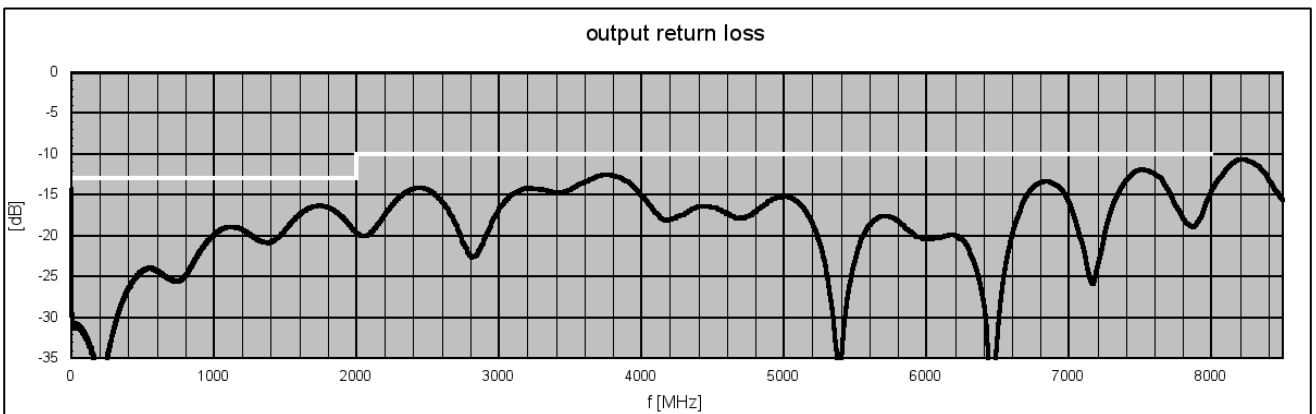
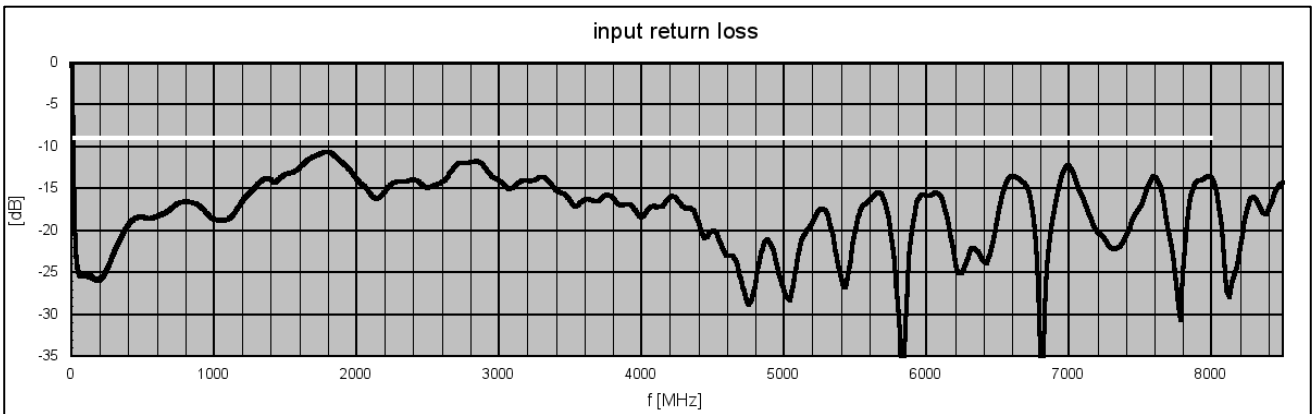
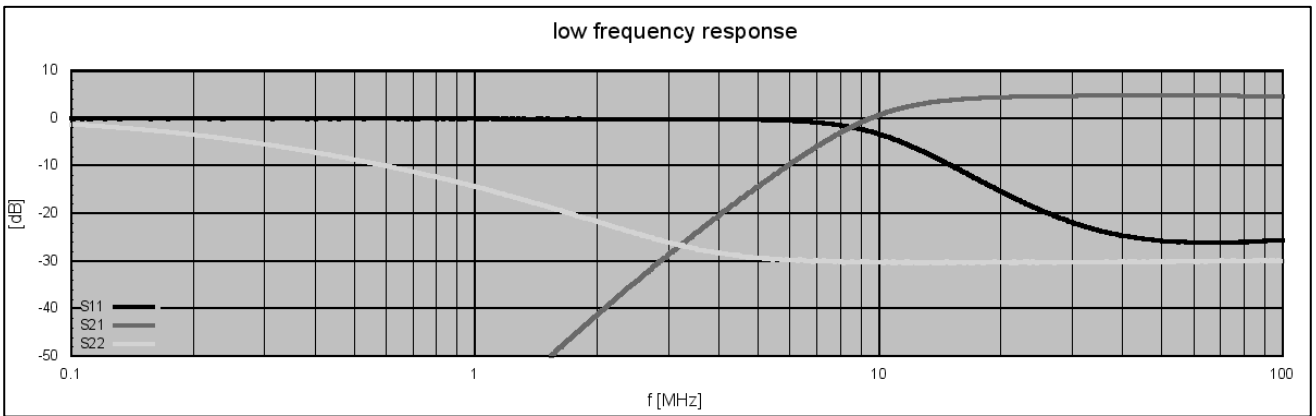
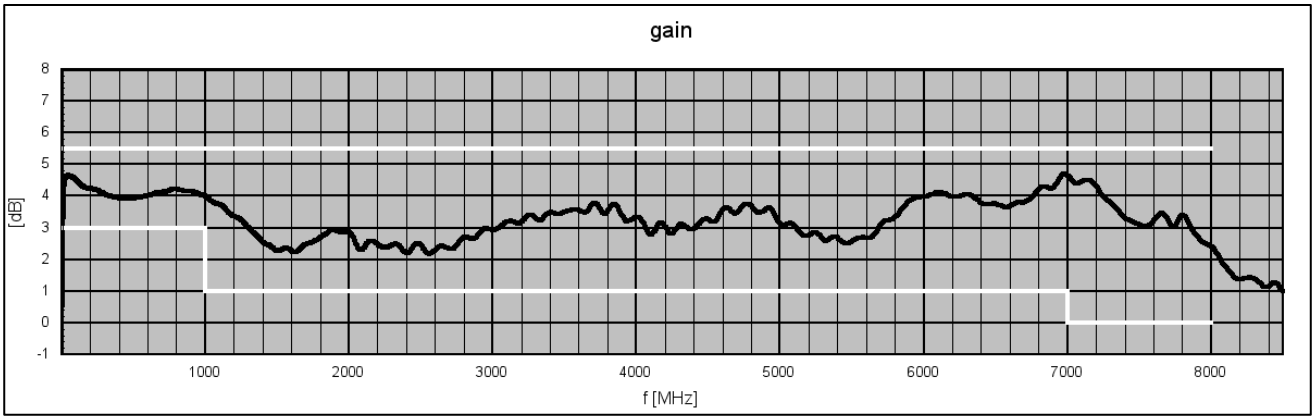
typical responses

Section A: 200 kHz ... 30 MHz





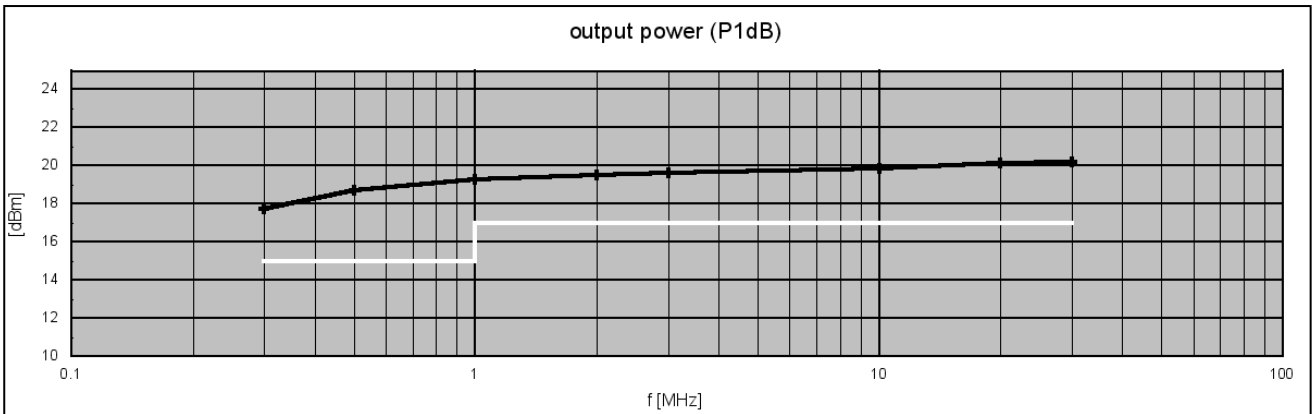
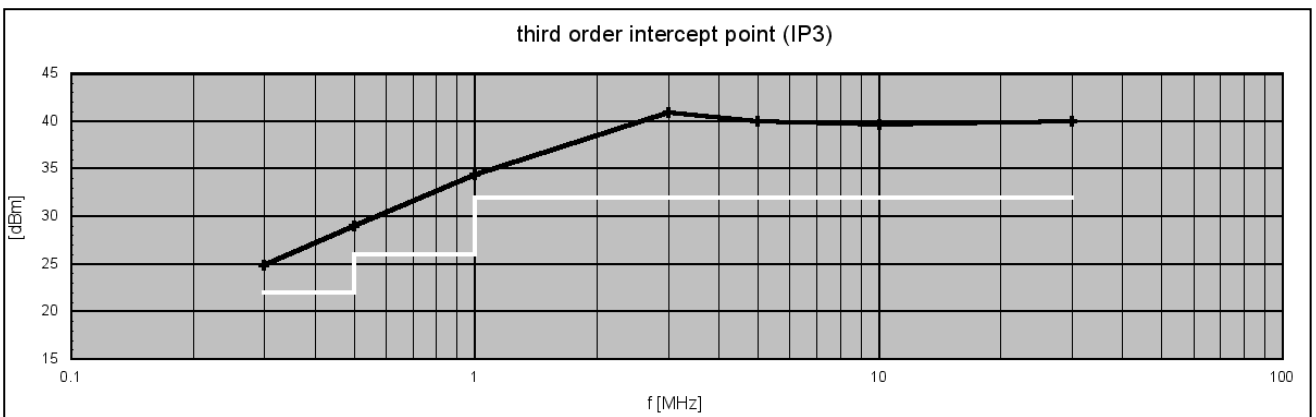
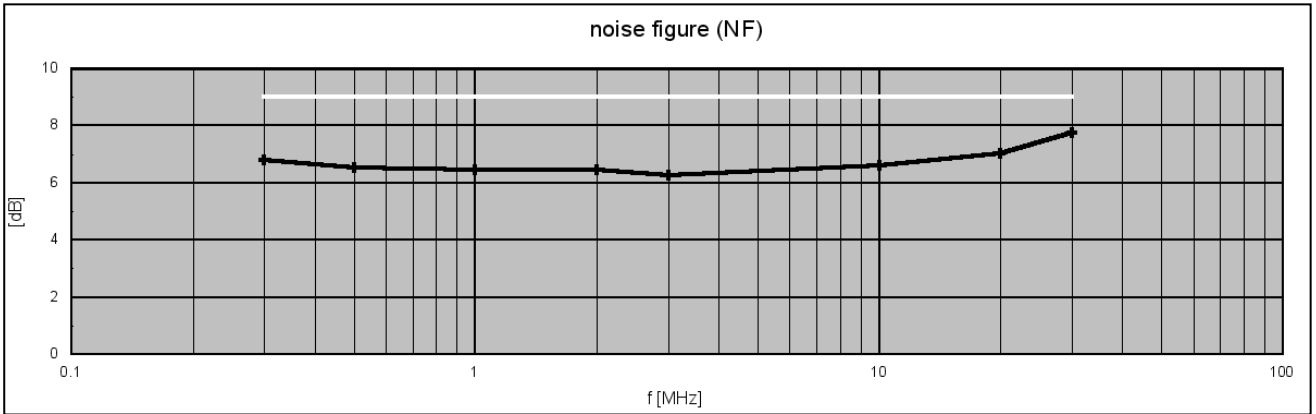
Section B: 20 MHz ... 8000 MHz



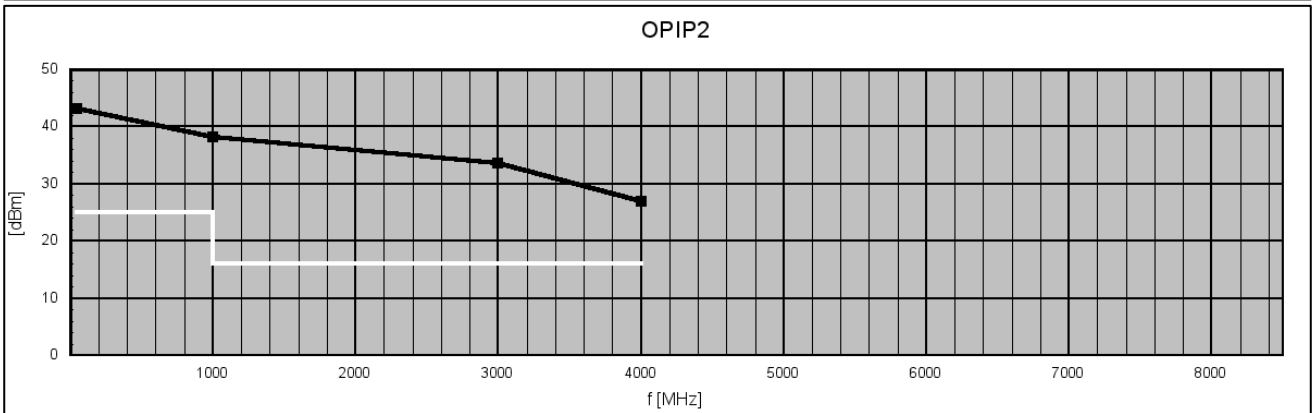
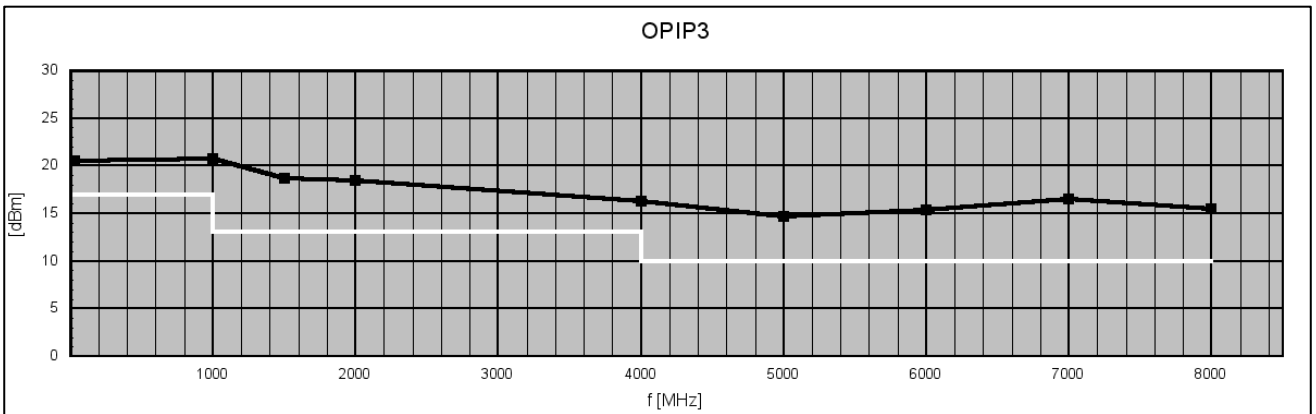
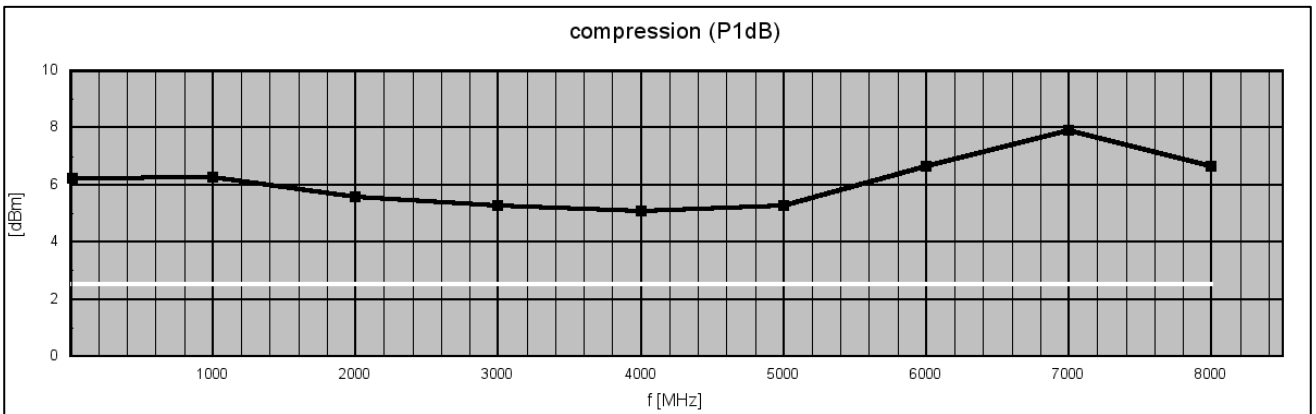
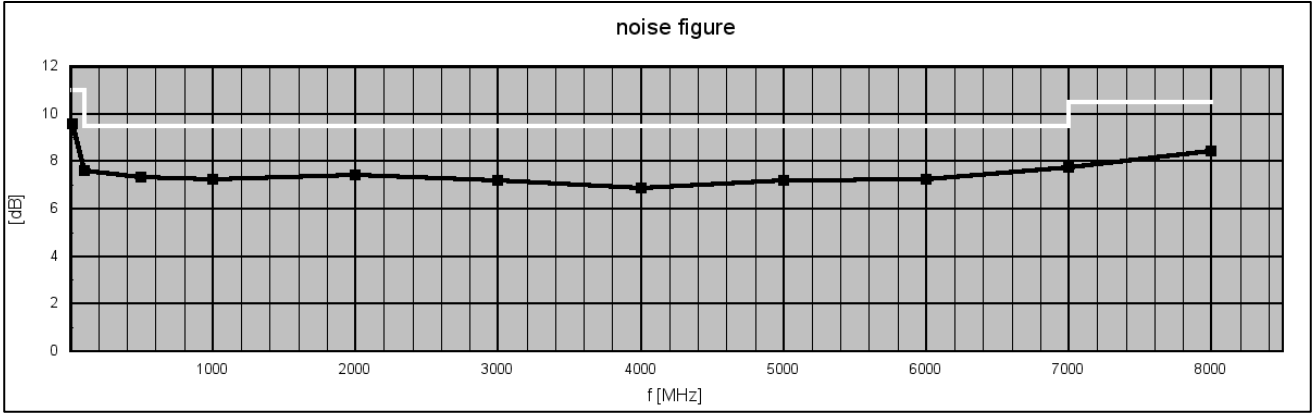
Dynamic Range

typical responses

Section A: 200 kHz ... 30 MHz



Section B: 20 MHz ... 8000 MHz



Appearances

Front View

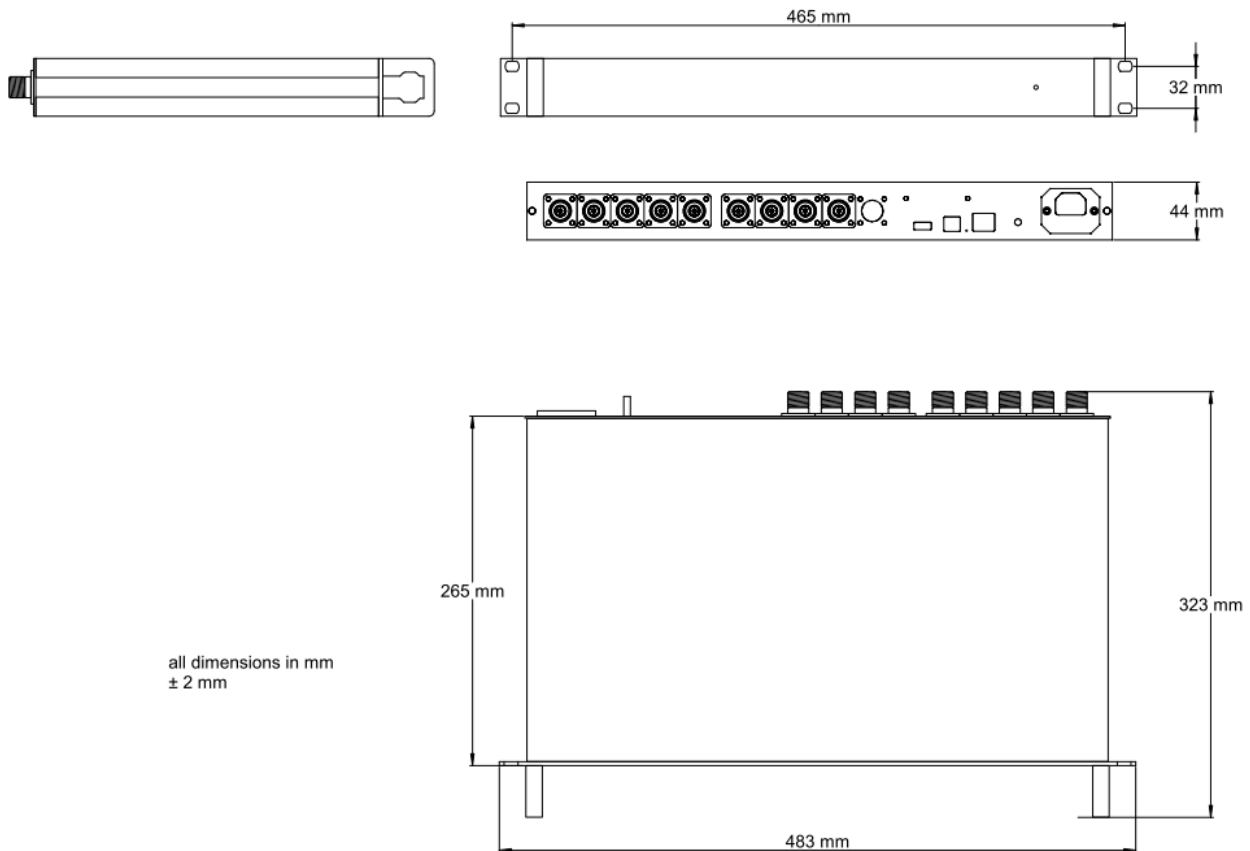


Rear view

Variant with AC Supply and Remote Monitoring (P/N: 2306.6102.2)



Dimensions



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

