BSDU-5DPLXR

Remote Switchable Duplexer Bank for Mobile Communication Tests, 50 Ohms

Features

- compact 19”, 3 U design
- EU LTE Bands 20, 8, 3, 1, 7
- extention 3 external duplexers possible
- low loss RF switches
- LAN and USB interface

Applications

- Product evaluation
- Product validation
- Handover testing
- Roaming testing
- R&D

Scope

The BSDU-5DPLXR is spacifically designed for tests in the context of broadband SDR communication systems. In order to use SDRs in realistic environments, this unit allows the selection of different cellular bands with sufficient selectivity to mitigate broadband interference.
It includes filter banks for five cellular bands: BD20 (800 MHz), BD8 (900 MHz), BD3 (1800 MHz), BD1 (2100 MHz), and BD7 (2600 MHz). Each band is separated into downlink and uplink channels.
Furthermore, the unit allows for the connection of up to three external duplexer modules through RF ports.

Compact

The housing of the BSDU-5DPLXR is a 19”, 3U design for the integration into 19” racks. Positioners located at the bottom of the device allow the use as a table top device, also. For seamless system integration, the RF ports are positioned on the front panel of the device, ensuring straightforward cabling.

Local control

A touch display panel allows users to select the desired duplexer from the front side. Moreover, the display shows basic device information.

Remote control

The BSDU-5DPLXR can be controlled remotely via LAN and USB interface to integrate the instrument into automatic test sequences. A web-based graphical user interface (GUI) enables the setup, initialization, and control of the device.

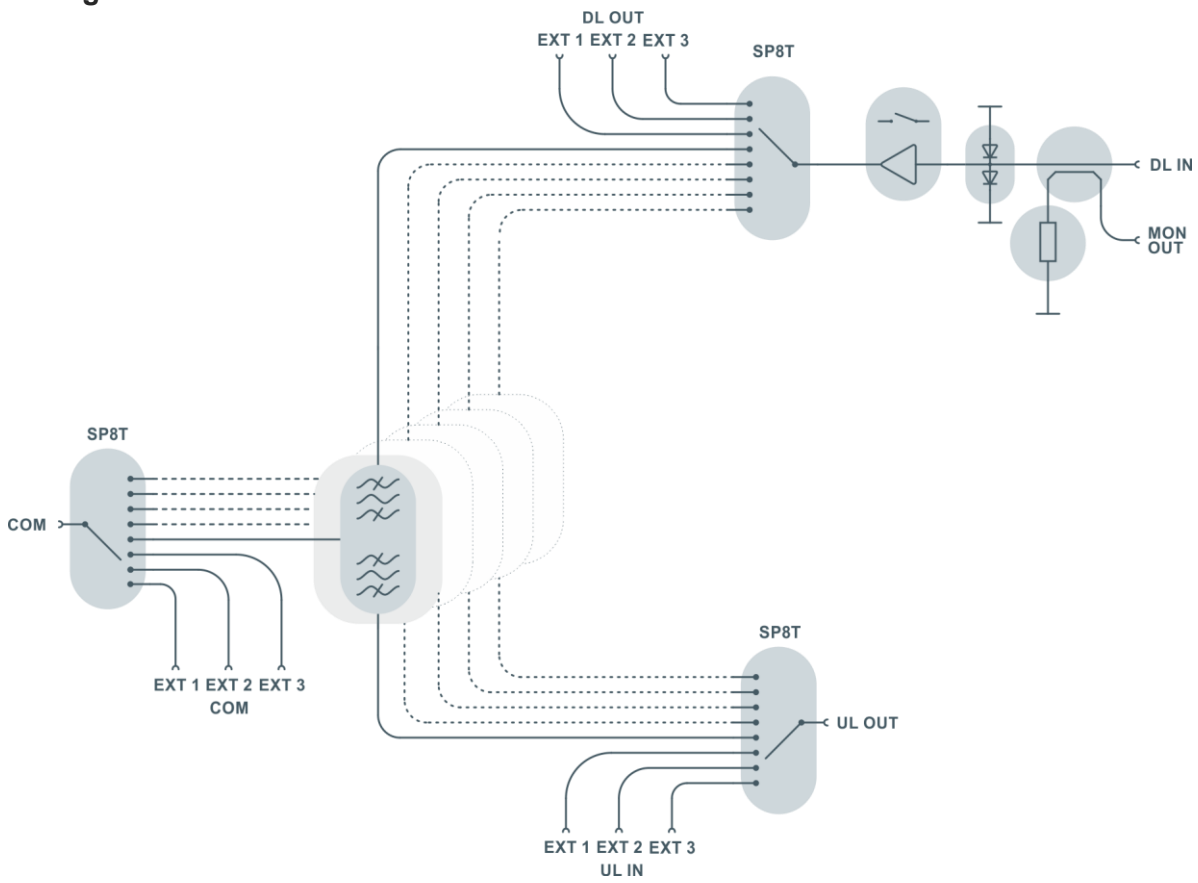
Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Condition
impedance	Z		50		Ohm	
low frequency	f_{MIN}			700	MHz	
high frequency	f_{MAX}	3.8			GHz	
Input power	P_{IN}			+37	dBm	DL IN, LNA OFF, no damage
	P_{IN}			+30	dBm	DL IN, LNA ON, no damage
	P_{IN}			+29	dBm	UL OUT
	P_{IN}			+29	dBm	COM, UL Band
	P_{IN}			+20	dBm	COM, DL Band
	P_{IN}			+20	dBm	EXT DL OUT
	P_{IN}			+50	dBm	EXT UL IN and EXT COM
DL input compression	P_{1dB}	+4	+9		dBm	LNA OFF
	P_{1dB}	+4	+6		dBm	LNA ON
return loss	S_{NN}		-13	-8	dB	
Insertion loss DL	S_{21}	-4	-2		dB	f ≤ 1 GHz, LNA OFF
	S_{21}	-6	-3		dB	1 GHz < f ≤ 2 GHz, LNA OFF
	S_{21}	-7	-4		dB	2 GHz < f ≤ 3 GHz, LNA OFF
	S_{21}	-7	-4		dB	f > 3GHz, LNA OFF
Insertion loss UL	S_{32}	-3	-2		dB	f ≤ 1 GHz
	S_{32}	-4	-2		dB	1 GHz < f ≤ 2 GHz
	S_{32}	-4	-2		dB	2 GHz < f ≤ 3 GHz
	S_{32}	-4	-2		dB	f > 3GHz
DL LNA gain	G_{LNA}	+16	+17	+19	dB	referred to IL @ LNA OFF
DL LNA Noise figure	NF_{LNA}		4	5.5	dB	
DL LNA IIP3	$IIP3_{LNA}$	+17	+18		dBm	
DL monitor coupling	CPL	-25	-23	-21	dB	f = 700 MHz
	CPL	-17	-15	-13	dB	f = 1.800 MHz
	CPL	-13.5	-11	-9.5	dB	f ≥ 2.700 MHz
DL monitor directivity	DIR_{CPL}	-30	20	-20	dB	≤ 2.000 MHz
		-20	13	-10		> 2.000 MHz
DL to UL Isolation	ISO_{DL-UL}	-60	90		dB	downlink frequencies
	ISO_{DL-UL}	-70	90		dB	uplink frequencies
switch isolation	ISO_{OFF}	100	110		dB	f ≤ 2 GHz
	ISO_{OFF}	90	110		dB	2 GHz < f ≤ 3 GHz
	ISO_{OFF}	90	105		dB	f > 3 GHz
800 MHz (Band 20)						
uplink freq. range		832	847	862	MHz	
downlink freq. range		791	806	821	MHz	
900 MHz (Band 8)						
uplink freq. range		880	897,5	915	MHz	
downlink freq. range		925	942,5	960	MHz	
1800 MHz (Band 3)						
uplink freq. range		1710	1447,5	1785	MHz	
downlink freq. range		1805	1842,5	1880	MHz	
2100 MHz (Band 1)						
uplink freq. range		1920	1950	1980	MHz	
downlink freq. range		2110	2140	2170	MHz	
2600 MHz (Band 7)						
uplink freq. range		2500	2535	2570	MHz	
downlink freq. range		2620	2655	2690	MHz	
External Duplexer Extension						
Numb. of ext. ports	n		3			3x UL, 3x DL, 3x COM
DC voltage	U_{DC}			20	V	
ESD discharge resistor	R_{ESD}		4.7		kΩ	
connectors	X		N female			Front panel

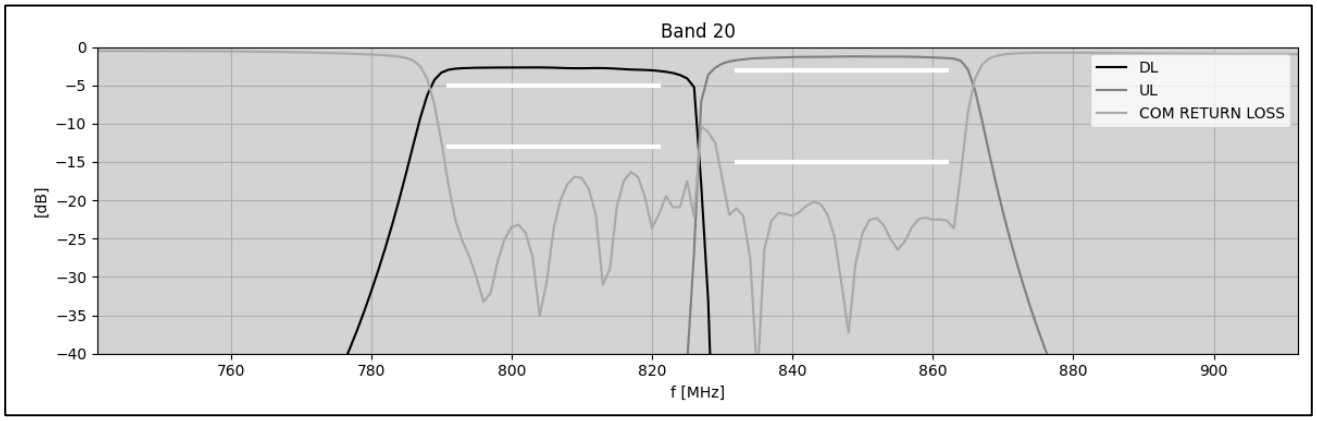
Common Specifications

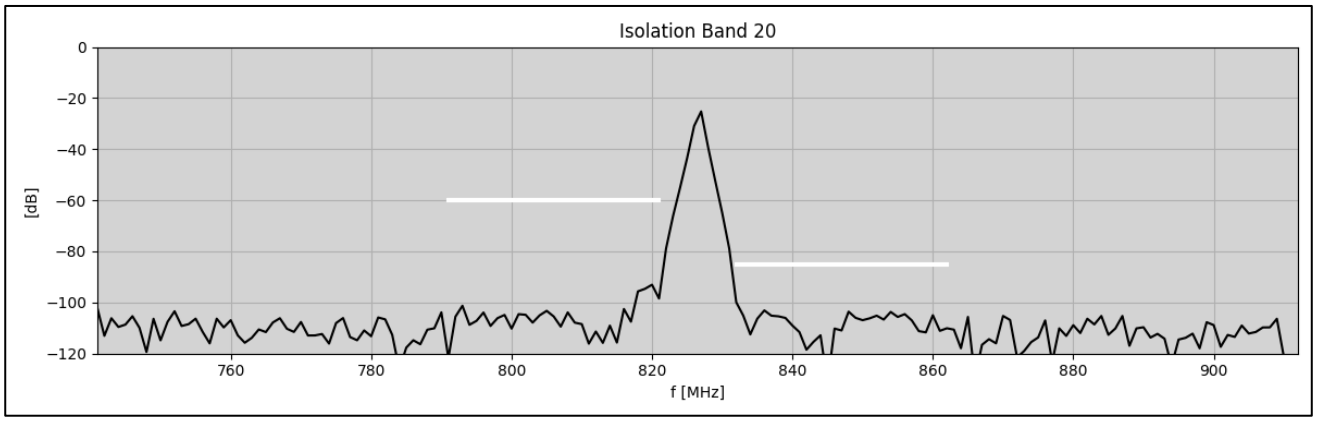
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
supply voltage	U_{AC}	90	230	260	V	50/60 Hz
power consumption	P_{AC}		11		W	
	P_{AC}			80	VA	
mains connector	X	acc. IEC 60320-C14				
dimensions	W x H x D	approx. 465 x 132 x 455			mm	19” 3 U, without handles
weight			11		kg	
operating temp. range	T_o	+5		+40	°C	
storage temp. range	T_s	-40		+70	°C	
remote control interfaces						
Ethernet / LAN		10/100 Base-T				RJ 45
USB		2.0 (high speed)				USB connector type B
ordering information	P/N	2410.6002.1				BSDU-5DPLXR

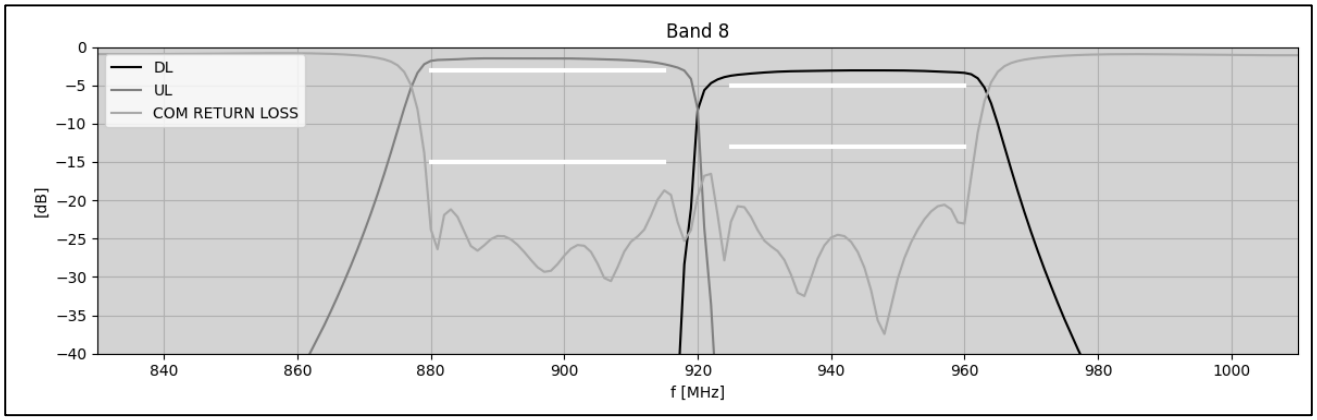
Block Diagram

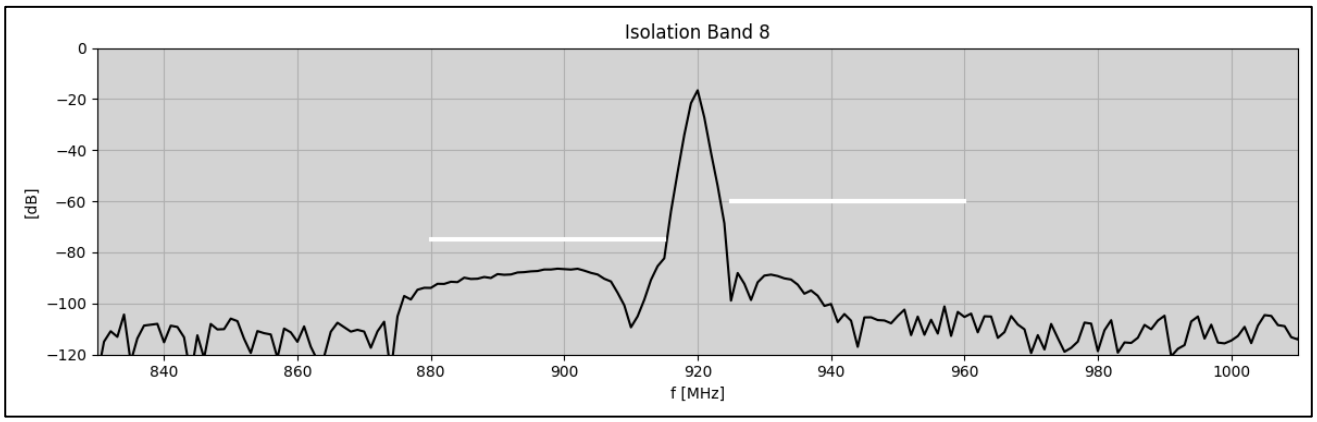


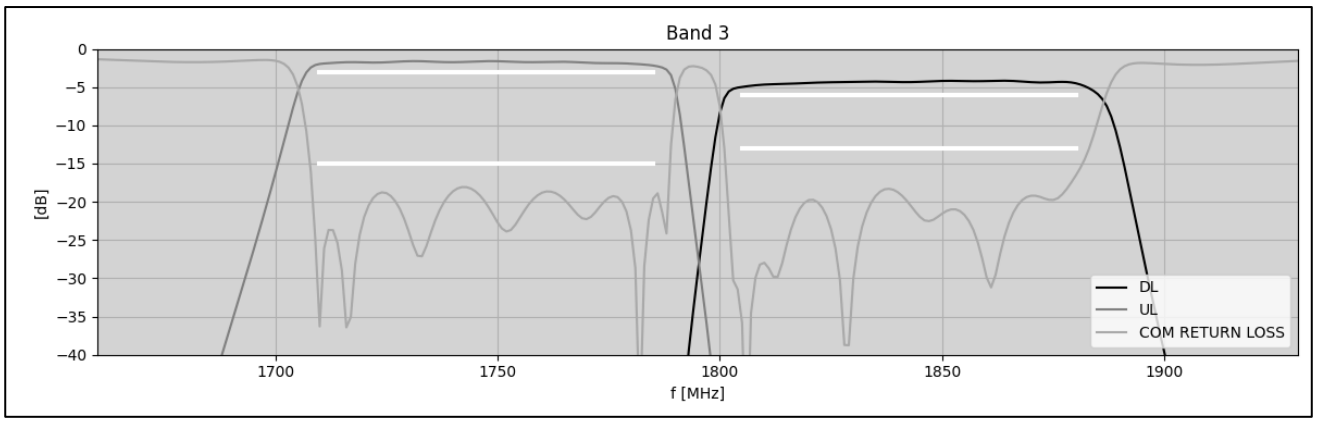
Duplexer Parameters (typical responses)

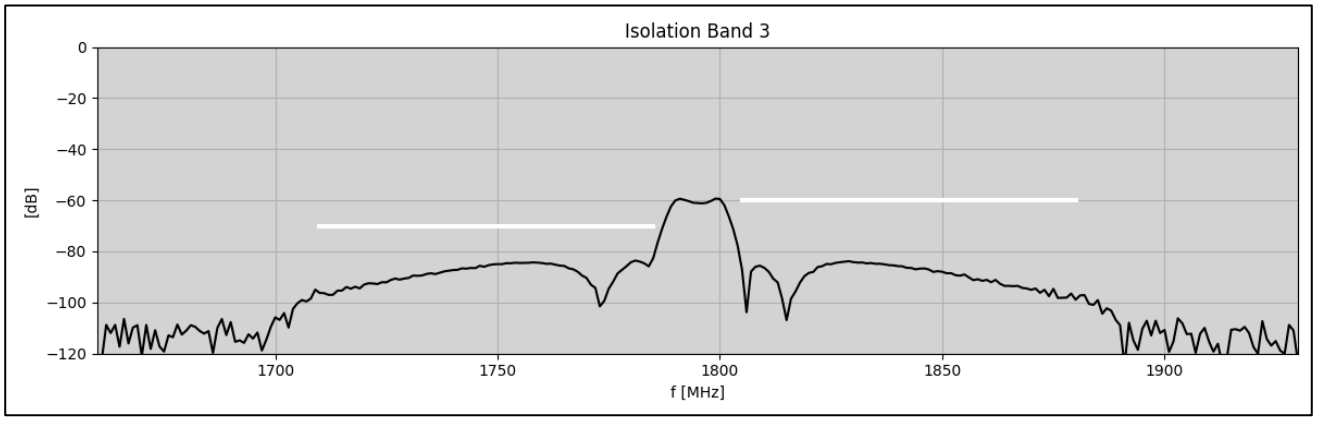


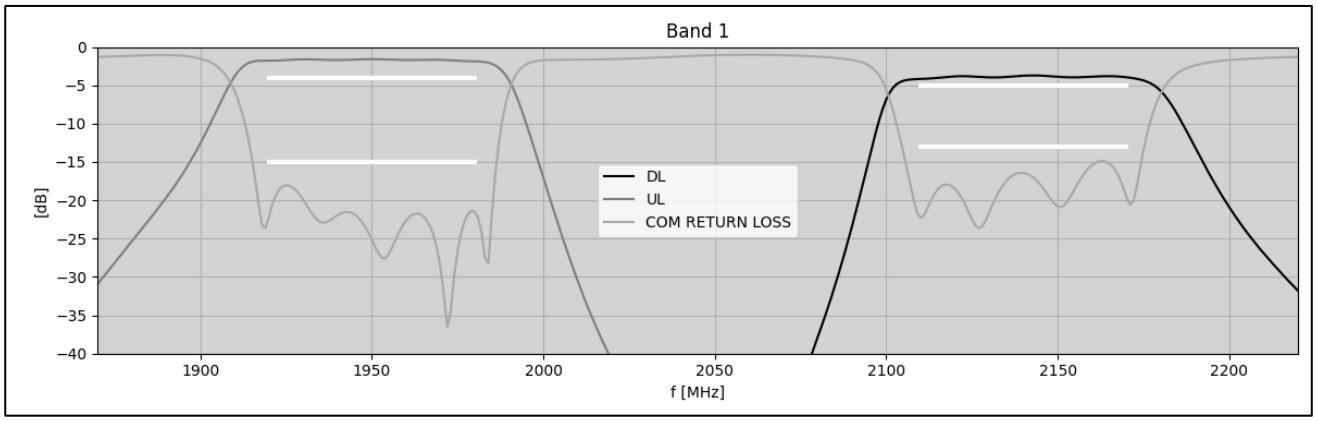


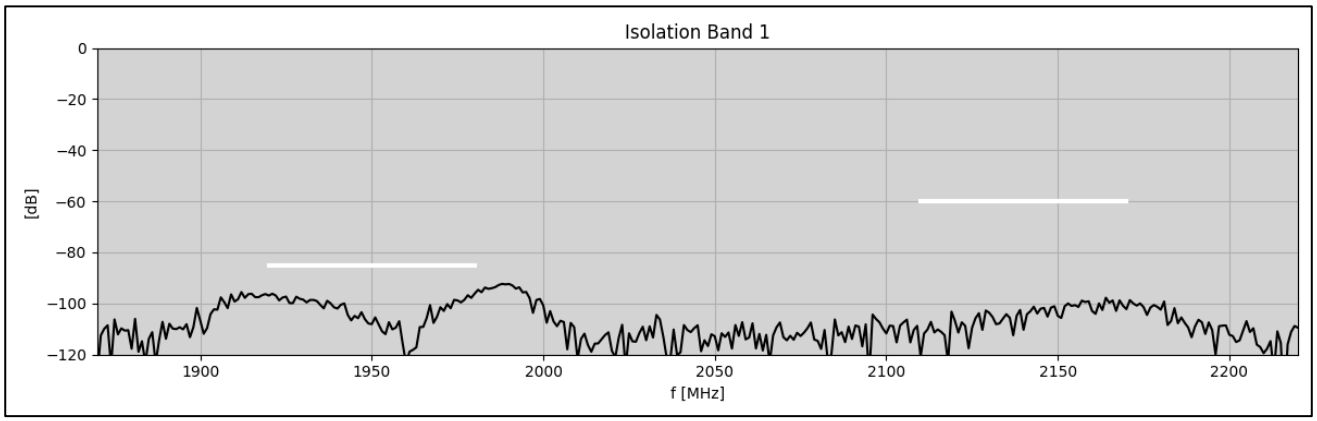


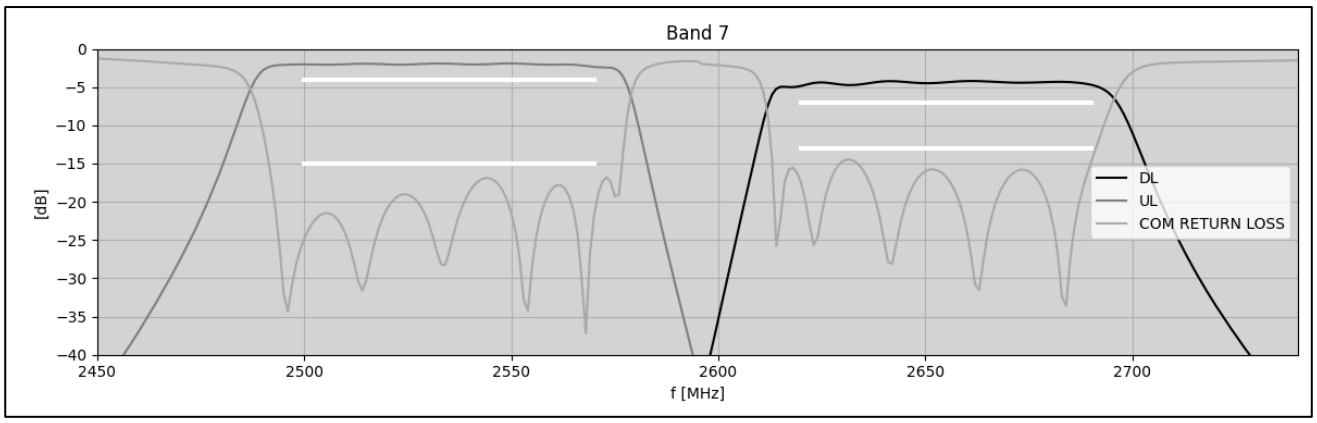


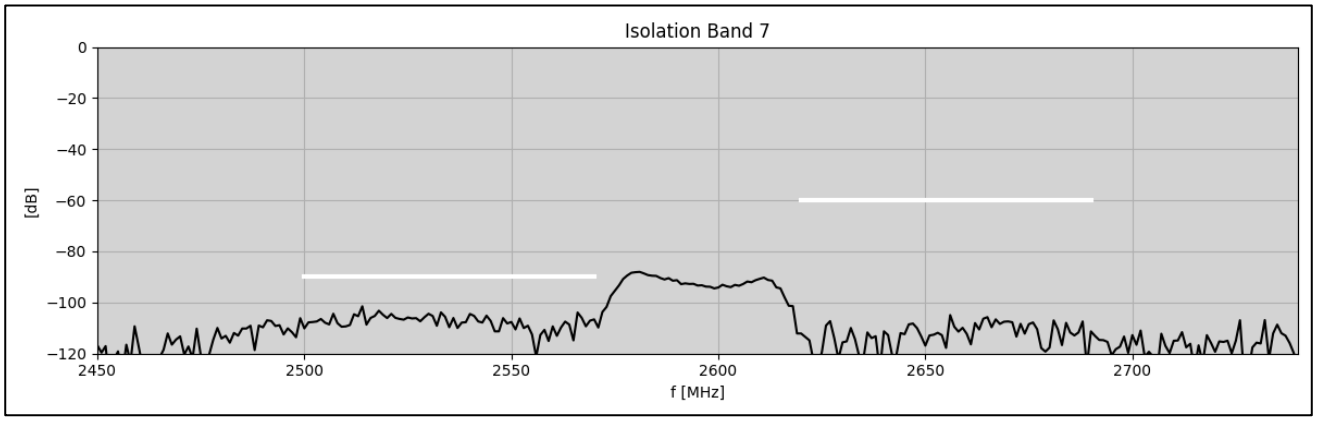

Band 3
[dB]
f [MHz]
DL
UL
COM RETURN LOSS

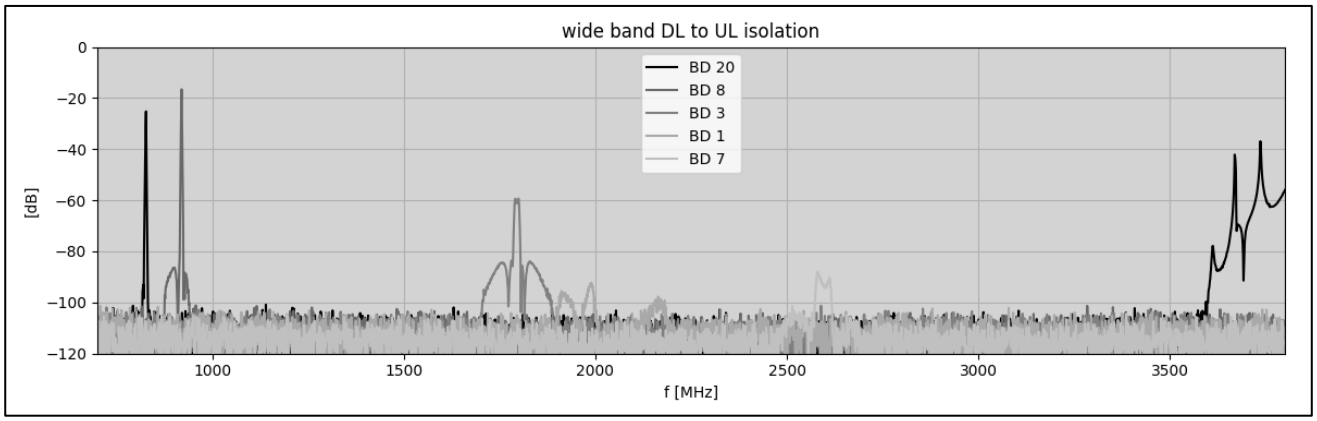

Isolation Band 3
[dB]
f [MHz]


Band 1
[dB]
f [MHz]
DL
UL
COM RETURN LOSS

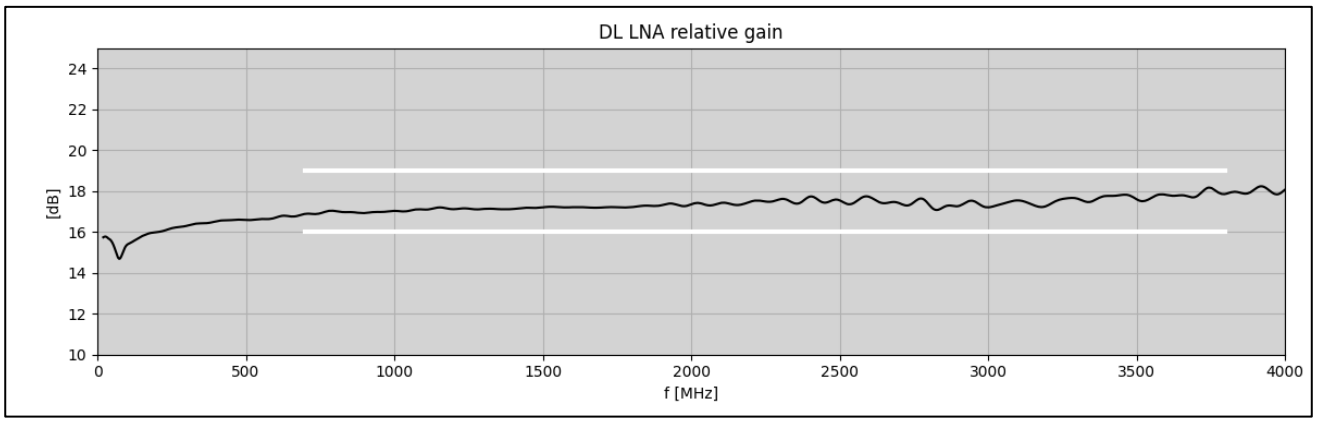

Isolation Band 1
[dB]
f [MHz]

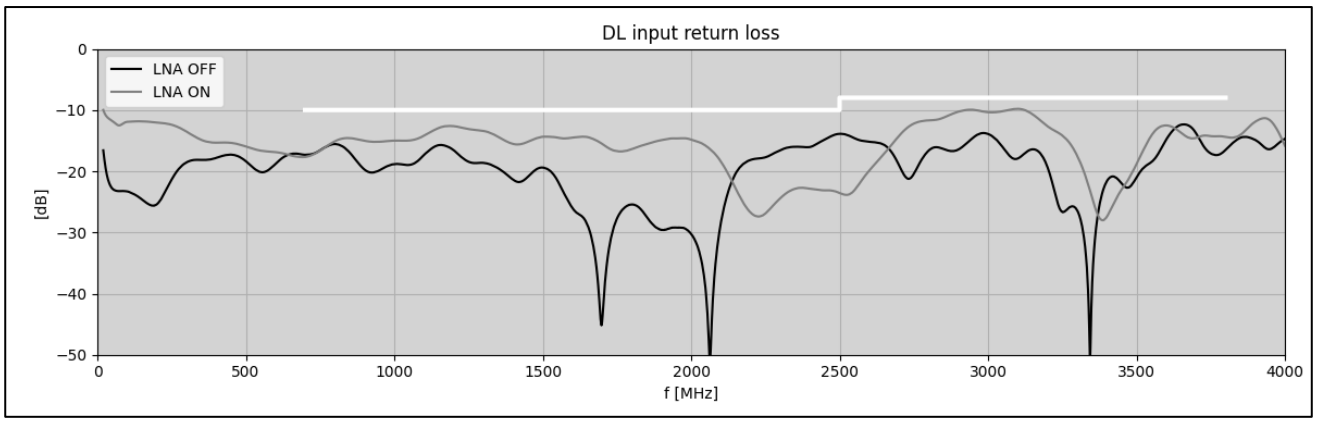


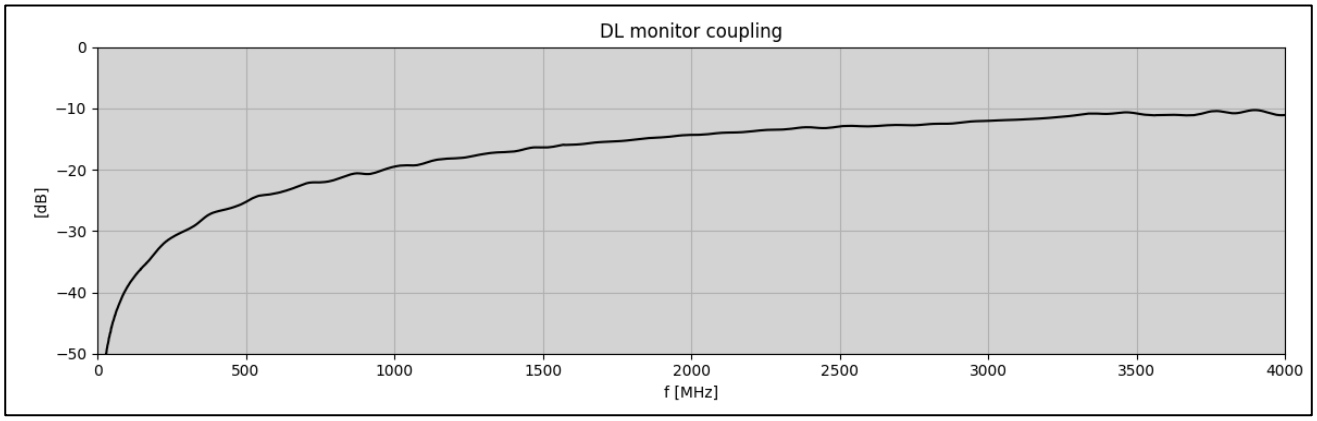


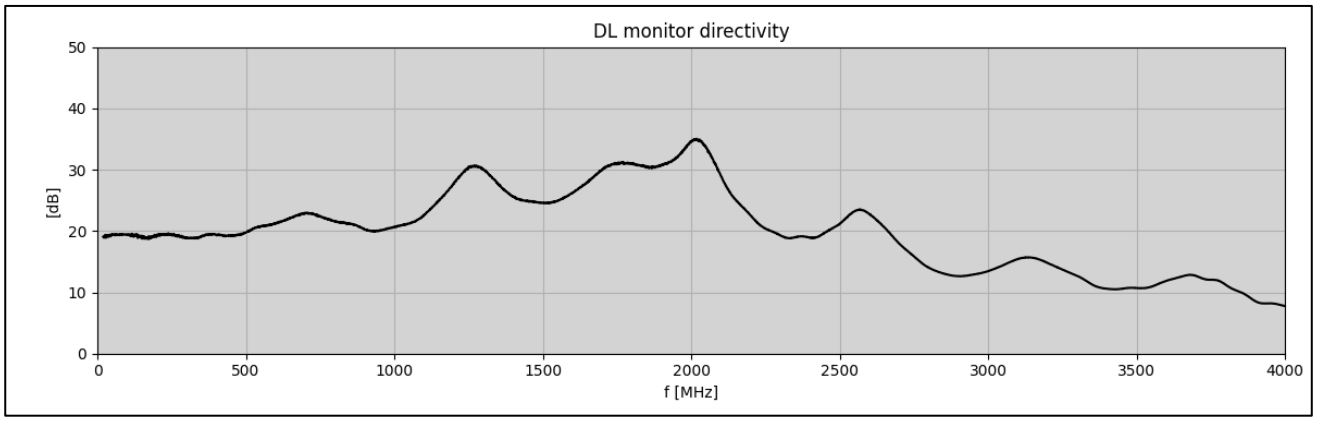


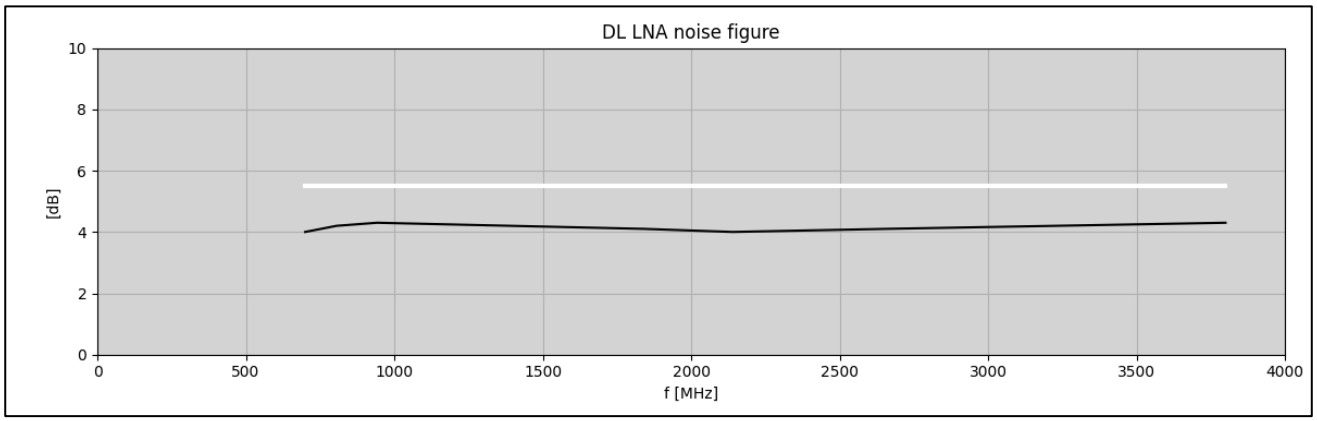
DL Input Parameters

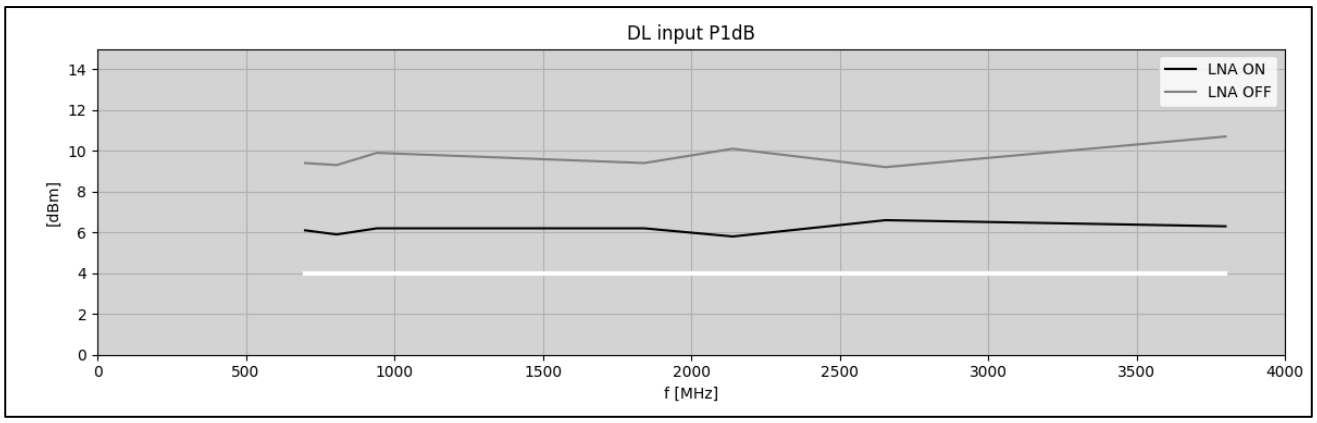


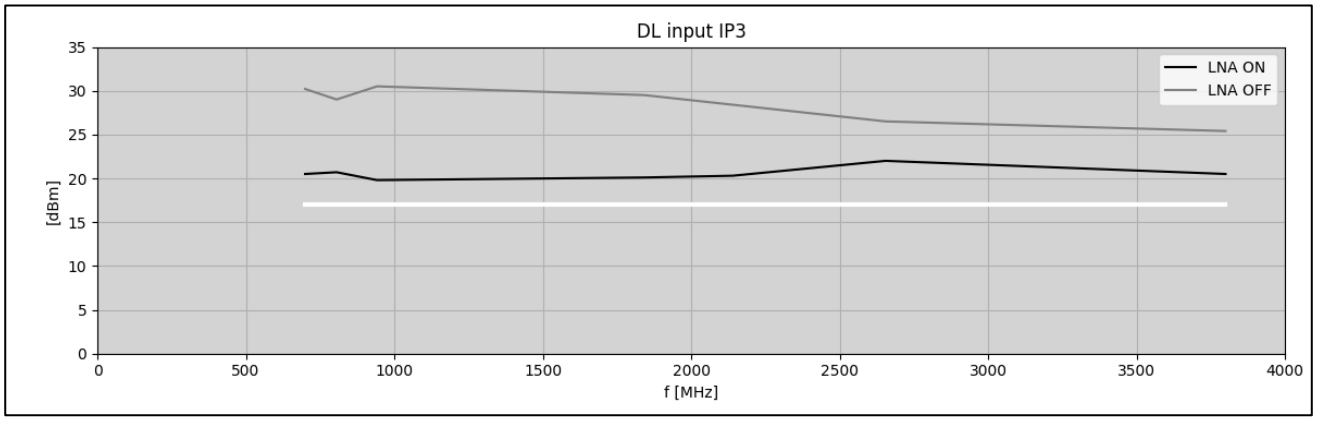

DL input return loss
LNA OFF
LNA ON
[dB]
f [MHz]


DL monitor coupling
[dB]
f [MHz]


DL monitor directivity
[dB]
f [MHz]


DL LNA noise figure
[dB]
f [MHz]

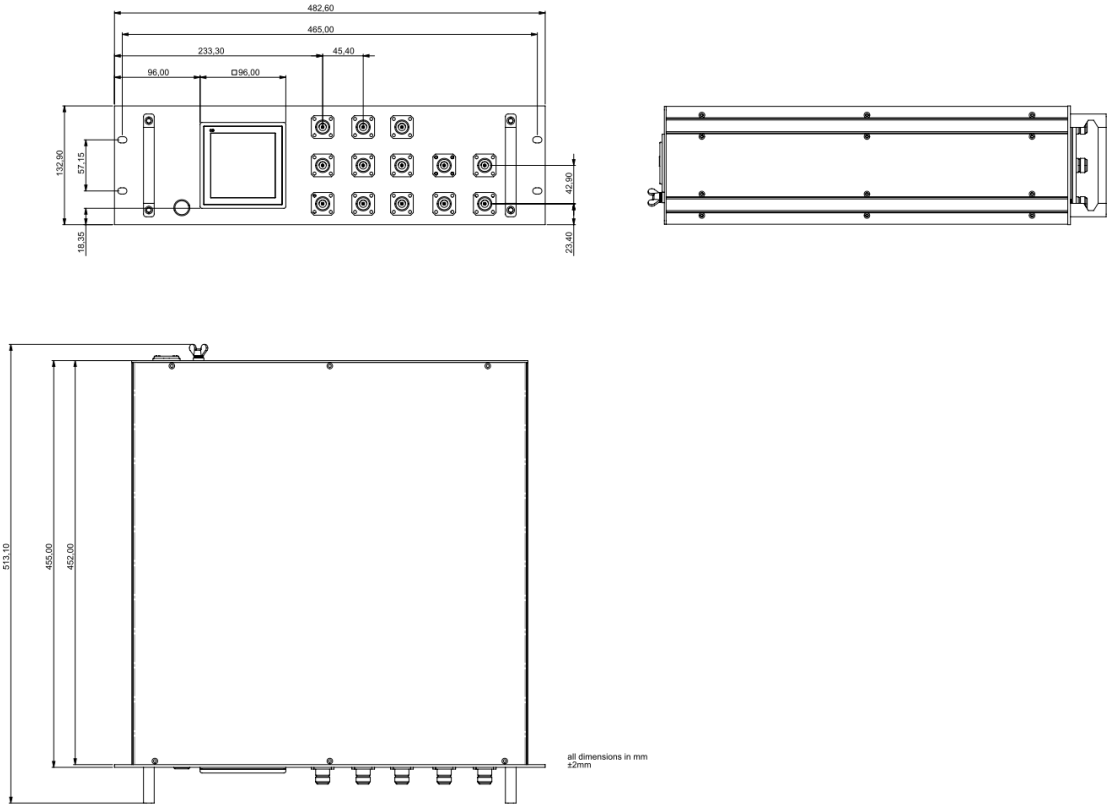

DL input P1dB
LNA ON
LNA OFF
[dBm]
f [MHz]
0
2
4
6
8
10
12
14
0
500
1000
1500
2000
2500
3000
3500
4000


DL input IP3
LNA ON
LNA OFF
[dBm]
f [MHz]
0
5
10
15
20
25
30
35
0
500
1000
1500
2000
2500
3000
3500
4000

Front view

Rear view

Dimensions



Related Products

Product	Description	P/N
AIE-4X4LR	4X4 Channel Air Interface Emulator, 500…9000 MHz 127 dB attenuation range 1U 19" Device	2109.4502.1
AIE-4X4LR	4X4 Channel Air Interface Emulator, 500…9000 MHz 63.5 dB attenuation range 1U 19" Device	2109.4502.2
AIE-W5LR	5 Port Air Interface Emulator, 500…8000 MHz 1U 19" Device	2109.4002.1
AIE-W8LR	8 Port Air Interface Emulator, 500…8000 MHz 2U 19" Device	2109.4102.1