

Spacelink-PCE

Wideband and multi-channel payload and satellite link emulator up to 1.6GHz

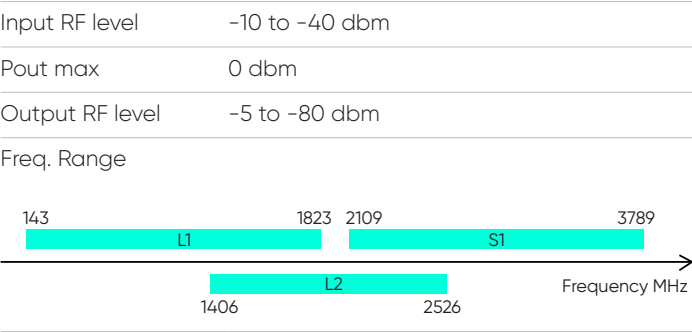
- Hardware-in-the-loop testing
- Modem and payload testing
- Station RF impairments emulation
- Independent or synchronized channels
- Independent uplink and downlink emulation
- LEO, GEO, and MEO satellites, UAVs, modems, ground systems



FUNCTIONS

- Doppler effect
- Propagation delay
- Fading and scintillation
- Additive Gaussian White Noise
- Additive wide band QPSK jammers
- Phase noise (ground & payload)
- RF filters (sat. payload IMUX & OMUX)
- Amplifier Nonlinearity (sat. payload)
- Automatic Level Control (sat. payload)

RF PARAMETERS



Bandwidth (MHz)	PCE Flex			PCE Pro	
Channels activated	L1 band	L2 band	S1 band	L-S band	
1	1680	1120	1680	1680 @L1, S1 1120 @L2	
2	840	560	840	840 @L1, S1 560 @L2	
3 or 4	420	280	420	280	
	420 MHz over full range with 2 channels				
	280 MHz over full range with 4 channels				
Central frequency	can be tuned within RF bands				

PROPAGATION EMULATOR

Slow fading	+5 to -40 dB (0.1 dB step)
Fast fading	0 to -15 dB for each downlink & uplink
Propagation Delay	20 μs to 540 ms (1 ns step) continuously variable
Delay slope	Up to ± 50,000 m/s (0.001 m/s step) Garanteed phase continuity
DOPPLER SHIFT	
Static	Limited only by instantaneous bandwidth (e.g. ± 400 MHz for 800 MHz BW).
Dynamic	Up to ± 1.7 MHz (1 MHz step)

RF AND PAYLOAD EMULATOR

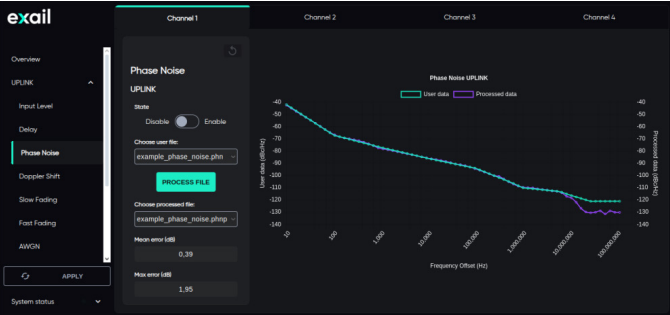
- ALC mode: 1st order loop/off
- Non linearity: AM/AM and AM/PM over more than 80 dB dynamic
- Phase noise: custom up to 70 points from 10 Hz to 10 MHz
- Independant IMUX & OMUX filter emulation

INTERFERERS AND JAMMERS EMULATOR

AWGN Generator	Noise generator with Gaussian transform (up to 5σ)
AWGN Bandwidth	Up to 1.6 GHz
AWGN Flatness	< 0.2 dB
Interferers	Up to 4 Pure or Modulated carrier (QPSK) adjustables in level & frequency

REMOTE CONTROL

Interface	Ethernet (TCP/IP)
Mnemonics	SCPI format
Data Playback Rate	100 Hz real-time
Remote Web GUI / Embedded web server for browser-based management	



ENVIRONMENTAL CONDITIONS

OPERATING	
Temperature	10 °C to 40 °C
Humidity	Up to 95 % at 30 °C
NON OPERATING	
Temperature	-20 °C to 55 °C
Humidity	Up to 95 % at 30 °C
POWER SUPPLY	
Voltage	85-240Vac / 47 to 63 Hz
Power	200W
PHYSICAL CHARACTERISTICS	
Drawer	19 inches × 2 U × 465 mm (excl. connectors and handles)
Weight	≤ 10 kg

SYNCHRONIZATION INTERFACES

- 10 Mhz input
- 1PPS input & output
- Trigger input & output (option)

EU CONFORMITY

EMC	EN 301 489-1 V2.2.0:2017
RoHS	EN IEC 63000:2018
Safety requirements	EN 62368-1:2014

SPACELINK-PCE MODELS

Example	PCE	Flex	L1	- 1
Series				
Propagation Canal Emulator				
Model				
Origin	VHF			
Flex	L1 or L2 or S1			
Pro	L/S Band			
Frequency range				
VHF band	(later)			
L1 band	0.2-1.8 Ghz			
L2 band	1.4-2.5 Ghz			
S1 band	2.1-3.7 Ghz			
L-S band	0.2 -3.7 Ghz			
Number of channels				
1	1 to 1			
2	2 to 2			
3	3 to 3			
4	4 to 4			