

TSQA-1X4AP

4 Channel Precise 16 W RF Power Source 300 MHz...3000 MHz

Features

- very high stability over long periods
- high output level accuracy
- ALC (Automatic Level Control)
- GUI (Graphical User Interface)
- CW (Continuous Wave) and pulse operation (option)

Applications

- qualification of active and passive cellular and wireless front-end components
- research and development (R&D)
- quality assurance (new designs, batch verification)



At a glance

TSQA-1X4AP is a multi-channel RF power source suitable for the frequency range 300 MHz...3 GHz in 50 ohms technology. It offers 4 RF channels with up to 18 watts output power per channel.

An integrated wideband RF signal source is split into 4 channels. Each channel is equipped with a power amplifier with ALC capability.

TSQA-1X4AP is available in variants for continuous wave (CW) and pulsed signal operation.

The TSQA-1X4AP implements software for automatic level control to ensure precise RF output levels with long term stability.

4 RF cables each with length of 1 m for DUT connection is part of delivery.

A typical application of this system is to perform HTOL RF testing (High Operating Lifetime testing) of RF components.

Flexible control interfaces

Physical remote interfaces: LAN or USB. TSQA-1X4AP is controllable via GUI (Graphic User Interface) without any additional effort of application software development and regardless of location. Alternatively, the system offers the control via an SCPI inspired ASCII string protocol for ATE (Automatic test Equipment) applications.

Integrated RF signal source

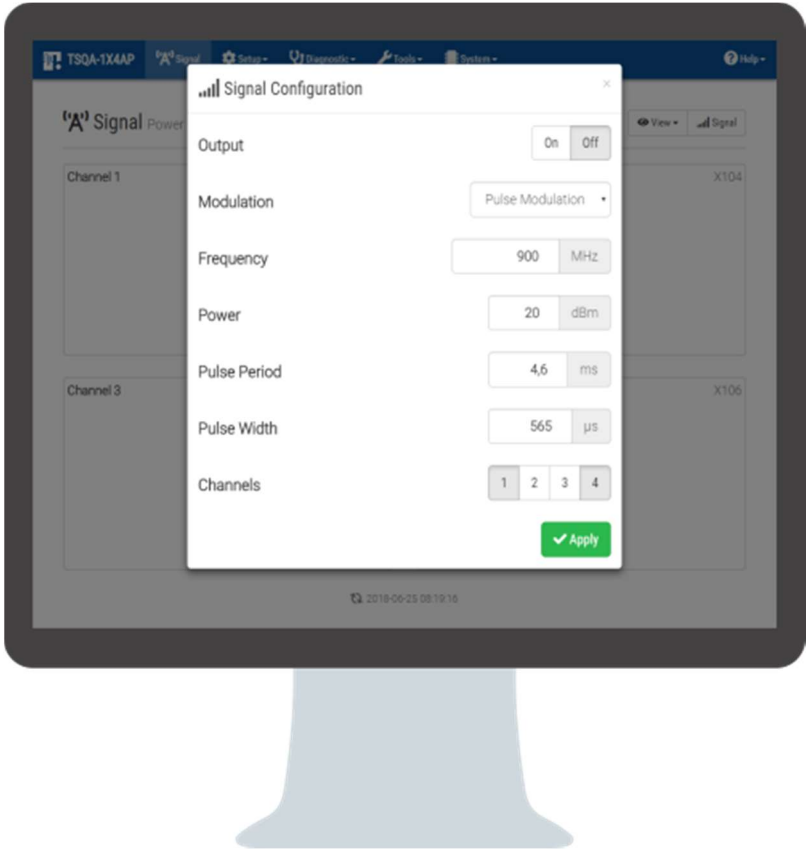
The integrated signal source generates CW- and optional pulsed signals over the full frequency range with high frequency stability.

Software functionalities

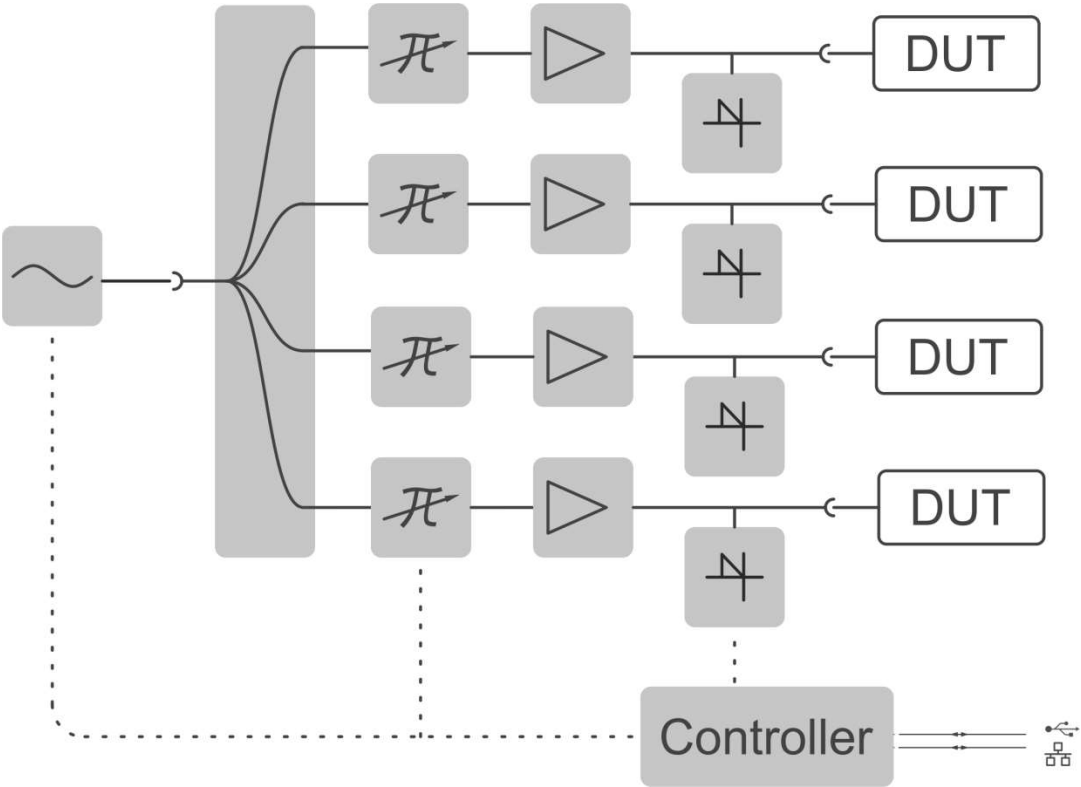
- **Setting of RF output level**
The RF power levels at the input of the DUTs are settable by software in a wide range. The cable type and attenuation can be configured in the software per channel.
- **ALC (Automatic Level Control)**
The RF power levels at the RF outputs are monitored continuously in each channel. The power level will be kept constant automatically. To avoid level overshoots, the ALC algorithm uses a smooth transition.
- **Frequency setting**
The operating frequency can be entered. The software of the TSQA-1X4AP takes the control of the signal generator.
- **Pulse parameter settings**
The pulse parameters like pulse length and period time are settable via GUI or remote interface.



Web-Interface



Principal Scheme



RF Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Impedance	Z_{in} / Z_{out}		50		Ohm	
number of channels	n_{DUT}		4			
low frequency	f_{min}		300	500	MHz	
high frequency	f_{max}	2800	3000		MHz	
output power	P_{OUT}	+38	+42		dBm	$f \leq 2.4$ GHz
	P_{OUT}	+36	+40		dBm	$f > 2.4$ GHz
output power range	P_{OUT}	+20		+43	dBm	
power setting step size	ΔP_{OUT}		0.1		dB	
output power accuracy	dP_{OUT}		± 0.5		dB	CW mode
output power drift	ΔP_{OUT}		± 0.3		dB	over 100 hours
pulse length	t_{pulse}	565		2300	μs	pulse mode
period	t_{period}	4.6		1000	ms	pulse mode
step resolution	ΔL		0,0625		dB	
detection		RMS and peak power				pulse mode
output power accuracy	dP_{OUT}		± 0.7			GSM pulses*
output power drift	ΔP_{OUT}		± 0.3		dB	over 100 hours
output isolation	S_{23}		-80		dB	adjacent channels, full gain

* $t_{pulse} = 565 \mu s$, $t_{period} = 4.6$ ms (duty cycle 0.125)

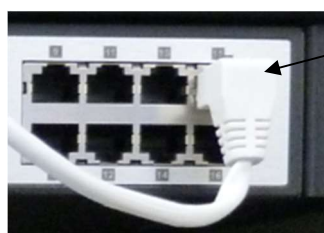
Common Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
power supply	U_{AC}	90	230	260	V	50 / 60 Hz
power consumption	P		280		W	
power plug		type „F“ CEE7/4				
dimensions	W x H x D	approx. 520 x 500 x 500			mm	19", 12 U
weight	m		40		kg	
cable type to DUT		RG400/U				
cable length to DUT	l		1		m	rack rear side to DUTs
RF connectors		SMA male				
remote interface		LAN interface RJ45, 10/100BaseT				GUI or ASCII commands
operating temp. range	T_o	+ 20		+ 30	$^{\circ}C$	within specification
storage temp. range	T_s	- 40		+ 70	$^{\circ}C$	
ordering information	P/N:	1606.1202.1				CW operation
ordering information	P/N:	1606.1202.2				CW and pulse operation

Appearance RF Panel (rear side)



Remote interface (rear side)

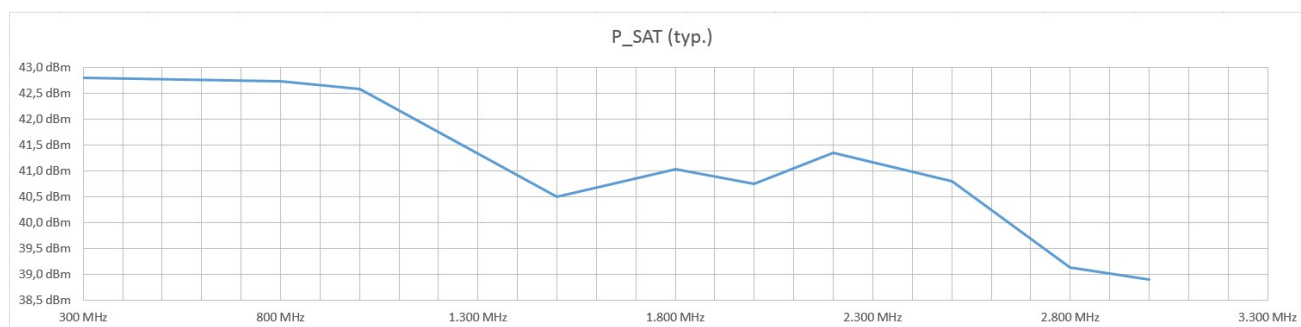


LAN Remote interface

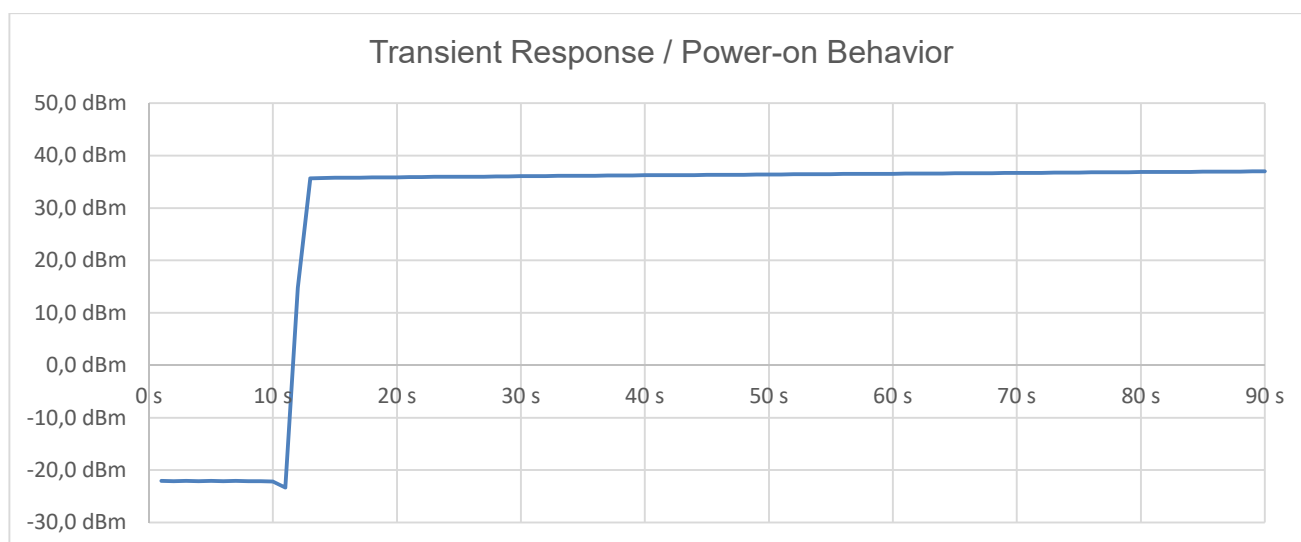
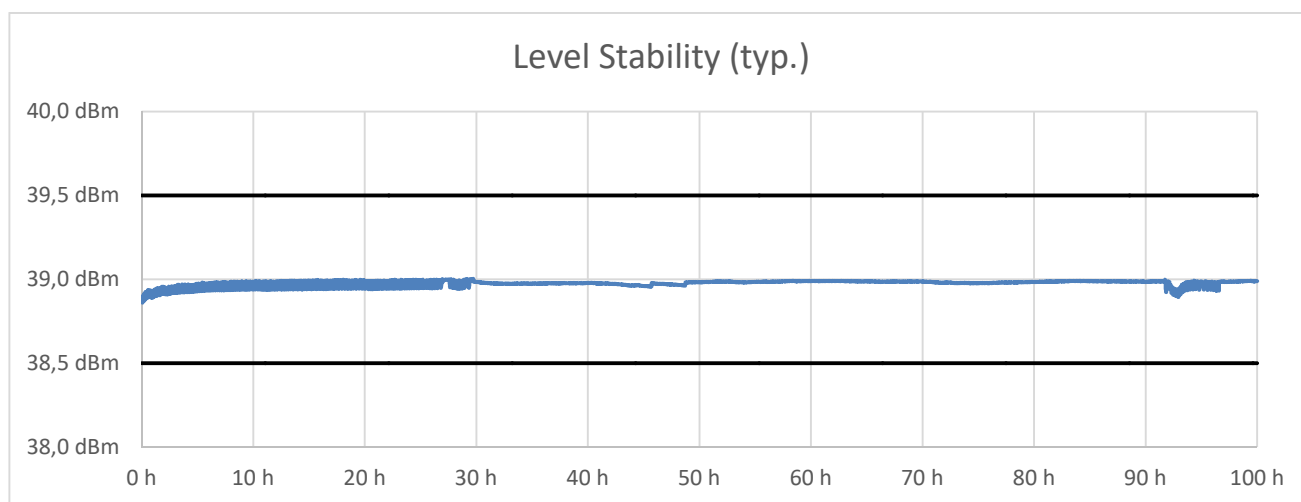


Typical performance

Saturated at RF rear panel of TSQA-1X4AP



Long term stability at P = +39 dBm, f = 1850 MHz



Transient Response / Power-on Behavior (close-up)

