

16 Channel Precise Automatic HTOL RF System, 30 MHz...3000 MHz

Features

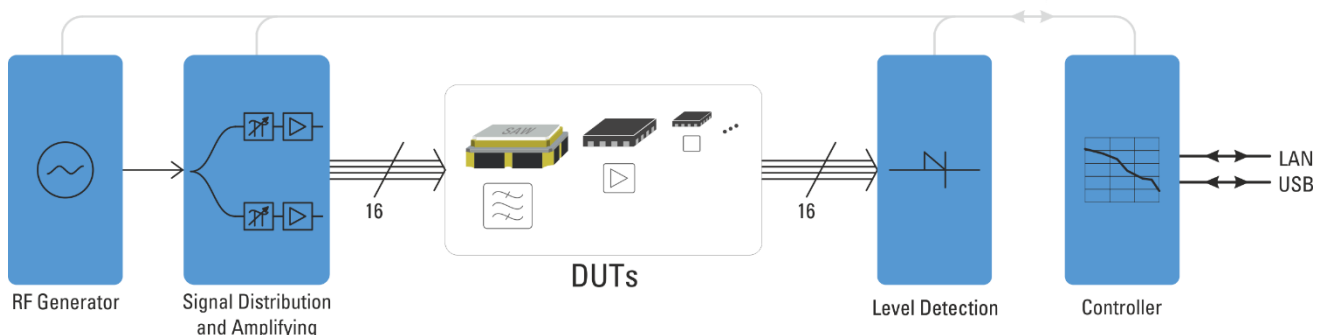
- wideband
- high output level accuracy
- high measurement accuracy
- compact 19", 15 U design
- LAN remote interface
- web control interface

Applications

- precise HTOL tests
High Temperature Operating Life
- qualification of active and passive electronic components
- quality assurance
- research and development (R&D)



Principle Circuit



At a Glance

Power stress tests and HTOL (High Temperature Operating Life) tests requires RF systems which offer multichannel high output power with high level precision.

TSQA-1X16PM is a compact, automatic HTOL subsystem, suitable for the frequency range 30 MHz...3000 MHz in 50 ohms technology with an internal signal source. The HTOL system offers 16 RF channels with up to 2.5 watts output power per channel. The output power is configurable in the range +10 mW (+ 10 dBm) to 2.5 W (+34 dBm).

Automated HTOL Tests

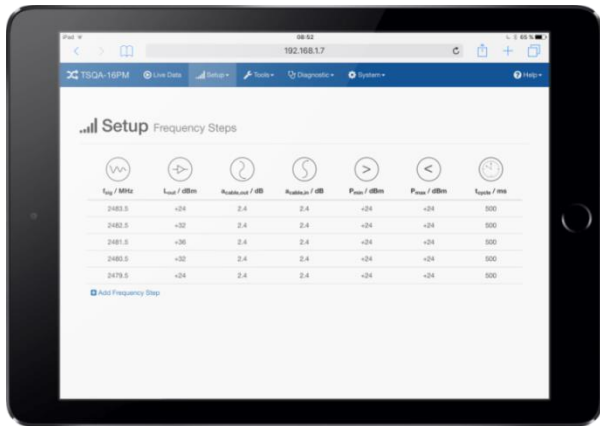
TSQA-1X16PM implements software for automatic testing of i.e. electronic components like semiconductor or SAW filters.

Up to five test frequencies, insertion loss of RF cables and level tolerances at the output of the DUT can be entered in the software. After starting the test sequence, one after the other DUT will be checked on tolerance conditions.

In the case of violating a specified value, the channel number of the faulty DUT added by a time stamp is recorded. The TSQA-1X16PM system can be remote controlled by ASCII strings.

Web-interface

Additional the TSQA-1X16PM is controllable via web-interface. That allows the remote operation of the system without the effort of application software. Additional the control is regardless of the system location.



Example web-interface

Easy Maintenance

Based on the modular design, the TSQA-1X16PM offers an easy maintenance. Every module can be replaced by unfasten the screws on the front panel and removing the RF cables on the rear side of the module. The voltage supply and the connection to the data bus of the modules are done by module connectors in the rack. The system contains one controller module, eight 1X2 power amplifier modules and two 8-channel RF-level detector modules. And additional a signal generator, a 1X8 wideband signal distribution and a flow controlled fan unit.

System Monitoring

Each power amplifier module has built in test functionality. Additional the output power of each channel is continuously monitored by the software. In case the output level deviates more than ± 3 dB from the desired value, the status LED on module front site lights in red colour. So the system monitoring function of the system saves time in the maintenance.

Software Functionalities

TSQA-1X16PM offers several functionalities to enable a time and cost efficient operation of the automatic HTOL system.

- Up to 5 Test Frequencies

The software allows the entry of up to 5 test frequencies. Each DUT will cyclic tested at these frequencies.

- ALC Function

The RF output power levels are monitored in each RF channel. In the case of deviation of more than ± 0.5 dB, the power level will be corrected. The ALC function can be deactivated.

To avoid level overshoots, the ALC algorithm has a smooth character. The output level of each RF channel can be shown.

- Insertion Loss Tolerances of DUTs

The software allows the input of up to 5 insertion loss tolerances. For each test frequency an upper and lower limit can be entered.

In the operation mode the tolerances will be tested on violation. In the case of exceeding the tolerances during the DUT tests, the software generates a failure message with time stamp automatically.

- Consideration of Cable Losses

The losses of the RF cables to and from the DUTs can be entered in the software. The software calculates the input- and output power levels at the DUT. The difference of input- and output level is determined as insertion loss of the DUT. Default values of the cable losses are predefined in the software versus operating frequency. Cable losses are predefined for the test frequencies 850 MHz, 1850 MHz, 2100 MHz, 2400 MHz and 2700 MHz. Cable losses between the predefined frequencies are interpolated.

- Control of signal generator

The software supports the control of the signal generator type ANAPICO APSIN4010HC-1URM-REAR by default.

The control of the signal generator is done by an internal LAN interface.

The integration of other generator types in the software can be carried out on demand.

- Web-interface

The software offers the control of the entire system via web-interface. All parameters like test frequencies, the tolerances of the insertion losses of the DUTs and the total time of test duration can be entered via the configuration page of the web-interface. The start of the HTOL test sequence can be triggered via the web-interface.

The actual test time, the total test duration and a failure list are displayed in on the status page of the web-interface.

- Automatic Test Stop

After the predefined test time has elapsed, the RF level of the signal generator will be tuned down by the software.

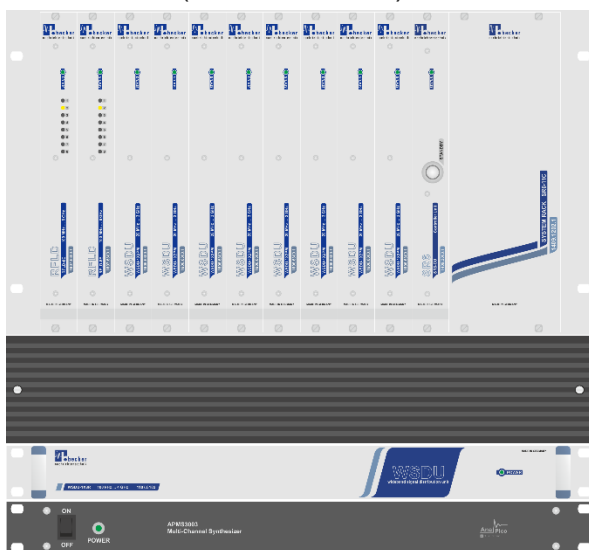
RF Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Impedance	Z_{in} / Z_{out}		50		Ohm	
Number of channels	n_{DUT}		16			
low frequency	f_{min}		30	700	MHz	
high frequency	f_{max}	2500	3000		MHz	
output power accuracy	dP_{OUT}		± 1		dB	
output power range	P_{OUT}	+10		+34	dBm	settable by software
maximum output power	P_{OUT}		+34.0		dBm	@ 1 GHz
	P_{OUT}		+32.5		dBm	@ 2 GHz
	P_{OUT}		+30.5		dBm	@ 2.5 GHz
harmonics	d_2		-30		dBc	2 nd order
output power accuracy	dP_{OUT}		± 2		dB	deviation to the desired value
detector accuracy			± 1		dB	CW

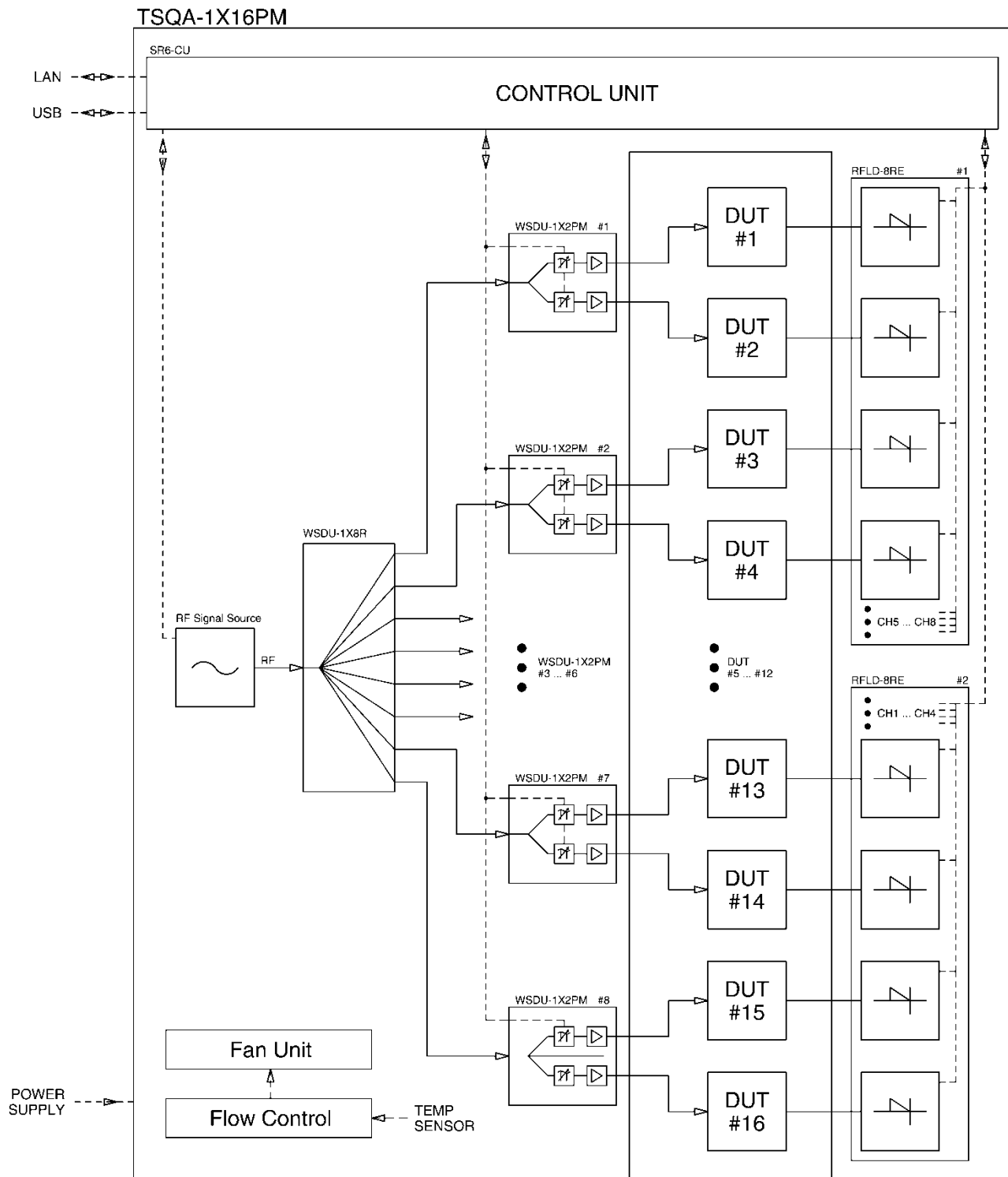
Common Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
power supply	u	90	230	260	V	50 / 60 Hz
power consumption	P		200		W	
power cable length	l	1.5			m	
power plug		type „F“ CEE7/4				
cable feedthrough	h1		42		cm	from floor ground, RF outp. 1...16
output cable length	l	100			cm	free cable length to DUT input
input cable length	l	100			cm	free cable length to DUT output
RF connectors		SMA male				connectors to DUT
dimensions	WxHxD	approx. 610 x 840 x 640			mm	19", 15 U (without feedthrough)
weight			90		kg	
remote interface		RJ45 10/100BaseT				ASCII commands
operating temp. range	T_o	+20		+30	°C	within specification
temperature range	T_T	+5		+45	°C	specification not guaranteed
storage temp. range	T_s	-20		+70	°C	
ordering information		TSQA-1X16PM			1606.1002.1	cable feedthrough on right side
		TSQA-1X16PM			1606.1002.2	cable feedthrough on left side

Front View (inside the rack)



Block Diagram



Related Products

Product	Description	P/N
TSQA-1X80PM	80 Channel Precise Automatic HTOL RF System, 30 MHz...3000 MHz	1606.1012.1
TSQA-1X80PM	80 Channel Precise Automatic HTOL RF System, 30 MHz...3000 MHz	1606.1012.2