Welzek T6290E8S

Radio Signal Tester

Datasheet

(V2.0.0 Edition)

Terms and Conditions

General Conditions

This document outlines the working performance data which is valid only when the instrument is operated within the specified environmental condition, based on 12-month calibration internal, unless otherwise required.

- All data apply to the instrument working from 20 °C to 30 °C;
- The instrument should have been stored in reasonable room temperature for at least 12 hours, then warmed up through 2-hour continuous operation.

Specifications with limits

- Preceded by constraint symbols such as <, ≤, >, ≥, ±, or descriptions such as maximum, limit of, minimum;
- Present product performance under warranty by means of a range of values for the corresponding parameter;
- Based on the design and confirmed as compliant through testing;
- Taking into account of measurement uncertainties like drift and aging, guard bands are applied to narrow the test limits.

Specifications without limits

- No preceding symbols;
- Present product performance for the specified parameter under warranty, with no to negligible deviations from the given value;
- Compliance is assured by design.

Typical data (typ.)

- Presents product performance by means of characteristic information for the given parameter;
- When preceded by <, > or shown as a range, it shows the performance met by approximately 80 % of the instruments at production time;
- Otherwise, it shows the mean value.

Nominal values (nom.)

- Present product performance by means of a characteristic value for the given parameter (e.g. nominal impedance);
- Contrary to typical data, such a value is not assessed statistically and the corresponding parameter is not tested during production.

Measured values (meas.)

- Present anticipated product performance by means of measurement results obtained from individual samples.

Measurement Uncertainties

- Characterize the statistical dispersion of the measured values attributed to a specific parameter;
- Given environmental conditions, aging, wear and tear, uncertainty is defined with a coverage factor of 2 and has been calculated in line with the rules of the Guide to the Expression of Uncertainty in Measurement (GUM).

Disclaimer: Typical data, nominal and measured values are not warranted by Welzek.

Complying with the 3GPP/3GPP2 standard, chip rates are specified in Mcps (million chips per second), whereas bit rates and symbol rates are specified in Mbps (million bits per second), kbps (thousand bits per second) or ksps (thousand symbols per second), and sample rates are specified in Msps (million samples per second). Mcps, kbps, ksps and Msps are not SI units.

Signal Generator Specifications

General description	Signal Generator Spec
Tx channel number	1
Port number per Tx Channel	8 full duplex ports
Tx output	broadcasting mode, each output can be switched on/off separately
Waveform sample memory	4GB memory, 512M samples of IQ data
Frequency and time specifications	**Signal Generator Spec**
Frequency range	400 MHz to 8000 MHz
Frequency setting resolution	1Hz, nom.
Frequency accuracy	equal to time base accuracy
Amplitude specifications	**Signal Generator Spec**
Output level range (Rx Off, Half Duplex) (minimum output level except 3000MHz and 6000MHz)	400 MHz to 4000 MHz: -130 dBm to 0 dBm (over range up to +5 dBm for continuous wave (CW)) 4000 MHz to 6000 MHz: -120 dBm to -10 dBm (for continuous wave (CW)) 6000 MHz to 8000 MHz: -110 dBm to -10 dBm (for continuous wave (CW))
Output level range (Rx On, Full Duplex) (minimum output level except 3000MHz and 6000MHz)	400 MHz to 4000 MHz: -130 dBm to -10 dBm (for continuous wave (CW)) 4000 MHz to 6000 MHz: -120 dBm to -15 dBm (for continuous wave (CW)) 6000 MHz to 8000 MHz: -110 dBm to -20 dBm (for continuous wave (CW))
Output level setting resolution	0.01 dB
Output level setting time	< 30 μs, stable within 0.1dB, tested between 2 list mode bursts to avoid the impact by communication delay of control program.
Output level accuracy	400MHz to 6000MHz: ±0.6 dB, output level ≥ -120dBm 400MHz to 4000MHz: ±1.6 dB, -130dBm ≤ output level < -120dBm 6000MHz to 8000MHz: ±1.2 dB, output level ≥ -80dBm
Output level repeatability	±0.05 dB typ., output level > -80dBm, same level and frequency, no temperature change
Output level linearity	±0.2 dB typ., CW output within level range, with fixed attenuator setting
Level imbalance between ports	±0.6 dB, within the same level and attenuation
Tx attenuation setting range (For compensation of external cable loss)	valid for all ports: -40 dB to 0 dB, when setting level < (maximum output level – 40 dB) (setting level) to 0 dB, when setting level ≥ (maximum output level – 40 dB)
Maximum port-dependent attenuation variety	< 6 dB
Harmonics and spurious	**Signal Generator Spec**
2nd harmonic	< -30 dBc nom., CW output -15 dBm
3rd harmonic	< -40 dBc nom., CW output -15 dBm
nonharmonic spurious	< -50 dBc nom., CW output -15 dBm
Phase noise	**Signal Generator Spec**
Carrier offset 1 MHz, single sideband	< -125 dBc, CW output -15 dBm, 400 MHz to 8000 MHz
Carrier offset 100 KHz, single sideband	< -95 dBc, CW output -15 dBm, 400 MHz to 8000 MHz
Signal bandwidth	**Signal Generator Spec**
Maximum signal bandwidth	500MHz, Center frequency from 600 MHz to 8000 MHz:
Maximum IQ data sample rate	750 Msps
In band amplitude flatness	600MHz to 8000MHz: < ±2 dB (±1.5dB typ.), relative to carrier frequency, over 500 MHz bandwidth, for corrected port 400MHz to 8000MHz: < ±1.5 dB (±1dB typ.), relative to carrier frequency, over 160 MHz bandwidth, for corrected port

In band group delay difference	±2 ns nom., relative to carrier frequency, over 500 MHz bandwidth
RF port specifications	**Signal Generator Spec**
Output Port	RF1/RF2/RF3/RF4/RF5/RF6/RF7/RF8, Type-N Female
Port impedance	50 Ω nom.
Isolation between output ports	active output port to Tx/Rx switched off port, output level on active port > -50 dBm 400MHz to 6000MHz: > 75dB 6000MHz to 8000MHz: > 55dB active output port to Rx input only port, output level on active port > -50 dBm 400MHz to 8000MHz: > 70 dB typ.

Signal Analyzer Specifications

General description	**Signal Analyzer Spec**
Rx channel number	1
Port number per Rx Channel	8 full duplex ports
Rx input	switch between Rx ports
Waveform sample memory	2 GB memory, 512M samples of IQ data
Frequency and time specifications	**Signal Analyzer Spec**
Frequency range	400 MHz to 8000 MHz
Frequency setting resolution	1 Hz, nom.
Frequency accuracy	equal to time base accuracy
Amplitude specifications	**Signal Analyzer Spec**
Maximum input level range	+34 dBm, CW, continuous input +36 dBm, pulsed input, pulse period <1 ms, duty cycle < 50%
Input level setting range (Full ADC scale)	-30dBm to +42dBm (signal power limited by peak 36dBm)
Level range	400MHz to 3000MHz, -82dBm to + 34dBm, CW input, RBW=1KHz 3000MHz to 6000MHz, -72dBm to + 34dBm, CW input, RBW=1KHz 6000MHz to 8000MHz, -65dBm to + 34dBm, CW input, RBW=1KHz
Maximum DC level	0 V DC
Input level setting time	< 30 μs, no frequency change, stable within 0.1 dB, tested between 2 list mode bursts to avoid the impact by communication delay of control program.
Input level accuracy	400MHz to 6000MHz: ±0.6 dB, input level > -50 dBm 6000MHz to 8000MHz: ±1.0 dB, input level > -50 dBm
Input level repeatability	±0.05 dB typ., input level > -50 dBm, same level and frequency, no temperature change
Input level linearity	±0.2 dB typ., CW input within level range, with fixed level setting
Harmonics and spurious response	**Signal Analyzer Spec**
Inherent spurious response (Except for frequencies below 500MHz)	< -80 dB below expected nominal power setting
Spurious response	< -40 dB, CW input, maximum S/N ratio
Phase noise	**Signal Analyzer Spec**
Carrier offset 1 MHz, single sideband	< -125 dBc nom.
Carrier offset 100 KHz, single sideband	< -95 dBc nom.

Signal bandwidth	Signal Analyzer Spec
Maximum signal bandwidth	400MHz, Center frequency from 400 MHz to 8000 MHz:
Maximum IQ data sample rate	750 Msps
In band amplitude flatness	400MHz to 8000MHz: <±1.5 dB (±0.5dB typ.), relative to carrier frequency, over 400 MHz bandwidth
In band group delay difference	±2 ns nom., relative to carrier frequency, over 400 MHz bandwidth
RF port specifications	**Signal Analyzer Spec**
Input Port	RF1/RF2/RF3/RF4/RF5/RF6/RF7/RF8, Type-N Female
Port impedance	50 Ω nom.
VSWR	< 1.3 typ. 400MHz to 4000 MHz < 1.5 typ. 4000MHz to 6000 MHz < 1.8 typ. 6000 MHz to 8000 MHz
Isolation between input ports	> 90 dB typ., active input port to Tx/Rx switched off port, input level on active port > -10 dBm > 90 dB typ., input port to Tx switched on port, input level on active port > -10 dBm

Instrument General Specifications

Dimensions and weight	Instrument General Spec
Dimensions	Width=332 mm, Height=44.5 mm, Depth=344 mm, excluding handle and projections Width=346 mm, Height=58.2 mm, Depth=390 mm, including handle and projections
Weight	Approx. 7.5 kg
Interfaces	**Instrument General Spec**
RF Connectors	8 Type-N female, RF1/RF2/RF3/RF4/RF5/RF6/RF7/RF8
USB1/USB2	2 Type-A, USB2.0 OTG and USB3.0 Slave
Trigger input	BNC Female, TTL nominal
Trigger output	BNC Female, TTL nominal
REF input	BNC Female, 50 Ω nom., AC input Vp-p 0.2 V-2 V nom.
REF output	BNC Female, 50 Ω nom., AC output Vp-p 1 V nom.
DP Port	Display Port V1.2a
LAN1/LAN2	2 RJ-45 (1000Base-T)
QSFP+	IEEE 802.3ae-2002, IEEE 802.3-2008 compliant
mmWave control/clock interface	2 Type-C, internal use only for mmWave module extension
Power input	24 V±2 V DC, max current 8 A
Timebase	**Instrument General Spec**
Temperature stability	±0.01 ppm
Aging tolerance per day	±0.01 ppm
Aging tolerance 1 year	±0.1 ppm
Initial calibration accuracy	±0.05 ppm, at the time of OCXO calibration finished.
Final accuracy	±[initial calibration accuracy + time aging + temperature stability]
Environmental conditions	**Instrument General Spec**
Operation temperature range	+10 °C to +45 °C
Storage temperature range	-25 °C to +60 °C
Damp heat	+40 °C, 80 % relative humidity, steady state, compliant with EN 600068-2-78
EMC (processing)	Compliant with European EMC Directive 2004/108/EC - IEC/EN 61326-1, IEC/EN 61326-2-1

	- CISPR Pub 11 Group 1, class A
	- AS/NZS CISPR 11:2002
	- ICES/NMB-001
Environmental stress (processing)	EN 60068-2-6, sinusoidal vibration
	EN 60068-2-64, random vibration
	Shock, MIL-STD-810, method 516, procedure I
Safety (processing)	Compliant with European Low Voltage Directive 2006/95/EC
	IEC/EN 61010-1
	USA: UL Std.61010-1

Warranty and calibration interval	Instrument General Spec
Warranty	Standard 3-year warranty unless otherwise stated
Calibration interval	1 year recommended

External ACDC adapter Specifications

General description	External ACDC Adapter Spec
AC supply range	85 ~ 264 VAC, 47 ~ 63 Hz, 1A / 230 VAC
Output Voltage	24V DC±4.0%
Output Current	Max. 8 A
Dimensions	Length=175 mm, Width=72 mm, Height=35 mm
Weight	Approx. 0.66kg