S3503 Series Signal/Spectrum Analyzer

Datasheet

Saluki Technology Inc.

The document applies to the signal/spectrum analyzers of the following models:

- S3503A signal/spectrum analyzer (3Hz-4GHz).
- S3503B signal/spectrum analyzer (3Hz-9GHz).
- S3503C signal/spectrum analyzer (3Hz-13.2GHz).
- S3503D signal/spectrum analyzer (3Hz-18GHz).
- S3503E signal/spectrum analyzer (3Hz-26.5GHz).
- S3503F signal/spectrum analyzer (3Hz-40GHz).
- S3503G signal/spectrum analyzer (3Hz-45GHz).
- S3503H signal/spectrum analyzer (3Hz-50GHz).
- S3503L signal/spectrum analyzer (3Hz-67GHz).

Options of the S3503 series signal/spectrum analyzer in addition to standard accessories:

- S3503-H01, Rear panel RF input: postposition the RF signal input interface.
- S3503-H02, High IF output: output the second IF signal with output frequency range of 275MHz-475MHz. Provide 30dB gain, 1dB step.
- S3503-H03, IF output: output the third IF signal with output frequency range of 10MHz-160MHz and step resolution of 1Hz.
- S3503-H04A, Reconstructed IF/video signal output: realize any IF, AM/FM or I/Q signal output through digital reconstruction with bandwidth limit of 40MHz.
- S3503-H04B, Wide band reconstruct IF/video signal output: realize any IF, AM/FM or I/Q signal output through digital reconstruction with bandwidth limit of 50MHz-100MHz.
- S3503-H08, Wide log detect output: output the logarithmic detector signal reflecting the input signal level characteristics.
- S3503-H12A, 40MHz bandwidth digital interface: output real-time signal data through optical fiber and support the signal data output up to 40MHz bandwidth.
- S3503-H12B, 200MHz bandwidth digital interface: output real-time bandwidth data through optical fiber and support the signal data output up to 200MHz bandwidth.
- S3503-H12C, 550MHz bandwidth digital interface: output real-time bandwidth data through optical fiber and support the signal data output up to 550MHz bandwidth.
- S3503-H15, +24V DC power supply: +24V DC power supply.
- S3503-H22A, SAV4711 data recorder: configure a SSD data recorder with same interface characteristics for a real-time and huge-capacity logging of signal data.
- S3503-H22B, SAV4712 data recorder: configure a HDD data recorder with same interface characteristics for a real-time and huge-capacity logging of signal data.
- S3503-H33, Electronic attenuator: frequency range: 3Hz-4GHz, attenuation range: 0-30dB, step: 1dB.
- S3503-H34-04/S3503-H34-09/S3503-H34-13/S3503-H34-18/S3503-H34-26/S3503-H34-40/S3503-H34-45/S3503-H34-50, Low-noise preamplifier: optional low-bnd preamplifier or all-band amplifier. The maximum frequency of all-band amplifier is up to 50GHz (S3503L exception). If an all-band preamplifier is adopted, a noise optimization path of at least 4GHz frequency band should be provided.

- S3503-H36, Pre-selector bypass: bypass the tracking pre-selector in the reception channel. (Necessary option for H38A,H38B and H38C)
- S3503-H38A, 40MHz analysis bandwidth: support 10Hz-40MHz analysis bandwidth.
- S3503-H38B, 200MHz analysis bandwidth: support 10Hz-200MHz analysis bandwidth.
- S3503-H38C, 550MHz analysis bandwidth: support 10Hz-550MHz analysis bandwidth.
- S3503-H39, Audio analysis: realize audio signal parameter test, distortion measurement and waveform analysis.
- S3503-H40, External mixer: be capable of extending frequency test range through external mixing. In this option, LO output, IF input and signal identification are provided.
- S3503-H41, Realtime analysis: provide digital phosphor spectrum and seamless waterfall, including frequency template trigger, which can support real-time spectrum analysis of 200MHz bandwidth.
- S3503-H48, Noise figure measurement: noise source drive and noise figure measurement function (S3503L exception).
- S3503-S01, Absolute power measurement: provide high-precision measurement of RF signal power by connecting an external USB power probe.
- S3503-S04, Phase noise measurement: provide SSB phase noise curve and single point phase noise measurement.
- S3503-S09, Analog demodulation analyzer: provide modulation characteristic and distortion characteristic analysis of AM, FM and PM signals.
- S3503-S10, Transient analyzer: test and analyze transient parameter spectrums, frequency spectrums and time-variant characteristics of signals and support logging data playback.
- S3503-S12, Vector signal analyzer: provides flexible demodulation functions of multiple single-carrier digital modulation signals. It can provide vector charts, constellation diagrams, eye diagrams, spectrum diagrams, etc., to analyze the characteristics of the modulation signal. The modulation error of the signal can be obtained by demodulation, which helps to judge the cause of the signal error.
- S3503-S13, Pulse signal analyzer: realize automatic measurement for time, level and modulation parameters of pulse waveform and statistic analysis of pulse sequences.
- S3503-S40, WLAN 802.11a/b/g measurement: provide broadband wireless LAN protocol physical layer test (802.11a/b/g), covering radio frequency, modulation analysis, and modulation quality testing.
- S3503-S40N, WLAN 802.11n measurement: provide broadband wireless LAN protocol physical layer test (802.11n), covering radio frequency, modulation analysis, and modulation quality testing.
- S3503-S40AC, WLAN 802.11ac measurement: provide broadband wireless LAN protocol physical layer test (802.11ac), covering radio frequency, modulation analysis, and modulation quality testing.
- S3503-S40AX, WLAN 802.11ax measurement: provide broadband wireless LAN protocol physical layer test (802.11ax), covering radio frequency, modulation analysis, and modulation quality testing.
- S3503-S51, DTMB signal test: provide one-button power and modulation analysis functions that comply with the DTMB standard.
- S3503-H97, Mounting suit: handles and accessories for S3503 mounting on standard racks.
- S3503-H99, Aluminum alloy aviation case: high-strength and portable aluminum alloy case with a handle and rolling wheels, which are convenient for transportation.

Preface

Thank you for choosing S3503 Signal/Spectrum Analyzer produced by Saluki Technology Inc.

We devote ourselves to meeting your demands, providing you high-quality measuring instrument and the best after-sales service. We persist with “superior quality and considerate service”, and are committed to offering satisfactory products and service for our clients.

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Saluki Technology

Document Authorization

The information contained in this document is subject to change without notice. The power to interpret the contents of and terms used in this document rests with Saluki.

Product Quality Assurance

The warranty period of the product is 36 months from the date of delivery. The instrument manufacturer will repair or replace damaged parts according to the actual situation within the warranty period.

Product Quality Certificate

The product meets the indicator requirements of the document at the time of delivery. Calibration and measurement are completed by the measuring organization with qualifications specified by the state, and relevant data are provided for reference.

Quality/Settings Management

Research, development, manufacturing and testing of the product comply with the requirements of the quality and environmental management system.

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Content

1. Overview

S3503 Series Signal Analyzer, featured with excellent dynamic range, phase noise, amplitude precision and testing speed, has multiple analysis functions including high-sensitivity spectrum analysis, spectrum power analysis, IQ analysis, multi-domain correlation analysis, pulse parameter analysis, audio analysis, analogue demodulation analysis and phase noise test, providing you reliable excellent testing service.

S3503 has a variety of optional components. These components can improve the performance, provide more interfaces and even new functions. The analyzer also provides digit and analogue output interfaces, which can be easily used to build a measurement system. With such a good performance and flexible optional components, S3503 is perfectly suitable for signal and equipment test of fields including Aviation, aerospace, radar detection, communications, electromagnetic countermeasure, and navigation.

1. 1. Definitions

Specification (Spec.)

Specifications describe the performance of parameters within the warranty of the instrument. Product specifications applies under the following conditions:

1) Two hours storage at ambient temperature(0-40℃) followed by 30 minutes warm-up operation

2) Specified environmental conditions met

3) Instrument is within its calibration cycle.

4) The specification listed in the datasheet includes measurement uncertainties.

Data in this document are Spec. unless otherwise noted.

Typical (typ.)

Typical data is not guaranteed by instrument warranty. It describes additional product performance information that 80 percent of the units exhibit. Typical data only valid at 25℃. Typical performance does not include measurement uncertainty.

Nominal(nom.)

Nominal values indicate expected performance, or describe product performance that is useful in the application of the product, but are not covered by the product warranty.

2. Specifications

2. 1. Frequency & Sweep

2. 1. 1. Frequency Range

Model	Frequency Range (DC Coupled)	Frequency Range (AC Coupled)
S3503A	3Hz - 4GHz	10MHz - 4GHz
S3503B	3Hz - 9GHz	10MHz - 9GHz
S3503C	3Hz - 13.2GHz	10MHz - 13.2GHz
S3503D	3Hz - 18GHz	10MHz - 18GHz
S3503E	3Hz - 26.5GHz	10MHz - 26.5GHz
S3503F	3Hz - 40GHz	10MHz - 40GHz
S3503G	3Hz - 45GHz	10MHz - 45GHz
S3503H	3Hz - 50GHz	10MHz - 50GHz
S3503L	3Hz - 67GHz	/

2. 1. 2. Band Division (Nom.)

Band	LO Multiple (N)	Frequency Range
0	1	3Hz - 4.1GHz
1	1	3.9GHz - 9GHz
2	2	8.7GHz - 18.3GHz
3	4	17.7GHz - 27GHz
4	4	26.6GHz - 40.4GHz
5	8	39.6GHz - 50GHz
6	1	49.5GHz - 54.6GHz
7	2	54.3GHz - 63.9GHz
8	4	63.3GHz - 67GHz

2. 1. 3. Frequency Reference

Frequency Resolution	0.01Hz	
10MHz Reference	Frequency Accuracy	± (To the last calibration date × aging rate +temperature stability + Calibration Accuracy)
	Aging Rate	±1 x 10^{-7}/Year

	Temp Stability	±1.5 x 10^{-8}(20℃ - 30℃), ±5 x 10^{-8}(0℃ - 55℃)
	Calibration Accuracy	± 4 x 10^{-8}/Year
Residual FM (CF=1GHz, RBW = 10Hz, VBW = 10Hz)	≤ (0.25 Hz x N) p-p, the rated value within 20 ms N is the number of frequency multiple times of LO	

2. 1. 4. Frequency Readout Accuracy

Frequency Readout Accuracy	±（Frequency Readout × frequency reference accuracy＋0.1%Frequency Bandwidth＋5% RWB + 2Hz + 0.5*Horizontal resolution）	
	Horizontal resolution = bandwidth / (scan points -1)	
Frequency Counter Accuracy	±（Frequency Readout x Frequency reference accuracy +0.1Hz)	
	Counter Resolution	0.001Hz

2. 1. 5. Span

Range	0Hz (Zero Span)
	10Hz - Max. Frequency
Resolution	2Hz
Accuracy	± (0.1% x Span + Span / (Sweep point - 1))

2. 1. 6. Sweep & Triggering

Sweep Time	**Span≥10Hz**	1ms - 6000s
	Span=0Hz	1us - 6000s Uncertainty: ±0.01%
Sweep Point	101 - 30001	
Trigger	**Source**	Free, Line, video, external level (front panel), external level (back panel), burst RF, timer
	Detector	Normal, positive peak, negative peak, sample, average, root mean square
	Trigger Delay	0 - 500ms
	Trigger Delay Resolution	0.1 us

2. 1. 7. RBW & VBW

RBW Range	1Hz - 3MHz （step by 1, 2, 3, 5), 4, 5, 6, 8, 10, 20MHz
Conversion Uncertainty	1Hz - 10MHz: ±0.3dB, 20MHz: ±1.0dB
Video Bandwidth	1Hz - 3MHz （step by 1, 2, 3, 5), 4, 5, 6, 8, 10, 20MHz (related value)

2. 1. 8. Analysis Bandwidth

Standard	10Hz - 10MHz
Option H38A	10Hz - 40MHz
Option H38B	10Hz - 200MHz
Option H38C	10Hz - 550MHz
Memory Capacity	4GB

2. 2. Amplitude

2. 2. 1. Amplitude Range

Measurement Range	DANL to +30dBm
Attenuator Range	0 - 70dB in 2dB step

2. 2. 2. Maximum Input Level

Maximum Safe Input Level	+30dBm (1W)

2. 2. 3. Display Range

Display Type	Linear, logarithm
Scale	0.1 - 20dB/div
Unit	dBm, dBmV, dBuV, dBmA, dBuA, V, W, A, uV, mV, uA, mA, pW, nW

2. 2. 4. Frequency Response

- **Settings:** 10dB Attenuator, 20℃ - 30℃
- **Pre-amplifier off**

Frequency Range	Feature	Typical
3Hz - 20MHz	±0.7dB	±0.5dB
3Hz - 20MHz (S3503L)	±1.2dB	±0.5dB
20MHz - 2GHz	±0.5dB	±0.4dB
2GHz - 3.6GHz	±0.7dB	±0.5dB
3.6Hz - 4GHz	±1.0dB	±0.8dB
4GHz - 9GHz	±1.5dB	±0.9dB
9GHz - 18GHz	±2.0dB	±1.0dB
18GHz - 26.5GHz	±2.5dB	±1.2dB
26.5GHz - 40GHz	±3.0dB	±1.8dB

40GHz - 50GHz	±3.0dB	±2.0dB
50GHz - 67GHz	±3.5dB	±3.0dB

- **Pre-amplifier Off/On (H34)**

Frequency Range	Feature	Typical
10MHz - 20MHz	±1.2dB/ ±1.5dB	±0.6dB/ ±0.6dB
20MHz - 2GHz	±1.0dB/ ±1.5dB	±0.6dB/ ±0.8dB
2GHz - 3.6GHz	±1.2dB/ ±1.5dB	±0.6dB/ ±0.9dB
3.6Hz - 4GHz	±1.5dB/ ±1.8dB	±1.0dB/ ±1.2dB
4GHz - 9GHz	±2.0dB/ ±2.5dB	±1.3dB/ ±1.5dB
9GHz - 18GHz	±2.5dB/ ±3.0dB	±1.5dB/ ±1.6dB
18GHz - 26.5GHz	±3.0dB/ ±3.5dB	±1.6dB/ ±1.8dB
26.5GHz - 40GHz	±3.5dB/ ±4.0dB	±2.2dB/ ±2.3dB
40GHz - 50GHz	±3.5dB/ ±4.0dB	±2.4dB/ ±2.6dB

2. 2. 5. Absolute Amplitude Accuracy

- **Settings:** 10 dB attenuation, 20 - 30 ℃,1 Hz < RBW < 1 MHz, input signal: -10 ~ -50dBm
- **Pre-amplifier Off**

500MHz	±0.24dB
All Frequency	±（0.24dB＋Frequency Response)

- **Pre-amplifier On (H34)**

All Frequency	±（0.36dB＋Frequency Response)

2. 2. 6. VSWR

- **Settings:** 10 dB attenuation

50MHz - 4GHz	<1.4
4GHz - 9GHz	<1.5
9GHz - 18GHz	<1.8
18GHz - 26.5GHz	<1.7
26.5GHz - 40GHz	<1.8
40GHz - 50GHz	<1.9
50GHz - 67GHz	<3

2. 2. 7. Display Scale Switching Uncertainty

RBW Range	Specification
1Hz - 2MHz, 3,4,5,6,8,10MHz	±0.3dB
20MHz	±1.0dB

2. 2. 8. Reference Level

Range	Log Scale: -170 - +30dBm, step by 0.01dB
Linear Scale	707pV - 7.07V, 0.01dB resolution
Accuracy	0.2dB

2. 2. 9. Display Scale Fidelity

Between –10 dBm and –80 dBm input mixer level	±0.2dB

2. 3. Dynamic Range Specifications

2. 3. 1. 1dB Gain Compression

- **Settings:** 2 tones, RBW=5kHz, 3MHz tone spacing, 20℃ - 30℃
- **Pre-amplifier Off:**

Frequency Range	Feature	Typical
20MHz - 40MHz	-3dBm	0dBm
40MHz - 200MHz	+1dBm	+2.5dBm
200MHz - 4GHz	+3dBm	+5dBm
4GHz - 9GHz	-1dBm	+5dBm
9GHz - 50GHz	+1dBm	+3dBm
50GHz - 67GHz	-1 dBm	/

- **Pre-amplifier On(Option H34) (Nom.):**

Frequency	Nominal
20MHz - 40MHz	-29dBm
40MHz - 200MHz	-28dBm
200MHz - 4GHz	-34dBm
4GHz - 9GHz	-31dBm
9GHz - 50GHz	-28dBm

2. 3. 2. DANL

- **Settings:** 50ohm load, noise marker on, 0dB attenuation, 1Hz RBW, 20℃ - 30℃

- **S3503A/B/C/D/E/F/G/H (Pre-amplifier off):**

Frequency Range	Feature	Typical
10MHz - 1GHz	-153dBm	-156dBm
1GHz - 2GHz	-151dBm	-154dBm
2GHz - 3GHz	-150dBm	-153dBm
3GHz - 3.6GHz	-148dBm	-151dBm
3.6GHz - 4GHz	-145dBm	-148dBm
4GHz - 5GHz	-148dBm	-152dBm
5GHz - 9GHz	-150dBm	-152dBm
9GHz - 18GHz	-148dBm	-151dBm
18GHz - 26.5GHz	-143dBm	-146dBm
26.5GHz - 40GHz	-138dBm	-144dBm
40GHz - 50GHz	-133dBm	-141dBm

- **S3503L (Pre-amplifier off):**

Frequency Range	Feature	Typical
10MHz - 1GHz	-152dBm	-155dBm
1GHz - 2GHz	-151dBm	-153dBm
2GHz - 3GHz	-148dBm	-150dBm
3GHz - 3.6GHz	-147dBm	-148dBm
3.6GHz - 4GHz	-143dBm	-145dBm
4GHz - 5GHz	-144dBm	-147dBm
5GHz - 9GHz	-145dBm	-147dBm
9GHz - 18GHz	-145dBm	-148dBm
18GHz - 26.5GHz	-141dBm	-143dBm
26.5GHz - 40GHz	-135dBm	-138dBm
40GHz - 50GHz	-131dBm	-135dBm
50GHz - 67GHz	-131dBm	-135dBm

- **Pre-amplifier On (Option H34)**

Frequency Range	Feature	Typical
10MHz - 1GHz	-162dBm	-164dBm

1GHz - 2GHz	-162dBm	-165dBm
2GHz - 3GHz	-160dBm	-164dBm
3GHz - 3.6GHz	-156dBm	-163dBm
3.6GHz - 4GHz	-155dBm	-162dBm
4GHz - 5GHz	-155dBm	-164dBm
5GHz - 9GHz	-155dBm	-164dBm
9GHz - 18GHz	-154dBm	-160dBm
18GHz - 26.5GHz	-154dBm	-157dBm
26.5GHz - 40GHz	-150dBm	-152dBm
40GHz - 50GHz	-145dBm	-150dBm

2. 4. Residues, SHI, TOI, Phase Noise

2. 4. 1. Residual Response

- **Settings:** Input terminated and 0 dB attenuation

200kHz - 9GHz	-100dBm
Other Frequency	-100dBm (Nom.)

2. 4. 2. Image Response

- **Settings:** -10dBm Mixer Level

Turned Frequency (f)	Excitation Frequency	Response
10MHz-1.1GHz	f + 150MHz	≤-80dBc
1.1GHz - 4GHz	f - 150MHz	≤-76dBc
4GHz - 26.5GHz	f - 150MHz	≤-80dBc
26.5GHz - 40GHz	f + 150MHz	≤-80dBc
40GHz - 50GHz	f - 150MHz	≤-76dBc
50GHz - 67GHz	f - 150MHz	≤-76dBc
10MHz-1.1GHz	f - 850MHz	≤-80dBc
10MHz - 18GHz	f + 850MHz	≤-80dBc
18GHz - 26.5GHz	f + 850MHz	≤-70dBc
26.5GHz - 40GHz	f - 850MHz	≤-70dBc
40GHz - 50GHz	f + 850MHz	≤-60dBc

Turned Frequency (f)	Excitation Frequency	Response
50GHz - 67GHz	f + 850MHz	≤-80dBc
10MHz - 1.1GHz	f + 3950MHz	≤-80dBc
1.1GHz - 4GHz	f + 10450MHz	≤-80dBc

2. 4. 3. Second Harmonic Distortion(SHI)

Frequency Rnage	Mixer Level	Distortion	SHI
10MHz - 0.55GHz	-15dBm	-54dBc	+39dBm
0.55GHz - 2GHz	-15dBm	-54dBc	+39dBm
2GHz - 4.5GHz	-15dBm	-72dBc	+57dBm
4.5GHz - 9GHz	-15dBm	-70dBc	+55dBm
9GHz - 25GHz	-15dBm	-65dBc	+50dBm
25GHz - 33.5GHz	-15dBm	-65dBc	+50dBm

2. 4. 4. Third Order Intermodulation Distortion

- **Settings:** two tones -10dBm signal, 50kHz tone spacing, 20℃ - 30℃ Nom.

Frequency Range	Feature	Typical
10MHz - 200MHz	+13dBm	+15dBm
200MHz - 4GHz	+13dBm	+16dBm
4GHz - 9GHz	+11dBm	+15dBm
9GHz - 18GHz	+13dBm	+15dBm
18GHz - 50GHz	+13dBm	+17dBm
18GHz - 50GHz (S3503L)	+11dBm	+13dBm
50GHz - 67GHz	+11dBm	+13dBm

2. 4. 5. Phase Noise

- Settings: CF=1GHz, RBW= 10Hz, VBW = 10Hz

Frequency Offset	Feature	Typical
100Hz	-96dBc/Hz	-105dBc/Hz
1kHz	-115dBc/Hz	-118dBc/Hz
10kHz	-125dBc/Hz	-129dBc/Hz
100kHz	-125dBc/Hz	-129dBc/Hz

2. 5. Settings

No. of Markers	12
No. of Traces	6
Average Types	Video, Power, Voltage
Trace Math Functions	Power Sum, Power Diff, log Sum, log diff, Voltage sum, Voltage diff
Trace Operation	clear/write, Max Hold, Min Hold, Avg

2. 6. Interfaces

2. 6. 1. Front Panel

Interface Description	Interface Type	
RF Input Port	S3503A	N type (F)
	S3503B	N type (F)
	S3503C	N type (F)
	S3503D	N type (F)
	S3503E	3.5mm (M)
	S3503F	2.4mm (M)
	S3503G	2.4mm (M)
	S3503H	2.4mm (M)
	S3503L	1.85mm (M)
LO Output Port	10GHz - 40GHz, 50ohm, 2.4mm (f)	
IF Output Port (Option H02,H03)	475MHz, 50ohm, 3.5mm(f)	
Sync Sweep Output	BNC (F)	
USB	USB type B x 2	
Trigger In	BNC (F)	

2. 6. 2. Rear Panel

Interface Description	Interface Type	Interface Description
RF Rear Input Port (Option H01)	S3503A	N type (F)
	S3503B	N type (F)
	S3503C	N type (F)
	S3503D	N type (F)
	S3503E	3.5mm (M)

Interface Description	Interface Type	Interface Description
	S3503F	2.4mm (M)
	S3503G	2.4mm (M)
	S3503H	2.4mm (M)
	S3503L	1.85mm (M)
Keyboard Port	PS/2	
Video Port	VGA	
LAN Port	RJ-45,1000Base-T	
GPIB	IEEE-488	
USB	USB type A x 1 USB type B x 2	
Sync Sweep Output	BNC (F)	
Narrow band I output (Option H04)	50ohm, SMA(F)	
Narrow band Q output (Option H04)	50ohm, SMA(F)	
Broad band I output (Option H04)	50ohm, SMA(F)	
Broad band Q output (Option H04)	50ohm, SMA(F)	
10MHz reference in	50ohm, SMA(F)	
10MHz reference out	50ohm, SMA(F)	
Trigger In	BNC (F)	
Trigger Out 1	BNC (F)	
Trigger Out 2	BNC (F)	

2. 7. General

Power Supply	AC 100-240V , 50/60Hz	
Power Consumption	Max.	400W
	Standby	20W
Operation System	Windows 7	
Storage Capacity	160GB SSD	
Display	1280 x 800, XGA. 10.1" screen	
Operation Temperature	0℃ - 50℃	
Storage Temperature	-40℃ - 70℃	

Weight	Net Weight	25Kg
	Shipping Weight	34Kg
MTBF	5000h	
Calibration cycle	1 year (Recommended)	
Warranty	36 months	
Dimension	LxWxH = 510 x 190 x 534 (with handles and foots)	
	LxWxH = 426 x 177 x 460 (without handles and foots)	

2. 8. Compliant

2. 8. 1. CE

- EMC

Complies with the requirements of the **EC EMC directive 2014/30/EU** with amendments.

Test Standards:

EN 61326-1:2013

EN 61000-3-2:2014

EN 61000-3-3:2013

- Safety

Complies with **EC LVD Directive 2014/35/EU** with amendment.

Test Standard

EN61010-1:2010

2. 8. 2. ISO

- Manufacturing

This instrument is manufactured in an ISO-9001 registered facility

- End of Document -