

IVA SERIES

CABLE AND ANTENNA ANALYZER

The iVA series Cable & Antenna Analyzer is an exciting new product from Kaelus that enables users to accurately measure and locate VSWR/return loss faults in their RF infrastructure. The wireless connectivity allows unprecedented measurement flexibility and opens up new & important possibilities in sweep testing and multi-port testing. The iVA is a rugged battery operated module that can be remotely controlled with any Bluetooth-enabled tablet, smart phone, laptop computer or any of our iPA series Portable Passive Intermodulation analyzers.



FEATURES

- Reinventing site certification sweep testing, dramatically reducing test time on site
- Directly measure insertion loss and isolation when using multiple iVAs. Measure calculated insertion loss with a single iVA and an RF short
- Accurately measure swept VSWR/return loss and Distance-to-Fault in RF path
- Simple and robust Bluetooth connection to a tablet PC or connect with USB or Bluetooth to a laptop computer
- Connect directly to the device under test; eliminates the need for a phase stable cable in most cases
- Uses the Kaelus customer-proven iPA reporting workflow & tagging features to facilitate a faster, simpler and more efficient workflow
- With the Kaelus iPA controlling the iVA, your RL data can be combined with your PIM data into a single report. Reports are combined and completed on-site with no post-processing required
- Simple to operate, highly intuitive software user interface with the unique ability to generate and complete the test report onsite
- Geotag each test point, insert a Google Maps® snapshot directly into the report
- Handy Spectrum Monitor mode for interference checking
- Stimulus mode allows iVA to be used as a signal generator. Can be configured to cycle through a number of frequencies, with a user-defined dwell time at each frequency.



Return Loss Trace



DTF Trace

TECHNICAL SPECIFICATIONS

KEY SPECIFICATIONS	
iVA analysis modes	Return loss, VSWR, Cable loss, Distance-to-fault (DTF), Transmission loss, Isolation, Spectrum monitor, Channel power
Frequency range	560MHz - 2750MHz
Minimum frequency increment	1kHz all modes
Number of measurement points	1 to 2191

ELECTRICAL	
DC power consumption	
Return loss mode	4.7W
Transmission mode	4.7W
Spectrum monitor mode	3.7W
Standby (Idle)	0.6W
Battery	Lithium-Ion 3.6V, 2350 mAh, 8.5Wh
Battery charging method	USB-compatible power source connected to USB port of iVA
Battery operating time	8 Hours at typical usage factor

IVA ANALYSIS MODE - RETURN LOSS	
Sweep speed	4ms per frequency point
RF Output power	0dBm \pm 3dB
Return loss dynamic range	40dB
VSWR Dynamic range	1 - 100:1
Cable loss measurement range*	0 - 20dB
Return loss measurement accuracy	Applies over the temperature range -10°C to $+45^{\circ}\text{C}$, with less than 5°C deviation from calibration temperature.
0 - 10dB	\pm 0.4dB
10 - 20dB	\pm 0.6dB
20 - 30dB	\pm 1.5dB
30 - 40dB	\pm 4.0dB
Calibrated directivity	43dB typical
Interference immunity	+10dBm at 500kHz offset from stimulus frequency
System impedance	50ohms
	* Cable loss can be measured either as a 1-port measurement, with the far end of the cable terminated in an open or short circuit, or directly measured for increased accuracy as a 2-port measurement using a second iVA



IVA ANALYSIS MODE - MULTI-PORT TRANSMISSION (OPTIONAL FEATURE)	
Sweep speed	10ms per frequency point
RF Output power	0dBm \pm 3dB
Dynamic range	90dB
Transmission loss measurement accuracy	Accuracy specifications only applicable where return loss of DUT is greater than 10dB.
0 - 10dB	\pm 1dB
10 - 60dB	\pm 2dB
60 - 90dB	\pm 3dB
Interference immunity	
0 - 60dB	-5dBm at 500kHz offset from stimulus frequency
60 - 100dB	-25dBm at 500kHz offset from stimulus frequency
Note	The iVA offers a novel multi-port S-parameter test capability using multiple iVAs. Up to 7 units can be connected simultaneously via Bluetooth, while up to 32 can be connected via USB. As an example, 6 iVAs could be used to perform measurements on a multi-port antenna. This configuration would cover all 36 transmission pathways (6x6), including the return loss at each port (6 measurements), and the transmission loss between every possible pair of ports (30 measurements). Return loss measurements made by the iVA contain both magnitude and phase information, while transmission loss measurements are limited to magnitude only.

IVA ANALYSIS MODE - SPECTRUM MONITOR	
Sweep speed	2ms per frequency point
Measurement range	
Low power range	-35 to -115dBm (software default)
High power range	+20 to -50dBm
Receiver noise figure (low power range)	15dB
Resolution bandwidth	20kHz
Displayed average noise level (RBW = 20kHz)	-115dBm low power range, -50dBm high power range
Measurement accuracy	±3dB
Maximum input power without damage	+23dBm
Input IP3 (low power range)	+18dBm
Interference immunity	
Low power range	-25dBm at 500kHz offset from stimulus frequency (software default)
High power range	-5dBm at 500kHz offset from stimulus frequency
Return loss at iVA test port	10dB minimum / 15dB typical

IVA ANALYSIS MODE - CHANNEL POWER MODE	
Measurement modes (See Note 1)	CW signal mode Modulated signal mode Occupied bandwidth Adjacent channel power ratio
Dynamic range in CW mode	
Low power range	-100 to -35dBm
High power range	-45 to +15dBm
Minimum detectable signal in modulated mode	
Low power range (See Note 2)	$10 \log(B) - 87\text{dBm}$
High power range (See Note 2)	$10 \log(B) - 32\text{dBm}$
Maximum detectable signal in modulated mode	
Low power range (See Note 2)	$\text{Min}(-0.5, 10 \log(B) - 14) \text{ dBm}$
High power range	+15dBm
Power measurement accuracy (See Note 3)	± 1.5dB typical ± 3dB maximum
Measurement channel bandwidth	
CW mode	1kHz to 20MHz
Modulated mode	1kHz to 2190MHz
Maximum number of measurement channels (See Note 4)	1
Sweep speed	2ms per frequency point
Maximum input power without damage	+23dBm
Note 1	Occupied Bandwidth and Adjacent Channel Power Ratio features to be included in future release of Kaelus Unify application software.
Note 2	B is the occupied bandwidth of the measured signal in MHz.
Note 3	Assumes aggregate RF power of all signals entering the test port is less than the IVA's input P1dB point.
Note 4	Future releases of Unify will allow the user to define up to 10 simultaneous measurement channels across the frequency range of interest.

STIMULUS MODE	
Number of carriers	
Minimum	1
Maximum	Unlimited
Dwell time	
Minimum	500ms
Maximum	Unlimited
RF output power	0dBm ± 3dB

INSTRUMENT CONTROL	
User interface	USB or Bluetooth supported user device with iVA application software installed
Supported Devices	iPA Portable PIM Analyzer Tablet computer (iOS & Android) Smartphone (iOS & Android) PC, Windows 7,8 & 10 running .NET version 4 or later
Communications interface to iVA	Bluetooth and USB 2.0
Bluetooth antenna	Integrated into housing
Maximum input power on RF port	+23dBm maximum, DC voltage ±30V

MECHANICAL	
Dimensions H x D x W	52 x 69.5 x 216mm 2.06 x 2.73 x 8.51in
Weight	0.68kg 1.5 lbs
Connector 1	RF test port iVA-0627A: Type N male, 50 ohms iVA-0627B: 4.3-10 male, 50 ohms
Connector 2	USB 2.0 Mini-B (for charging and connection to iPA or PC)
Mechanical Shock & Vibration	MIL-PRF-28800F Class 2, ETS 300 019-2-1, -2, -7

ENVIRONMENTAL	
Temperature range	-10°C to +55°C +14°F to +131°F (operational)
Ingress protection	IP54
Altitude	4600m 15,000ft maximum
Compliance	EMC- EN 61326-1:2013, EN 61326-2-1:2013, EN 55022:2010 "Class A" EN 61000-4-2, 4-3, 4-4, 4-5, 4-6, 4-11 Safety- EN 61010-1:2012, EN 61010-030:2012
Operational humidity	5% to 95% RH non-condensing
Storage temperature range	-20°C to +60°C -4°F to +140°F

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
iVA-0627A-NC	iVA Cable & Antenna Analyzer System, Type N male connector with Neoprene Soft Case
iVA-0627A-HC	iVA Cable and Antenna Analyzer System, Type N male connector with Hard Case
iVA-0627A-BK	iVA Cable & Antenna Analyzer System, Type N male connector with Basic Accessory Kit
iVA-0627A-SK-02	iVA Cable & Antenna Analyzer System, Type N male connector with Standard Accessory Kit
iVA-0627A-PK-02	iVA Cable & Antenna Analyzer System, Type N male connector with Premium Accessory Kit
iVA-0627B-NC	iVA Cable & Antenna Analyzer System, 4.3-10 male connector with Neoprene Soft Case
iVA-0627B-HC	iVA Cable and Antenna Analyzer System, 4.3-10 male connector with Hard Case
iVA-0627B-BK	iVA Cable & Antenna Analyzer System, 4.3-10 male connector with Basic Accessory Kit
iVA-0627B-SK-02	iVA Cable & Antenna Analyzer System, 4.3-10 male connector with Standard Accessory Kit
iVA-0627B-PK-02	iVA Cable & Antenna Analyzer System, 4.3-10 male connector with Premium Accessory Kit

ACCESSORY KITS	
iAK-0200A-00	Single unit Hard Case Kit, USB Cables and Charger
iAK-0200A-01	Single unit Hard Case Kit w/ Adaptors, USB Cables and Charger
iAK-0200A-02	Single unit Hard Case Kit w/ Adaptors and N Type Female Calibration Kit, USB Cables and Charger -03 N Type Male Calibration Kit -04 DIN Female Calibration Kit -05 DIN Male Calibration Kit
iAK-0210A-02	Premium Hard Case Kit w/ Adaptors, Calibration Kit, Phase Stable Cable, USB Cables and Charger -03 N Type Male Calibration Kit -04 DIN Female Calibration Kit -05 DIN Male Calibration Kit
iAK-0200B-01	Single unit Hard Case Kit w/ Adaptors, USB Cables and Charger
iAK-0200B-06	Single unit Hard Case w/ Adaptors, 4.3-10 Female Calibration Kit, USB Cables and Charger -07 4.3-10 Male Calibration Kit
iAK-0210B-06	Premium Hard Case Kit w/ Adaptors, Phase Stable Cable, 4.3-10 Female Calibration Kit, USB Cables and Charger -07 4.3-10 Male Calibration Kit

HOW TO ORDER

Kaelus offers our customers a variety of channels to fit their network and delivery requirements:

Direct from Kaelus -contact our customer service team at +1.303.768.8080 or toll free at +1.800.498.1352 for technical support, unit pricing and availability.

Distribution Partners: Our US and Canada distribution partners have the full line of iVA series products available for your use. Contact information can be found on our website under partners at www.kaelus.com.

MECHANICAL INTERFACE

