iVA - CABLE & ANTENNA ANALYZER

VSWR, Return Loss Measurement & Distance to Fault

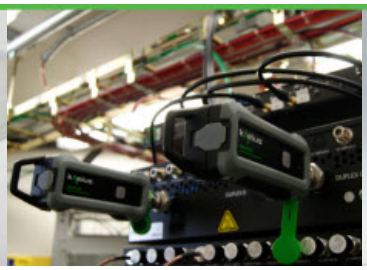
The iVA Series Cable & Antenna Analyzer is an exciting new product from Kaelus that enables users to accurately measure VSWR/return loss and the location of the VSWR/return loss faults in their RF infrastructure. The wireless connectivity allows unprecedented measurement flexibility and opens up new & 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.

iVA Product 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 (DTF) in RF path
- Can be used in conjunction with an iPA Series PIM Analyzer to directly measure insertion loss and isolation
- Connect directly to the device under test; eliminates the need for a phase stable cable in most cases 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
- Uses the Kaelus customer-proven iPA reporting workflow & tagging features to facilitate a faster, simpler and more efficient workflow
- Simple to operate, highly intuitive software user interface with the unique ability to generate and complete the test report on site)
- Geotag each test point, insert a Google Maps® snapshot directly into the report
- Smart high power input protection when used with a Kaelus iPA

Multi-Port Testing



Isolation Testing

Antenna Testing

TECHNICAL SPECIFICATIONS

IVA ANALYSIS MODE -RETURN LOSS

iVA Analysis Modes	Return Loss VSWR Cable Loss[1] Distance-to-Fault (DTF)
Frequency Range	690 - 2700 MHz
Minimum Frequency Increment	1 kHz
Sweep Speed	4 ms per frequency point
Number of Measurement Points	2 to 2001
RF Output Power	+5 dBm
Return Loss Dynamic Range	0 – 40 dB
VSWR Dynamic Range	1 – 100
Cable Loss Dynamic Range	0 – 20 dB
Return Loss Measurement Accuracy[1]	[1]Applies over the temperature range −10°C to +45°C, with less than 5°C deviation from calibration temperature.
0 – 10 dB	± 0.3 dB
10 – 20 dB	± 0.6 dB
20 – 30 dB	± 1.5 dB
30 – 40 dB	± 4.0 dB
Calibrated Directivity	43 dB (typ)

Interference Immunity	**+10 dBm at 500 kHz offset from stimulus frequency**
System Impedance	**50 ohms**

[1.] 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 - N-PORT TRANSMISSION

iVA Analysis Modes	**Transmission Loss** **Isolation**
Frequency Range[1]	**690 - 2700 MHz**
Minimum Frequency Increment	**1 kHz**
Sweep Speed [1]	**10 ms per frequency point**
Number of Measurement Points[1]	**2 to 2001**
RF Output Power	**+5 dBm**
Dynamic Range	**90 dB**
Transmission Loss Measurement Accuracy[1]	
0 – 10 dB	**± 1 dB**
10 – 60 dB	**± 2 dB**
60 – 90 dB	**± 3 dB**
Interference Immunity	
0 – 60 dB	**-5 dBm at 500 kHz offset from stimulus frequency**

60 – 100 dB	**-25 dBm at 500 kHz offset from stimulus frequency**

[1.] 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 both magnitude and phase information, while transmission loss measurements are limited to magnitude only.

IVA ANALYSIS MODE -SPECTRUM MONITOR

iVA Analysis Modes	**Amplitude vs. Frequency**
Frequency Range	**690 - 2700 MHz**
Minimum Frequency Increment	**1 kHz**
Sweep Speed	**2 ms per frequency point**
Receiver Noise Figure [1]	**15 dB**
Measurement Noise Floor	**−115 dBm Typical**
Measurement Range	**+20 to −115 dBm**
Measurement Accuracy	**±3 dB**
Maximum Input Power without Damage[2]	**+23 dBm**
Input IP3[1]	**+18 dBm**
Resolution Bandwidth	**20 kHz**
Interference Immunity	
Preamp On	**−25 dBm at 500 kHz offset from stimulus frequency**
Preamp Off	**−5 dBm at 500 kHz offset from stimulus frequency**
Return Loss at iVA Test Port	**10 dB (min) / 15 dB (typ)**

[1] Preamp on.

[2] At RF input levels above +23 dBm, Spectrum Monitor mode is automatically disabled and the iVA enters a protective shutdown state.

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 running .NET verison 4 or later**
Communications Interface to iVA	**Bluetooth and USB 2.0**
Bluetooth Antenna	**Integrated into housing**
Maximum Input on RF Port	**RF+30dBm max**
	DC Voltage±30V
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**
Mechanical & Environmental	
Dimensions	**2.06 x 2.73 x 8.51in (52 x 69.5 x 216mm)**
Weight	**1.4 lbs (640 g)**
RF Test Port Connector	**Type N male, 50Ω**
USB Connector	**USB 2.0 Mini-B**

Operating temperature range	-10°C to +45°C
Storage temperature range	-20°C to +60°C
Relative humidity	5% to 95% RH non-condensing
Altitude	15,000 ft (4600 m) max
Ingress protection (IP)	IP54 (operating)
Mechanical Shock	MIL-PRF-28800F Class 2, ETS 300 019-2-1, -2, -7
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

ORDERING INFORMATION

MODEL PART #	DESCRIPTION - CONTENTS
iVA-0727A-NC	Cable & Antenna Analyzer 690-2700 MHz
- R18-0640	1'(30cm) USB Cable
- R18-0832	9' (3m) USB Cable
- R29-4362	AC Wall Charger 5V 2A USB
iVA-0727A-HC	iVA Cable and Antenna Analyzer with Hard Case
- iVA-0727A-NC	Cable & Antenna Analyzer 690-2700 MHz
- iAK-0200A-00	Single unit Hard Case Kit
iVA-0727A-BK	iVA Cable & Antenna Analyzer System with Basic Accessory Kit
- iVA-0727A-NC	Cable & Antenna Analyzer 690-2700 MHz
- iAK-0200A-01	Single unit Hard Case Kit w/ Adaptors
iVA-0727A-SK	iVA Cable & Antenna Analyzer System with Standard Accessory Kit
- iVA-0727A-NC	Cable & Antenna Analyzer 690-2700 MHz
- iAK-0200A-02	Single unit Hard Case Kit w/ Adaptors and Calibration Kit

iVA-0727A-PK	iVA Cable & Antenna Analyzer System with Premium Accessory Kit
- iVA-0727A-NC	Cable & Antenna Analyzer 690-2700 MHz
- iAK-0210A-02	Premium Hard Case Kit w/ Adaptors, Calibration Kit, Phase Stable Cable and Battery Bank

ACCESSORY KIT PART #	DESCRIPTION - CONTENTS
iAK-0200A-00	Single unit Hard Case Kit
iAK-0200A-01	Single unit Hard Case Kit w/ Adaptors
iAK-0200A-02	Single unit Hard Case Kit w/ Adaptors and N Type Female Calibration Kit -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 and Battery Bank -03 N Type Male Calibration Kit, -04 DIN Female Calibration Kit, -05 DIN Male Calibration Kit