iVA – Cable & Antenna Analyzer

VSWR, Return Loss Measurement & Distance to Fault

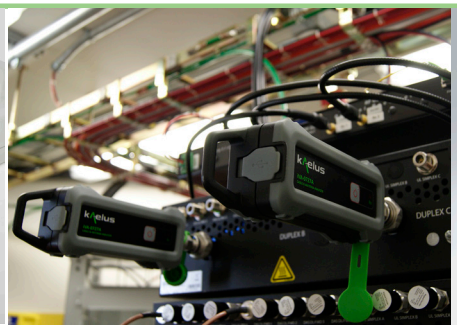
The iVA Series Cable & Antenna Analyzer is an exciting new product from Kaelus that enables users to accurately measure VSWR/return loss and the location of the VSWR/return loss faults in their RF infrastructure. The wireless connectivity allows unprecedented measurement flexibility and opens up new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

PRODUCT FEATURES

- Reinventing site certification sweep testing, dramatically reducing test time on site
- Directly Measure insertion loss and isolation when using multiple iVA's. 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
- 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-processsing 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
- Handy Spectrum Monitor mode for interference checking

Multi-Port Testing



Isolation Testing

Antenna Testing

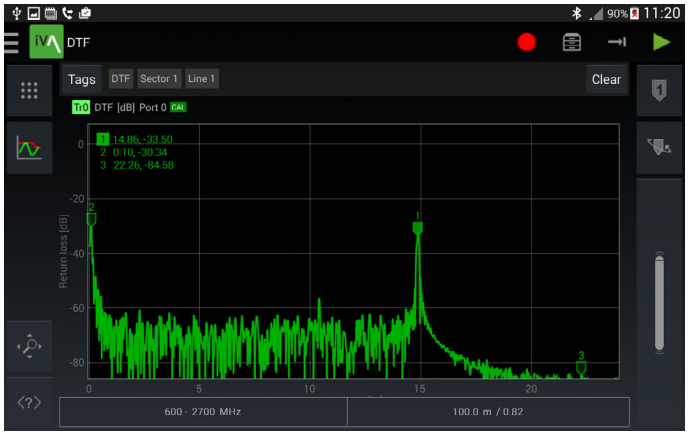
TECHNICAL SPECIFICATIONS

IVA ANALYSIS MODE – RETURN LOSS

iVA Analysis Modes	Return Loss VSWR Cable Loss[1] Distance-to-Fault (DTF)
Frequency Range	600 - 2750 MHz
Minimum Frequency Increment	1 kHz
Sweep Speed	4 ms per frequency point
Number of Measurement Points	2 to 2151
RF Output Power	0 dBm ± 3 dB
Return Loss Dynamic Range	40 dB
VSWR Dynamic Range	1 – 100:1
Cable Loss Measurement Range[1]	0 – 20 dB
Return Loss Measurement Accuracy	Applies over the temperature range −10°C to +45°C, with less than 5°C deviation from calibration temperature.
0 – 10 dB	± 0.4 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

Return Loss Trace



DTF Trace

TECHNICAL SPECIFICATIONS CONTINUED

IVA ANALYSIS MODE – N-PORT TRANSMISSION

iVA Analysis Modes	Transmission Loss Isolation
Frequency Range	600 - 2750 MHz
Minimum Frequency Increment	1 kHz
Sweep Speed	10 ms per frequency point
Number of Measurement Points	2 to 2151
RF Output Power	0 dBm ± 3 dB
Dynamic Range	90 dB
Transmission Loss Measurement Accuracy	
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

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.

[1.] Accuracy specifications only applicable where return loss of DUT is greater than 10db.

TECHNICAL SPECIFICATIONS CONTINUED

IVA ANALYSIS MODE – SPECTRUM MONITOR

iVA Analysis Modes	Amplitude vs. Frequency
Frequency Range	600 - 2750 MHz
Minimum Frequency Increment	1 kHz
Sweep Speed	2 ms per frequency point
Measurement Range	
Low Power Range	-40 to -120 dBm (Software Default)
High Power Range	+20 to -50 dBm
Receiver Noise Figure [1]	15 dB
Resolution Bandwidth	20 kHz
Displayed Average Noise Level (RBW = 20kHz)	-120 dBm Low Power Range, -50 dBm High Power Range
Measurement Accuracy	±3 dB
Maximum Input Power without Damage	+23 dBm
Input IP3 [1]	+18 dBm
Interference Immunity	
Low Power Range	−25 dBm at 500 kHz offset from stimulus frequency (Software Default)
High Power Range	−5 dBm at 500 kHz offset from stimulus frequency
Return Loss at iVA Test Port	10 dB (min) / 15 dB (typ)

1. Low Power Range.

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

TECHNICAL SPECIFICATIONS CONTINUED

Maximum Input Power on RF Port	RF +23dBm 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	1.5 lbs (680 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 (4,600 m) max
Ingress protection (IP)	IP54 (operating)
Mechanical Shock & Vibration	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
Safety	EN 61010-1:2012, EN 61010-030:2012

ORDERING INFORMATION

MODEL PART #	DESCRIPTION – CONTENTS
iVA-0627A-NC	**iVA Cable & Antenna Analyzer**
– iVA-0627A	Cable & Antenna Analyzer 600-2750MHz
– R29-4426	Neoprene Softbag
– R18-0640	1’ (30cm) USB Cable
– R18-0832	9’ (2.7m) USB Cable
– R29-4362	AC Wall Charger 5V 2A USB
iVA-0627-HC	**iVA Cable & Antenna Analyzer with Hard Case**
– iVA-0627A	Cable & Antenna Analyzer 600-2750MHz
– iAK-0200A-00	Single unit Hard Case Kit, USB Cables and Charger
iVA-0627A-BK	**iVA Cable & Antenna Analyzer System with Basic Accessory Kit**
– iVA-0627A	Cable & Antenna Analyzer 600-2750MHz
– iAK-0200A-01	Single unit Hard Case Kit w/ Adaptors, USB Cables and Charger
iVA-0627A-SK-02	**iVA Cable & Antenna Analyzer System with Standard Accessory Kit**
– iVA-0627A	Cable & Antenna Analyzer 600-2750MHz
– iAK-0200A-02	Single unit Hard Case Kit w/ Adaptors and Calibration Kit, USB Cables and Charger
iVA-0627A-PK-02	**iVA Cable & Antenna Analyzer System with Premium Accessory Kit**
– iVA-0627A	Cable & Antenna Analyzer 600-2750MHz
– iAK-0210A-02	Premium Hard Case Kit w/ Adaptors, Calibration Kit, Phase Stable Cable and Battery Bank, USB Cables and Charger

Accessory Kit Part #	DESCRIPTION – CONTENTS
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, Battery Bank, USB Cables and Charger -03 N Type Male Calibration Kit, -04 DIN Female Calibration Kit, -05 DIN Male Calibration Kit