

IVA A-SERIES OPERATING MANUAL

Cable & Antenna Analyzer System (Android Version)



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Precautions



WARNING: RF HAZARD

This series of instrument is capable of producing up to 10 milliwatts of radio frequency (RF) power in the 600 MHz to 2750 MHz frequency band. Users are reminded that proper precautions must be taken to minimize exposure to these RF fields to the recommended limits.



WARNING: BATTERY

The iVA Series Cable and Network Analyzer is fitted with a non user replaceable lithium-ion battery(Li-ion). Rechargeable Li-ion batteries contain organic solvents and reactive materials. Erroneous handling of Li-ion batteries may result in heat generation, explosion or fire, possibly leading to injury.

Observe correct handling and disposal of Li-ion batteries.

DISCLAIMER: INTERFERENCE

The instrument uses similar frequencies to several cellular telephone systems. Kaelus and its agents or distributors accept no responsibility for interference to existing communications services as a result of improper operation or misuse. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

GENERAL CONDITIONS OF USE

This equipment should be protected from the ingress of liquids and precipitation such as rain and snow. The equipment must be operated within the environmental conditions specified in Chapter 1.4. This equipment is not approved for use in hazardous atmospheres, locations or medical applications.

UNPACKING

Ensure that the total number of boxes of equipment is checked off against the delivery documentation. At the same time inspect for any obvious transit damage. Should any damage be noted, notify the carrier immediately to file a transit damage claim. Do not discard any packing material until notified by the carrier or Kaelus. Carefully unpack all containers and check that all items listed on the delivery documentation. Please notify Kaelus of any damaged or missing items from the shipment.

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1. Operating Instructions

1.1 Introduction

This manual describes the operation of the iVA (Cable and Network Analyzer) developed by Kaelus.

The iVA Cable and Network Analyzer enables users to accurately measure VSWR/

Return Loss and the location of the VSWR/Return Loss faults in their RF infrastructure. The Bluetooth interface allows unprecedented measurement flexibility and opens up new & exciting possibilities in sweep testing.

The iVA is a rugged remotely controlled battery operated module that can be used with any Bluetooth enabled Android tablet.

1.2 Functional Description

The iVA can be connected to by a tablet via an Android application available in the Play Store. The iVA is connected via the tablets Bluetooth interface.

1.3 Features

- Rugged and reliable; designed with tower climbers in mind
- Accurate measurement of swept VSWR/Return loss and Distance to Fault (DTF) in the RF Path.
- Simplifies site certification sweep testing dramatically reducing test time on site.

1.4 Specifications

Please refer to the Datasheet on our webpage

1.5 Construction and Features

The external details of the iVA test set are shown in Figure 1.



Figure 1: iVA Equipment View

1. Power On/Off Button - Power on turns on the iVA unit. A short touch will turn on the iVA, indicated by a Green LED (See item 3). A long touch until the Tx Rx activity LED's flash then release will turn the iVA off.

2. Bluetooth Activity LED - Indicates when Bluetooth signaling is active

- Solid Blue indicates connected
- Flashing indicates disconnected

3. Power On/ Charge LED's - Solid orange indicates charging. Green indicates switched on.

4. Tx, Rx Activity LED's - Indicates when Transmit (Red led) or Receive (Green led) is active.

5. RF Input /Output Port - N Type connector.

6. USB Port - USB Port covered by a protective splashproof cover. Charging the iVA battery is done through the USB port. Connection to your charger is done through the USB port.

7. Protective Cover - Protective cover for the RF Input Output connector.

8. Lifting Lug - Provides a fastening point for a lanyard or line to help prevent the unit being dropped, and support the measurement head near the cable end or measurement point.

9. Protective Cover Retaining Hook - Provides a fastening point to hook on the protective cover to keep it out of the way while connecting and making measurements.

1.6 Installing Software

1.6.1 Installing software on your Android Tablet

1.6.1.1 Play Store Releases

Typically the stand alone Android installable file will be released via the Play Store

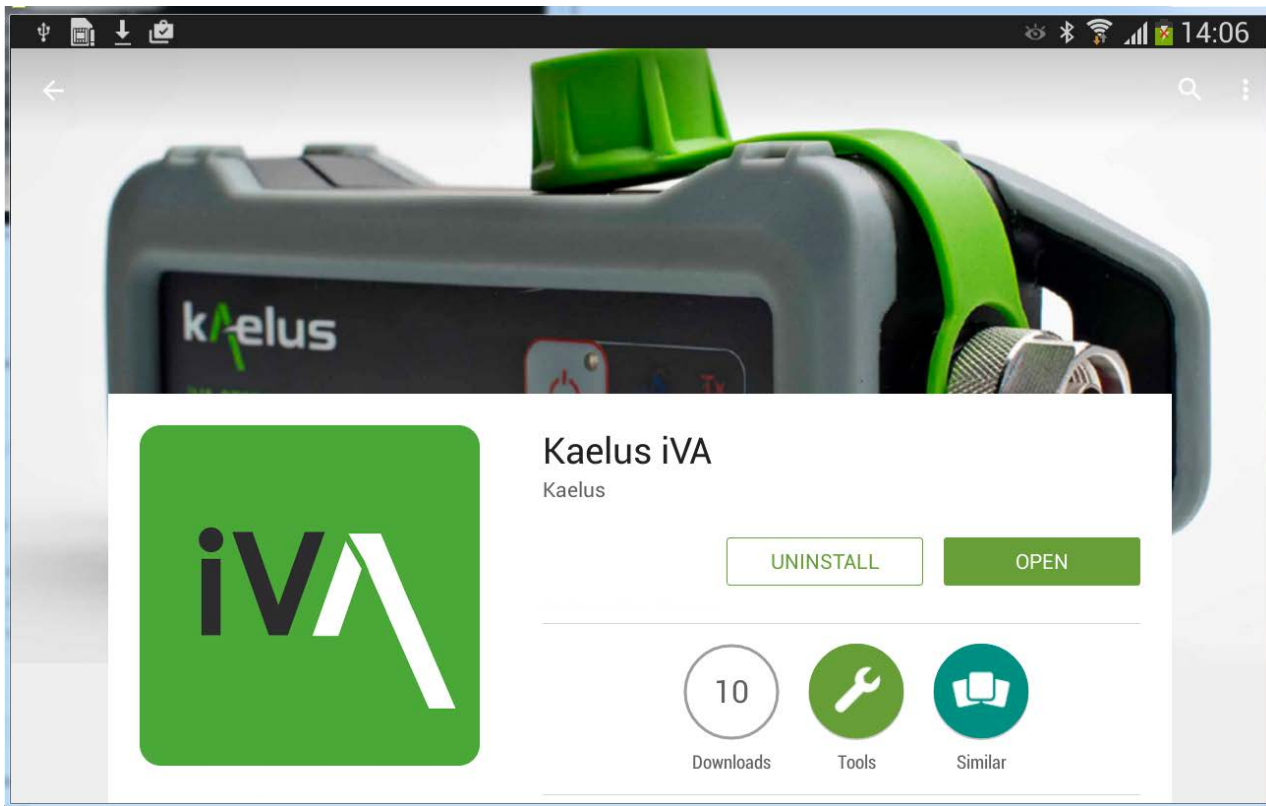


Figure 2 Install Screen from the Play Store.

1.6.1.2 Play Store releases

Go to the Play store and search for Kaelus iVA and press install.

1.6.1.3 Minimum System Requirements

Android 4.2

1.7 Charging

The iVA has a non user replaceable 3.6V Li-ion battery, that is charged via the USB port.

1.7.1 Charging Constraints

There is a variety of charging currents delivered from USB Ports. Ideally your USB Port should be able to deliver 500mA of current or more. 500mA is sufficient for intermittent use at maximum operation current and charging, you may find that heavy continuous use will not allow you to take on extra charging with a minimal current USB port.

While long USB cables are handy for moving the iVA into harder to reach places. Low quality USB cables can reduce the power available to charge the iVA.

The iVA will self-limit at 1.2A, and is designed to charge from a number of different sources. A heavy use pattern may require the use of the supplied USB Charger.

The supplied USB charger and small USB cable is recommended for charging.

1.7.2 Charging After the Battery has Been Run Flat

The iVA has a number of protection systems to reduce the chance of battery damage from complete discharge. The iVA hardware will prevent higher current charging of a discharged battery. If discharged, it is necessary to charge the iVA while switched off initially for at least 1 Hour. Note : That if the iVA has an adequate charge level remaining, normal and higher charge rates can occur and normal use can commence immediately once connected for charging, lower current USB charge sources may not support continuous heavy usage.

If the iVA is not going to be used for a significant time and has been run flat, it is recommended to give the iVA at least an hours charge before storing. Li ion batteries can self-discharge at a rate of approximately 1% per month, if not used for many months a periodic recharge may be needed.

1.7.3 Charging Time

Charging time will depend on the USB port current capacity. A new iVA, switched off for charging with the supplied a 5V 1.2A charger can reach fully charged in approximately 3.5 Hrs.

1.7.4 Battery Life

Fully charged with continuous return loss sweeps and under Bluetooth control the iVA will last typically 3 Hrs of use. With connect and disconnect time, rigging and installation work time a nominal 8Hr work shift is readily achieved.

1.7.5 Safety

Any attempt to replace the internal battery could damage the unit. Care should be taken to not expose the battery to high temperatures and to not overcharge the battery.

1.8 Switching on Your iVA



Figure 3 Switching on the iVA

A momentary touch on the Power Button with switch on the iVA. Note: the pre-use charging instructions in Section 1.7. Turn on the iVA prior to starting the iVA application. If you have recently installed or updated the iVA Application, ensure the iVA is charged and will be operating from a reliable power source. After initial installation or application update, it may be necessary for the application to update the iVA firmware and download the factory calibration data. It is necessary that the iVA and tablet can remain on until these processes have completed.

1.9 Connecting To Your Android Tablet (Application Information)

Once you have installed the Android Application there will be an icon in your applications list. Click on it to start the program.



Figure 4 Android iVA Application Icon

If the Kaelus iVA application icon is not visible on your tablet screen, check in the Apps menu. Typically the Program will start on the devices menu screen to allow you to first connect to the iVA, when the iVA is first switched on the Blue LED will be flashing, indicating that the iVA is not yet paired to a tablet.

1.9.1 Selecting Your iVA in the Android Application Device Menu

Ensure the Bluetooth is enabled on your Android device, the Bluetooth switch can be found in the Android settings menu.

1.9.1.1 Devices Menu

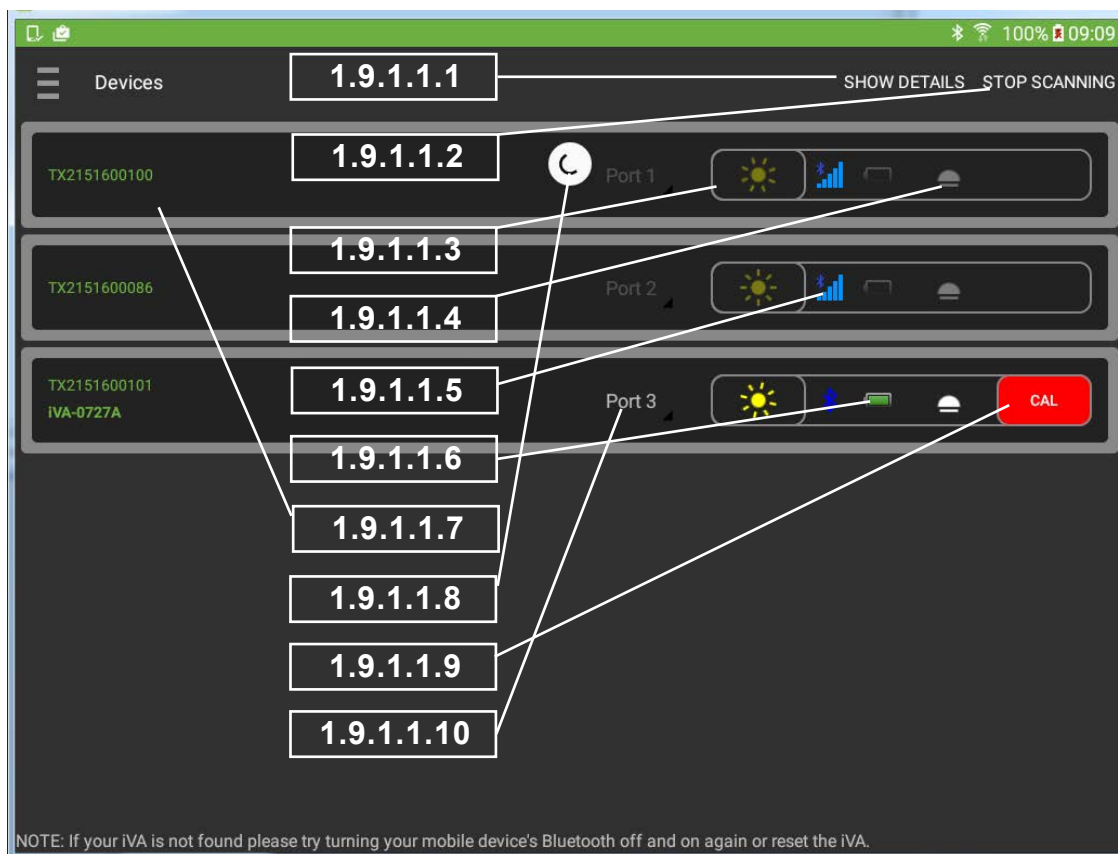




Figure 5 Android Application, Devices Menu

1.9.1.1.1 Information

Displays device information. iVA firmware version.


1.9.1.1.2 Scan for Devices ON/OFF

Initially the scanning icon  appears, this allows you to search for iVA's in range. Once the Connect icon is pressed and you connect to the iVA the scanning icon will disappear. If you want to connect additional iVA's the Scan icon  can be pressed again to locate further iVA's in range. It is best practice to leave the devices menu with scanning turned off. This helps minimise Bluetooth traffic and battery consumption.

1.9.1.1.3 Connect Icons

The icon will rotate while establishing a connection to the selected iVA. The Android tablet/device will also come up with a Bluetooth pairing message with the serial number of your selected iVA, Press OK to pair/connect to the iVA. Connection to your iVA can be confirmed in several ways. On the tablet/device display the icon will stop rotating and be a solid/brighter Yellow. On the iVA the Bluetooth LED will change from flashing to continuous ON. The identify function, see item 1.9.1.1.5 below can also be used.

1.9.1.1.4 Identify

The identify function key allows you to get a visual response from the iVA/s you are connected to in your device list pressing  will cause the blue Bluetooth, red tx and green rx leds to flash for approximately 6 seconds. This allows you to view which is the physical device on your list.

1.9.1.1.5 Bluetooth Signal Indicator

Stronger signal  Lower signal

Note: The signal icon appears while bluetooth scanning is taking place.
Not all Android hardware provides signal strength data for the Application to display. If your Android platform does not supply signal strength data then the signal strength meter will not be displayed.

1.9.1.1.6 Battery Charge Indicator

The Battery charge indicator, indicates the battery charge level and whether the iVA is charging via the USB port.



Charging



50% Charge remaining



Battery Low



Battery Very Low

1.9.1.1.7 Progress Bar

Shows the progress of the transfers to and from the iVA. This could be factory calibration data or firmware (ensures your iVA firmware is compatible with the application version you are using), and will occur on the first use of the iVA or after an update.

1.9.1.1.8 Device Search Activity Indicator

Note: The device searching function can be switched on and off via Item 2. It is advised to leave the search function switch off once your iVA has been located/paired, this will improve Bluetooth data throughput and application performance when making measurements.

1.9.1.1.9 Enter Calibration Menu



Calibration saved .



Requires Calibration.

1.9.1.1.10 Pull Down Menu

Selects what Port number is associated with the connected iVA

1.10 Navigation Menu

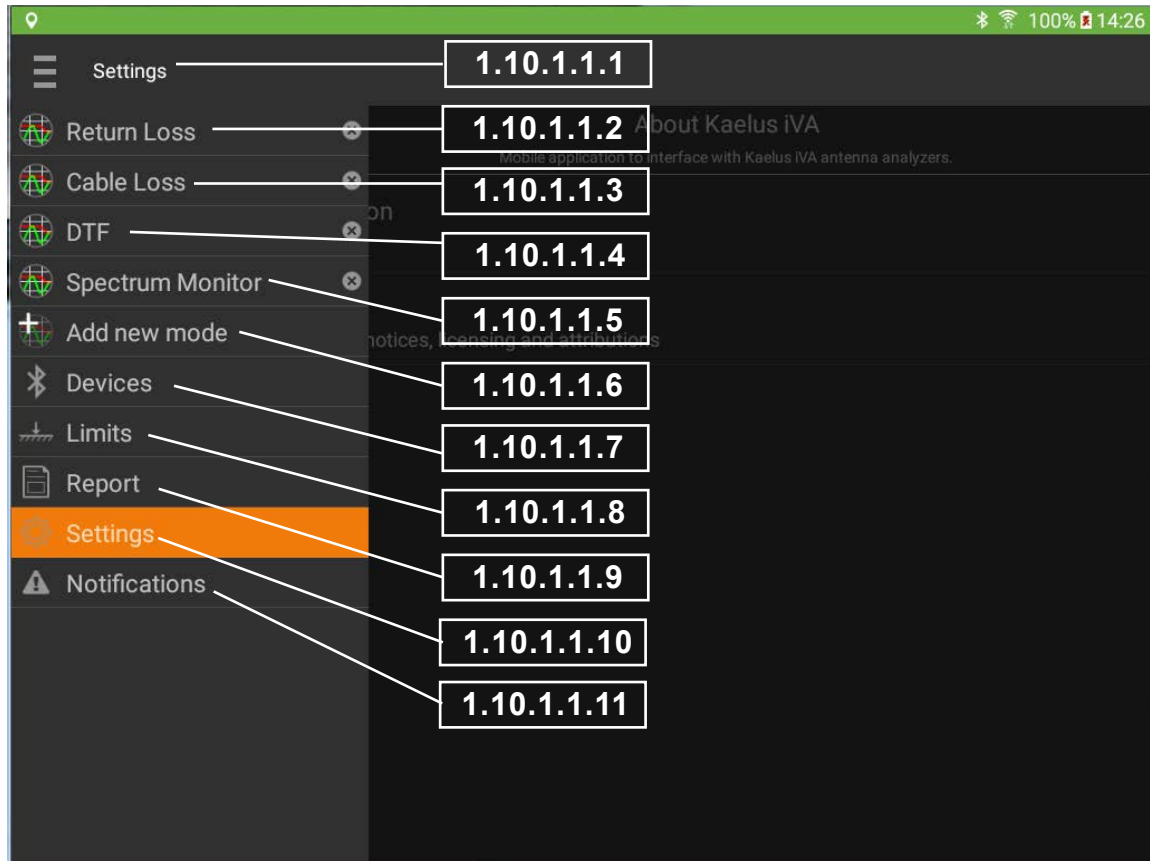


Figure 6 Application, Navigation Menu

1.10.1.1.1 Navigation Side Panel menu Open/Close

Touch here to open the menu items listed below, touch again to close the side panel.

1.10.1.1.2 Return Loss. See Section 1.15

1.10.1.1.3 CableLoss. See Section 1.13

1.10.1.1.4 DTF (Distance To Fault)

1.10.1.1.5 Spectrum Monitor. See Section 1.17

1.10.1.1.6 Add New Mode

This allows custom modes to be created for specific test scenarios where needed.

1.10.1.1.7 Devices. See Section 1.9.1

The devices menu allows you to scan and select the iVA device you want to use for your measurements.

Note: Your device/s must be connected to first before items 1.10.1.1.2 to 1.10.1.1.4 above and item 1.10.1.1.6 are able to operate. See 1.9.1.1 for more detail.

1.10.1.1.8 Limits. Refer to Section 1.18

1.10.1.1.9 Report. See Section 1.19

1.10.1.1.10 Settings

1.10.1.1.11 Notifications

1.11 Selecting Your iVA in the Android Application Distance to Fault

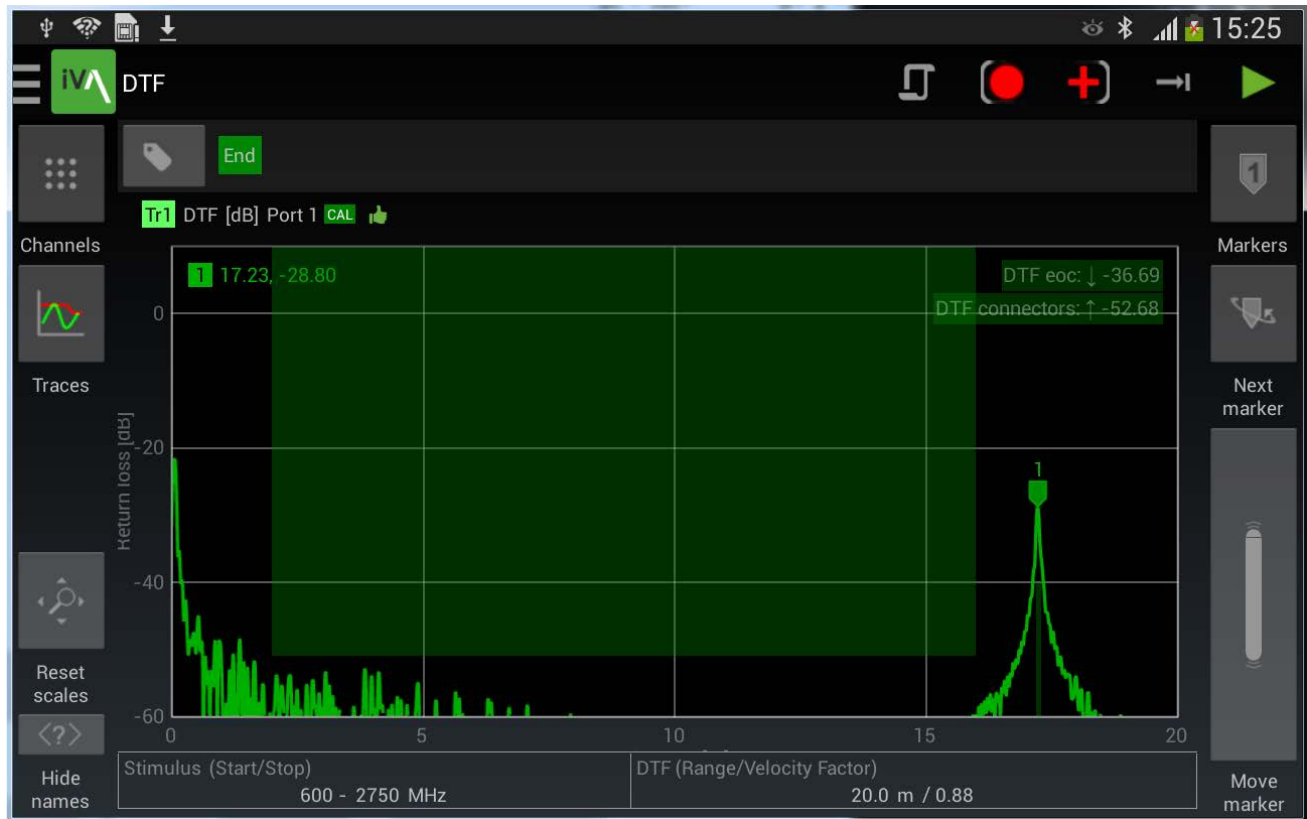


Figure 7 Distance to Fault Display

1.12 Traces Menu

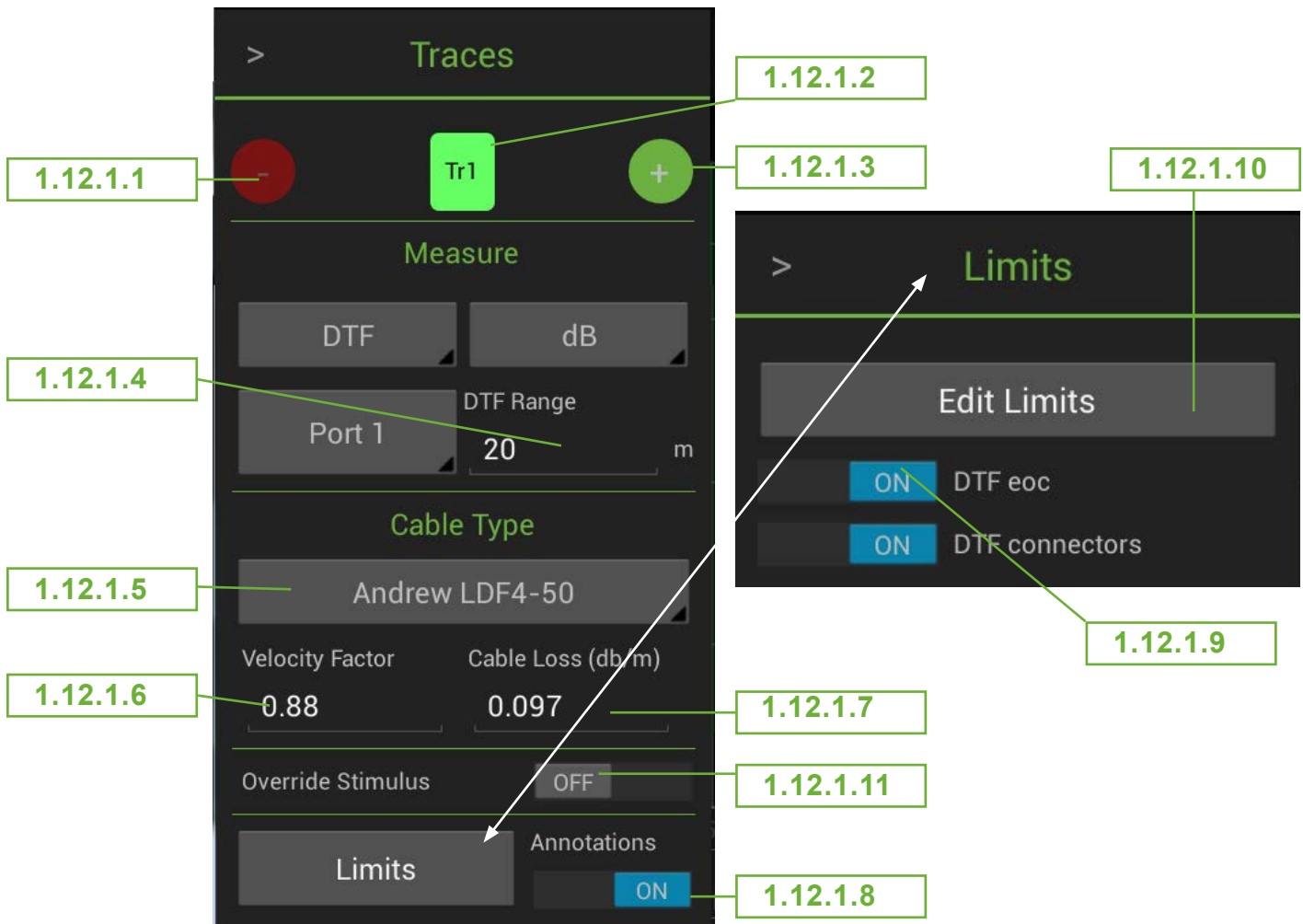


Figure 8 Add and remove traces menu DTF, Android application

1.12.1.1 Remove Trace

The highlighted trace will be removed.

1.12.1.2 Shows the Trace Number.

This shows the trace number for the current parameter menu, other traces could be Tr2, Tr3 and so on.

1.12.1.3 Add an Additional Trace

Adds a trace to the current display channel.

1.12.1.4 DTF Range

Sets the maximum measurement range and trace X Scale on the DTF graph.

1.12.1.5 Cable Type

There are a number of pre-configured cable types in a pull down menu. This populates items 1.12.1.6, and 1.12.1.7 automatically, if your desired cable is not displayed, select custom and enter items 1.12.1.6 and 1.12.1.7 from your cable datasheet.

1.12.1.6 Velocity Factor

The relative speed of the radio waves in the desired cable compared to air, being 1.00, Incorrect velocity factor entry can introduce errors in the distance to fault measurements.

1.12.1.7 Cable Loss Per Unit Length

Length Units can be set in the settings menu. Enter the cable loss per meter.

1.12.1.8 Annotations Switch

If the Annotations switch is on, the entered Limits are overlaid on the display, individual user entered spec limits can be applied to this trace by switching them on (See item 9).

1.12.1.9 Apply Limits Switches

Spec Limits entered in the Limits menu can be applied to the selected trace, via an ON/OFF switch in this sub-menu.

1.12.1.10 Open Limits Menu

This will take you directly to the limits edit menu See Section 1.18.

1.12.1.11 Override Stimulus Menu





Switch this on to set specific frequency stimulus for this trace.

1.13 Channel Menu

Channel frequency stimulus is used by default on traces, See Figure 8 to Override



Figure 9 Android Application, Channel Menu

1. Channel menu
2. Run
Selects between trace running  and stopped 
3. Single trace or continuous
Selects between Single sweep  and Multiple sweeps 
4. Add and remove traces
5. Stimulus start frequency
6. Stimulus stop frequency
7. Number of points on plot
8. Record menu, take photo, choose photo, record selected trace.
9. Record icon
10. State menu

1.14 Trace Zoom Functions, Android Application



Figure 10 Android Application X axis Zoom



Figure 11 Android Application Y Axis Zoom



Figure 12 Android Application X and Y Zoom Together

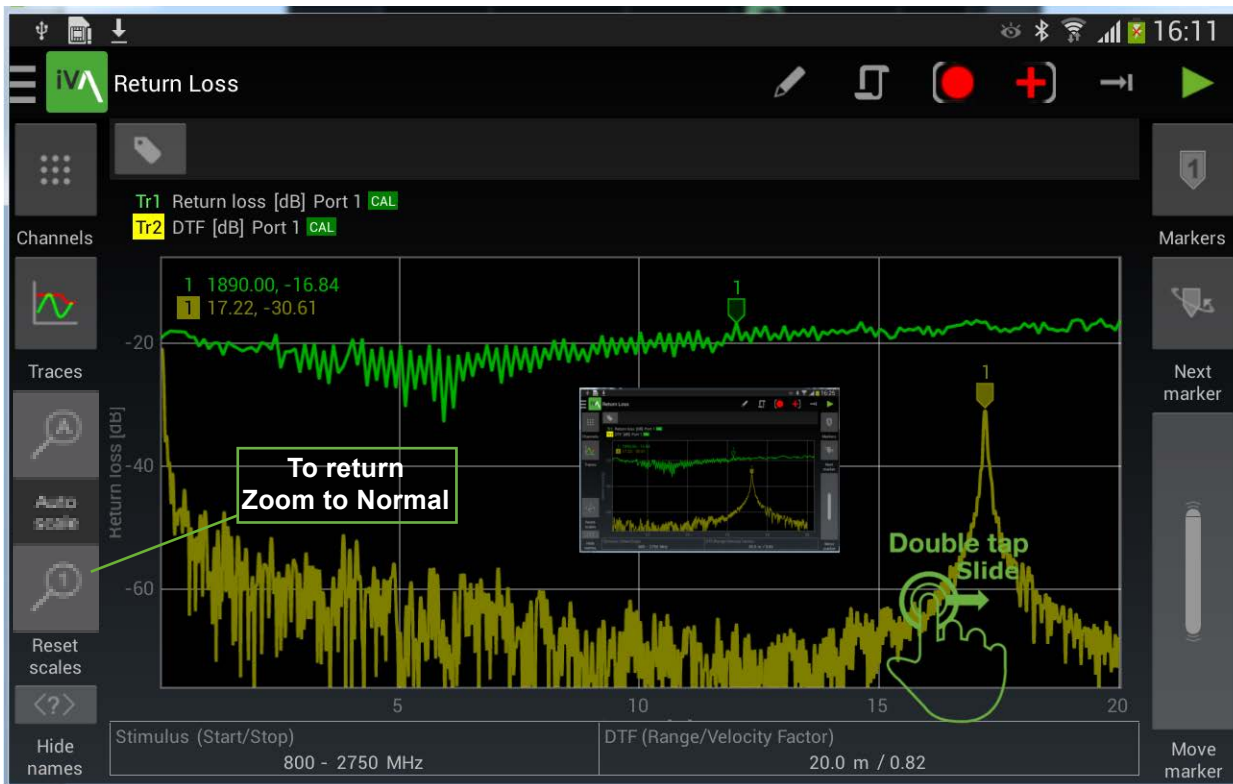





Figure 13 Double tap and Slide Zoom

1.15 Return Loss Menu (Android App Control)



Figure 14 Return Loss Menu (Android Application Control)

1. Channels Menu. Set parameters for this measurement channel. See section 1.13
2. Add and delete measurement tags menu. See Section 1.20
3. Traces menu. Add and edit traces to the display. See section 1.12
4. Reset scales. Reset zoom settings.
5. Show/hide button labels.
6. Display for start/stop stimulus frequency.
7. Display for the number of plot/measurement points. Edited via the trace menu. See section 1.12
8. Edit mode name.
9. Add measurement markers.
10. Change highlighted marker on the selected trace.
11. Move highlighted marker.
12. Calibration indicator.
13. Enter the state files menu. See section 1.21
14. Switch between single or continuous sweep.
15. Start stop trace/measurement.
16. Record (record display for a report)
17. Record progress Icon  appears as the trace sweeps.
18. Spec limit displayed.
19. Trace pass/fail indicator  
20. Picture menu. See section 1.19.3

1.16 Cable Loss Measurement

Cable loss is measured by measuring return loss to a shorted end of the Cable under test, then halving that loss to find the cable loss. First do an OSL (Open Short Load) calibration on the iVA , See Section 1.9.1.1 . Then fit the iVA to one end of the cable under test and the OSL short to the other end of the cable under test.

1.17 Spectrum Monitor Measurement

1.17.1 Setting Sweep Start and Stop Frequency



Figure 15 Spectrum Monitor, Override Stimulus

1.17.1.1 Spectrum Monitor Sensitivity Range

A Pull down menu has 2 sensitivity ranges, -80dBm to -20dBm and -130dBm to -30dBm

1.17.1.2 Override Stimulus Switch

Allows you to select your own start and stop frequency for this trace, if disabled the default start and stop frequency from the channel menu (Section 1.13) is used.

1.17.1.3 Start Frequency

This sweep start frequency will be applied only to the selected trace.

1.17.1.4 Stop Frequency

This sweep stop frequency will be applied only to the selected trace.

1.17.1.5 Points

This enters the number of measurement points for the selected trace.

Note: The resolution bandwidth of the spectrum monitor function is 17KHz .

1.17.2 Setting Markers



Figure 16 Marker Setting

1.17.2.1 Add Marker

Add a marker to the currently selected trace.

1.17.2.2 Remove Marker

Remove currently selected marker from the trace.

1.17.2.3 Marker Type

Marker type pop up menu appears, these include Value, Max and Min marker types.

1.17.2.3.1 Value Marker

Value markers allow you to enter an absolute X value, once an absolute marker value has been entered, this can be further adjusted by the slider control or entering a new value.

1.17.2.3.2 Max Marker

When both max and min Marker types have been selected it is possible to enter a threshold value. The Max marker will ignore maxima below the threshold value.

1.17.2.3.3 Min Marker

When both max and min Marker types have been selected it is possible to enter a threshold value. The Min marker will ignore minima above the threshold value.

1.17.2.4 Marker Reference Menu

This marker pop-up menu allows the user to select what point the marker result is referenced to. In it's simplest form Origin, is the origin of the trace (0,0), this gives you absolute marker values. In addition to this on the pop-up menu, any other currently set marker on any other trace can be compared as a result shown on your current marker result. TrX signifies the trace number. Tr1-X Indicates the marker number on that trace. So to do a Delta measurement from Tr1-1 (Trace 1 Marker 1) Marker 2, the delta result would have it's reference set to Tr1-1 , Marker 2 will then show the difference in frequency and level from marker 1 on trace 1 .

1.18 Setting Test Limits

Test limits can be entered and enabled per trace. There are several test limit types that can be applied to a given trace. Single or multiple limits can be applied to the same trace giving great versatility.

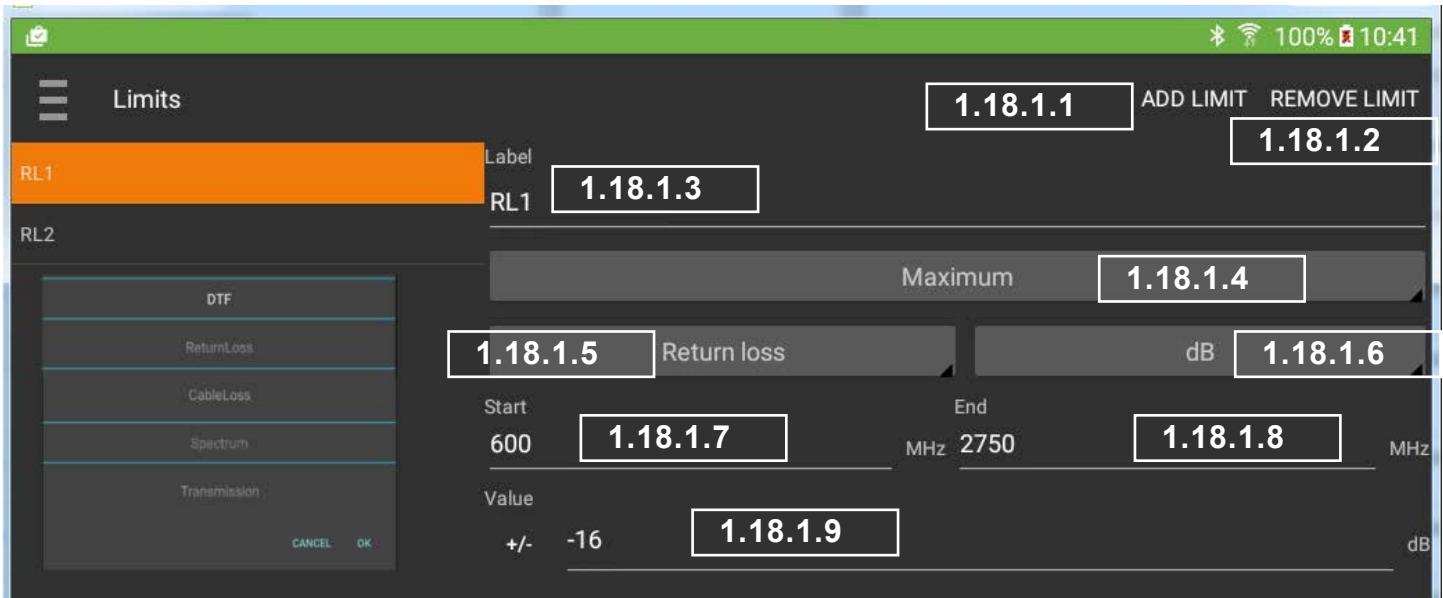


Figure 17 Limits Menu

1.18.1.1 Add a new Limit

Add a new limit, a default label of New Limit will be given to the new limit initially and it will be appended to the end of the list. Highlight the New Limit and edit your new spec to suit.

1.18.1.2 Remove Limit

Whatever limit that is currently highlighted will be removed. Ensure you highlight the limit you want to remove first before pressing Remove Limit.

1.18.1.3 Limit Label Field

Edit the Label of your spec, this label will appear in the corner of the trace when the limit is enabled, it will also appear on your test report and test report preview screen, it is also used for to label your limit enable switches.

1.18.1.4 Limit Type Field

Provides a pull down menu allowing the limit type to be selected.

1.18.1.4.1 Minimum Spec Type

Refer to Figure 18

1.18.1.4.2 Maximum Spec Type

Refer to Figure 19 and Section 1.18.3

1.18.1.4.3 Tolerance Spec Type

Refer to Figure 21 and Section 1.18.5

1.18.1.4.4 Ripple Spec Type

Refer Figure 20 and Section 1.18.4

1.18.1.5 Spec Limit Trace Type Field

The type of trace the spec can be applied to needs to be specified, these include DTF, Return Loss, Cable Loss, Spectrum.

1.18.1.6 Measurement Units

This provides a pull down menu that allows measurement units to be selected.

1.18.1.7 Start Point

This specifies the start point the spec limit is applied over, this can be start frequency or the starting distance if used with DTF (Distance to Fault) measurements.

1.18.1.8 End Point

This specifies the end point the spec limit is applied over, this can be end frequency or the end distance if used with DTF (Distance to Fault) measurements.

1.18.1.9 Value

The limit value can be entered here this can be the ripple value, maximum level, minimum level. For tolerance specs, this will be the amount above and below the center Value.

1.18.1.10 Center

Used with tolerance spec limits, specifies the center of the tolerance window, the value sets the amount above and below the center value. Only appears for Tolerance spec limits.

Note: A limit cannot pass unless there is sweep data that covers it's full range (Start Point – End Point) sweeps must be equal to or outside the Limits set. When testing against limits please ensure your sweep is configured appropriately.

1.18.2 Minimum Limit

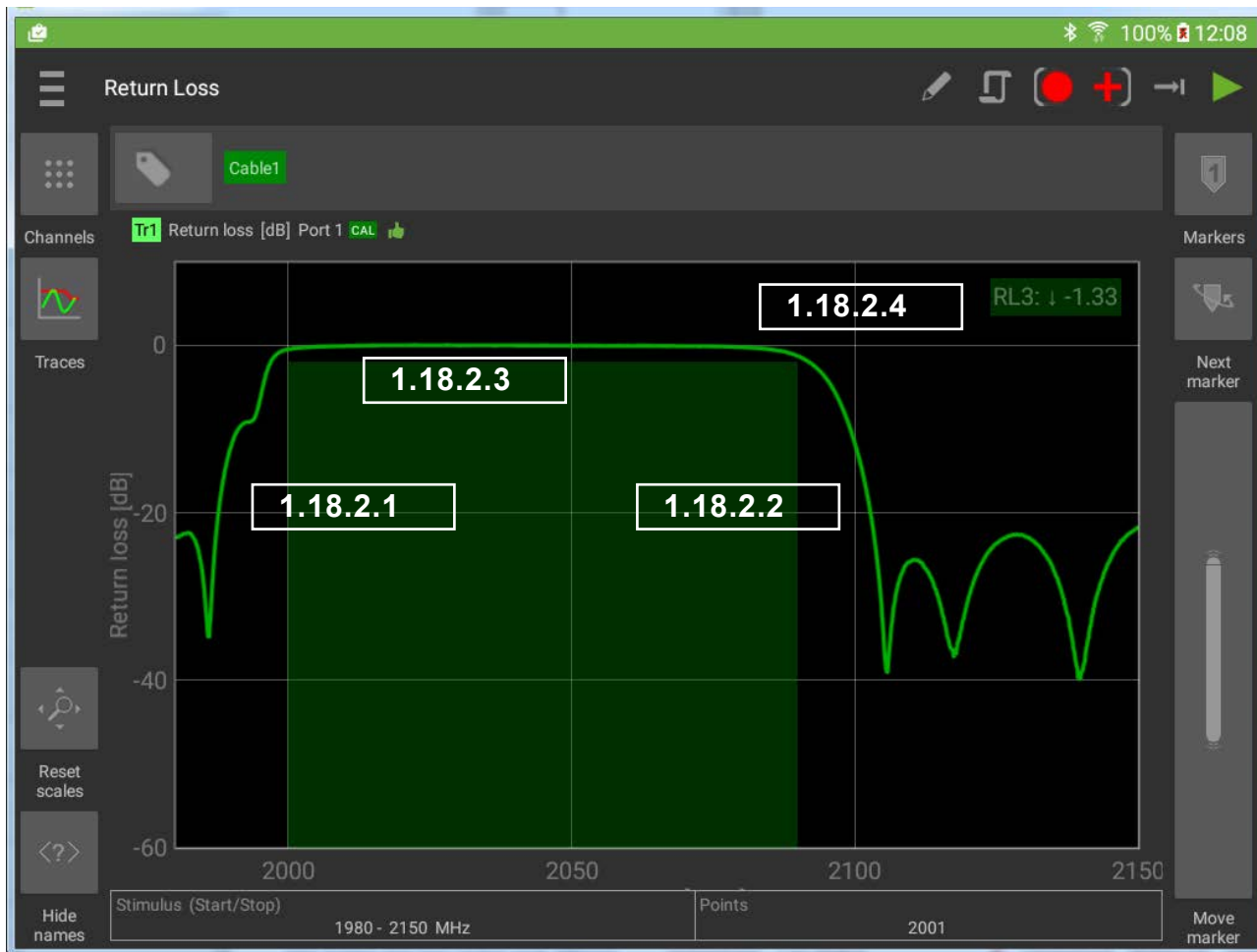


Figure 18 Minimum Spec Limit

1.18.2.1 Minimum Limit Start

This is the starting point that spec level is applied over in this case 2000MHz.

1.18.2.2 Minimum Limit Stop

This is the end point that spec level is applied over in this case 2090MHz.

1.18.2.3 Minimum Limit Level

1.18.2.4 Limit label, type and result

The limit label shows the label you created in the limits menu, the down arrow shows this is a Minimum spec limit. There is a result shown here also, between the start and stop points the trace has a Minima of -1.33

1.18.3 Maximum Limit



Figure 19 Max Limit Drawn on a Return Loss Trace

1.18.3.1 Maximum Limit Start

This is the starting point that spec level is applied over in this case 650MHz.

1.18.3.2 Maximum Limit Stop

This is the end point that spec level is applied over in this case 2200MHz.

1.18.3.3 Maximum Limit Level

1.18.3.4 Limit label, type and result

The limit label shows the label you created in the limits menu, the up arrow shows this is a Maximum spec limit. There is a result shown here also, between the start and stop points the trace has a peak of -16.16 .

1.18.4 Ripple Limit



Figure 20 Ripple Limit on a Trace

1.18.4.1 Ripple Max in Band

This shows the maximum level that has occurred between ripple limits start and stop.

1.18.4.2 Ripple Min in Band

This shows the minimum level that has occurred between ripple limits start and stop.

1.18.4.3 Ripple Average in Band

This shows the average value ripple limits start and stop.

1.18.4.4 Ripple Level

The limit set for the example in Figure 20 was 1.5dB, the difference between -0.1 and -1.33 is 1.23 dB, so indicates a pass.

1.18.5 Tolerance Limit



Figure 21 Tolerance Spec Limit

Tolerance Limits set an absolute level center and a plus/minus value. This differs from the ripple limit that uses whatever level is present in the ripple start stop range.

1.19 Generating Reports

1.19.1 Site Information Menu



Figure 22 Report Site Information

1.19.1.1 Less/More/Show/Hide Details

Expand and contract the site information menu. Location and comments field can be open or hidden to save screen space.

1.19.1.2 New

Clear the current report and start a new report. Save the current report first if you need to recall it later.

1.19.1.3 Open

Open an existing report file, the current report information will be lost. Tags and Settings are still available for new traces.

1.19.1.4 Save

Save existing report to a file, the filename will be autogenerated based on the Site, User entered and test date and time, or it can be manually entered.

1.19.1.5 Merge

This allows previously saved reports to be merged with the current report. This includes PIM reports from both the iQA and iPA series products including *.rpt legacy reports and current *.zip report formats. If conversion is required an update dialog will appear. Merged reports are saved in the current *.zip format.

1.19.1.6 Share

The file/report sharing is also available through this menu, sharing options will depend on what Apps and resources are available on your tablet. These can include various Cloud services (© Dropbox , © Google Drive, © Onedrive) email, WiFi Direct. Saved reports are also available via USB from the tablet under Kaelus/iVA/Reports/ . PDF reports can be shared from the PDF viewing program that you have installed and are also available via the USB under Kaelus/iVA/ .

1.19.1.7 View PDF

Touch to view how the final PDF report will look. The PDF viewer of your tablet will be used for this. If you want to save or share the PDF report use the save and share functions in your PDF app.

1.19.2 Entering Contractor Details and Logo

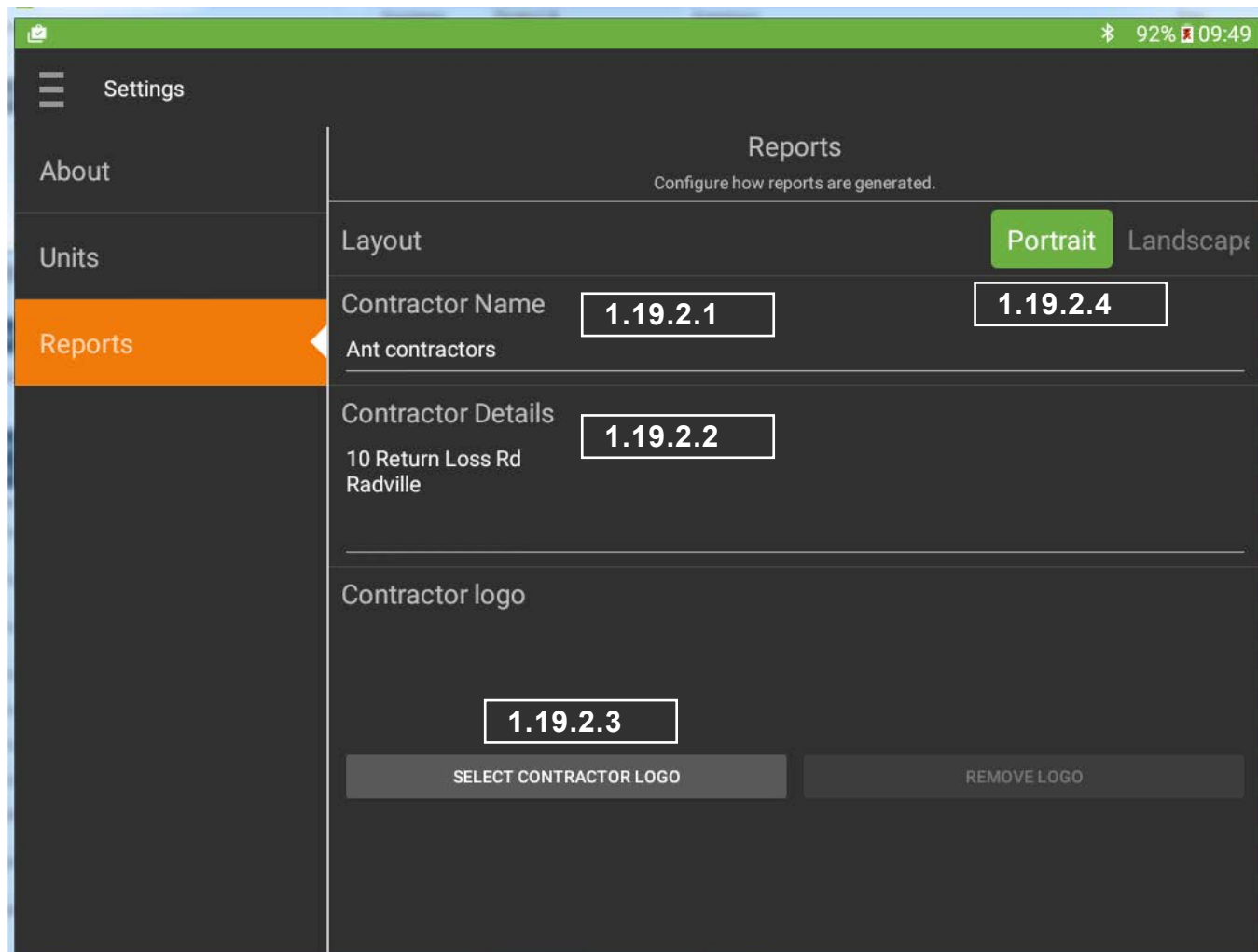


Figure 23 Contractor Details Menu

1.19.2.1 Contractor Name

Contractor name can be entered here it will appear at the start of every report. Contractor name details and logo are retained when the tablet is switched off or other state files are loaded. This menu is accessed via the Navigation/Settings Menu. See Figure 6

1.19.2.2 Contractor Details

These details will appear after the Contractor Name at the top of the report.

1.19.2.3 Select Contractor Logo

A small PNG or JPG file constituting your business logo can be added from the tablet gallery.

1.19.2.4 Portrait/Landscape Selection

Reports can be generated in Portrait or Landscape orientation.

1.19.3 Adding Photo's

Photos can be added to a report from any of the trace plot screens. See Figure 24 and Section 1.19.3.1

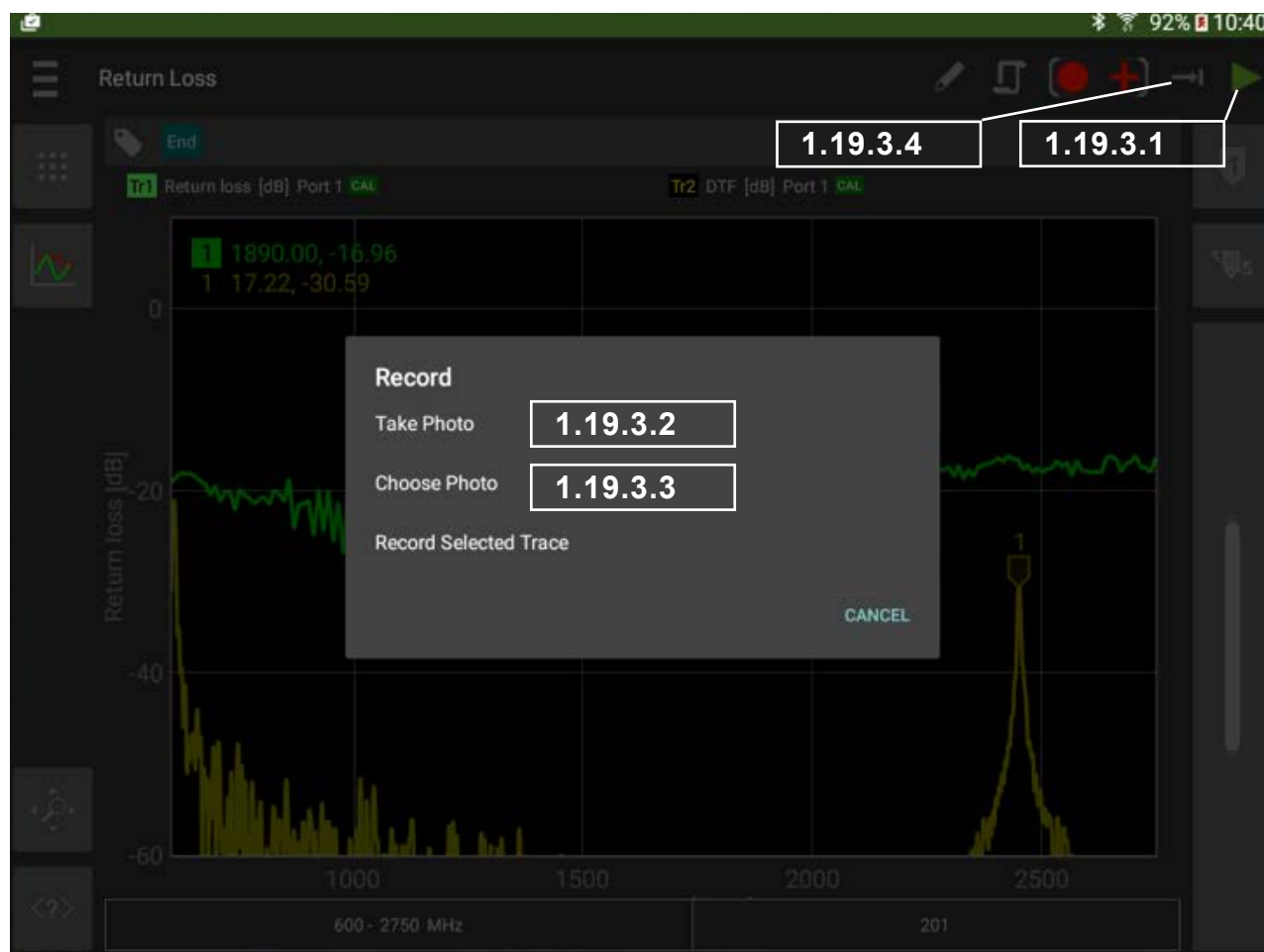


Figure 24 Record and Photo Menu

1.19.3.1 Select Photo and Record Menu

Touch here to make the Photo and record sub-menu appear.

1.19.3.2 Take Photo

This will select your default Tablet Photo program and open it. Take your desired photo. Depending on your photo/camera application, you will be asked to use it or press ok. The Photo will then be taken and added to the report. If your tablet has a geotag fix, the location of the photo will also be added to the report. If your tablet is not providing geotag data the photo is included on it's own.

1.19.3.3 Choose Photo

A photo that already exists in your Gallery can be chosen and included in your reports. When this key is pressed a list of your tablet photo viewing applications will be displayed, select Gallery, check the photo to include (one at a time). They will then be added to the report and geotag data if available.

1.19.3.4 Record Selected Trace

Touch this will cause the currently selected trace, it's tags and pass/fail result, if limits are used, to be added to the report, this function can also be operated. The single red icon on the trace display causes all traces on the display to be recorded.

1.19.4 Geotagging

As part of the installation process you will have been asked for the iVA application to share your location data. This is the first step, the second step is that location data needs to be available. A simple way to check this is to see if an application like google maps will show your current location on a map. Various technologies through the Android operating platform can be used to derive your location for geotagging. See the troubleshooting Section 2 on Geotagging to isolate some of the causes why Android may not be supplying Geotag data to the iVA Application.

1.19.5 Retrieving CSV data

In some cases it might be desirable to have your plot/trace data in a CSV (Comma Separated Values) format. This can be used to import the data to a spreadsheet or database program. The report *.zip file can be opened with a conventional zip file reading program, CSV files have already been included for you in the report zip file.

1.20 Tags

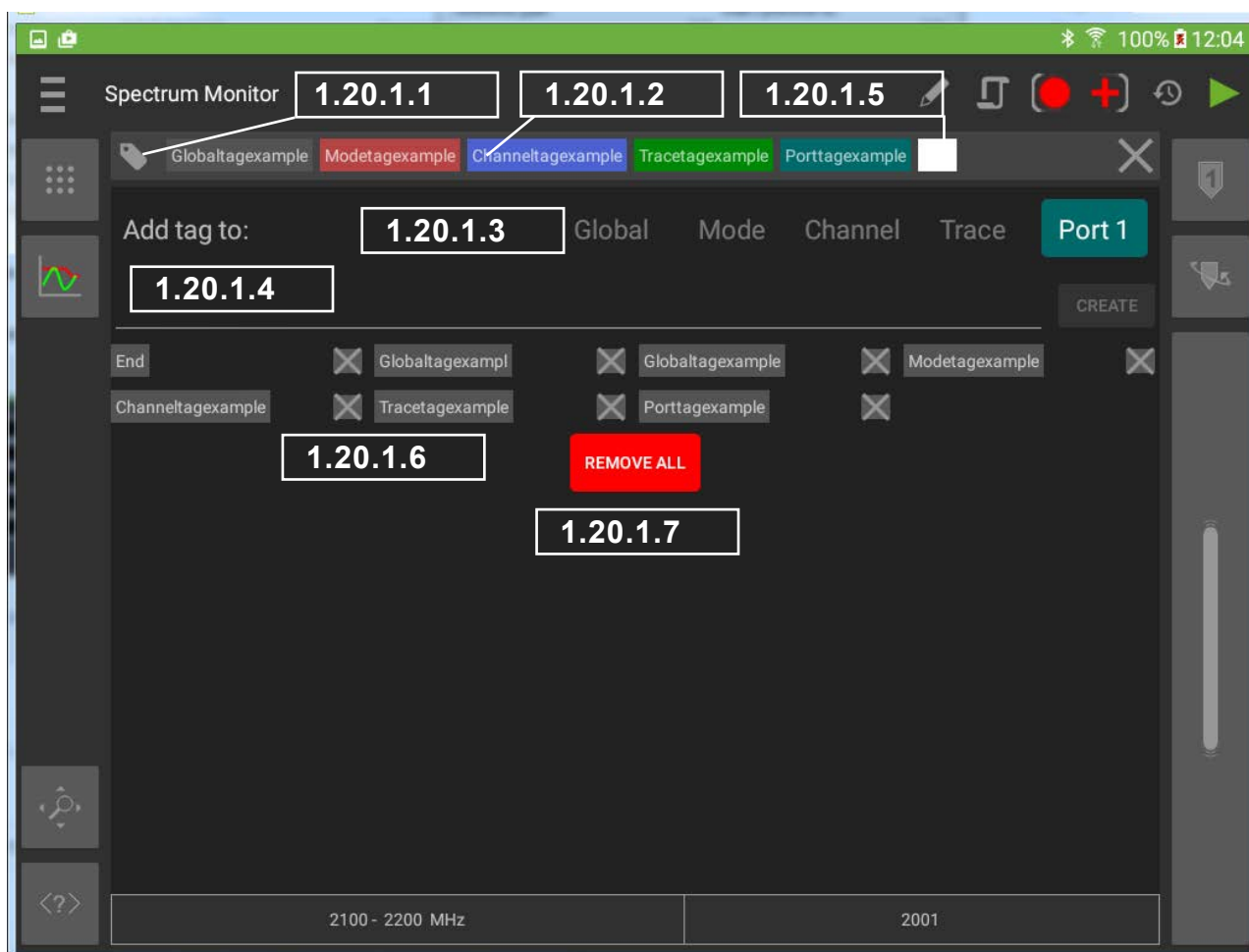


Figure 25 Tag menu

1.20.1.1 Enter and Exit the Tag Menu

The tags menu icon appears on all measurement mode screens, touch on it to make the tags menu appear, you have to touch this icon again to exit the tags menu.

1.20.1.2 Current Tags List Area

Prior to entering the tags menu, whatever trace, Mode, Port, Channel that was being highlighted/used will have it's particular set of tags now displayed in the current tags list area. Tags are displayed in color order as per the tag scope selection order, tags can be dragged up and down to be associated with a different scope if required. Alternatively you can select a tag and use the scope buttons.

1.20.1.3 Tag Scope Selection

The tag you enter in the Tag Entry Area (See 1.20.1.4) will be associated with a tag scope. How many places the tag is visible in will depend what scope is selected when you press create tag.

1.20.1.3.1 Global

Global tags are added everywhere, every plotted result in the report will have the tag you have entered put against it.

1.20.1.3.2 Mode

Everything in the currently selected mode will have the tag you enter associated with it. Modes could be one of the default modes like Spectrum monitor mode shown in Figure 25, or one of your user created modes. If you create a second Spectrum monitor mode, your tag would only associate with the mode currently selected when you entered the tags menu.

1.20.1.3.3 Channel

All traces in the currently selected channel will have the tag you enter associated with it. See Section 1.13.

1.20.1.3.4 Trace

Only the currently selected Trace will have the tag you enter associated with it.

1.20.1.3.5 Port

In the devices menu each connected iVA is associated with a Port, 1 , 2 , 3 etc . Any trace using the selected Port will have the tag you enter associated with it. This tag grouping can associate with an iVA's physical location. Cable1 as example.


1.20.1.4 Tag Entry Area

Tags should be entered here with no spaces, ensure the desired group is selected first, the press create tag or hit Enter.

1.20.1.5 Highlighted tag for deletion.

Highlight/select one of the tags in the current tags list area as shown. Pressing  will delete it.

1.20.1.6 Tags Pool

Enter your required Grouping then touch one of the tags in the tag pool to re-use any of the tags you have already entered. An  appears by each tag in the pool to allow it to be deleted.

1.20.1.7 Remove All

Remove all the tags in the tags pool.

1.21 State Files

It is possible to save instrument setups to a state file, these include Tags, Limits, Modes, Traces and Markers. It is worth spending some time to organize your test setups and workflow with some state files. State files can be sent and shared via normal Android sharing mechanisms, email, Dropbox, Wifi Direct, USB Upload. Sharing choices are available when entering the state saving menu.

1.22 Settings

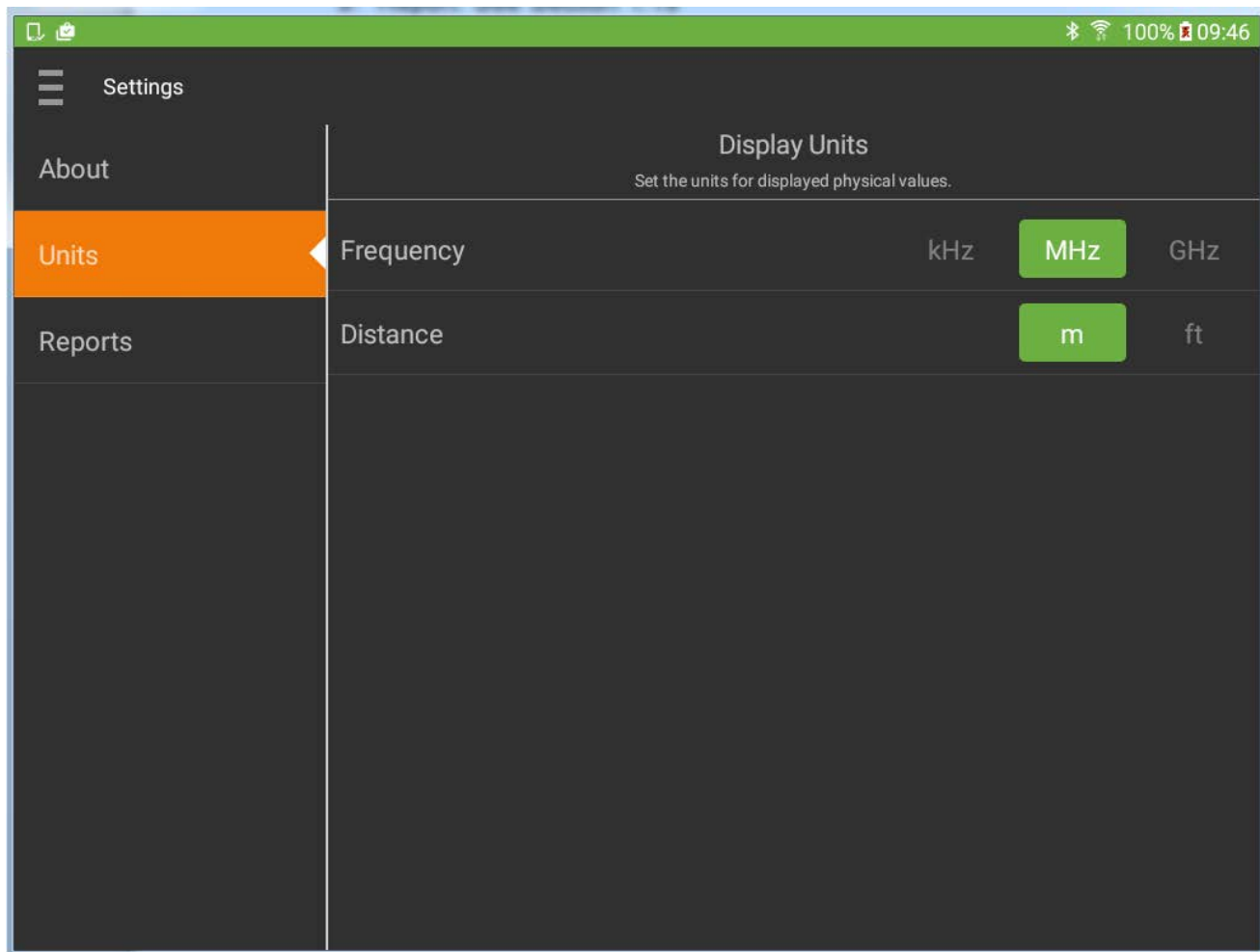


Figure 26 Settings Units

About shows the software version number, Units allows you to select the frequency and distance measurement Units used. Reports allows you to set contractor details and logo. See Section 1.19.2.

1.23 Cleaning the Equipment

Before commencing any cleaning, switch off the equipment. We recommend that the exterior surface of the equipment case is cleaned using a soft cloth moistened in water. Do not use aerosol or liquid solvent cleaners.

The test connector should be protected from dirt and scratches and cleaned with lint free cotton bud with isopropyl alcohol.

Care should be taken not to scuff, scratch or damage internal RF mating surfaces. Do not rotate the body of the iVA when connecting to a cable, rotate the fastening nut of the connector. When cleaning is a good time to inspect the connector and insure it is in good condition and if it requires servicing.

1.24 Turning off the IVA

Press and hold the Power Switch, See Figure 3 , for approximately 3 seconds until both Tx and Rx LED's flash, then lift your finger from the switch then it will turn off.

2. Troubleshooting Guide

If the remedies indicated in the chart below do not solve the problem, consult the manufacturer for further instructions.

Power

No Power upon pressing power switch

- Charge the battery with the iVA switched off for 3.5 Hrs with the included charger and small USB cable supplied. Confirm the Orange LED is on while charging.
- If the Orange LED does not come on, swap the charger to a known working power outlet.
- After sufficient charging time has passed then attempt to switch the iVA on again. See Section 1.7
- If the above action does not fix the problem the test set should be returned to a Kaelus/Summitek approved service facility.

Operation

Unable to Connect Via Bluetooth

- If the Bluetooth LED is solid Blue (Not flashing). Another Tablet may be in control/connected to your iVA. Switching off the iVA (See Section 1.24) , this will force the current controller to disconnect. Switch on the iVA (See Section 1.8) and attempt to connect via Bluetooth while the LED is flashing (See Section 1.9.1)
- Ensure you are attempting to connect to the correct serial number iVA. Check that the serial number of your iVA is in the devices list (See Section 1.9.1.1 and Figure 5), if not in the list you may need to manually start the scanning process to locate it and have it added to your device list, once in the list you should be able to connect.
- Signal Strength, typically you are able to connect and control up to 400 Meters away. Being inside a RF screened

room can reduce this range significantly, using the controlling tablet outside the screened enclosure should resolve the problem.

- Interference, test environments can be co-sited with high power transmitters or environments with high transmitted noise floors. Powering off interferers while testing can assist with interference problems.
- Resetting the tablet Bluetooth hardware, switching off Bluetooth on the tablet and switching it back on again can assist. Likewise pairing again to your iVA serial number in the Bluetooth menu will allow the new connection to occur quicker.

Geotag

- Geotag data may not be available inside a screened room or where high RF fields are present. Secure your location on your smart phone or tablet before connecting wirelessly to the iVA or entering the screened environment.
- Geotag data is only as good as the information provided by the location service on your Smartphone or tablet. If your device has GPS or location services, ensure they are switched on in the settings menu. Some Tablet computers may not even have GPS receiver hardware and may not be able to use Satellite location services.
- Geotag service providers can gather geo data from several sources. Having more data sources turned on, on your smart phone/tablet being shared with your geotag service provider can improve your chances of an adequate fix. These include GPS (Global Positioning System) switched on and set to share your location (if fitted), Wi-Fi access points that can be received nearby, Cellular Phone tower signals being received nearby for smartphones or phone enabled tablets, and an internet data connection can all assist to get a geotag fix.
- If your smartphone/Tablet Wi-Fi is your only Geotag data collection source, get your geotag fix first then use the Wi-Fi to connect to an internet connection.
- You can use your map application on your Tablet PC or phone to confirm you have a Geotag fix for your location this can help isolate problems with your Geotag fix.

Unable to Measure Cable Loss

- Cable loss measurement uncertainty increases as cable loss increases, if you suspect very high cable loss. The reflected signal from the cable end may be becoming too low to measure. Check the terminated return loss of your cable, if the connectors or assemblies at the start of cable are very poor. This can create a reflected signal stronger than the cable loss measurement signal. Attend to any local return loss problems first, before attempting your cable loss measurements.

3. Ce Declaration of Conformity

Hereby, **Kaelus Pty Ltd**
34 Corporate Drive
Cannon Hill, QLD, 4170
AUSTRALIA

declares that the following products are in compliance with the essential requirements of Directive 2004/108/EC (EMC Directive), Directive 1999/5/EC (RTT&E Directive) and Directive 2006/95/EC (LVD Directive) if installed and operated in accordance with manufacturer's instructions.

These products are in conformity with the following European, harmonised and published standards at the date of this declaration

The design, development and manufacturing of Kaelus Pty Ltd products are controlled by an ISO 9001:2008 certified Quality Management System.

Part Number	Model Number	Description
IV0727V01A-01N	iVA0727A	Cable and Antenna Tester
IV0627V01A-01N	iVA0627A	Cable and Antenna Tester

Referenced EMC Standard	
EN 61326-1:2006	EN 61000-4-4
EN 61326-2-1:2006	EN 61000-4-5
EN 55022:2010 "Class A"	EN 61000-4-6
EN 61000-4-2	EN 61000-4-11
EN 61000-4-3	
Referenced Safety Standard	
EN 61010-1:2010	EN 61010-030:2010
Referenced Radio Standard (incorporated WT41-E Bluetooth device)	
ETSI EN 300-328	ETSI EN301-489-1
ETSI EN301-489-1	ETSI EN301-893-

Authorised representation within the EU is

Kaelus, 1 Aquarius Court, Viking Way, Rosyth, Scotland, KY11 2DW

Signed by the manufacturer at 34 Corporate Drive, Cannon Hill, QLD, Australia 4170 (the location of the technical file),

Christine Blair
Engineering Director
Kaelus Pty Ltd
24th June 2015
ID: EUTA2036A1



4. Bluetooth Product Listing

Bluetooth® Product Listing


The Bluetooth SIG Hereby Recognizes

Kaelus
Member Company

D027332
Declaration ID

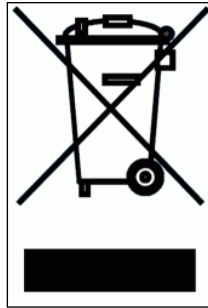
Referenced Qualified Design ID(s): 28412, 37931
Listing Date: 24 June 2015
Product Listing: IVA

This certificate acknowledges the products declared by the member were listed in accordance with the *Bluetooth®* Qualification Process

 **Bluetooth®**
SPECIAL INTEREST GROUP

5. End of Life Statement

Equipment marked with the symbol below (Crossed Out Wheelie Bin) complies with the European Parliament and Council Directive 2002/96/EC (the “WEEE Directive”) in the European Union.



Please contact your local Kaelus representative (see next section) at the end of the product's useful life to arrange its disposal in accordance with your local regulations.

6. Contacts

Kaelus has service center locations globally. Please visit <http://www.kaelus.com/Contact-Us/Locations/> to find the service center nearest you.

When ringing, ask for IM tester support (technical or otherwise) & quote the relevant part numbers.

Send feedback to: info@Kaelus.com