

## Portable Appliance Testers User Manual

### TnT ELB G4-Series

Australian Designed & Manufactured to comply with testing requirements of AS/NZS 3760:2010 standards.



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*Patent Filed with IP Australia*

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## Important Information

### Accessories Supplied

- Portable Appliance Tester Instruction Manual
- Manufacturer's 1<sup>st</sup> Calibration Certificate – (Valid for 12 months)
- IEC test lead (500mm orange/red)
- Earth Lead with Alligator Clip (1800mm black)
- Soft Carry Case
- Locking IEC Power Cable (1800mm Blue)
- \*Battery model (power bank)
- \*Battery model USB lead

### Precautions



#### Unique Locking Power Cable

Please make sure yellow lever is pressed prior to removal of the locking power supply cable. Though the case of the G4 TnT is manufactured from impact resistant & flame retardant ABS, failure to do so, combined with excessive force may damage the rear panel.

#### Switch from battery power to mains power

To switch from battery power to mains power, simply plug in the supplied blue power cord. There is no need to disconnect the battery cable. However, it is advised to disconnect the USB AM-BM cable from USB B port from the rear of unit.

In case of switching from mains power to power bank or switching off the unit using Enter button, disconnect the USB cable from USB B port of unit and connect it back, press the Enter button to start the unit.

### Manufacturer Recommendations

**Calibration:** The manufacturer recommends a routine calibration / verification of this unit to ensure the accuracy of readings on a 12 monthly basis, or as prescribed under any additional local Regulatory requirements.

**Note:** Only Wavecom Instruments or its Authorised Service Agents are permitted to repair and Calibrate this Instrument. Failure to perform unauthorised service or repair may void all warranties and Calibration Status.

TnT Firmware & TnT G4 series in general have the ability to be updated to comply with potential Changes in Testing Standards

### Safety Warning

This 4<sup>th</sup> Generation TnT series of products have been designed to meet stringent safety requirements, however no device can completely protect persons from the consequences of incorrect use.



The testing of Electrical appliances requires that extra care and caution is taken at all times to ensure personal safety.

The Manufacturer also advises that appliance testing should be conducted by a **Competent** and suitably trained person, as referred to under the current Standard AS3760:2010, as well as any additional legislation or rulings in different states.

If in doubt, the manufacturer suggests the user contact their responsible Authority.

For maximum safety, always ensure that the following advice is followed:

- The equipment being tested is in good repair.
- All user instructions are followed.
- Double check power supply connections. (note LED status)
- Always use specified fuses and protection devices.
- Do not use leads that require repair or are damaged.
- If you are unsure, call a licensed Engineer/Electrician.

\* See P.5 AS/NZ 3760:2010 def.

**IMPORTANT**

- This equipment uses an external battery power bank. DO NOT send this item by any shipping company. This includes the power bank by itself or with equipment. Please remove the battery power bank first.
- If you have any transportation queries please contact your shipping company or Wavecom Instruments.

**TnT ELB Portable Appliance Tester**

Front Panel View

**Instrument description**

1. Carry Handle/Body
2. LCD Display Screen
3. Function Key F1
4. Function Key F2
5. Function Key F3
6. Return/Enter Key (Menu/Select)
7. Supply Status/Warning indicators
8. Main Appliance Test Socket
9. IEC Test Socket for Earth and Extension lead testing
10. Battery power bank housing



View from Back Panel (10A)

**Instrument description**

1. IEC Blue Power Inlet (Lockable)
2. Carry Handle
3. Power Bank Battery incorporates Fuse Holder 10A rated
4. USB B port
5. Battery Port



Please note: a USB-A to USB-B Cable (included) is required for using the battery pack

## ***Competent Person***

To ensure that all electrical equipment or devices are inspected, tested and tagged correctly, regulations require that a 'competent person' such as a Licensed Electrician be employed to perform the required tests.

Please refer to the above definition as described in the current **AS/NZ-3760:2010 Standard** and in addition, to any other local legislation or jurisdictions as may be relevant in your State.

### **EXAMPLE:**

A person competent to undertake Inspection and Testing of electrical equipment must have:

- Knowledge and practical experience of electricity and its hazards.
- A clear understanding of precautions to avoid danger.
- The ability to recognise at all times whether or not it is safe for work to continue.
- The ability to carry out visual examinations of electrical equipment.
- The ability to distinguish between electrical equipment that is double insulated and equipment that is earthed as well as being able to identify the appropriate test for each type.
- The competency to safely carry out the Earthing Continuity, Insulation Resistance or Leakage Test and RCD tests on electrical equipment.
- The knowledge of how to use the relevant testing instruments, interpret and record the results for compliance with the Standard/Workplace requirements.
- The knowledge to be able to correctly recommend the frequency of testing required.

Due to the potential hazards of electrical testing, due care must be

taken at all

times.

## ***Disclaimer***

### **Limited Warranty**

The Manufacturer warrants its products against defects in materials and workmanship for a period of 12 months from the date of purchase. During the warranty period, the manufacturer will repair (or at its option replace at no charge) the product that proves to be defective. This warranty does not apply if the product has been damaged by accident, abuse, misuse or mis-application or as a result of service or modification by anyone other than manufacturer of the TnT.

The TnT product range of devices or its manufacturer IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, INCLUDING DAMAGE TO PROPERTY AND TO THE EXTENT PERMITTED BY LAW, and DAMAGES FOR PERSONAL INJURY. The Distributors of this product cannot assume liability or responsibility for any loss or damage resulting from the use of this device.

The TnT manufacturer reserves the right to discontinue models, change or design, at any time without notice or obligation.



specification, price

## Technical Information

### ***Class 1 (Earthed Appliance) Definition***

*(Single basic insulated and protectively earth equipment)*

This type of product design provides two safety barriers between all live conductors at dangerous voltages and the equipment user.

The provision of basic insulation between exposed metal parts and live parts is the first barrier to provide basic protection against electric shock.

The second safety barrier is by the connection of exposed (accessible) conductive (metal) parts to the protective earthing conductor (earth wire) in the fixed wiring of the device/Installation.

The protective earthing terminal of the equipment must be marked with the word "earth" or the symbol "E" or the symbol for Earth Terminal or Protective.

To perform this test a continuous earth loop must be made between the exposed conductive material (metal) and the TnT appliance tester. This is done by means of connecting the earth lead with the crocodile clip/probe attached to a GOOD earth point (paint & coatings will not provide effective connections) and the DUT (Device Under Test) plugged into the TnT appliance testers' DUT socket. The Maximum allowable limit is less than 1.0 (ohm).

### ***Class 2 (Double Insulated) Definition***

*(Double insulated equipment)*

**This method of construction employs two safety barriers comprising two layers of insulation between dangerous voltages and the user of the equipment.**

The first layer of insulation is formed around the live conductor and is termed 'the Functional Insulation'.

The second layer of insulation is termed 'the Supplementary Insulation'. In Class II equipment, protection against electric shock does not rely on basic insulation only, but has additional supplementary insulation such as double insulation or reinforced insulation provided, there being no reliance on precautions in the fixed wiring of installation.

Class II equipment is marked with the words "DOUBLE INSULATION" or the symbol



For double insulated under Safety Symbols:

Note 1 – Double Insulation is insulation comprising both basic and supplementary insulation.

Note 2 – Reinforced Insulation is a single insulation system with a degree of protection against electric shock, which is equivalent to double insulation.

### ***Testing of Electrical Equipment***

Many testing personnel have some reservations in testing sensitive, electronic equipment using a 500V DC insulation test. There is a perceived fear of causing internal damage from over voltage. With the introduction on the TnT Range of appliance testers, these concerns are alleviated.

The TnT Range of electrical portable appliance testers is safe to test electronic equipment as the tests are carried from Active-Neutral (shorted by a relay inside the tester) to Earth. No dangerous voltages pass through in this

mode to the internal components of the DUT (Device Under Test). If these tests are done using an Insulation Tester only and the user tests Active to Neutral, this would be a cause of potential damage, **this is why the TnT product range is far safer to use.**

Some changes may be required in certain configurations where fitted surge protection devices (**MOV's**) in the DUT may cause a failed test result. Applying 500V in these situations can cause the surge protection devices to trip, therefore conducting the applied voltage to earth, thus showing a failure of insulation. In these instances the test voltage should be changed to 250V then retest. If DUT still fails, check with the DUT Operators Manual or an electrician. *[for details see - 'Double Insulation Test' 250/500VDC to change test voltage].*

Under these circumstances, it would be difficult for any damage to occur to either the surge protection device or the DUT, as there is insufficient current generated by the TnT-el appliance tester.

#### **Leakage Test:**

If there are any doubts with insulation testing of the equipment, the standard (AS/NZ3760) allows for an alternative test method. A Leakage Test can be performed instead (The TnT – Series are designed to perform these tests).

**NOTE: 10Amps MAXIMUM Resistive Load only** (Standard TNT - Series units).

A Leakage Test applies power to the Device under Test (DUT) and measures the imbalance of leakage current from the DUT between the active and neutral conductors. The leakage is tested to the limits specified in the standard and a Pass/Fail result as well as a digital reading is provided to ensure that the user gains as much information as necessary.

#### **Earth Continuity Test:**

**The TnT-el conducts earth continuity tests at approx. 200mA.** Continuity tests at higher currents are not required and are not recommended on certain equipment as this can cause severe damage or premature failure to the DUT under test (as per AS/NZ3760).

#### **3 Phase Testing: \* (Note Optional Adaptor is required)**

3 Phase appliances can be tested by the TnT series appliance testers. This test is carried out by using the adaptor connection socket. As the insulation tests are from Phase to Earth, only a 500V insulation test is required. These adaptors can be made by your electrician or purchased as an accessory. *[See 'Optional Accessories' for details - when ordering please state plug configuration of 3 phase plug.]*

**Please note: (The TnT cannot perform 3 Phase Leakage test. Contact Wavecom Instruments Pty Ltd for the appropriate tester).**

#### **Switching between 250V & 500V Test**

To change the test voltages select the "change ins" from the options menu. Please refer to the **(Special Functions)** section of this manual.




**Please Note:** The TnT - Series will automatically default to 500VDC when restarted.

## Integrated Tests

### Supply Mains Test

**(Not Available in Battery Mode)**

The Supply Mains Test checks the polarity and connectivity of the mains supply by LED's. This test is also a part of all the testing functions of this unit.

	<p>If the N-E (red) light is on and you need to conduct load/leakage tests <b>DO NOT CONTINUE</b>. If you are carrying out standard Insulation and Earth Bond tests, it is generally safe to continue. This light will glow if a voltage difference lies between the neutral and the earth, or if no earth is connected to the TnT- Series supply. (If working with a generator or inverter, this is most likely to occur and you may need to consult an electrician before proceeding).</p>
	<p>If both the A-E &amp; A-N (green) lights are on but not the N-E (red), mains supply test is ok, continue to test.</p>
	<p>If both of the N-E (red) &amp; A-E (green) lights are on, <b>consult an Electrician</b>, as there is a fault with the Mains Supply.</p>

### NCNT Test

#### (No Connection No Test)

The TnT – Series appliance testers ensure that the appliance is plugged in and switched on. This test is also a part of all of the testing functions of this unit.

This test function ensures that the appliance is plugged into the TnT appliance tester and that it is switched on. If the device is not plugged in and the TnT appliance tester detects that no device is present, plug in to continue the test or confirm 'QUIT' to return to the main menu.

If for some reason the NCNT circuit does not detect the device but it is actually plugged in and turned on, the operator will need to override the NCNT function.

To do this Over Ride **Press F3**

**(Done with user discretion)**

With an emphasis in the **Standard AS/NZ3760** for carrying out the live testing the TnT - Series appliance testers will indicate for you to check if the device is plugged in and switched on. If the device is not plugged in and/or recognised, it may require a live test therefore making it necessary for the operator to carry out a full functional Leakage Test (Available on all models of TnT – Series).

This function is to ensure that correct testing procedures are carried out in accordance with the Standard AS/NZ3760.

#### \*Optional

**Note:** When using 3-Phase adaptors the **NCNT** function will need to be over ridden by pressing the 'OK' key prior to the TnT appliance tester performing the assigned test. Some single Phase appliances controlled by contactors will also require manual over ride. In some instances holding the 'ON' button will enable the NCNT function to work normally.



## First Safety Test

### Visual Inspection

VISUAL INSPECTION IS TO OCCUR BEFORE ANY OTHER TEST IS CARRIED OUT BEFORE USING ANY OF THE RANGE OF TnT APPLIANCE TESTERS

**(Theory has it that up to 90% of errors are detected just by doing a thorough complete visual inspection, this will also determine what specific type of test will be conducted on the inspected appliance.)**

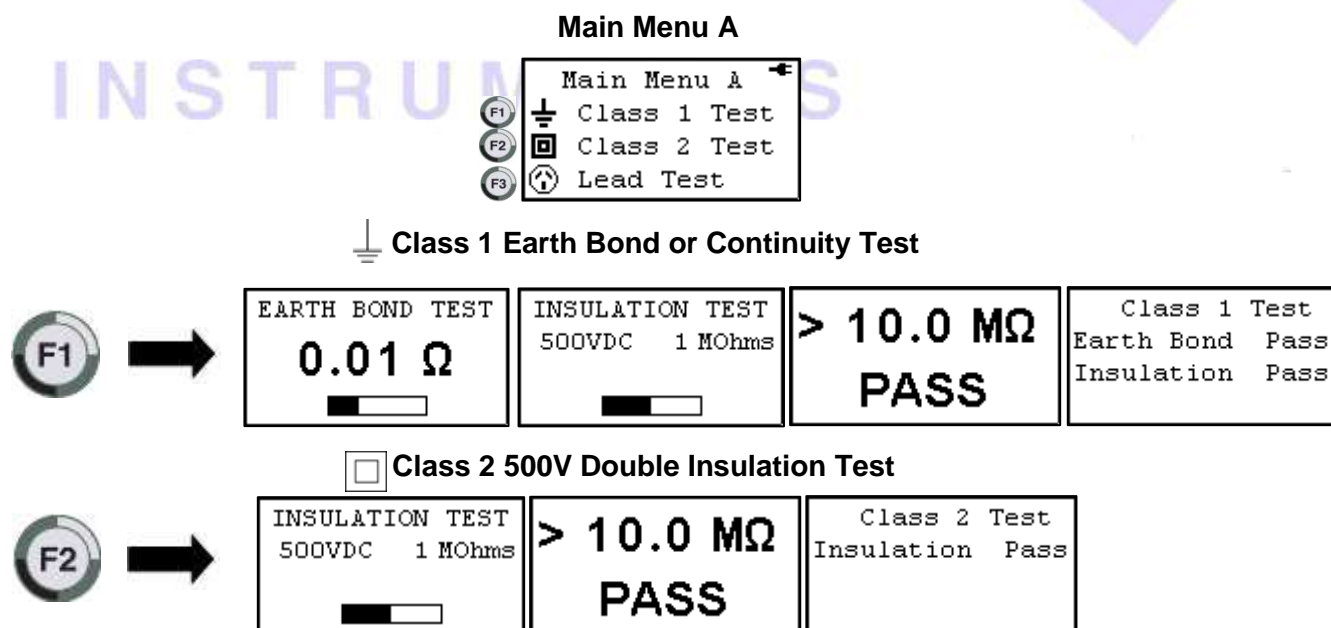
- Take your time and read information carefully, compliance plates or stickers attached to the appliances being inspected, have valuable information like volts, amps, power and symbols like the earth symbol  $\perp$  and the double insulated symbol  $\square$  that will help you identify what test needs to be conducted with that appliance. (Explained in detail refer pg.
- There is no damage or component defects to the accessories, plugs, outlet sockets or connectors (physical).
- There are no cracks &/or abrasions.
- There are no exposed inner cores or conductors (flexible) and the supply cords are not twisted or distorted.
- Any Fuse / Over load protection components (if fitted) are checked.
- All labels, markings and warning indicators (of the maximum load to be connected to the device) are legible and intact.
- The insulation is not damaged in any way i.e. melted, cuts or abrasions. There are no iron filings in the insulation. There is no insulation tape on the lead.
- Any flexible cords and/or leads are effectively anchored (glands and grommets intact).
- All covers or guards are in place and secure as intended by the supplier/manufacturer.
- All safety devices and systems are in good working order. (i.e. overload latches & buttons).
- No dust &/or dirt obstructs any exhausts or ventilation outlets.
- All controls are working properly and are secure and aligned.

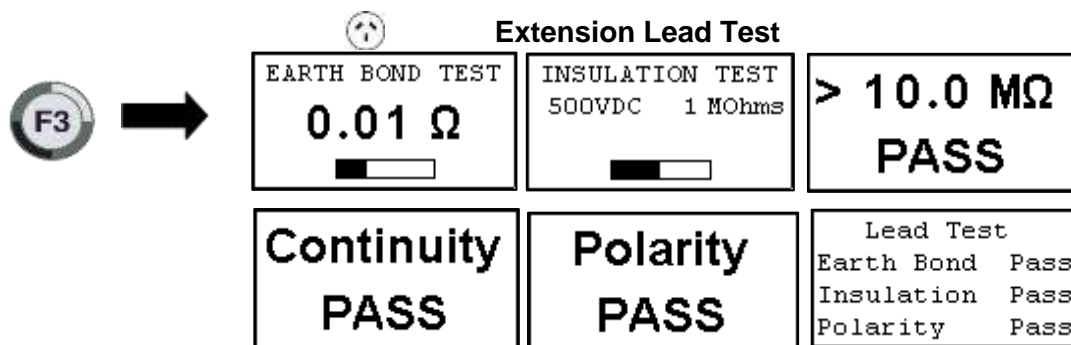
**Important: If result is a FAIL!!**

If any Equipment **FAILS ANY** of the above, it should be deemed to have **FAILED** the Visual Test, and therefore no other tests need be performed. If this is the case the Equipment should be tagged with a **DANGER TAG** and removed from service. It is recommended by the manufacturer and distributor of this product that it **SHOULD NOT BE RETURNED TO SERVICE**. To do so would be considered unsafe.

## TNT - Series (All models - Testing (Menu A)

### TEST Function Flow Chart





### Class 1 - Earthed Appliance Test - F1

**Please Note:** A **Visual Inspection** test must be carried out before any others (refer to *First Test Section*)

The Class 1- Earth Appliance Test completes the following sequences as part of its procedure:	
1. Integrated Supply Mains Test	Refer to <i>Integrated Test</i> section
2. Integrated NCNT Test	Refer to <i>Integrated Test</i> section
3. Earth Bond Test (@ 200mA): 200mA test current, pass level <b>less</b> than 1Ω	
4. Insulation Test (@ 250V or 500V): pass level <b>greater</b> than 1MΩ	

**Please Note:** 250V insulation testing applies to Class 1 appliances if selected (refer to *Technical Information* for details to change test voltage)

In some situations if the DUT is labelled with "Surge Protection Fitted" or if it contains **MOV's** (Metal Oxide Varistors), conduct a 250V-insulation test.

\*If unsure refer to the **AS3760 Standard**. Should it still fail, remove it from service. (Refer to the *Technical Information* section to change test voltage).

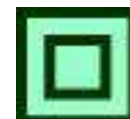
**Procedure:**

1. Complete a Visual Inspection. **Only proceed if test passed.**
2. Plug device into appliance socket.
3. Connect earth clip to any exposed metal on the device.
4. Press the F1 key and wait for results (ensure that device is powered on)
5. Read and record results appropriately
6. Unplug device
7. Tester will return to Main menu A automatically

**If the result was a pass** - Tag with PASS tag showing "next test due" date and return the device to service.

**If the result was a fail** - Tag the DUT with a **DANGER** tag and remove the device from service.

**Please Note:** Ensure that the device is isolated from any ground loop.



### Class 2 Test - Double Insulation Test - F2

**Please Note:** A Visual Inspection test must be carried out before any others (refer to *First Test Section*)

<b>The Double Insulation Test completes the following test sequences as part of its procedure</b>	
1. Integrated Supply Mains Test	Refer to <i>Integrated Test</i> section
2. Integrated NCNT Test	Refer to <i>Integrated Test</i> section
3. Double Insulation Test (@250V or 500V): pass level <b>greater</b> than 1MΩ	

**Procedure:**

1. Complete a Visual Inspection (**Note: Only proceed if test passed**)
2. Plug the appliance into appliance test socket.
3. Connect earth clip to any exposed metal on the device (if any, or device can be wrapped in foil or use metal mesh braid, Part No: WCM-ES 500)
4. Press the F2 key and wait for results (ensure the device is powered on)
5. Read and record results appropriately
6. Unplug device
7. Tester will return to Main menu A automatically

**If the result was a pass** - Tag with **PASS** tag showing "next test due" date and return the device to service.

**If the result was a fail** - Tag with a **DANGER** tag and remove the device from service.

In some situations if the device is labelled with “**Surge Protection Fitted**” or if it contains **MOV’s** (Metal Oxide Varistors), conduct a 250V-insulation test. (**Hint always read the compliance plates during Visual**)

\*If unsure refer to the **AS3760:2010 Standard**.

Should it still fail, remove it from service. (Refer to the *Technical Information* section to change test voltage).

### **Lead Test (Ext Lead Test) - F3**

**Please Note:** A **Visual Inspection** test must be carried out before any others (refer to *First Test* Section)

<b>The Lead TEST completes the following sequence as part of its comprehensive testing procedure:</b>	
1. Integrated Supply Mains Test	Refer to <i>Integrated Test</i> section
2. Earth Bond Test (@ 200mA): 200mA test current, pass level <b>less</b> than 1Ω	
3. Insulation Test (@ 250V or 500V): pass level <b>greater</b> than 1MΩ	
4. Continuity and Polarity Test 240VAC @ 2mA Checks continuity & polarity of leads	

**Procedure:**

1. Complete a Visual Inspection. **Only proceed if test passed.**
2. Plug in supplied orange IEC adaptor lead supplied into front IEC socket.
3. Plug male end of extension lead or power board in to TnT – Series appliance socket.
4. Press the F3 key and wait for results.
5. Read and record results appropriately.
6. Unplug extension lead/power board.
7. Tester will return to Main menu A automatically.

**If the result was a pass** - Tag with **PASS** tag showing "next test due" date and return the device to service.

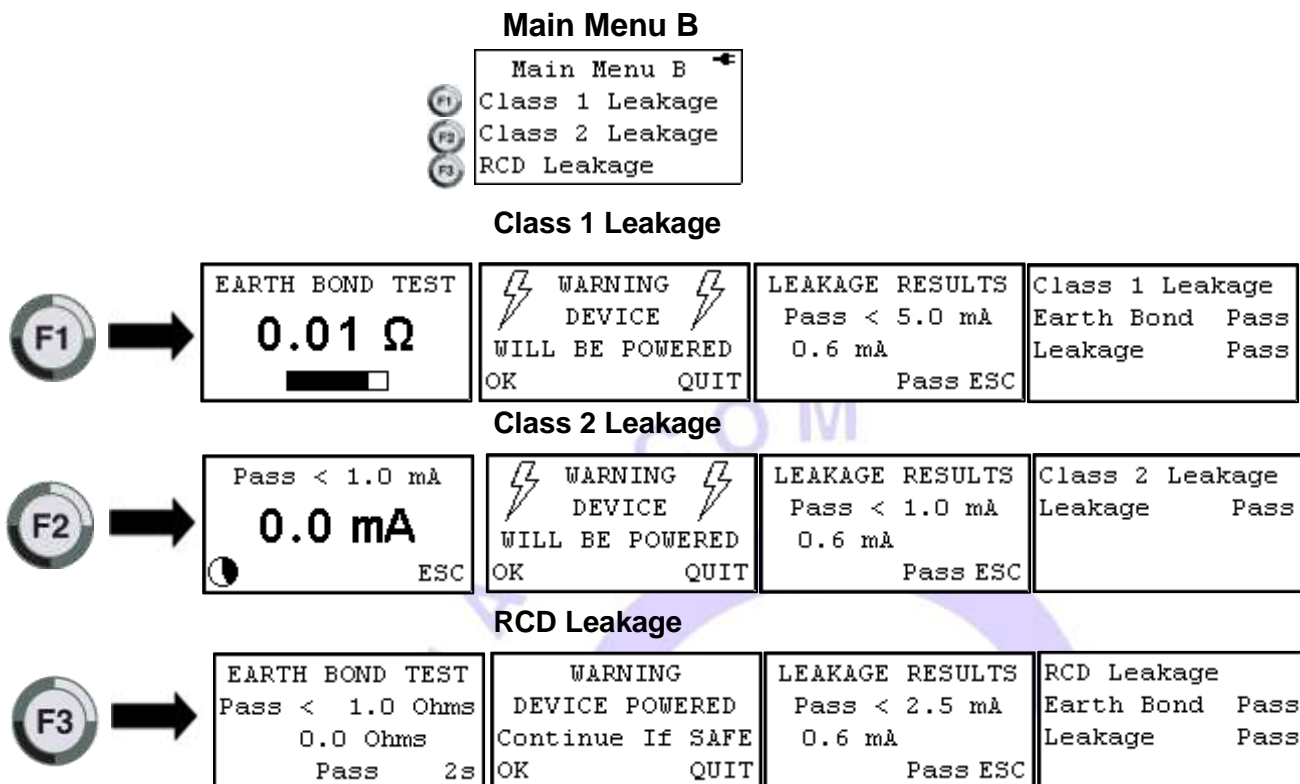
**If the result was a fail** - Tag with a **DANGER** tag and remove the device from service.

**Please Note:**

- Extension leads should **always be uncoiled** before using or testing. Please ensure that the IEC Adaptor & the IEC socket are inserted firmly or it may result in a continuity/polarity fail.

## TNT – Series (All models – Testing (Menu B))

### Main Menu B Test Function Flow Chart



### Class 1 & 2 Leakage / Run Test

(Not Available in Battery Mode)

Disclaimer: blue power lead is required for this operation.

The Leakage Test is an alternate method to perform insulation resistance tests. Leakage testing is a major function of the TNT - Series

**Please Note:** A **Visual Inspection** test must be carried out before any others (refer to *First Test* Section)

This test determines errors of leakage not otherwise detected in a normal insulation test. If there are any doubts with insulation testing of the equipment, the Standard **(AS/NZS 3760 since 2001)** allows for a **leakage test** to be carried out **instead**. The TNT - Series appliance testers have been designed to perform these tests. The **Leakage Test** applies power to the Device Under Test and measures any imbalance or leakage current. The leakage is tested to the limits of the class types specified in the Standard AS/NZS 3760 i.e. Class 1 = > 5mA as **Fail** & Class 2 = > 1mA as **fail**.

The Limit of imbalance measured on the TnT-RCD, + appliance tester will read well in excess of the limits set in mA. However, should the supply circuit be protected by an RCD this device will trip anywhere between 10 to 30mA and trip the mains supply switch OFF.

#### Procedure:

1. Complete a **Visual Inspection**. For details refer to the *First Test* section. If the device passed the Visual Inspection, continue with the following instructions, if not, refer to the *First Test* section.
2. Press the return key to view Main menu B.

3. Press a function key (as follows) to start the test/s. Press either F1, F2 or F3 depending on the type of device you are testing). **F1** = Earth Leakage, limit set to MAX then 5mA fail. **F2** = D/insulated leakage and ext. leads, limit set to MAX then 5mA fail. **F3** = RCD leakage.

**CONFIRM IF SAFE TO CONTINUE? OK/QUIT. IF OK, DEVICE WILL POWER SWITCH ON. ENSURE ITEM AND ENVIRONMENT FOR SAFE OPERATION!**

4. Results are displayed, read and record appropriately.
5. Unplug DUT.
6. Press Enter until you return to the main menu.

**If the result was a pass** - Tag with the appropriate tag including "next test due" date and "return to service".

**If the result was a fail** - Tag with a **DANGER TAG** and remove from service.

The **Leakage Test** allows the user to operate the appliance in normal operation conditions and measure its Operating Leakage current. The displayed parameter is mA. The mA Display Range 0.0 to 22.0 mA.

A predefined value for individual class types is programmed into your TNT - Series appliance testers. These limits are set according to the **AS/NZ3760**. Should these values change in future it can be simply altered in firmware. A Pass / Fail will also be displayed at the end of the test.





The run time period can be adjusted (by 5sec increments). The value can be changed by selecting the leakage test time in the options menu. See the **special functions** section of the manual for more details. The factory default setting is 20sec. The value for the leakage runtime is also used for the power test (plus models only).

**Caution:** Before operating ensure the equipment is firmly secured to eliminate the possibility of causing injury or damage. This function will power the Unit on, Please make sure the drills or any blades of any rotating devices have been removed prior to any testing and have clearance from body or object. Appliances may jump off benches and may need to be secured by clamping them, or they may cause serious damage if not secured properly.

**Leakage Test Time**

The **leakage test** time is adjustable. You may need to adjust timing in this feature if the DUT has a long power up time or requires special power on procedure. Default time for **Leakage Test** is 20 seconds. From this menu you can change the test time from 5 seconds to 28800 seconds. Adjusting to any less than 5 seconds will put the test time to infinite.

TnT Options:	LEAKAGE DURATION
Leak. Test Time	Up            25 S
Next	Down
Esc            OK	SET            ESC

- Press the  key to increase the test time.
- Press the  key to decrease the time.
- Press the  key to set the new leakage / power test time.
- Press the  key to escape out of the menu. No changes saved.

**Audio Option - All**

Enabling the audio option will make the TnT use a sound to indicate a pass or a fail at the end of a test. If the TnT unit has never been altered, then the audio beep is disabled.



TnT Options:	Audio Option
Next	
Esc            OK	

- Press the  key to disable.
- Press the  key to enable.

### Result hold time

Press Enter and F2 to enable options then F2 until you get to result hold time this allows you to change the time that the results values are showed on the TnT display screen

TnT Options:	RESULTS DELAY
Result Hold time	TIME: 3 Seconds
Next	DECREASE
Esc OK	INCREASE OK

- Press the  key to increase time.
- Press the  key to decrease time.

### ***KILL SWITCH***



To stop operation press the **return/enter** key at **any time**. The unit will power down after 20 seconds as factory default.



**Caution:** This test turns the Equipment ON. The power / leakage test can handle up to **10 Amp** (Resistive) Load MAX. **Exceeding** this value will blow the external M205 ceramic fuse. Care should be taken when testing inductive loads (i.e. AC motors) with large start up currents.

If 10A HBC **fuse is blown** the appliance will **not operate** in Power test or Leakage test modes. Replace fuse only with M20 10A HBC fuses. Any other fuse voids warranty and manufacturers design.

**Caution: DO NOT OPEN** TnT – Series case as there are no serviceable parts inside and you can void your Warranty






## TnT Options Menu

### Introduction

Here you can adjust the way the TnT behaves under certain tests and other TnT functions. Some TnT options are not available to some TnT models. Some options are only available to TnT memory units.

#### To access the TnT options menu:



```
TnT Options:
Change Ins Vol
Next
Esc          OK
```

-  • From either the Enter barcode screen (memory unit) or the main menu A screen hold down the return button.
-  • With this button held down press the F2 key you should now be in the TnT options screen. The screen displays 1 option at a time.
-  • You can select this option by pressing the return button.
-  • To select the next item press the F2 button.
-  • Pressing the F3 button escapes out of the TnT options menu.

#### Change Insulation Voltage – All TnT models

TnT Options: Change Ins Vol Next Esc          OK	INSULATION TEST  250 VDC  500 VDC
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Some DUT contain MOV's (metal oxide varistor) or commonly known as spike protection devices. These limit the mains voltage to about 280VAC. If you attempt to perform a 500VDC insulation test on one of these devices you will get a failed result. To fix this problem select the 250V option.

- Press the  key to select the 250V option.
- Press the  key to select 500V option.

You can also set the unit back to 500V by switching the mains power off and on again. The default insulation voltage is 500V.

## Optional Accessories

WinPATS LogBOOK	Part No: WCM-WinPATS LogBOOK
WinPATS LogBOOK PRINT	Part No: WCM-WinPATS Log PRINT (used with Wavecom Printer)
Barcode Scanner	Part No: WCM-1200 Scanner USB (with LogBOOK only)
500mm Earth Strap	Part No: TnT-ES 500
WAVECOM Tag Printer	Part No: WCM-Wavecom Printer (with LogBOOK only)
3-Phase Adaptor 20A	Part No: WCM-3Phase-20A
3-Phase Adaptor 32A	Part No: WCM-3Phase-32A
3-Phase Adaptor Multi (20A) (32A)	Part No: WCM-3Phase-M
HBC Fuse	Part No: WCM-HBC10AM205
Test Probe Kit	Part No: WCM-Probe-Kit
Rugged Case (L)	Part No: WCM-HTC-L
Tag Remover	Part No: WCM-Kutter
Laminated Tags	Part No: WCM-TT-Generic-Tags

## SPECIFICATIONS TNT ®G4- Series

### Mains Supply Test

- ▶ Checks Polarity and continuity of mains supply by LED indicators (A-N, A-E, and N-E). (Flashing- Test Fail indicator)



### CLASS 1 Earthed Appliance

- ▶ Appliance Check: Ensures appliance is plugged in and turned on.
- ▶ Earth Bond Test: 200mA test current. Pass level Less than 1.0 Ω. Measurement: 0.01Ω to 10 Ω.
- ▶ Insulation Test: 500VDC / 250VDC. Pass level Greater than 1M Ω. Measurement: 0.1Ω to 10MΩ. **\*See also Leakage Test**

### CLASS 2 Double Insulated Appliance

- ▶ Appliance Check: Ensures appliance is plugged in and turned on.
- ▶ Earth Bond Test: 200mA test current. Pass level Less than 1.0Ω. Measurement: 0.1Ω to 10Ω.
- Insulation Test: 500VDC / 250VDC. Pass level greater than 1MΩ. Measurement: 0.1Ω to 10MΩ.
- \*See also Leakage Test**

### Extension Leads

- ▶ Earth Bond Test: 200mA test current. Pass level Less than 1Ω. Measurement: 0.01Ω to 10.0Ωs
- ▶ Insulation Test: 500VDC / 250VDC . Pass level Greater than 1MΩ. Measurement: 0.1Ω to 10.0MΩ.
- ▶ Continuity Test: 250VAC check continuity and polarity of leads. Displays Pass/Fail.
- ▶ Polarity Test: 250VAC check continuity and polarity of leads. Displays Pass/Fail.

### Leakage Test \*

- ▶ Leakage Current: 0 to 30.0mA at 200 to 265V
  - ▶ Earth Leakage Test: 240VAC Mains. Pass level 1, 2.5, 5.0 mA leakage test levels with up to 10Amp load operation.
- Note 1:** Pass level for CLASS 1 is 5 mA  
Pass level for CLASS 2 is 1 mA



**Note 2:** Leakage test may be performed if for any reason a standard CLASS 1 or CLASS 2 is not possible.

### Meter Mode®

- ▶Load Current: 0.0 to 10Amp
- ▶Voltage: 200 to 265VAC
- ▶Apparent Power: 0 to 2400VA
- ▶Power: 0 to 2400W

### TnT Features

### Meter Mode ®

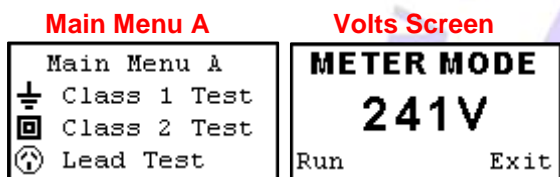
*(Not Available In Battery Mode)*


Meter Mode Screen

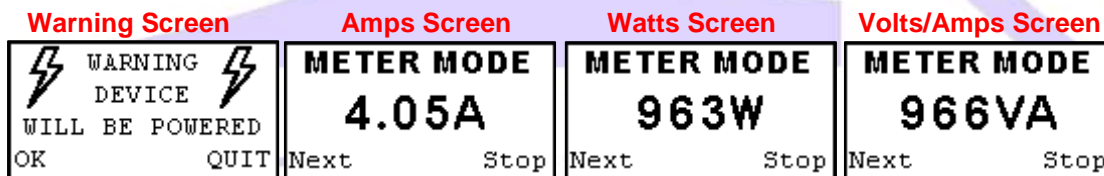


### How to Activate Meter Mode

- Hold **F3** from main screen display for 2 seconds



- Screen will change to show volts by default when socket is ( not powered )
- Plug appliance into testers , test socket , Press F3 to go into power mode and will show
- **(Warning device will be powered)**
- Press F3 again to continue and **(power the device)**. If you continue the A-N LED on the tester will flash green  and device will power up. Otherwise press enter to exit.



- Press the enter key to stop the power mode and return to volts.
- Pressing F3 key will start power mode again.
- **TnT stays in Meter Mode** regardless of power on/off until you exit
- Pressing **Return key** will **exit** meter mode and return the main menu.
- If the TnT is reset in meter mode it will return to meter mode when powered up again.

### Meter Mode Uses

Meter Mode is a new and versatile function of the new Gen 4 tester that will allow you to display **Electrical Parameters** from a Power outlet source or from the appliance under test.

### Typical Applications

Example.: Measuring the Power of a bar heater, or electric power drill check the ratings and compare them to that on the compliance plate etc. Quick test of Power outlet Voltages in rooms or locations split from multiple circuits.

### Meter Mode Features – (Four Discrete Options)

## **Electrical parameters are displayed as Volts, Amps, Watts, and Volt / Amps**

These electrical parameters will be displayed on the Testers main screen display. Select from the 4 Test available in Meter Mode.

Meter Mode Measures and displays volts in AC, Current in Amps, Power Measurement in Watts and VA in Volt/AMPS

### **Explanation of Electrical Parameters**

#### **Volts**

- A volt is the unit used to measure the energy available in the electrical current of a circuit. Voltage controls the available electrical power (wattage).

#### **Amperes**

An amp is the unit used to measure electrical current as it flows past a specified point.

#### **Watts**

- A watt is the unit used to measure the amount of actual flowing electrical energy.

#### **Volt-Amps**

- A volt-amp is the unit used to measure the apparent electrical power used by computing equipment. Mathematically, it is expressed as volts times amps (V\*A).

**\*Meter Mode ® is a unique function of all TnT Gen 4 Models.**

#### **Uses of Volt-Amp Measurement**

- Because it represents the amount of energy computing systems may draw from a power grid, the VA is used to determine the kind of wiring and circuit breakers required to support the computing equipment in question.

### **Watts and VA (Detailed Explanation)**

The power drawn by equipment is expressed in Watts or Volt-Amps (VA). The power in Watts is the real power drawn by the equipment. Volt-Amps are called the "apparent power" and are the product of the voltage applied to the equipment times the current drawn by the equipment. Both Watt and VA ratings have a use and purpose. The Watt rating determines the actual power purchased from the utility company and the heat loading generated by the equipment

### **Safety Precautions**

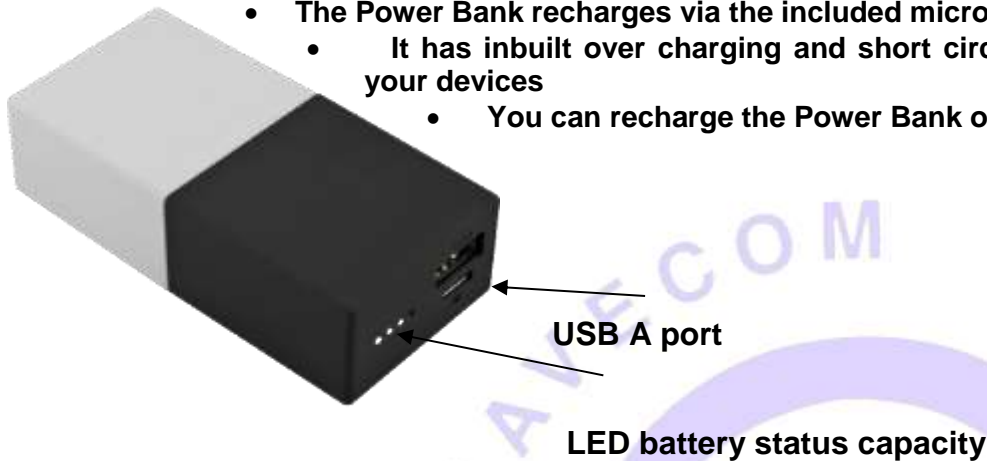
Make sure you have a clear and safe area when powering any equipment, remove any drills bits etc before testing any equipment. Always read equipment compliance plates.

### **Disclaimer**

Meter Mode is to be used for quick simple indicative electrical parameter measurements. Providing reasonably accurate readings without the need to carry any other instruments. It is not intended to replace specific, more accurate individual test equipment, nor is its purpose to replace prescribed testing requirements. It in doubt please consult a qualified electrician when unsure or perform proper test procedures.

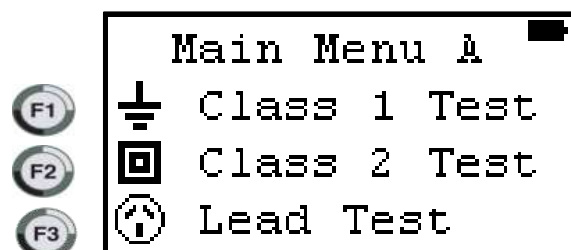
## Power Bank

- You can use the Power Bank to recharge your devices when you're on the go. It has a large capacity and a high power output so you can get back to using your devices quickly.
- You can use the Power Bank to recharge your smartphone, tablet, smartwatch, camera, MP3 player and most handheld devices.
- It has a large 4400 mAh capacity, provide extra battery life to handheld devices.
- It delivers a high power output of 2.1 A to ensure your devices charge quickly.
- The Power Bank has a stylish 2 tone, black and white design.
- There are 4 inbuilt LEDs to indicate capacity status.
  - The Power Bank recharges via the included micro USB cable.
    - It has inbuilt over charging and short circuit protection to protect your devices
    - You can recharge the Power Bank over 500 times.



### Battery Mode

- To turn the unit on using the power bank, connect the USB to the USB B port in the rear of the unit with USB A port on power bank using the supplied cable.
- Press the Enter button for 2 seconds until the unit starts up
- To shut down the unit, keep pressing the same Enter button for 2 seconds till it shuts it down.
- In case of switching from mains power to power bank or switching off the unit using Enter button, disconnect the USB cable from USB B port of unit and connect it back, press the Enter button to start the unit.
- On connecting the power bank, symbol of mode of power changes to battery icon from plug icon, on top right corner.
- Options for testing class 1 & class 2 are same as using the mains power.
- Only leakage tests and meter mode is not available on battery mode – when using the power bank.
- Power bank LED status indicates the amount of battery capacity left in the power bank, 4 LED on means it is full charged while 2 will indicate 50% charge remaining. Please charge the power bank using supplied white USB to microUSB cable to charge the power bank, using any USB wall charger or smart phone charger with micro USB output.



## Disclaimer – E&OE

All specifications may be subject to be change by Wavecom Pty. Ltd. without prior notice.

Updated Specifications & Model changes may be found on the Wavecom website: - [www.wavecom.com.au](http://www.wavecom.com.au)

At the time of developing this manual, all care and consideration for accuracy has been implemented. Wavecom accepts no responsibility for any errors or omissions in this document.

This is partly based on the fact that Electronics & Electrical testing and specifications worldwide are constantly changing and that Local, State and National Regulatory Authorities may also have differing or additional requirements.

**It is strongly recommended the Purchaser check Local Regulatory Standards that may be applicable in your region.**

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The TnT G4 series is Designed and Manufactured by:

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Technical: [support@wavecom.com.au](mailto:support@wavecom.com.au)

# Wavecom Tags



**Medium Duty Laminated Test Tag** suitable for indoor and outdoor use. UV & chemical resistant.



**Packet of 100 includes marking pen Heavy Duty tag** using the highest quality adhesive. Suitable for use in all environments.

Order information: TT-TAGS

Part no: WCM-TT-TAG, BL, GN, Y, O, BLK

Colour: (BL) Blue, (GN) Green, (Y) Yellow, (O) Orange, (BLK) Black

Order information: TM-TAGS

Part no: WCM-TM-TAG, B, GN, Y, O, BLK

Colour: (B) Blue, (GN) Green, (Y) Yellow, (O) Orange, (BLK) Black

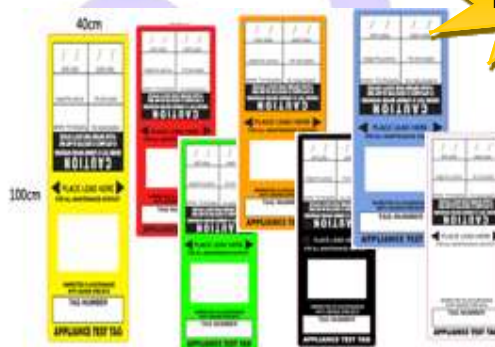


Formulated to withstand harsh Environment's Extra Strong Adhesive for Added Durability Extra thick PVC to resist tearing Ideal for Construction Sites & Factories

Order information:

TA-TAGS Part no: WCM-TA-TAG BL, GN, Y, O, BLK

Colour: (BL) Blue, (GN) Green, (Y) Yellow, (O) Orange, (BLK) Black



These laminated generic tags come in various colours and in rolls of 250 tags. Each tag measures 100mm x 40mm and is made of polyester materials designed to withstand most extreme environments.

Order information:

ATT-TAGS Part no: WCM-ATT- R, B, GR, Y, OR, W, BIK, BUR

Colour: (R) Red, (B) Blue, (GR) Green, (Y) Yellow, (OR) Orange, (W) White, (BLK) Black, (BUR) Burgundy

Using colour codes make the appliances that require testing easily identifiable. Test colours can save you time when managing your Test & Tag schedule.

It is important to understand the significance of the colours & to select the right colour for your Test & Tagging requirements, some applications require specific colour coding as outlined in legislation. It is important that you check with the Regulatory Authorities & the Applicable Australian Standard for exact requirements.

# Important Information

## Restrictions to the transporting of LITHIUM ION products

It has come to the attention of {Wavecom Instruments}, that battery and /or products containing batteries may be being shipped by customers by air freight. It is our understanding that, for the purpose of Air transport, batteries are considered as dangerous goods under the International Air Transport Authority (IATA) regulations.

It is the responsibility of the shipper to ensure that the product being shipped and the packaging used comply with all regulations, noting that extensive penalties can be imposed by the relevant authorities for any breach.

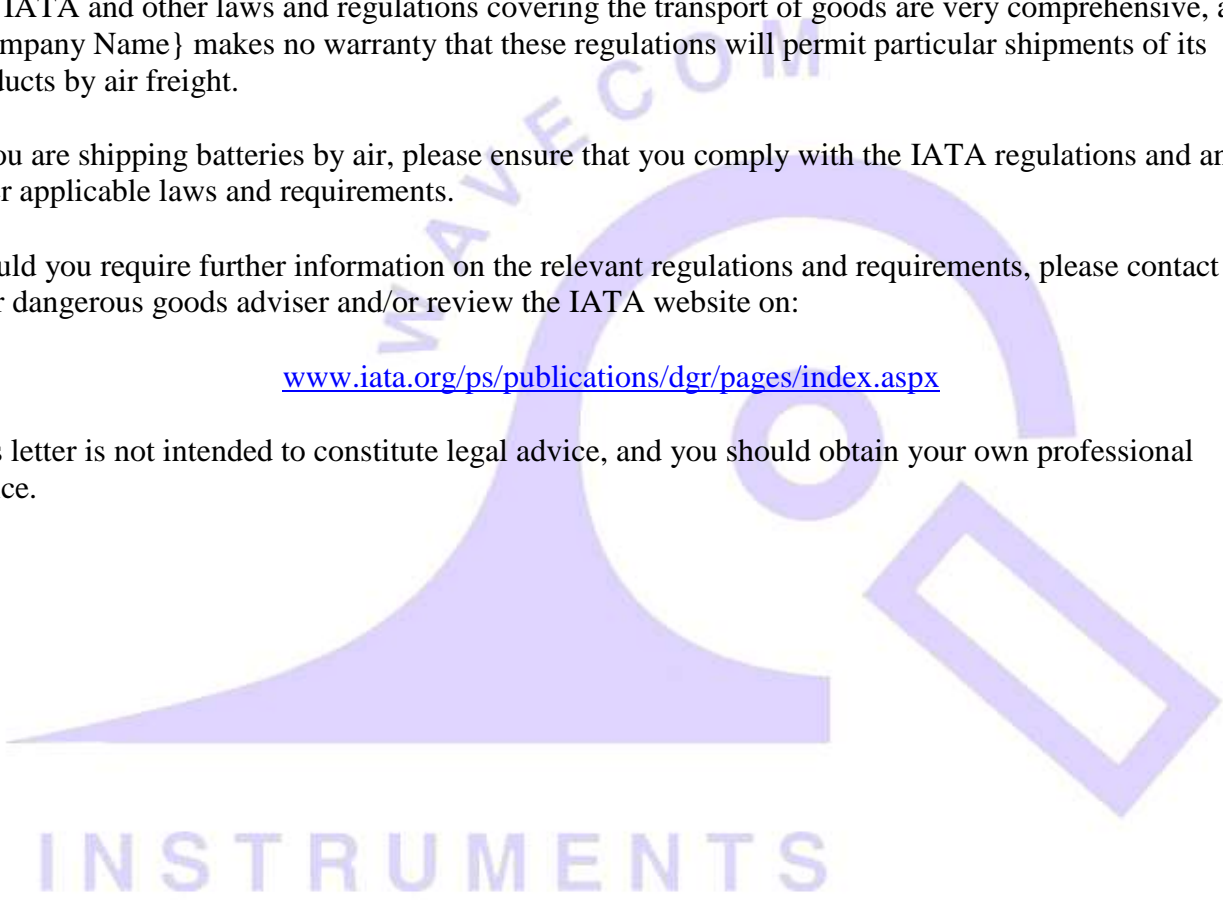
The IATA and other laws and regulations covering the transport of goods are very comprehensive, and {Company Name} makes no warranty that these regulations will permit particular shipments of its products by air freight.

If you are shipping batteries by air, please ensure that you comply with the IATA regulations and any other applicable laws and requirements.

Should you require further information on the relevant regulations and requirements, please contact your dangerous goods adviser and/or review the IATA website on:

[www.iata.org/ps/publications/dgr/pages/index.aspx](http://www.iata.org/ps/publications/dgr/pages/index.aspx)

This letter is not intended to constitute legal advice, and you should obtain your own professional advice.





# Portable Appliance Testers

## *TnT® G4-Series*



[www.wavecom.com.au](http://www.wavecom.com.au)

V010613

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*Note: TnT Firmware & TnT G4 series in general have the ability to be updated to comply with potential Changes in Testing Standards*

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