

## **Microtronix TAT and WPTS 470-C Test Capabilities**

### ***Introduction***

Microtronix Systems Ltd. offers a number of Telephone Testing Systems. This document provides an overview of the TIA-470-C testing capabilities of the Telephone Acoustic Tester (TAT), and the Wireline Phone Test System (WPTS). Microtronix offers Country Kit Applications for testing to the requirements of 470-C on the TAT and WPTS products; refer to the 470-C Country Kit Application product information for details of tests included with the kit.

### **Telephone Acoustic Tester**

The Telephone Acoustic Tester (TAT) provides telephone manufactures and designers a cost effective, stand-alone acoustics testing solution for their facility.

The TAT utilizes DSP technology to provide high speed, accurate and repeatable standards compliant results. The TAT capabilities include send and receive frequency response, loudness rating, volume control, distortion, return loss, impedance and V-I testing. Production facilities will find the Multi-tone Frequency Response feature significantly reduces test time.

The new Test Console application integrates test results, frequency response graphs and a go/no-go visual indication of the tests status. The Telephone Acoustic Tester takes advantage of Microtronix Country Kit Test Applications to provide customers with turnkey solutions for testing their products.

### **Wireline Phone Test System**

The Wireline Phone Test System (WPTS) provides production, quality assurance and R&D facility a complete acoustic and electrical solution for their facilities.

The WPTS provides the same standards compliant acoustic measurements as the TAT. Other test capabilities include DTMF dialing and distortion, pulse signaling, ringer impedance, ringing and call display.

The TAT and WPTS are test system platforms that Microtronix is building upon for future test capabilities. VoIP test capabilities for TIA-810-A and TIA-920 can easily be added to either of these platforms.

## Microtronix TAT and WPTS 470-C Test Capabilities

### ***Handset Acoustic Performance Requirements***

**Table 1 TIA-470.110-C Test Capabilities Matrix**

Reference	Description	TAT	WPTS
<b>4.4</b>	<b>SEND PERFORMANCE</b>		
4.4.2	Send Frequency Response	✓	✓
4.4.3	Send Loudness Rating (SLR)		
4.4.3.1	Basic Requirement	✓	✓
4.4.3.2	Parallel Set Off-Hook Requirement	✓	✓
4.4.3.3	Conference Mode	✗ <sup>2</sup>	✗ <sup>2</sup>
4.4.4	Send Linearity	✓	✓
4.4.5	Send Distortion		
4.4.5.1	Send Amplitude Normalized Total Harmonic Distortion (ANTHD)	✓	✓
4.4.5.2	Send ANTHD with a Parallel set	✓	✓
4.4.6	Send Noise		
4.4.6.1	Off-Hook Noise	✓	✓
4.4.6.2	On-Hook Noise	✓	✓
4.4.6.3	Off-Hook Send Single Frequency Interference	✓	✓
4.4.7	Send Muting	✓	✓
<b>4.5</b>	<b>RECEIVE PERFORMANCE</b>		
4.5.2	Receive Frequency Response	✓	✓
4.5.3	Receive Loudness Rating (RLR)		
4.5.3.1	Basic Requirement	✓	✓
4.5.3.2	Parallel Set Off-Hook Requirement	✓	✓
4.5.3.3	Conference Mode Requirement	✗ <sup>2</sup>	✗ <sup>2</sup>
4.5.4	Receive Linearity	✓	✓
4.5.5	Receive Distortion		
4.5.5.1	Receive Amplitude Normalized Total Harmonic Distortion (ANTHD)	✓	✓
4.5.5.2	Receive ANTHD with a Parallel set	✓	✓
4.5.6	Receive Noise		
4.5.6.1	Off-Hook Noise	✓	✓
4.5.6.2	Off-Hook Receive Single Frequency Interference	✓	✓
4.5.7	Receiver Volume Controls	✓	✓
4.5.8	Magnetic Field for Hearing Aid Coupling	✓ <sup>1</sup>	✓ <sup>1</sup>
<b>4.6</b>	<b>SIDETONE PERFORMANCE</b>		
4.6.2	Sidetone Masking Rating (STMR)	✓	✓
4.6.3	Sidetone Echo Delay	✗	✗
4.7	ACOUSTIC STABILITY	✓	✓

NOTES for Table 1:

1. Requires Microtronix HAC option.
2. Requires two line simulation.

## Microtronix TAT and WPTS 470-C Test Capabilities

### *Resistance and Impedance Performance Requirements*

**Table 2 TIA-470.210-C Test Capabilities Matrix**

Reference	Description	TAT	WPTS
4.5	ON-HOOK RESISTANCE	✓	✓
4.6	OFF-HOOK RESISTANCE		
4.6.1	dc Resistance	✓	✓
4.6.2	Simulated Open Switch Interval Recovery Time	✓ <sup>4</sup>	✓ <sup>4</sup>
4.7	ON-HOOK IMPEDANCE		
4.7.1	dc Current During Ringing	✗ <sup>3</sup>	✓ <sup>2</sup>
4.7.2	Metallic Impedance During Ringing	✗ <sup>3</sup>	✓ <sup>1</sup>
4.7.3	Longitudinal Impedance During Ringing	✗	✗
4.7.4	Longitudinal Impedance for ac Power Induction From Power Lines	✗	✗
4.7.5	On-Hook Metallic Impedance (5 to 200 Hz, 1 to 10 Vrms)	✗ <sup>3</sup>	✓ <sup>1</sup>
4.7.6	In-Band On-Hook Metallic Impedance (200 to 3200 Hz)	✓	✓
4.8	OFF-HOOK METALLIC IMPEDANCE (RETURN LOSS)	✓	✓
4.9	LONGITUDINAL BALANCE	✗	✗

**NOTES for Table 2:**

1. Requires Ringer Impedance Option
2. Requires custom hardware and Test Program
3. The TAT does not support ringing
4. Requires custom Test Program and monitoring the dc current signal with an oscilloscope

## Microtronix TAT and WPTS 470-C Test Capabilities

### *Alerter Acoustic Output Requirements*

**Table 3 TIA-470.220-C Test Capabilities Matrix**

Reference	Description	TAT <sup>3</sup>	WPTS
<b>4.3</b>	<b>ALERTER SENSITIVITY</b>		
4.3.1	Response to Ringing Signals	✗	✓
4.3.2	Reproduction of Distinctive Ringing Patterns	✗	✓ <sup>1,4</sup>
4.3.3	Non-Response to Other Signals	✗	✓
<b>4.4</b>	<b>ALERTER ACOUSTIC OUTPUT</b>		
4.4.2	Frequency Content of Electronic Alerters	✗	✓ <sup>1</sup>
4.4.3	Alerter Sound Pressure	✗	✓ <sup>1</sup>
4.4.3.1	Individual f1 and f2 Sound Pressure Level Requirements	✗	✓ <sup>1</sup>
4.4.3.2.	Average Alerter Sound Pressure Level Requirements	✗	✓ <sup>1 2</sup>
4.4.4	Effect of Voltage Variations of the Applied Ringing Signal	✗	✓ <sup>1</sup>

NOTES for Table 3:

1. Requires Alerter Option
2. This would be a custom option; it requires averaging six measurements of sound pressure at different angles around the CPE.
3. The TAT does not support ringing
4. Requires monitoring the alerter acoustic signal with an oscilloscope

