

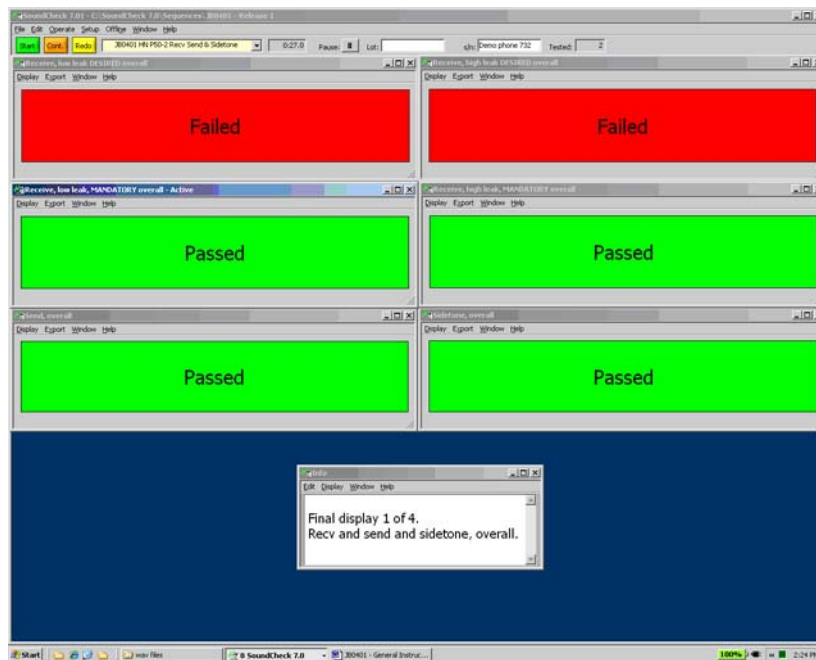
Sequence Note

TIA 470C Test Sequence for Telephone Testing

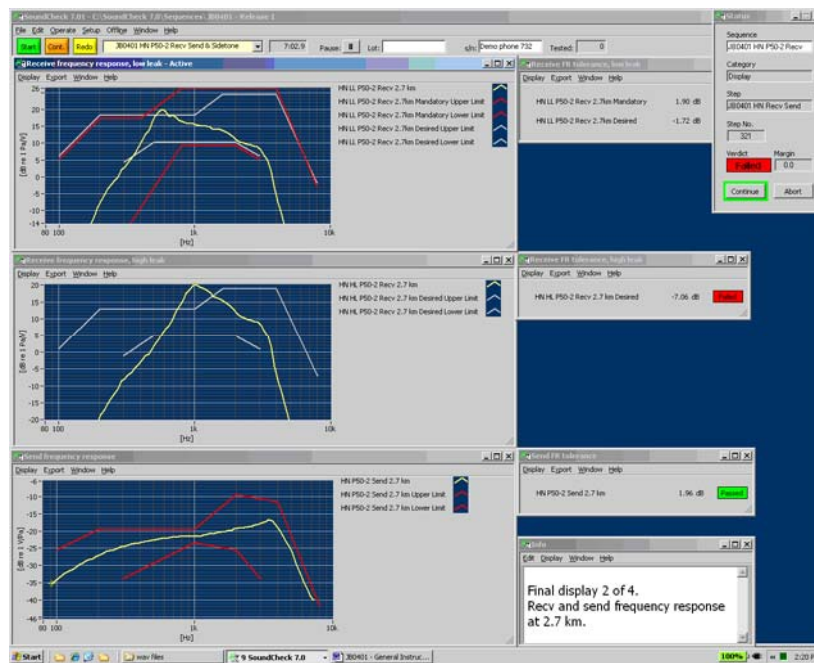
Introduction

This sequence (compatible with SoundCheck 7.0) measures handset phones to TIA-470.110-C. The test sequence implements all the electroacoustic tests required by this standard, outputting the results as a report or writing to a database.

Future releases of this sequence are planned to cover headset and speakerphone testing, and will be developed when the relevant subsections of TIA-470 are approved. It contains all the major clauses of TIA470C, and also includes calibration sequences and subsequences. The test sequences can be used as they are to test to the standard, or modified by the user for custom in-house tests based on the standard.



Overall results for receive, send and sidetone



Details for receive, send and sidetone frequency response

Required Equipment

Hardware

- Head and Torso Simulator with handset positioner
- Power amplifier (if needed to power artificial mouth in Head and Torso Simulator)
- SoundConnect Microphone Power Supply
- SCM microphone or equivalent
- Acoustic calibrator
- Legato Telephone interface or similar

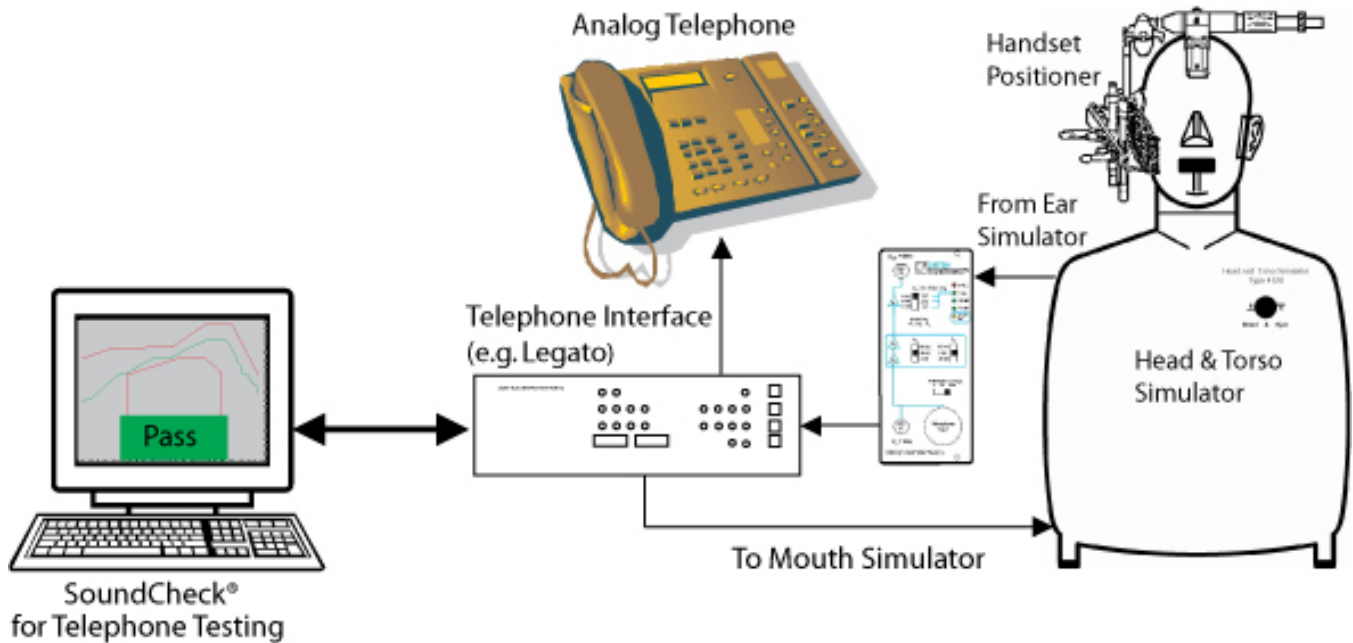
Software

- SoundCheck 7.0 Telephone Testing R&D Package Part Number 1105
- or alternative package including:
 - 2005 RTA
 - 2013 Wave file equalization
 - 2007 Loudness rating
 - 2009 Statistics
 - 2001 Harmonic distortion



Note: This sequence has only been verified to work with SoundCheck version 7. If you are using a different version, please check with your sales engineer before purchasing.

System diagram



Setup and calibration

Due to the complex nature of this sequence, please refer to the detailed instructions that are provided as part of the package.



Full Details of Clauses Tested and Sequences

Clause	Measurement	Sequence & Subsequence(s)
4.4	Send Performance	
4.4.1	General (no tests)	
4.4.2	Send Frequency Response (sine)	JB0401 HN Sine Recv Send & Sidetone JB0401s HN Sine Recv VC Ref JB0401s HN LL Sine Recv JB0401s HN HL Sine Recv JB0401s HN Sine Send JB0401s HN Sine Side
	Send Frequency Response (P50-2)	JB0401 HN P50-2 Recv Send & Sidetone JB0401s HN P50-2 Recv VC Ref JB0401s HN LL P50-2 Recv JB0401s HN HL P50-2 Recv JB0401s HN P50-2 Send JB0401s HN P50-2 Side
4.4.3	Send Loudness Rating (SLR)	
4.4.3.1	Basic Requirement (sine)	included in implementation of 4.4.2
	Basic Requirement (P50-2)	included in implementation of 4.4.2
4.4.3.2	Parallel Set (sine)	JB0401 HN Sine Parallel Set (JB0401s HN LL Sine Recv) (JB0401s HN HL Sine Recv) (JB0401s HN Sine Send)
	Parallel Set (P50-2)	JB0401 HN P50-2 Parallel Set (JB0401s HN LL Sine Recv) (JB0401s HN HL Sine Recv) (JB0401s HN Sine Send)
4.4.3.3	Conference Mode (sine)	JB0401 HN Sine Conference Mode (JB0401s HN LL Sine Recv) (JB0401s HN HL Sine Recv)



		(JB0401s HN Sine Send)
	Conference Mode (P50-2)	JB0401 HN P50-2 Conference Mode (JB0401s HN LL Sine Recv) (JB0401s HN HL Sine Recv) (JB0401s HN Sine Send)
4.4.4	Send Linearity	JB0401 HN Send and Recv Linearity JB0401s HN Sine Recv VC Ref
4.4.5	Send Distortion	
4.4.5.1	Send ANTHD	JB0401 HN Send and Recv ANTHD JB0401s HN Sine Recv VC Ref JB0401ss HN Sine Recv VC 12dB
4.4.5.2	Send ANTHD with Parallel Set	JB0401 HN Send and Recv ANTHD Parallel Set JB0401s HN Sine Recv VC Ref
4.4.6	Send Noise	JB0401 HN Send and Recv Noise JB0401s HN Send Noise On-hook JB0401s HN Sine Recv VC Ref JB0401s HN Send Noise and SFI JB0401s HN Recv Noise and SFI
4.4.7	Send Muting	JB0401 HN Send Muting
4.5	Receive Performance	
4.5.1	General (no tests)	
4.5.2	Receive Frequency Response	included in implementation of 4.4.2
4.5.3	Receive Loudness Rating (RLR)	
4.5.3.1	Basic Requirement (sine)	included in implementation of 4.4.2
	Basic Requirement (P50-2)	included in implementation of 4.4.2
4.5.3.2	Parallel Set	included in implementation of 4.4.3.2



4.5.3.3	Conference Mode	included in implementation of 4.4.3.3
4.5.4	Receive Linearity	included in implementation of 4.4.4
4.5.5	Receive Distortion	
4.5.5.1	Receive ANTHD	included in implementation of 4.4.5.1
4.5.5.2	Receive ANTHD with Parallel Set	included in implementation of 4.4.5.2
4.5.6	Receive Noise	included in implementation of 4.4.6
4.5.7	Receiver Volume Controls (sine)	JB0401 HN Sine Recv VC Max (JB0401s HN LL Sine Recv)
	Receiver Volume Controls (P50-2)	JB0401 HN P50-2 Recv VC Max (JB0401s HN LL P50-2 Recv)
4.5.8	Magnetic Field for Hearing Aid Coupling (no test)	
4.6	Sidetone Performance	
4.6.1	General (no tests)	
4.6.2	Sidetone Masking Rating	included in implementation of 4.4.2
4.6.3	Sidetone Echo Delay	included in implementation of 4.4.2
4.7	Acoustic Stability	JB0401 HN Stability
other	Handset volume control reference	JB0401s HN Sine Recv VC Ref JB0401s HN P50-2 Recv VC Ref
	Standalone control of B&K 5906	Xtra - 5906 Control
	Change corr-in HATS R & HATS L to match use of ear simulators	Xtra - DRP to ERP to corr in HATS R & HATS L Xtra - Flat 0dB to corr in HATS R & HATS L



Xtra - IEEE 1652 FF to DRP 12th Oct
to corr in HATS R & HATS L
Xtra - IEEE 1652 FF to DRP R40
to corr in HATS R & HATS L

Table 1 - Calibration

Calibration	Sequence & Subsequence(s)
HATS & 6mm Cal Mic	JB0401 Calibration - HATS & Cal Mic
HATS L Ear	JB0401s Cal HATS Ear - Left
HATS R Ear	JB0401s Cal HATS Ear - Right
6mm Cal Mic	JB0401s Cal 6mm Cal mic
HATS Mouth Sine	JB0401s Cal HATS Mouth Sine
HATS Mouth P50 2 sec	JB0401s Cal HATS Mouth P50 2 sec
Standard Mouth & Mics	JB0401 Calibration - Std Mouth & Mics
Free Field Mic	JB0401s Cal FF mic
12mm Cal Mic	JB0401s Cal 12mm Cal mic
Mouth Sine	JB0401s Cal Mouth Sine
Mouth P50 2 sec	JB0401s Cal Mouth P50 2 sec
Show current calibration values	JB0401 Calibration - Show Current