GTT-010034

Telecommunications Industry Association

TELECOMMUNICATIONS SYSTEMS BULLETIN

2.5 mm AUDIO INTERFACE FOR MOBILE WIRELESS HANDSETS - TEXT TELEPHONES (TTY)

Support for Mobile Station - TTY Interconnection via a 2.5mm interface connection for electrical audio signals

PN-4558 (To be published as TIA/EIA/TSB-121)

November 8, 2000

TELECOMMUNICATIONS INDUSTRY ASSOCIATION

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1. INTRODUCTION

This Telecommunications Systems Bulletin (TSB) describes a possible implementation of the interface between a mobile station and a TTY. Recognizing that:

- FCC Rule and Order CC Docket No. 94-102 "E9-1-1/TTY Compatibility" requires wireless service providers to support TTY compatibility for contacting assistance in an emergency.
- The CTIA/PCIA TTY Forum requested that TIA TR-45 specify a 2.5mm connection with appropriate electrical parameters which would allow reliable audio interconnection between TTYs and mobile wireless handsets.
- The majority of legacy TTY terminals only support audio connection to the telephone network via: (See Section 6.: Interconnect Options)
  - Acoustic coupling utilizing the wire-line handset placed into flexible cups designed for Type G or Type K handsets. .
  - FCC Type RJ-11 modular connection.
- Due to the wide variety of shapes and sizes of modern wireless handsets, neither of these modes of connection are applicable to mobile wireless handsets.
- TIA/EIA/IS-789-A describes electrical specifications to adapt wireless handsets to a vehicular environment.

This TSB specifies an interface that will support direct audio connections between TTYs and mobile wireless handsets based upon TIA/EIA/IS-789-A.

2. REFERENCES

The following standards pertaining to mobile stations may be useful in implementing this TSB. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this TSB are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:.

2.1. TIA/EIA/IS-789-A: Electrical Specification for the Portable Phone to Vehicle Interface

2.2. TIA/EIA-690: *Recommended Minimum Standard for 800 MHz Cellular Subscriber Units*

2.3. ANSI/TIA/EIA-98-C: *Recommended Minimum Performance Standards for Dual-Mode Spread Spectrum Cellular Mobile Stations*

2.4. TIA/EIA-136-270-B (March 31, 2000) *TDMA Third Generation Wireless - Mobile Stations Minimum Performance*

3. GENERAL INFORMATION AND OVERVIEW

This TSB describes a convenient audio connection between a TTY and a mobile unit through the use of a 2.5mm jack and a plug for the physical connection and this TSB refers to electrical characteristics specified in TIA/EIA/IS-789-A.

This interface is defined at a point between the modulator/demodulator of the TTY and the audio input/output of the mobile wireless handset (See Figure 1).

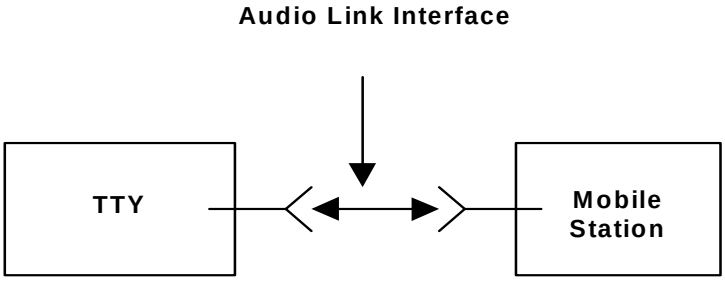


Figure 1

4. PHYSICAL INTERFACE

The physical connection is a 2.5mm stereo jack and plug.

5. ELECTRICAL CONTACTS AND CHARACTERISTICS

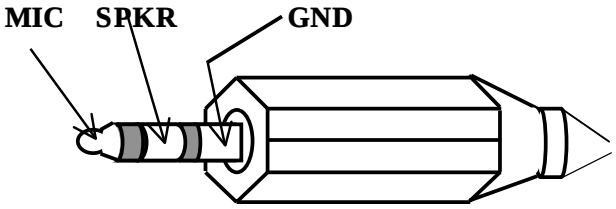
TIP: Mobile Station Microphone (input to Mobile Station)

TIA/EIA/IS-789-A Signal Reference: MICPOS/MICNEG

CENTER: Mobile Station Speaker (out of Mobile Station)

TIA/EIA/IS-789-A Signal Reference: LSPPOS/LSPNEG

SLEEVE: Ground



Reference Electrical Parameters from TIA/EIA/IS-789-A

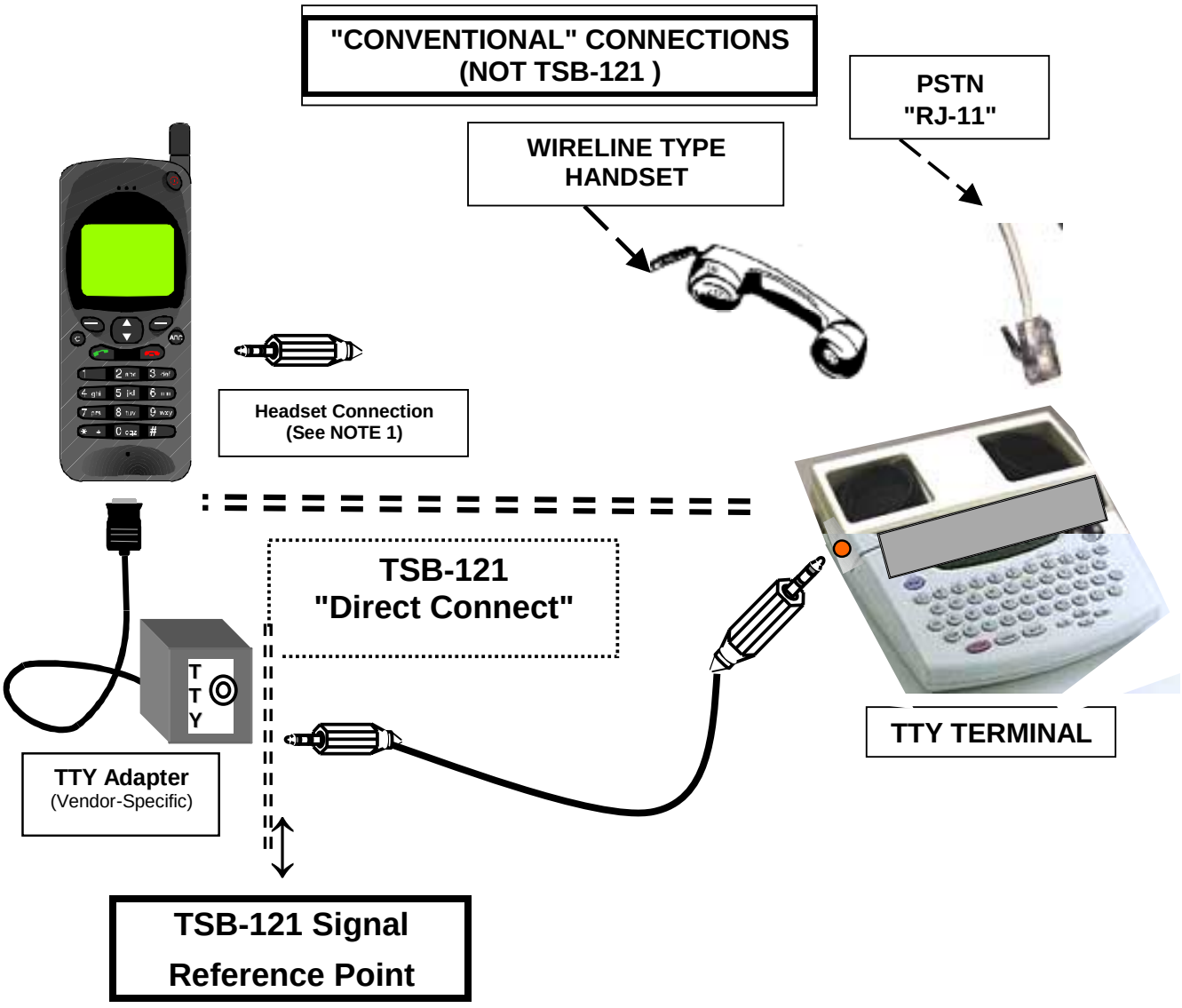
(Note: SPEAKER (LSPPOS/LSPNEG) and MIC (MICPOS/MICNEG) are differential signals in TIA/EIA/IS-789-A)

Table 1

Name (referenced to mobile)	**V_{nom}**	**Characteristic Impedance (Z)**
Speaker (LSPPOS, LSPNEG)	50 mV_{rms}	150Ω Output
MIC (MICPOS, MICNEG)	50 mV_{rms}[1]	100Ω Input

[1] -26dBV (50mV RMS) Nominal corresponds to typical telephone system level of –18dBmo.

6. INTERCONNECT OPTIONS



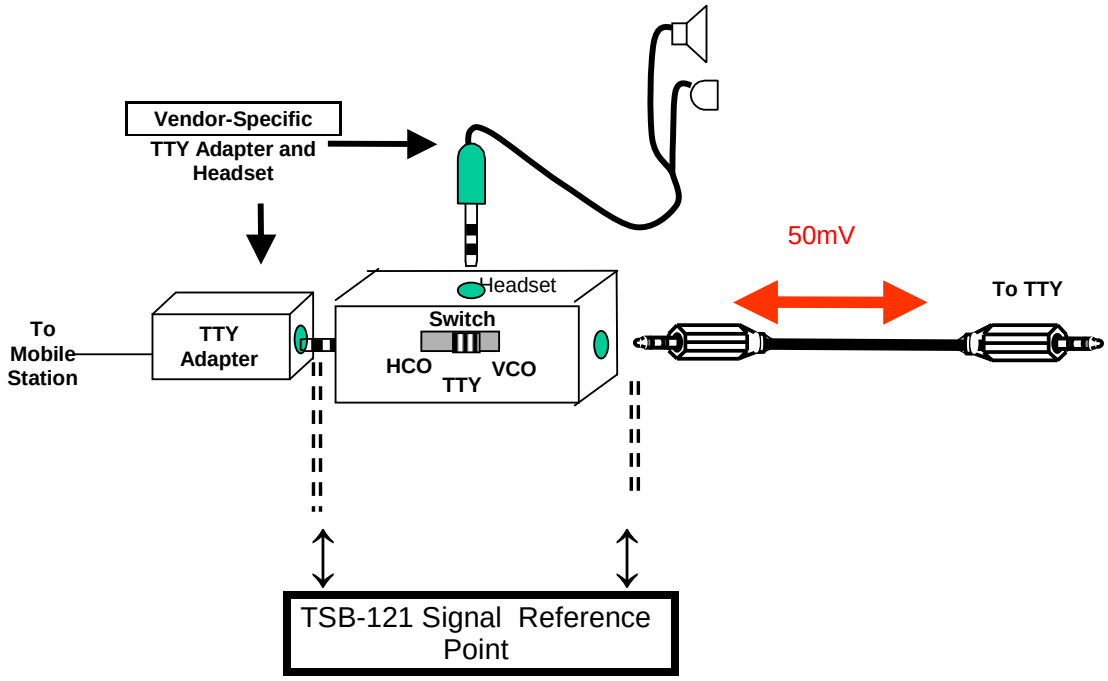
NOTES:

1) "HEADSET CONNECTION" may be adapted to "Wireline Handset" OR to a TSB-121 Direct Connection.

2) If external battery power is used, there should be a means of indicating battery charge status.

3) Label TTY Adapter "***FOR TTY***". To avoid a possible interaction with the land network, it is suggested that the RJ-11 connection to the PSTN should not be used while connected to the wireless terminal.

7. HEARING CARRY-OVER (HCO) AND VOICE CARRY-OVER (VCO) EXAMPLE

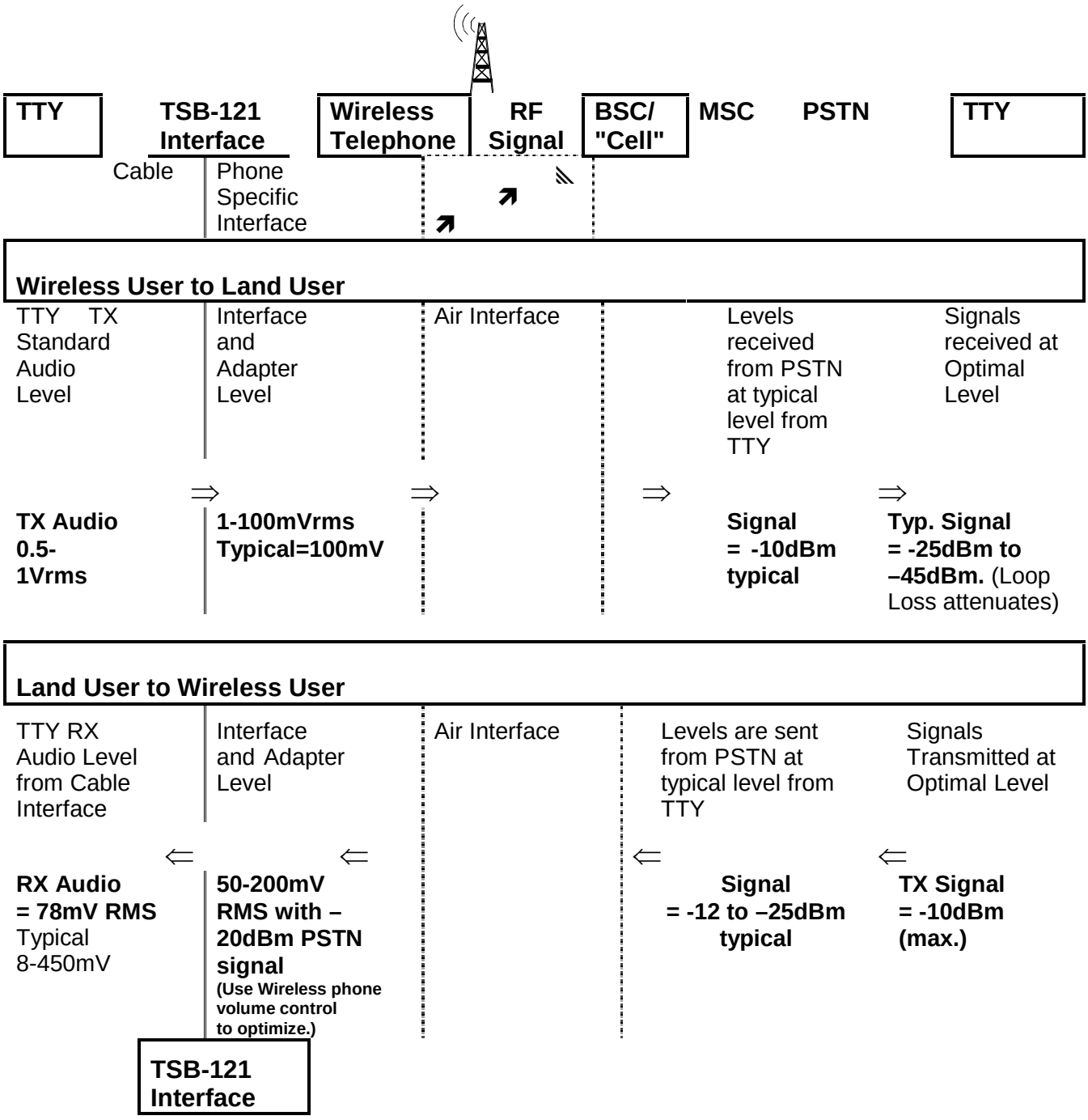


Common TTY, VCO/HCO Interface provided by phone manufacturer

ANNEX A.

End-to End Path

The following illustration is an example of typical signal levels expected along an end-to-end path connection between the two TTY devices.



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BALLOT VERSION