EQUIPMENT HIGHLIGHTS

RADIO INTERFACE UNITS

Prepared by
Defense Test and Evaluation Support Agency
Kirtland AFB, New Mexico 87117-5000
**Radio Interface Unit (U)**

A brief description of several units available that facilitate the use of actual Soviet radio systems. These units were developed in the US and are available for use by agencies conducting tests.
EQUIPMENT HIGHLIGHTS

RADIO INTERFACE UNITS

Prepared by
Defense Test and Evaluation Support Agency
Kirtland AFB, New Mexico 87117-5000
REAL IS CREDIBLE

What are your test, training, and exercise requirements?

- Conducting tests in an area that has no fixed range assets and facilities?
- A scenario that calls for mobile, credible, operational opposing systems?
- Quick, daily on-site collection and data assessment?
- Assistance with design, planning, and execution?

The Defense Test and Evaluation Support Agency (DTESA), headquartered in Albuquerque, New Mexico, is the single Department of Defense (DoD) agency that can address these specific requirements or any of your other test requirements.

DTESA assets are part of the mobile test facilities sponsored by the Office of the Secretary of Defense (OSD), Director, Operational Test and Evaluation (DOT&E) and Deputy Director, Defense Research and Engineering, Test and Evaluation (DDDR&E, T&E). DTESA operates and maintains one of the most dynamic, flexible, and mobile opposing systems arrays in the free-world test community. Large- and small-scale integrated hardware systems, threat systems, complete mobile instrumentation and data collection systems, and depot facilities are available. This vast array of hardware is combined with resident expertise in all phases of formal testing to provide you with objective test planning and conduct. DTESA can provide you with a highly flexible, mobile operational test facility to meet your test requirements. Real is credible; and credible testing is what DTESA can bring to your effort.

This publication will provide the tester, trainer, developer, intelligence specialist, or operator with a brief description of one of DTESA's resources. The purpose of this series of reports is to portray the utility that DTESA resources provide the test community and to provide this information at the lowest classification level possible. A different DTESA resource will be featured each month.

Your comments and suggestions regarding this series of reports are solicited. DTESA invites your participation in this exciting new program and challenges you to test our capability to support your effort.

DAVID S. TRACY
Director

Address: DTESA/RQF
Kirtland AFB, NM
87117-5000

Phone: 1-800-445-6910
(505) 842-0271

Message address for unclassified and collateral information: DTESA Kirtland AFB NM/RQ/

Message address for information to be passed via SSO channels: DTESA//RQ//
## CONTENTS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TECHNICAL CHARACTERISTICS AND CAPABILITIES</td>
<td>7</td>
</tr>
<tr>
<td>RIU FEATURES</td>
<td>7</td>
</tr>
<tr>
<td>Input Audio Processing</td>
<td>8</td>
</tr>
<tr>
<td>Radio Output Audio Processing</td>
<td>8</td>
</tr>
<tr>
<td>Sidetone Audio Generation</td>
<td>8</td>
</tr>
<tr>
<td>VU Meter</td>
<td>8</td>
</tr>
<tr>
<td>VOX Operation</td>
<td>9</td>
</tr>
<tr>
<td>DUAL-CHANNEL RIU</td>
<td>9</td>
</tr>
<tr>
<td>REMOTE OPERATION USING RIU</td>
<td>9</td>
</tr>
<tr>
<td>AVAILABILITY</td>
<td>10</td>
</tr>
</tbody>
</table>

Distribution Statement A is correct for this report.
Per Ms. Linda Deal, DTESA/ROFJ
RADIO INTERFACE UNITS

DESCRIPTION

The Radio Interface Unit (RIU) and its predecessor, the Special Radio Interface (SRI), were developed to provide regulated power to operate various types of foreign radio systems and to provide an interface between the radio’s microphone input and headset output, allowing the radio to be operated with standard domestic headsets and microphones. The RIUs also provide an interface that allows communications to be recorded on a standard audio tape recorder. In addition, most types of RIUs allow the operator to monitor the relative volume units (VU) of the received and transmitted audio via a front panel light-emitting diode (LED), bar graph VU meter.

The RIUs and SRI provide operational flexibility through the use of a main printed circuit board (PCB) that contains amplification and switching circuitry and small secondary (“daughter”) PCBs, each designed for a particular radio system, that plug into the main PCB. The secondary PCBs ensure proper interface characteristics for the radio system in use.

The RIUs and SRI operate off standard 110-Vac, 50/60-Hz line voltage; some RIUs may be operated off an external 24-Vdc source.

The foreign radio systems supported by the SRI and various RIUs include:

R-105D  R-105M
R-107   R-118
R-123   R-130
R-405   R-407
R-802G  R-832

TECHNICAL CHARACTERISTICS AND CAPABILITIES

RIU FEATURES

The standard RIU (Figure 1), which can be rack mounted or table mounted, measures 17 inches wide (19 inches with front panel) by 19 inches deep by 7 inches high and weighs 36 pounds. Features of the RIU include:

1. Transmit audio processing and key processing circuitry and controls for audio transmissions using a hand-held push-to-talk microphone, headset microphone, recorder, or 600-ohm input,
2. Receive radio processing to speaker, headset, recorder, and 600-ohm output,
3. Sidetone audio generation for monitoring audio transmissions,
4. Voice activated transmission (VOX) operation of headset microphone, and
5. VU meter indication of transmitted audio or 600-ohm output signal level.
Input Audio Processing

Audio signals input to the Standard RIU from the hand-held push-to-talk microphone, headset microphone, audio recorder, or 600-ohm input are amplified by a gain-adjustable differential amplifier on the main PCB and routed to the secondary PCBs for conditioning and impedance matching. The audio signal is then routed to the attached radio through rear panel connections.

When the Standard RIU is operated in the MODULATION mode, the relative strength of the output audio signal to the radio is indicated on the front panel VU meter. The TRANSMIT KEY indicator illuminates whenever the transmit key relay is actuated as a result of push-to-talk microphone or VOX operation.

Radio Output Audio Processing

Signals from the radio are received through the rear panel interfaces and routed to the secondary PCBs for conditioning and impedance matching before amplification and connection to the selected output (speaker, headset, recorder, or 600-ohm mode). When the RIU is operated in the 600-OHM OUT mode, the VU meter indicates the relative strength of the 600-ohm output signal and allows the user to maintain this level at 0 dBm.

Sidetone Audio Generation

Sidetone audio generation allows users to monitor audio transmissions. Amplification is provided by an operational amplifier through the transmit key relay and then is applied to the speaker and headset amplifiers. The front panel SIDETONE VOLUME control is used to minimize audio feedback between the microphone and front panel speaker.

VU Meter

The VU METER display is a bar graph that indicates the relative strength of the transmit audio signal or the 600-ohm output signal. In the MODULATION mode, the transmit audio amplifier output is sampled, and the signal level is indicated on the VU METER display. The sampled signal is compared with a reference voltage and rectified, and a logarithmic resultant signal is applied to the bar graph display. The VU meter is calibrated so that the last bar graph "tics" correspond to transmitter saturation.
VOX Operation

During VOX operation, a series of amplifiers control the voice level needed to actuate the transmit key relay automatically. Controls and adjustments for VOX operation are located on the main PCB and are not accessible during normal operation.

DUAL-CHANNEL RIU

A dual-channel RIU (Figure 2) has been developed for use with the Soviet R-405 radio. The dimensions of the dual-channel RIU are the same as those for the standard RIU; however, the dual-channel RIU weighs only 22 pounds.

Features of the dual-channel RIU include:

1. Transmit audio processing using headset microphones and recorder,
2. Receive radio processing for speaker, headset, and recorder, and
3. Teletype (TTY)/computer data transmission.

Amplification, conditioning, and impedance matching circuitry for the dual-channel RIU is similar to that for the standard RIU. However, additional circuitry in the dual-channel RIU permits interfacing TTY data formats and computer data formats (digital signals) with the R-405. The computer data-handling function is not currently operational on the dual-channel RIU.

The dual-channel RIU operates only on standard 110-Vac power. The 110-Vac power is routed to the internal cooling fan and the 12-Vdc power supply and, in future configurations, to the primary of a 110-Vac to 220-Vac step-up transformer. The 12-Vdc power supply furnishes ±12 Vdc to the main PCB audio amplifier and conditioning circuit. Future dual-channel RIUs will provide 220-Vac output power to operate external radios and TTY.

REMOTE OPERATION USING RIU

A variation of the standard RIU can be used with a Remote Control Unit (RCU) to provide remote operation of the Soviet R-118 radio station via either a field telephone or the R-105 series frequency modulated (FM) radio transceiver.
AVAILABILITY

RIUs are available for use by the DoD and other Government agencies. Inquiries regarding availability, scheduling, logistics, and costs should be directed to DTESA/RQ, Kirtland AFB, NM, 87117-5000, telephone 1-800-445-6910 or (505) 842-0271.
DISTRIBUTION (U)

OSD/DDDR&E (T&E)
Pentagon, Room 3E1060
Washington, DC 20301-3110

The Honorable John E. Krings
OSD/DOT&E
Pentagon, Room 3E318
Washington, DC 20301-3110

Director
AFEWC/EW
Attn: Gil Smith
San Antonio, TX 78243-5000

Director
AFMIC
Bldg 1607, Fort Detrick
Frederick, MD 21701-5004

AFOTEC/CN
Kirtland AFB, NM 87117-7001

AFOTEC/ST
Kirtland AFB, NM 87117-7001

AFOTEC/XP
Kirtland AFB, NM 87117-7001

AFWL/IN
Kirtland AFB, NM 87117-5000

CDR
AMC
5001 Eisenhower Ave
Alexandria, VA 22333-0001

OSD
ASD/C3I
Attn: Dr. Smith
Pentagon, Room 3E106
Washington, DC 20301-3040

Office of Joint Chiefs of Staff
Chief Combat Ops Support
Division (J-3/COSD)
Washington, DC 20310-5000

CINCARRED/J2
Fort McPherson, GA 30330-6000

CINCARRED/J3
Fort McPherson, GA 30330-6000

CINCMAC/J2
Scott AFB, IL 62225-5001

CINCMAC/J3
Scott AFB, IL 62225-5001

CINCORAD/NC
Peterson AFB, CO 80914-5001

CINCORAD/NCI
Peterson AFB, CO 80914-5001

CINCPAC FLEET/J2
Pearl Harbor, HI 96860-7000

CINCPAC FLEET/J3
Pearl Harbor, HI 96860-7000

CINCPACAF/DO
Hickam AFB, HI 96853-5001

CINCPACAF/IN
Hickam AFB, HI 96853-5001

CINCSAC/J2
Offutt AFB, NE 68113-5001

CINCSAC/J3-SACOS-DOSS
Offutt AFB, NE 68113-5001

CINCUSAFE/J2/J3
APO, NY 09094-5001
<table>
<thead>
<tr>
<th>Code</th>
<th>Location</th>
<th>Zip Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIA/DB-2D2</td>
<td>Washington, DC</td>
<td>20340-6799</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DB-3C</td>
<td>Washington, DC</td>
<td>20340-6617</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DB-3C4</td>
<td>Washington, DC</td>
<td>20340-6627</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DB-4B</td>
<td>Washington, DC</td>
<td>20340-6574</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DB-4G</td>
<td>Washington, DC</td>
<td>20340-6367</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DB-5A</td>
<td>Washington, DC</td>
<td>20340-6072</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DB-8C</td>
<td>Washington, DC</td>
<td>20340-6626</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DB-8D</td>
<td>Washington, DC</td>
<td>20340-6635</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DB-TPO</td>
<td>Washington, DC</td>
<td>20340-6537</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DC</td>
<td>Washington, DC</td>
<td>20340-6537</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DSM-2</td>
<td>Washington, DC</td>
<td>20340-6537</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DT</td>
<td>Washington, DC</td>
<td>20340-6537</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DT-2</td>
<td>Washington, DC</td>
<td>20340-6166</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DT-2B</td>
<td>Washington, DC</td>
<td>20340-6167</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DT-2C</td>
<td>Washington, DC</td>
<td>20340-6168</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DT-2D</td>
<td>Washington, DC</td>
<td>20340-6169</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DT-4</td>
<td>Washington, DC</td>
<td>20340-6056</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DT-4A</td>
<td>Washington, DC</td>
<td>20340-6054</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DT-4B</td>
<td>Washington, DC</td>
<td>20340-6055</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DT-4C</td>
<td>Washington, DC</td>
<td>20340-6068</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DT-4D</td>
<td>Washington, DC</td>
<td>20340-6073</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/DT-FMO</td>
<td>Washington, DC</td>
<td>20340-6148</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/JST-2A</td>
<td>Washington, DC</td>
<td>20340-4777</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIA/RTS-2B</td>
<td>Washington, DC</td>
<td>20340-3341</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIRNSA/P08</td>
<td>Ft. George G. Meade, MD</td>
<td>20755-6000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Executive Director for Acquisition Management/AIR-05A Washington, DC 20361-5000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSTC/AIFREC</td>
<td>Charlottesville, VA</td>
<td>22901-5296</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FTD/XOCF Wright-Patterson AFB, OH 45433-0111</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I1Q AFSC/INJ Andrews AFB, MD 20334-5000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HQ AFSC/TEUX Andrews AFB, MD 20334-5000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DTESA-88-SR-04
September 1988

HQ AFSC/TEV
Andrews AFB, MD 20334-5000

HQ AFTAC/CC
Patrick AFB, FL 32925-6001

CDR
HQ CECOM
Fort Monmouth, NJ 07703-5000

HQ DA
Attn: DAMO-FDI
Washington, DC 20310-0460

HQ DA
Attn: DAMO-FDZ
Washington, DC 20310-0460

HQ DA
Attn: DAMI-IS
Washington, DC 20310-1001

HQ DA/ATA-PD
USA Intelligence Agency
Washington, DC 20310-1015

HQ ESD/TCD-4
Hanscom AFB, MA 01731-5000

HQ ESD/TCDT
Hanscom AFB, MA 01731-5000

HQ ESD/TCJ-6
Hanscom AFB, MA 01731

HQ ESD/TCSV
Hanscom AFB, MA 01731

HQ SAC/CC
Offutt AFB, NE 68113-5001

HQ SAC/XRT
Offutt AFB, NE 68113-5001

Assistant Secretary of Air Force
HQ SAF/AQRZ
Washington, DC 20330-1000

HQ TAC/CC
Langley AFB, VA 23665-5001

CDR
HQ TECOM/AMSTE-TC-T
Aberdeen Proving Ground, MD 21005-5001

Assistant Chief of
Staff Intelligence (AF/IN)
HQ USAF
Washington, DC 20330-5110

HQ USAF/IN
Washington, DC 20330-50554

HQ USAF/JA
Washington, DC 20330-50554

HQ USAF/SAF-AQV
Washington, DC 20330-50554

HQ USAF/SAS
Washington, DC 20330-50554

HQ USAF/XOO
Washington, DC 20330-50554

HQ USAF/XOORE
Washington, DC 20330-50554

HQ USAFTAWC/ECAR
Eglin AFB, FL 32542-6008

HQ USAFTAWC/EW
Eglin AFB, FL 32542-6008

Director for Test
HQ, Defense Nuclear Agency/DFTD
Washington, DC 20305-1000
R&D Program Manager
HQ, Defense Nuclear Agency/SPWE
Washington, DC 20305-1000

HQ, US Marine Corp AP
Washington, DC 20330

HQ, US Marine Corp PO
Washington, DC 20330

HQ, US Marine Corp CCA
Washington, DC 20330

JEWC/OP
San Antonio, TX 78243-5000

JEWC/OPT
San Antonio, TX 78243-5000

JEWC/SE
Attn: William R. Swart
San Antonio, TX 78243-5000

Director
MCOTEA/OTEA 13(C-3)
Quantico, VA 22134-5017

Naval Air Systems Command/AIR-120
Washington, DC 20361-1120

Deputy Chief of Naval Operations
Naval Warfare/OP-73
Navy Department
Washington, DC 20350-2000

Commanding Officer
Naval Weapons Evaluation Facility
Kirtland AFB, NM 87117-5000

NJBJPO/DO
Attn: Maj. Ken Moore
Falcon Air Station, CO 80912-1000

OASD
Program Analysis & Evaluation
Pentagon, Room 2E313
Washington, DC 20301-1800

Director of Naval Intelligence
Office of Naval Intelligence CNO (NIC-10)
Navy Department
Washington, DC 20350-2000

Director of Naval Intelligence
Office of Naval Intelligence CNO (OP-092)
Navy Department
Washington, DC 20350-2000

CDR
Operational Test & Evaluation Force
(COMOPTEVFOR)
Norfolk, VA 23511-6388

OSD/C31
T & TC3
Pentagon, Room 3D174
Washington, DC 20301-3040

OSD/DDDR&E
Dr. Robert Duncan
Pentagon, Room 3E106
Washington, DC 20301-3040

Director
Program Integration, Office of the Under Secretary of Defense for Acquisition (OUSD (A))/PA
Pentagon, Room 3E1064
Washington, DC 20301-3110

Director
Program Integration, Office of the Under Secretary of Defense for Acquisition (OUSD (A))/PI
Pentagon, Room 3E1064
Washington, DC 20301-3110
DTESA-88-SR-04
September 1988

Assistant Secretary of the Army
Resource, Development, Acquisition
Washington, DC 20310-0103

Rome Air Development Ctr/OCDR
Griffiss AFB, NY 13441-5700

Director
TEC
Attn: ATEC-T
Ft. Ord, CA 93941-7000

Director, Research & Development
Requirements
Test and Evaluation/OP-098
Navy Department
Washington, DC 20350-2000

CDR
TEXCOM
Attn: ATCT-PO
Ft. Hood, TX 76544-5065

CDR
US Army Electronic Proving Ground
Attn: STEEP-CT-F
Fort Huachuca, AZ 85613-7110
(3 Copies)

Director
US Army Missile and Space
Intelligence Center
Attn: YC
Redstone Arsenal, AL 35898-550

Director
US Army Missile and Space
Intelligence Center
Attn: YD
Redstone Arsenal, AL 35898-550

Director
US Army Missile and Space
Intelligence Center
Attn: YY
Redstone Arsenal, AL 35898-550

Commanding General
US Army Test &
evaluation Command
Attn: AMSTE-CG
Aberdeen Proving Ground,
MD 21005-5055

Technical Director
US Army White Sands
Missile Range
Attn: STEWS-TD
White Sands Missile Range,
NM 88002-5002

Director
USA Laboratory Command/SLCSM-D
2800 Powder Mill Rd
Adelphi, MD 20873-1145

Director
USA Signal Warfare Center/AMSEL-SW-RI
Vint Hills Farm Station
Warrenton, VA 22186-5000

CDR
USA Vulnerability Assessment
Laboratory
Attn: SLCVA-DPC
White Sands Missile Range,
NM 88002-5513

President
USAABNBD
Attn: ATXA-BD
Ft. Bragg, NC 28307-5000

Commandant
USAADASCH
Attn: ATSA-CDA
Fort Bliss, TX 79916-7050

President
USAARENBD
Attn: ATZK-AE
Ft. Knox, KY 40121-5470
President
USA AVNBD
Attn: ATZQ-OTC
Ft. Rucker, AL  36362-5064

President
USA CEBD
Attn: ATZH-BD
Ft. Gordon, GA  30905-5350

President
USA FABD
Attn: ATZR-BDP
Ft. Sill, OK  73503-6100

President
USA IB
Attn: ATZB-IB
Ft. Benning, GA  31905-5800

President
USA INS BD
Attn: ATSI-IB
Ft. Huachuca, AZ  85613-7000

CDR
USA FK SWC
Attn: SSG Shea
Ft. Bragg, NC  28307

CDR
USA AOTE A/ CSTE-PO-PP
Attn: Mr. Eric Shrader
5600 Columbia Pike
Falls Church, VA  22041-5115

CDR
USA AOTE A/ CSTE-PO-I
Attn: Lt Col M.A. Moran
6500 Columbia Pike
Falls Church, VA  22041-5115

CDR
USA AOTE A/ CSTE-ZT
5600 Columbia Pike
Falls Church, VA  22041-5115

President
USA RAMABD
Attn: ATZC-D
Ft. Bliss, TX  79916-5400

CDR
USA ATRA DOC
Attn: ATCD-TT
Ft. Rucker, AL  36362-5064

USCENTCOM/J2
Mac Dill AFB, FL  33608-7001

USCENTCOM/J3
MacDill AFB, FL  33608-7001

USCINCAFRED/J2
Langley AFB, VA  23665-6001

USCINCAFRED/J3
Langley AFB, VA  23665-6001

USCINCEUR/J2
APO, NY  09406-5000

USCINCEUR/J3
APO, NY  09406-5000

USCINCLANT/J2
Norfolk, VA  23511-6001

USCINCLANT/J3
Norfolk, VA  23511-6001

USCINCPAC/J2
Camp H.M. Smith, HI  96861-5025

USCINCPAC/J3
Camp H.M. Smith, HI  96861-5025