

## DOI DIGITAL RADIO CONTRACT SUBMITTAL LIST

Last modified: 08/12/2004

**CONTRACT DEFICIENCIES FOR EACH CLIN SHOULD BE CLEARED BY  
DECEMBER 31, 2004 OR FUTURE PURCHASES MAY BE SUSPENDED BY DOI, OR  
CLINS WITH DEFICIENCIES MAY BE TERMINATED.**

## **EF Johnson Company**

### EFJ 5300 Series VHF mobile

50 watt & 100 watt Dash and Remote mount with and without encryption  
VHF Standard Control Head 5300, DSP 0.1.49, Controller 1.23.0, Hardware  
0.1.2.

Accepted with deficiencies.

#### **Contract Deficiencies:**

- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- The radio incorrectly transmits the status symbol 01 (repeater inbound channel busy) during duplex, simplex, and talkaround operation.
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC
- Emergency button: Inconsistent Operation; The Emergency Button does not always initiate the Emergency function when pressed. When the emergency function is activated, the data sent seems to be trunking data and is not decoded by either digital service monitor (General Dynamics or Aeroflex). If the PTT is pushed after the Emergency button is activated, then the emergency condition is transmitted correctly over the channel. The Emergency transmission should be activated immediately upon pressing the Emergency button without the need to then press the PTT button.

#### **Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- No digital data capability

#### **Other Issues noted:**

- Channel names cannot be changed via front panel programming.

### EFJ 5300 Series UHF mobile

Not Accepted

The UHF version of the EFJ 5300 mobile radio was not tested.  
It has been noticed that the DOI contract shows that this is a 15 watt radio, which does not meet the contract requirement of 30 to 50 watts for mid power stations. See paragraph 10.4.5 B. Also note that the EFJ contract submittal provides an optional frequency range of 450-512 MHz in addition to the required frequency range of 406-470 MHz.

EFJ 2600 VHF Repeater/Base, 25 - 110 watt, commercially powered

Accepted with deficiencies.

Not recommended for purchase with current deficiencies.

**Contract Deficiencies:**

- No analog or multi-mode operation

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- The Base Station does not support digital data capability

**Other Issues noted:**

The 2600 series repeaters feature an Ethernet network interface to allow programming, console communication/control, and linking over an existing IP network.

Components Include:

2600 IP Repeater

APCO PC Console

2600 Nettlelligent Repeater Programming Software

An EFJ 2601 repeater was submitted for testing. The unit arrived with an IP (Internet protocol) input/output/control interface. A Tone (2-wire and/or 4-wire) interface is scheduled for later release. The unit is ADHCP@ enabled where it will obtain an IP address on the attached LAN. The unit does not support analog operation at this time.

Encryption capability for these units (base stations) is scheduled to be included in the PC software.

The unit demonstrated a long delay in producing an output to the subscriber radio. It appears that the unit transmits a header, 3 blank and terminator frames, a LDU02 frame and a LDU 01 &02 frame prior to transmitting any usable data. This may account for the delay at the subscriber end.

- The unit and the programming software need password protection.
- No channel scan
- No wireline control for the base station
- No authentication process (password protection) exists for communicating with or modifying parameters of the repeaters over the IP network.
- The repeaters transmit 3 blank P25 frames at the beginning of transmissions for calls originating from other repeaters.

The repeaters tested ran preliminary software that lacks many features of the

advertised finished product. Analog 12.5 kHz and 25 kHz operation was not supported at the time of testing, but should be available in the final release according to EF Johnson. Base station operation of the 2600 was not tested.

EFJ 2600 UHF Repeater/Base, 25 -110 watt, commercially powered

Accepted with deficiencies.

**Contract Deficiencies:**

- The UHF unit has the same deficiencies as the VHF unit with one additional deficiency noted.
- In the receive only mode (standby), the transmitted signal is still present at about 70 dB below normal output level at the transmitter output port.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

**Other Issues noted:**

EFJ 5100 Series VHF Personal Portable

Four (4) keypad and 16 keypad

Accepted with deficiencies.

**Contract Deficiencies:**

- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- The radio incorrectly transmits the status symbol 01 (repeater inbound channel busy) during duplex, simplex, and talkaround operation.
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC
- Emergency button: Inconsistent Operation; The Emergency Button does not always initiate the Emergency function when pressed. When the emergency function is activated, the data sent seems to be trunking data and is not decoded by either digital service monitor (General Dynamics or Aeroflex). If the PTT is pushed after the Emergency button is activated, then the emergency condition is transmitted correctly over the channel. The Emergency transmission should be activated immediately upon pressing the

Emergency button without the need to then press the PTT button.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- No digital data capability
- The keypad, required for digital signaling and control, and telephone interconnect (equivalent to DTMF signaling in analog mode) was not active in the digital mode of operation.

**Other Issues noted:**

Items for Review / Correction

The talkgroup list can not be edited from the keyboard.

The Squelch Select List should display the NAC and/or the CTCSS code instead of just the item number on the list. This should be an alternating display (displaying both) as implemented for the Unit ID and Alias display.

The volume control has a small operating range in the middle of its rotation.

This has been improved in the latest radio version, but still no difference in volume is noticed from the 12 o'clock to 3 o'clock positions.

Channel names cannot be changed via front panel programming.

EFJ 5100 Series UHF Personal Portable

Four (4) keypad and 16 keypad

**Contract Deficiencies:**

All deficiencies listed above for the VHF 5100 apply to the UHF version.

## **Datron World Communications, Inc.**

### Datron VHF Personal Portable, Guardian P25

Accepted with deficiencies.

#### **Contract Deficiencies:**

- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- The radio transmits incorrect status symbols during duplex, simplex, and talkaround operation.

#### **Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- No DES-OFB/AES encryption available
- No OTAR
- No digital data capability
- The keypad, required for digital signaling and control, and telephone interconnect (equivalent to DTMF signaling in analog mode) was not active in the digital mode of operation.

#### **Other Issues noted:**

The Datron VHF Personal Portable radio met the general requirements of the contract. It met the general requirements for analog wideband, analog narrowband, and TIA/EIA-102 digital operation. It met the general requirements for analog and digital interoperability.

The amplitude of the DTMF levels, in analog mode, were higher than the required level of 2/3 of peak deviation: Levels were measured at 1.91 – 2.0 kHz in narrowband mode and 4.26 – 4.32 kHz in wideband mode. There are no adjustments for these levels.

The initiation of a Unit-to-Unit call is very difficult and requires the user to enter several layers of menu to get to the entry for the unit ID number of the party to be called. A more straight-forward method needs to be provided. The Fire Features software was not available / loaded on this radio.

Neither, diagnostic nor service software, were provided to allow adjustment of radio frequency and audio levels.

A “Low Battery” indicator (audible or visual) is not provided.

### Datron VHF Fire Portable, Guardian P25F

Accepted with deficiencies.

#### **Contract Deficiencies:**

- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- The radio transmits incorrect status symbols during duplex, simplex, and talkaround operation.
- The Fire portable did not provide a NAC/CTCSS, or TG “pick lists”. The Fire Features software was not available / loaded on this radio.
- A “AA” clamshell battery pack was not provided.  
(Note: a “AA” battery pack is available from Motorola that will work with this radio.)

#### **Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- No DES-OFB/AES encryption available
- No OTAR
- No digital data capability
- The keypad, required for digital signaling and control, and telephone interconnect (equivalent to DTMF signaling in analog mode) was not active in the digital mode of operation.

#### **Other Issues noted:**

All of the comments for the Datron Personal Portable also apply to the Fire portable.

### Datron VHF Mobile, Guardian P25

Accepted with deficiencies.

#### **Contract Deficiencies:**

- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not

active.

- The radio transmits incorrect status symbols during duplex, simplex, and talkaround operation.
- DTMF tones are severely distorted when transmitting with DCS signaling. Pressing the AD@ key while transmitting in the analog mode causes the radio to enter programming mode.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- No DES-OFB/AES encryption available
- No OTAR
- No digital data capability
- The keypad, required for digital signaling and control, and telephone interconnect (equivalent to DTMF signaling in analog mode) was not active in the digital mode of operation.

**Other Issues noted:**

The Datron VHF Mobile radio met the general requirements of the contract. It met the general requirements for analog wideband, analog narrowband, and TIA/EIA-102 digital operation. It met the general requirements for analog and digital interoperability with the following exceptions:

The amplitude of the DTMF levels, in analog mode, were much higher than the required level of 2/3 of peak deviation. Decoding of these tones was not consistent. When the DTMF level was adjusted to the proper level on the DTMF microphone, then the radio would no longer accept DTMF tones for programming of the radio. The radio needs to be modified to allow both modes to operate correctly and simultaneously.

On an analog channel, the yellow ABusy Channel@ light did not illuminate if another user was transmitting with a CTCSS tone other than the programmed received value. Also, the ABusy Channel@ light did not illuminate if another user was transmitting in the digital mode.

On a digital channel, the yellow ABusy Channel@ light did not illuminate if another user was transmitting in the analog mode.

The initiation of a Unit-to-Unit call is very difficult and requires the user to enter several layers of menu to get to the entry for the unit ID number of the party to be called. A more straight-forward method needs to be provided.

## **Thales Communications**

### Thales VHF Personal Portable

Accepted with deficiencies.

#### **Contract Deficiencies:**

None Noted

#### **Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- No digital data capability (This radio does support GPS digital data transfer for AVL operation. Note: GPS data specifications have NOT been completed by the P25 Standards Committee).
- The keypad, required for digital signaling and control, and telephone interconnect (equivalent to DTMF signaling in analog mode) was not active in the digital mode of operation.

#### **Other Issues noted:**

Latest firmware version has significantly increased speaker volume.

### Thales VHF Fire Portable

Accepted with deficiencies.

#### **Contract Deficiencies:**

None Noted

#### **Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- No digital data capability (This radio does support GPS digital data transfer for AVL operation. Note: GPS data specifications have NOT been completed by the P25 Standards Committee).
- The keypad, required for digital signaling and control, and telephone interconnect (equivalent to DTMF signaling in analog mode) was not active in the digital mode of operation.

#### **Other Issues noted:**

Latest firmware version has significantly increased speaker volume.

## **Relm Wireless Corporation (BK Radio)**

### Relm VHF Base Station (Westel) with control options

Accepted with deficiencies.

#### **Contract Deficiencies:**

**This radio has not been tested for contract deficiencies!**

#### **Deficiencies of TIA/EIA-102 (P25) Standard Options:**

#### **Other Issues noted:**

### Relm VHF Repeater Station, commercially powered / non-commercially powered

Accepted with deficiencies.

#### **Contract Deficiencies:**

- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, are not transmitted.

#### **Deficiencies of TIA/EIA-102 (P25) Standard Options:**

#### **Other Issues noted:**

Relm submitted the DRB-25 repeater/ Remote base station from Westel Group Limited, formerly ADI. The unit consists of a modular housing that holds two transceivers with two power amplifiers and two power supplies. It supports 50 or 100 watt VHF transceivers and 50 watt UHF transceivers. Any combination of the two may be installed. Linking the two radio repeaters may be achieved or one may be configured as a base station and one as a repeater or both as wire line controlled base stations.

- No method to adjust transceiver to wire line audio levels.
- No way to encrypt the wire line control for secure systems
- The repeat audio from the analog side of the unit to the digital side passes the CTCSS tone at a very high audible level.

### Relm - BK DPH VHF Personal Portable

This radio was submitted for testing on February 27, 2003 and is a technical upgrade to replace the BK25 radio. The radio was retested the week of August 2, 2004.

Accepted with deficiencies.

**Contract Deficiencies:**

- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel worked correctly, however, transmission was also prevented upon an analog carrier, or noise, being present on the channel. Busy channel lockout based on carrier or noise present is not acceptable.
- The radio transmits incorrect status symbols during simplex operation.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- Does not support OTAR
- No Indication of Emergency condition on the Channel
- Does not comply with the TIA/EIA-102 data standard
- The keypad, required for digital signaling and control, and telephone interconnect (equivalent to DTMF signaling in analog mode) was not active in the digital mode of operation.

**Other Issues noted:**

- Emergency button: After Emergency button is pressed, then the PTT button must be pressed to activate. Emergency transmission should be activated immediately upon press of Emergency button.

Relm - BK DPH VHF Fire Personal Portable -

Accepted with deficiencies.

**Contract Deficiencies:**

All of the comments for the Relm - BK DPH VHF Personal Portable also apply to the Fire portable.

In addition, the DPH Fire portable does not have a NAC/CTCSS Pick List or a Talkgroup pick list.

## **Daniels Electronics Ltd.**

The following configurations were submitted, tested, and accepted:

VHF Repeater Station, commercially powered

UHF Repeater Station, commercially powered

VHF Repeater Station, non-commercially powered

UHF Repeater Station, non-commercially powered

VHF Transportable Repeater

UHF Transportable Repeater

All of Daniels' submittals utilize identical radio (RF) and control modules but with an external power supply, for commercially powered operation, and an external PA amplifier, for high power operation. Both the receiver and transmitter modules retain and utilize full vocoder operation. .

The current version of the RF units provide full backwards compatibility / interchangeability with the analog only product line. In other words, digital and analog RF modules can be inter-mixed while retaining the ability to route all audio and control signals between any combination of modules.

### **Contract Deficiencies:**

None Noted.

### **Deficiencies of TIA/EIA-102 (P25) Standard Options:**

None Noted.

### **Other Issues noted:**

- Channel scan was provided in the test units but were found to be rather slow.
- PTT switch on System Monitor Module does work with CL-RC4 module installed

## **Technisonic Industries Ltd.**

Accepted with Deficiencies.

### **Contract Deficiencies:**

- No Unit-to-Unit received call display
- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- The radio transmits incorrect status symbols.

### **Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- No DTMF Digital Equivalent Encode capability
- No DES-OFB/AES Encryption
- No OTAR
- No digital data capability

### **Other Issues noted:**

Even though this is not a Fire@ radio, it does have keypad programmability and NAC/Tone and Talkgroup selection/input. Direct radio-to-radio cloning is not available.

### **Items for Review / Correction:**

- Busy Channel Light does not operate properly. (The busy light should always show that the channel is in use, even though the unit using the channel may be in a different operating mode than the mode the channel is programmed for. For example, an analog user on a digital channel, digital user on an analog channel, analog user on an analog channel with a different CTCSS tone, or digital user on a digital channel with a different NAC or TGID.)

**King Communications, USA**

See comments regarding Relm (Westel) base station/repeater submittal

## **IDA Corporation**

### **Contract Deficiencies:**

None Noted

### **Deficiencies of TIA/EIA-102 (P25) Standard Options:**

None Noted

### **Other Issues noted:**

24-66H Tone Remote - Accepted

24-66HMSK Digital Remote - Accepted

20-28 Digital Termination Panel - Accepted

TRAKIT-25D AVL System - No power or other indicator lights on unit. This made troubleshooting difficult. Because of interface problems with the Motorola Integrated Voice and Data system, correct operation of this unit was not observed.

## Motorola USFGMD

### VHF Quantar Base Station, 125 watt, commercially powered

Accepted with deficiencies.

#### **Contract Deficiencies:**

- NAC of \$F7E does not function according to ANSI/TIA/EIA 102.BAAC  
The function of digital carrier squelch can be accomplished through menu selection for squelch type, but the programming software then forces the transmitted NAC to be \$293. This is unacceptable
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC
- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- Programs with DOS software. Contract calls for Windows programming software.

#### **Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- The Motorola Quantar base station does not comply with the TIA/EIA-102 data standard

#### **Other Issues noted:**

### VHF Base Station Astro Spectra Consolette, 50 watt

Accepted with deficiencies.

#### **Contract Deficiencies:**

- NAC of \$F7E does not function according to ANSI/TIA/EIA 102.BAAC  
The function of digital carrier squelch can be accomplished through menu selection for squelch type, but the programming software then forces the transmitted NAC to be \$293. This is unacceptable
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC
- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- The radio transmits incorrect status symbols during simplex operation.
- In multi-key radios, when using the "Individual Select-Call Hardware Key"

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Astro Systems, Talkgroup List, in the CPS, this feature does not correctly and the radio usually uses a key other than the key that selected in the CPS. This feature is used when initiating an Individual (Unit-to-Unit) Select Call. The the channel, not the talkgroup or

talkgroup table, since the talkgroup ID is  
calls.

not used during unit-to-unit

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

-The Motorola consolette does not comply with the TIA/EIA-102 data standard

**Other Issues noted:**

UHF Base Station, Quantar, 110 watt, commercially powered

Accepted with deficiencies.

**Contract Deficiencies:**

- NAC of \$F7E does not function according to ANSI/TIA/EIA 102.BAAC  
The function of digital carrier squelch can be accomplished through menu selection for squelch type, but the programming software then forces the transmitted NAC to be \$293. This is unacceptable
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC
- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- Programs with DOS software. Contract calls for Windows programming software.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

-The Motorola Quantar base station does not comply with the TIA/EIA-102 data standard

**Other Issues noted:**

UHF Base Station Astro Spectra Consolette, 40 watt

Accepted with deficiencies.

**Contract Deficiencies:**

- NAC of \$F7E does not function according to ANSI/TIA/EIA 102.BAAC  
The function of digital carrier squelch can be accomplished through menu selection for squelch type, but the programming software then forces the transmitted NAC to be \$293. This is unacceptable
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC

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- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- The radio transmits incorrect status symbols during simplex operation.
- In multi-key radios, when using the "Individual Select-Call Hardware Key" Astro Systems, Talkgroup List, in the CPS, this feature does not correctly and the radio usually uses a key other than the key that selected in the CPS. This feature is used when initiating an Individual (Unit-to-Unit) Select Call. The encryption key the channel, not the talkgroup or talkgroup table, since the not used during unit-to-unit calls.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- The Motorola consolette does not comply with the TIA/EIA-102 data standard

**Other Issues noted:**

VHF Astro Digital Spectra Mobile, 110 watt

Accepted with deficiencies.

**Contract Deficiencies:**

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- NAC of \$F7E does not function according to ANSI/TIA/EIA 102.BAAC  
The function of digital carrier squelch can be accomplished through menu selection for squelch type, but the programming software then forces the transmitted NAC to be \$293. This is unacceptable
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC
- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- The radio transmits incorrect status symbols during simplex operation.
- In multi-key radios, when using the "Individual Select-Call Hardware Key" Astro Systems, Talkgroup List, in the CPS, this feature does not correctly and the radio usually uses a key other than the key that selected in the CPS. This feature is used when initiating an Individual (Unit-to-Unit) Select Call. The encryption key the channel, not the talkgroup or talkgroup table, since the not used during unit-to-unit calls.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- The Astro Spectra Mobile radio does not comply with the TIA/EIA-102 data standard

**Other Issues noted:**

UHF Astro Digital Spectra Mobile, 110 watt

Accepted with deficiencies.

**Contract Deficiencies:**

- NAC of \$F7E does not function according to ANSI/TIA/EIA 102.BAAC  
The function of digital carrier squelch can be accomplished through menu selection for squelch type, but the programming software then forces the transmitted NAC to be \$293. This is unacceptable
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC
- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not

active.

- The radio transmits incorrect status symbols during simplex operation.
- In multi-key radios, when using the "Individual Select-Call Hardware Key" Astro Systems, Talkgroup List, in the CPS, this feature does not correctly and the radio usually uses a key other than the key that selected in the CPS. This feature is used when initiating an Individual (Unit-to-Unit) Select Call. The encryption key the channel, not the talkgroup or talkgroup table, since the not used during unit-to-unit calls.

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**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- The Astro Spectra Mobile radio does not comply with the TIA/EIA-102 data standard

**Other Issues noted:**

VHF Astro Spectra Motorcycle Mobile, 25 watt

Accepted with deficiencies.

**Contract Deficiencies:**

- NAC of \$F7E does not function according to ANSI/TIA/EIA 102.BAAC  
The function of digital carrier squelch can be accomplished through menu selection for squelch type, but the programming software then forces the transmitted NAC to be \$293. This is unacceptable
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC
- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.

under work was encrypted should be tied to talkgroup ID is

- The radio transmits incorrect status symbols during simplex operation.
- In multi-key radios, when using the "Individual Select-Call Hardware Key" Astro Systems, Talkgroup List, in the CPS, this feature does not correctly and the radio usually uses a key other than the key that selected in the CPS. This feature is used when initiating an Individual (Unit-to-Unit) Select Call. The encryption key the channel, not the talkgroup or talkgroup table, since the not used during unit-to-unit calls.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- The Astro Spectra Mobile radio does not comply with the TIA/EIA-102 data standard

**Other Issues noted:**

UHF Astro Spectra Motorcycle Mobile, 15 watt

Accepted with deficiencies.

**Contract Deficiencies:**

under work was encrypted should be tied to talkgroup ID is

- NAC of \$F7E does not function according to ANSI/TIA/EIA 102.BAAC  
The function of digital carrier squelch can be accomplished through menu selection for squelch type, but the programming software then forces the transmitted NAC to be \$293. This is unacceptable
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC
- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- The radio transmits incorrect status symbols during simplex operation.
- In multi-key radios, when using the "Individual Select-Call Hardware Key" Astro Systems, Talkgroup List, in the CPS, this feature does not correctly and the radio usually uses a key other than the key that selected in the CPS. This feature is used when initiating an Individual (Unit-to-Unit) Select Call. The encryption key the channel, not the talkgroup or talkgroup table, since the not used during unit-to-unit calls.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- The Astro Spectra Mobile radio does not comply with the TIA/EIA-102 data standard

**Other Issues noted:**

VHF Personal Portable

XTS 3000, Model I, II, III

Accepted with deficiencies.

**Contract Deficiencies:**

- NAC of \$F7E does not function according to ANSI/TIA/EIA 102.BAAC  
The function of digital carrier squelch can be accomplished through menu selection for squelch type, but the programming software then forces the transmitted NAC to be \$293. This is unacceptable
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC
- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- The radio transmits incorrect status symbols during simplex operation.
- In multi-key radios, when using the "Individual Select-Call Hardware Key"  
Astro Systems, Talkgroup List, in the CPS, this feature does not work correctly and the radio usually uses a key other than the key that was selected in the CPS. This feature is used when initiating an encrypted Individual (Unit-to-Unit) Select Call. The encryption key should be tied to the channel, not the talkgroup or talkgroup table, since the talkgroup ID is not used during unit-to-unit calls.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- The XTS 3000 radio does not comply with the TIA/EIA-102 data standard

**Other Issues noted:**

- The keypad, required for digital signaling and control, and telephone interconnect (equivalent to DTMF signaling in analog mode) was active in the digital mode of operation, but we were unable to verify compliance with the EIA/TIA-102 Standard.

UHF Personal Portable

XTS 3000, I, II, III

Accepted with deficiencies.

**Contract Deficiencies:**

- NAC of \$F7E does not function according to ANSI/TIA/EIA 102.BAAC  
The function of digital carrier squelch can be accomplished through menu selection for squelch type, but the programming software then forces the transmitted NAC to be \$293. This is unacceptable
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC
- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- The radio transmits incorrect status symbols during simplex operation.
- In multi-key radios, when using the "Individual Select-Call Hardware Key"

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Astro Systems, Talkgroup List, in the CPS, this feature does not correctly and the radio usually uses a key other than the key that selected in the CPS. This feature is used when initiating an Individual (Unit-to-Unit) Select Call. The encryption key the channel, not the talkgroup or talkgroup table, since the not used during unit-to-unit calls.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- The XTS 3000 radio does not comply with the TIA/EIA-102 data standard

**Other Issues noted:**

- The keypad, required for digital signaling and control, and telephone interconnect (equivalent to DTMF signaling in analog mode) was active in the digital mode of operation, but we were unable to verify compliance with the EIA/TIA-102 Standard.

VHF Fire Personal Portable

Not Accepted

XTS 3000, Model III - This radio does not support front keyboard programmability, and is not acceptable for Fire use.

Not Accepted

JT1000 - This is an analog-only radio and does not meet the requirements of TIA/EIA-102 for digital operation. This radio was not submitted or tested.

UHF Fire Personal Portable

Not Accepted

XTS 3000, Model III - This radio does not support front keyboard programmability, and is not acceptable for Fire use.

Not Accepted

JT1000 - This is an analog-only radio and does not meet the requirements of TIA/EIA-102 for digital operation. This radio was not submitted or tested.

VHF Personal Portable

XTS 5000, Model I, II, III

This radio is a technical upgrade to replace the XTS3000 series of radios.

Accepted with deficiencies.

**Contract Deficiencies:**

-NAC of \$F7E does not function according to ANSI/TIA/EIA 102.BAAC  
The function of digital carrier squelch can be accomplished through menu selection for squelch type, but the programming software then forces the transmitted NAC to be \$293. This is unacceptable

-Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC

-Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.

-In multi-key radios, when using the "Individual Select-Call Hardware Key"

under  
feature is  
by the radio  
Select Call, since the  
key should be  
since the  
Astro Systems, Talkgroup List, in CPS Version R04.01.00, this  
not currently supported. We are not sure which key is used  
when initiating an encrypted Individual (Unit-to-Unit)  
desired key can not be selected in the CPS. The encryption  
tied to the channel, not the talkgroup or talkgroup table,  
talkgroup ID is not used during unit-to-unit calls.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

-The XTS 5000 radio does not comply with the TIA/EIA-102 data standard

-DTMF (Hot Keypad) not operational in analog mode of operation for Model III radio

**Other Issues noted:**

- The keypad, required for digital signaling and control, and telephone interconnect (equivalent to DTMF signaling in analog mode) was active in the digital mode of operation, but we were unable to verify compliance with the EIA/TIA-102 Standard.
- OTAR was not tested because it was not enabled in the test radio.

UHF Personal Portable

XTS 5000, Model I, II, III

This radio was recently submitted and will be a technical upgrade to replace the XTS3000 series of radios.

Accepted with deficiencies.

**Contract Deficiencies:**

- NAC of \$F7E does not function according to ANSI/TIA/EIA 102.BAAC  
The function of digital carrier squelch can be accomplished through menu selection for squelch type, but the programming software then forces the transmitted NAC to be \$293. This is unacceptable
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC
- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- In multi-key radios, when using the "Individual Select-Call Hardware Key"

under  
feature is  
by the radio  
Select Call, since the  
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Astro Systems, Talkgroup List, in CPS Version R04.01.00, this  
not currently supported. We are not sure which key is used  
when initiating an encrypted Individual (Unit-to-Unit)  
desired key can not be selected in the CPS. The encryption  
tied to the channel, not the talkgroup or talkgroup table,  
talkgroup ID is not used during unit-to-unit calls.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- The XTS 5000 radio does not comply with the TIA/EIA-102 data standard
- DTMF (Hot Keypad) not operational in analog mode of operation for Model III radio

**Other Issues noted:**

- The keypad, required for digital signaling and control, and telephone interconnect (equivalent to DTMF signaling in analog mode) was active in the digital mode of operation, but we were unable to verify compliance with the EIA/TIA-102 Standard.
- OTAR was not tested because it was not enabled in the test radio.

VHF Fire Personal Portable

Accepted with deficiencies.

XTS 5000, Model III

This radio was recently submitted and will be a technical upgrade to replace the XTS3000 Model III radio.

Accepted with deficiencies.

**Contract Deficiencies:**

- NAC of \$F7E does not function according to ANSI/TIA/EIA 102.BAAC  
The function of digital carrier squelch can be accomplished through menu selection for squelch type, but the programming software then forces the transmitted NAC to be \$293. This is unacceptable
- Talkgroup of \$0000 is not allowed as required by ANSI/TIA/EIA 102.BAAC
- Status symbols for inbound channel busy/idle, as defined in TIA/EIA 102.BAAA paragraph 8.4, to prevent transmission on a busy digital channel, not active.
- In multi-key radios, when using the "Individual Select-Call Hardware Key" under Astro Systems, Talkgroup List, in CPS Version R04.01.00, this feature is not currently supported. We are not sure which key is used by the radio when initiating an encrypted Individual (Unit-to-Unit) Select Call, since the desired key can not be selected in the CPS. The encryption key should be tied to the channel, not the talkgroup or talkgroup table, since the talkgroup ID is not used during unit-to-unit calls.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

- The XTS 5000 radio does not comply with the TIA/EIA-102 data standard
- DTMF (Hot Keypad) not operational in analog mode of operation

**Other Issues noted:**

- The keypad, required for digital signaling and control, and telephone interconnect (equivalent to DTMF signaling in analog mode) was active in the digital mode of operation, but we were unable to verify compliance with the EIA/TIA-102 Standard.
- OTAR was not tested because it was not enabled in the test radio.

#### UHF Fire Personal Portable

Not Accepted

XTS 5000, Model III

- This radios does not support front keyboard programmability (at this time), and is not acceptable for Fire use.

#### VHF Quantar Repeater Station, 125 watt, commercially powered

Accepted with deficiencies.

##### **Contract Deficiencies:**

- NAC of \$F7F does not function according to ANSI/TIA/EIA 102.BAAC
- Programs with DOS software. Contract calls for Windows programming software.

##### **Deficiencies of TIA/EIA-102 (P25) Standard Options:**

##### **Other Issues noted:**

#### UHF Quantar Repeater Station, 110 watt, commercially powered

Accepted with deficiencies.

##### **Contract Deficiencies:**

- NAC of \$F7F does not function according to ANSI/TIA/EIA 102.BAAC
- Programs with DOS software. Contract calls for Windows programming software.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

**Other Issues noted:**

VHF Quantar Repeater Station, 125 watt, non-commercially powered

Accepted with deficiencies.

**Contract Deficiencies:**

- NAC of \$F7F does not function according to ANSI/TIA/EIA 102.BAAC
- Programs with DOS software. Contract calls for Windows programming software.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

**Other Issues noted:**

UHF Quantar Repeater Station, 110 watt, non-commercially powered

Accepted with deficiencies.

**Contract Deficiencies:**

- NAC of \$F7F does not function according to ANSI/TIA/EIA 102.BAAC
- Programs with DOS software. Contract calls for Windows programming software.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

**Other Issues noted:**

VHF Quantum Transportable Repeater, 40 watt

Accepted with deficiencies.

**Contract Deficiencies:**

- NAC of \$F7F does not function according to ANSI/TIA/EIA 102.BAAC

-Programs with DOS software. Contract calls for Windows programming software.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

**Other Issues noted:**

UHF Quantrum Transportable Repeater, 40 watt

Accepted with deficiencies.

**Contract Deficiencies:**

-NAC of \$F7F does not function according to ANSI/TIA/EIA 102.BAAC  
-Programs with DOS software. Contract calls for Windows programming software.

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

**Other Issues noted:**

- |                                     |  |
|-------------------------------------|--|
| <u>RCH 3000 Digital Remote</u>      | - Accepted                               |
| <u>Commandstar Desktop Console</u>  | - This unit was not submitted or tested. |
| <u>MC1000 Basic Local Deskset</u>   | - This unit was not submitted or tested. |
| <u>MC1000 Basic Tone Deskset</u>    | - This unit was not submitted or tested. |
| <u>MC2000 ADV Local Deskset</u>     | - This unit was not submitted or tested. |
| <u>MC2000 ADV Tone Deskset</u>      | - This unit was not submitted or tested. |
| <u>MC2500 Multi-channel Deskset</u> | - This unit was not submitted or tested. |
| <u>MC3000 Digital Deskset</u>       | - This unit was not submitted or tested. |
| <u>Astro TAC 3000 Comparator</u>    | - Accepted                               |

<u>Radio Network Controller</u>	- Accepted
<u>Wireless Network Gateway</u>	- Accepted
<u>KMF - OTAR- Infrastructure</u>	- Accepted
<u>Astro Tac VHF Satellite Receiver</u>	- Accepted
<u>Astro Tac UHF Satellite Receiver</u>	- Accepted
<u>Network Channel Bank</u>	- Accepted
<u>Key Variable Loader, KVL 3000</u>	- Accepted
<u>Digital Interface Unit, Astro DIU 3000</u>	- Accepted
<u>Integrated Voice and Data System</u>	-Accepted

This system provides Project 25 mobile data and Over-The-Air Rekeying (OTAR) capabilities to Motorola base station or repeater equipment.

Mobile data and OTAR is Motorola Proprietary and do not comply with the TIA 102 standard.

Components include:

Wireless Network Gateway (WNG)

Radio Network Controller (RNC)

Key Management Facility Server and Client

Digital Interface Unit (DIU).

Issues noted:

This system used many of the individual hardware components listed above. The only application that was provided for testing was OTAR. Mobile data is a separate, extra cost application, and was not provided for testing. AVL operation is also a separate, extra cost application and was provided by IDA Corporation for testing.

The system is very expensive and includes many features that are useful only to users of wide-area radio networks with thousands of subscriber units.

There is no direct IP connectivity between the system LAN and the subscriber units.

R2670B Communications System Analyzer

Accepted with deficiencies

**Contract Deficiencies:**

**Deficiencies of TIA/EIA-102 (P25) Standard Options:**

**Other Issues noted:**

The unit would not test for proper radio keypad operation for digital signaling (equivalent to DTMF in analog mode).

The unit does not display OTAR and mobile data handshake packets.

## **AEROFLEX WICHITA, INC**

### IFR 2975 Communications Test Set -

Accepted with deficiencies

#### **Contract Deficiencies:**

#### **Deficiencies of TIA/EIA-102 (P25) Standard Options:**

#### **Other Issues noted:**

Off air monitoring is difficult due to poor receiver sensitivity.

The unit does not display OTAR and mobile data handshake packets.