

**INSTRUCTION MANUALS**

Draft copy of the of the front matter of the following instruction manual is enclosed with this submission:

68P81095E55-C ..... Quantar Digital Capable Station  
For Conventional, ASTRO  
6809 Trunking, and IntelliRepeater Systems  
Instruction Manual

Other system and radio / configuration service software manuals are available to support the product and system in operation. They can be provided to the Commission upon request.

**TUNE-UP PROCEDURE**

This exhibit contains the tune-up procedure as it will appear in the Configuration Service Software (CSS) manual.

The following adjustments comprise the total transmitter alignment:

1. Reference Oscillator
2. Transmitter Power Output
3. Transmit Deviation Control
4. Reference Modulation Compensation

Note: All adjustments are factory pre-set and do not require alignment under normal operating conditions. In the event alignment is needed, refer servicing to qualified radio maintenance personnel only.

**TEST EQUIPMENT**

**Description                      Recommended model**

1. Service Monitor              Motorola R-2001 or equivalent
2. PC with CSS

**TRANSMITTER ALIGNMENT PROCEDURE**

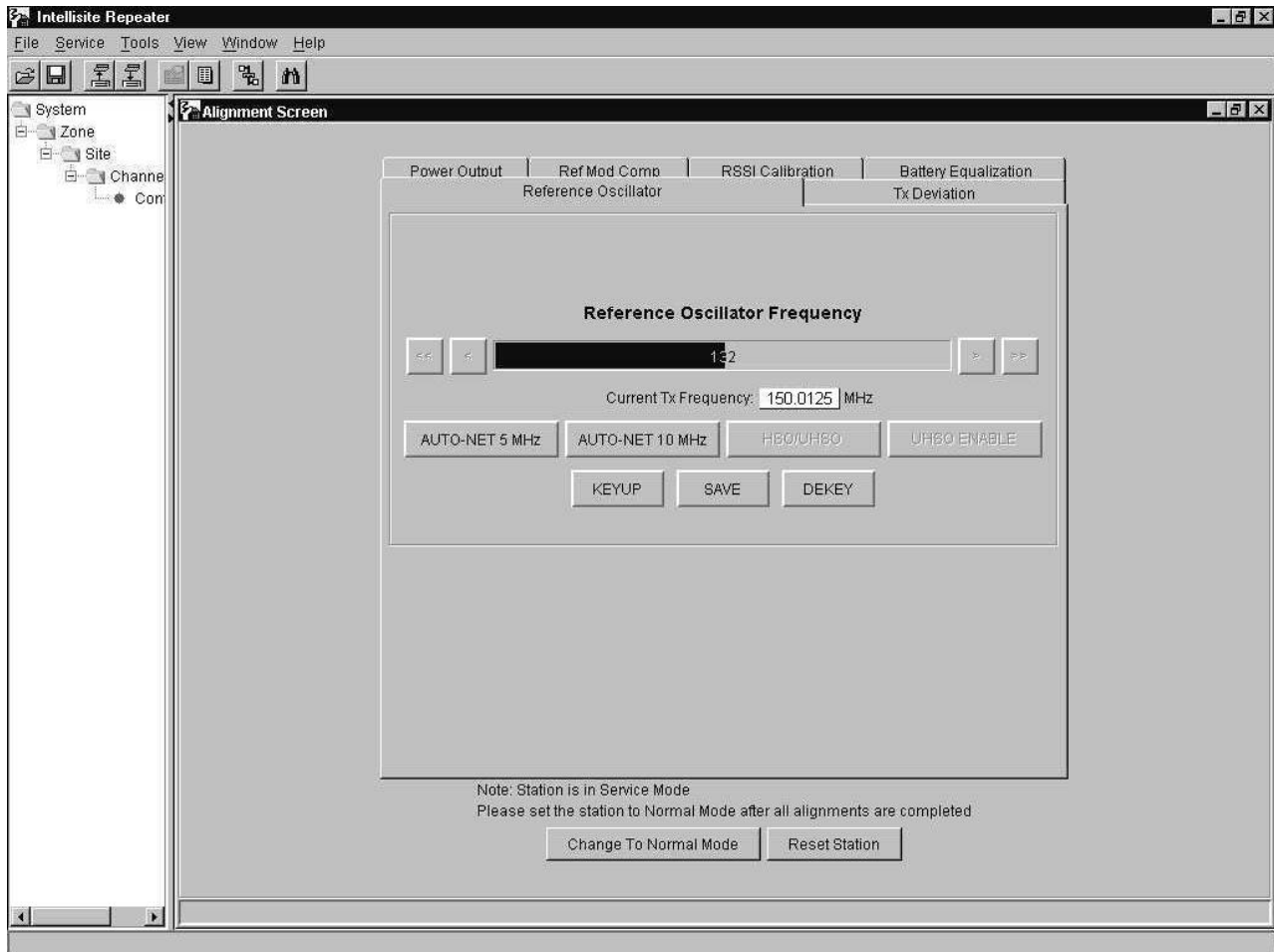
CSS/RSS Port: A 9-pin D connector is provided on the station control module front panel to allow service personnel to connect a PC loaded with the Configuration Service Software (CSS) and perform programming and maintenance tasks via this TIA RS-232 port. The following pages of this exhibit will show the important alignment screens.

**EXHIBIT    DESCRIPTION**

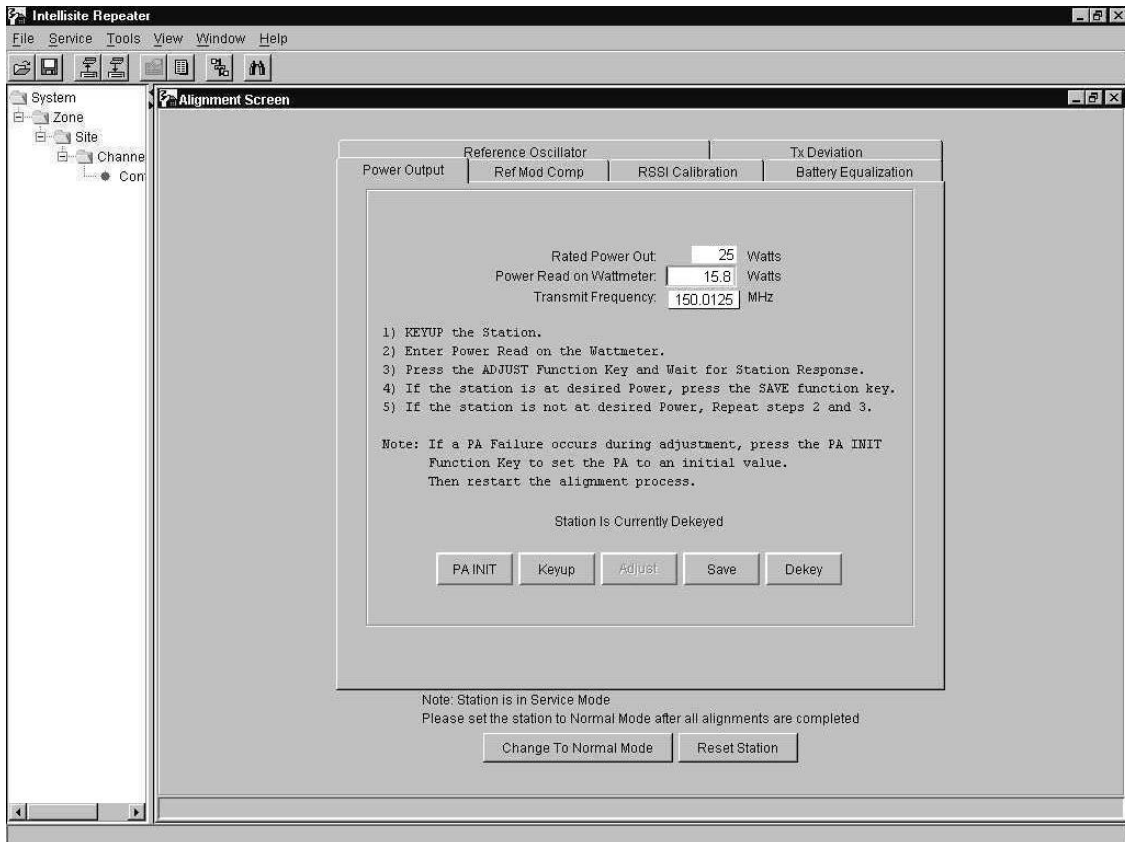
- 9A    Reference Oscillator Alignment Screen
- 9B    Transmitter Power Output Alignment Screen
- 9C    Transmitter Deviation Alignment Screen
- 9D    Reference Modulation Compensation Alignment Screen

All adjustments are software controlled and are pre-set at the factory. Certain station operating parameters can be changed via man-machine interface (MMI) commands, within predetermined limits. Examples include transmit / receiver operating frequencies and power level.

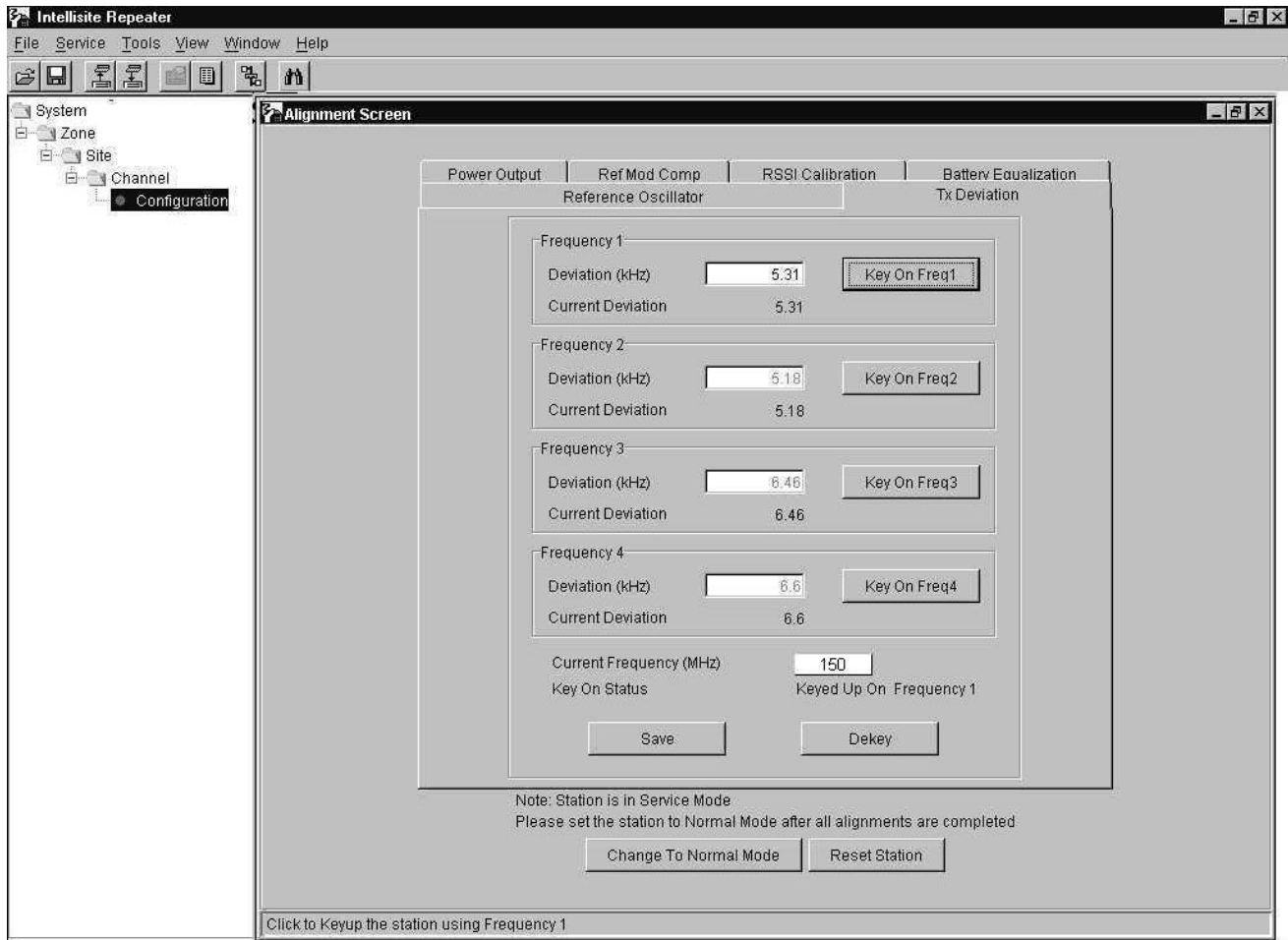
**TUNE-UP PROCEDURE - Reference Oscillator Alignment Screen**



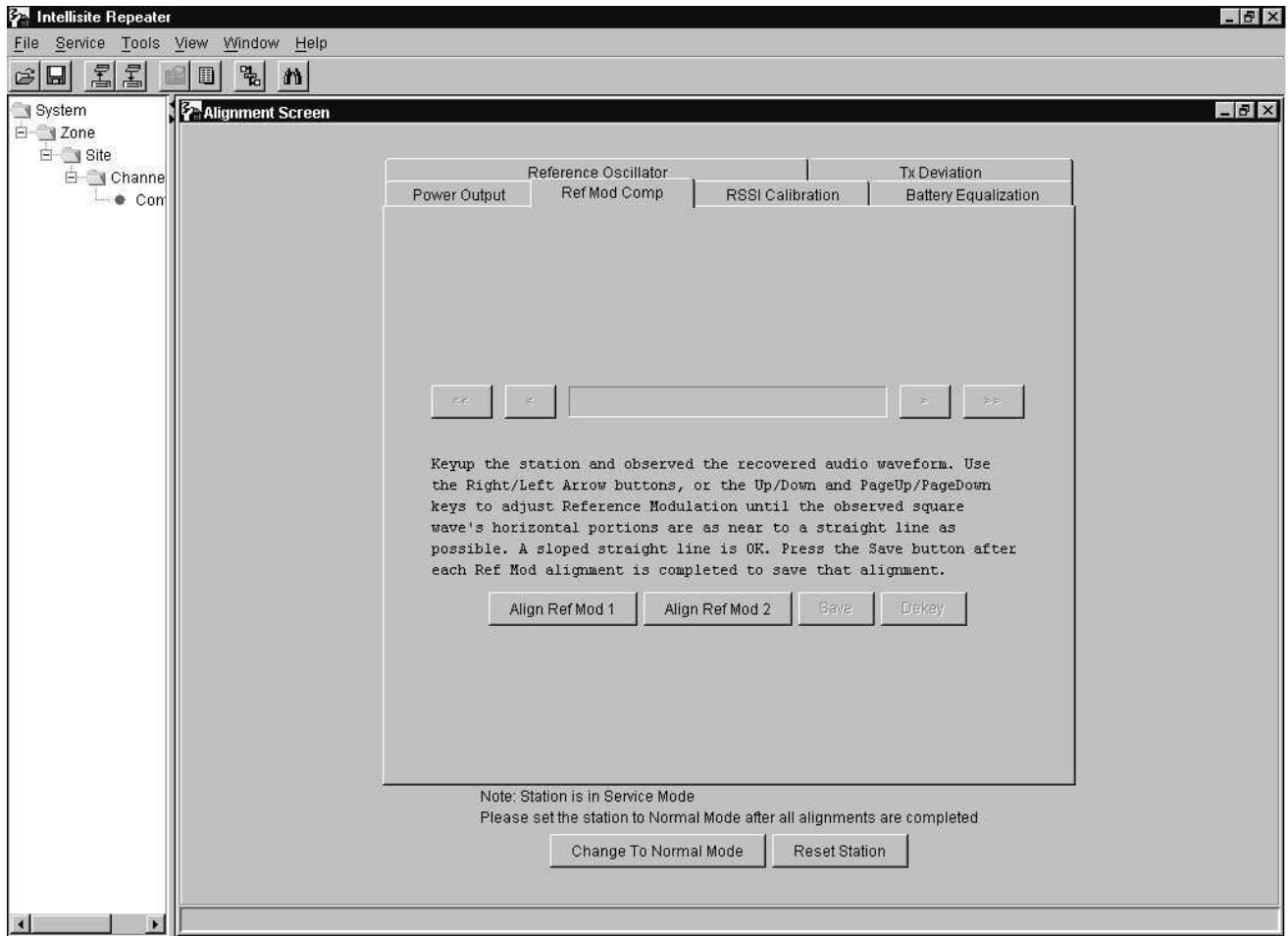
**TUNE-UP PROCEDURE - Transmitter Power Output Alignment Screen**



**TUNE-UP PROCEDURE - Transmitter Deviation Alignment Screen**



**TUNE-UP PROCEDURE - Reference Modulation Compensation Alignment Screen**





**QUANTAR™**

## Digital-Capable Station

For Conventional, *ASTRO*,  
6809 Trunking, and *IntelliRepeater* Systems

VHF — 25W & 125W

UHF — 25W, 100W, & 110W

800 MHz — 20W & 100W

900 MHz — 100W

# PRELIMINARY



**Instruction Manual**

68P81095E05-C

### COMPUTER SOFTWARE COPYRIGHTS

The Motorola products described in this instruction manual may include copyrighted Motorola computer programs stored in semiconductor memories or other media. Laws in the United States and other countries preserve for Motorola certain exclusive rights for copyrighted computer programs, including the exclusive right to copy or reproduce in any form the copyrighted computer program. Accordingly, any copyrighted Motorola computer programs contained in the Motorola products described in this instruction manual may not be copied or reproduced in any manner without the express written permission of Motorola. Furthermore, the purchase of Motorola products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license under the copyrights, patents or patent applications of Motorola, except for the normal non-exclusive, royalty free license to use that arises by operation of law in the sale of a product.

EPS-34440-B

### COMMERCIAL WARRANTY (STANDARD)

Motorola radio communications products are warranted to be free from defects in material and workmanship for a period of ONE (1) YEAR, (except for crystals and channel elements which are warranted for a period of ten (10) years) from the date of shipment. Parts, including crystals and channel elements, will be replaced and labor will be provided free of charge for the full warranty period. Thereafter purchaser must pay for the labor involved in repairing the product or replacing the parts at the prevailing rates together with any transportation charges to or from the place where warranty service is provided. This express warranty is extended by Motorola Communications and Electronics, Inc., 1301 E. Algonquin Road, Schaumburg, Illinois 60196, to the original purchaser only, and only to those purchasing for purpose of leasing or solely for commercial, industrial, or governmental use.

**THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED WHICH ARE SPECIFICALLY EXCLUDED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL MOTOROLA BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES TO THE FULL EXTENT SUCH MAY BE DISCLAIMED BY LAW.**

In the event of a defect, malfunction or failure to conform to specifications established by seller, or if appropriate, to specifications accepted by Seller in writing, during the period shown, Motorola, at its option, will either repair or replace the product or refund the purchase price thereof, and such action on the part of Motorola shall be the full extent of Motorola's liability hereunder.

This warranty is void if:

- a. the product is used in other than its normal and customary manner;
- b. the product has been subject to misuse, accident, neglect or damage;
- c. unauthorized alterations or repairs have been made, or unapproved parts used in the equipment.

This warranty extends only to individual products, batteries are excluded. Because each radio system is unique, Motorola disclaims liability for range, coverage, or operation of the system as a whole under this warranty except by a separate written agreement signed by an officer of Motorola.

**LICENSED PROGRAMS** — Motorola software provided in connection with this order is warranted to be free from reproducible defects for a period of one (1) year. All material and labor to repair any such defects will be provided free of charge for the full warranty period, and **SUBJECT TO THE DISCLAIMER IN BOLD FACE TYPE.**

Non-Motorola manufactured products are excluded from this warranty, but subject to the warranty provided by their manufacturers, a copy of which will be supplied to you on specific written request.

In order to obtain performance of this warranty, purchaser must contact its Motorola salesperson or Motorola at the address first above shown, attention Quality Assurance Department.

This warranty applies only within the United States.

EPS-48759-O

### FCC INTERFERENCE WARNING

The FCC Requires that manuals pertaining to Class A and Class B computing devices must contain warnings about possible interference with local residential radio and TV reception. This warning reads as follows:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial or residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.





**MOTOROLA**

Commercial Government and  
Industrial Solutions Sector

**QUANTAR**™

**Digital – Capable Station**  
for Conventional, *ASTRO*,  
6809 Trunking, and *IntelliRepeater* Systems

VHF — 25W & 125W  
UHF — 25W, 100W, & 110W  
800 MHz — 20W & 100W  
900 MHz — 100W

## Table of Contents

<i>Model/Option Information</i> .....	<i>xi</i>
<i>Foreword</i> .....	<i>xxiv</i>
<i>General Safety Information</i> .....	<i>xxvi</i>
<i>Performance Specifications</i> .....	<i>xxviii</i>

### DESCRIPTION

<b>DESCRIPTION</b> .....	<b>68P81096E56</b>
<b>Introduction</b> .....	<b>page 1</b>
Compact Mechanical Design .....	page 1
State-of-the-Art Electrical Design .....	page 2
Summary of Operating Features .....	page 3
Multiple System Capability .....	page 4
<b>Station Components</b> .....	<b>page 6</b>
<b>Functional Theory of Operation</b> .....	<b>page 8</b>
Transmitter Circuitry Operation .....	page 8
Receiver Circuitry Operation .....	page 9
Station Control Circuitry Operation .....	page 9
Wireline Interface Board Operation .....	page 10
Power Supply Module Operation .....	page 10

### INSTALLATION

<b>INSTALLATION</b> .....	<b>68P81096E57</b>
<b>Pre-Installation Considerations</b> .....	<b>page 2</b>
Installation Overview .....	page 2
Environmental Conditions at Intended Site .....	page 3
Equipment Ventilation .....	page 3
AC Input Power Requirements .....	page 4
Equipment Mounting Methods .....	page 4
Site Grounding and Lightning Protection .....	page 5
Recommended Tools and Equipment .....	page 6
Equipment Unpacking and Inspection .....	page 6
Physical Dimensions and Clearances .....	page 7

— *continued on next page* —

<b>Mechanical Installation</b> .....	<b>page 14</b>
Unpacking the Equipment .....	page 14
Mounting Procedures .....	page 20
Stacking Cabinets .....	page 25
Stacking Modular Racks .....	page 26
Anti-Vibration/EMI Screws .....	page 27
<b>Electrical Connections</b> .....	<b>page 28</b>
Power Supply Connections .....	page 28
RF Cabling Connections .....	page 32
Connecting System Cables .....	page 38
Connecting Telephone Lines .....	page 46
Connecting V.24 Modems .....	page 50
Connecting External Reference .....	page 51
<b>Post-Installation Checkout</b> .....	<b>page 54</b>
Applying Power .....	page 54
Verifying Proper Operation .....	page 54
Proceeding to Optimization .....	page 56

## **OPTIMIZATION**

<b>OPTIMIZATION</b> .....	<b>68P81086E72</b>
<b>Description</b> .....	<b>page 1</b>

## **OPERATION**

<b>OPERATION</b> .....	<b>68P81096E58</b>
<b>Description</b> .....	<b>page 1</b>
Summary of Switches, Pushbuttons, and Connectors .....	page 1
Summary of LED Indicators .....	page 1

## **MAINTENANCE & TROUBLESHOOTING**

<b>ROUTINE MAINTENANCE</b> .....	<b>68P81086E39</b>
<b>Introduction</b> .....	<b>page 1</b>
Routine Maintenance Overview .....	page 1
<b>Recommended Test Equipment</b> .....	<b>page 1</b>
<b>TROUBLESHOOTING</b> .....	<b>68P81096E59</b>
<b>Introduction</b> .....	<b>page 1</b>
Troubleshooting Overview .....	page 1
<b>Recommended Test Equipment</b> .....	<b>page 1</b>
List of Test Equipment .....	page 1
<b>Troubleshooting Procedures</b> .....	<b>page 2</b>
Troubleshooting Overview .....	page 2
Interpreting LED Indicators .....	page 6
Interpreting Alarm Alert Tones .....	page 9
Verifying Transmitter Circuitry .....	page 10
Verifying Receiver Circuitry .....	page 14

— continued on next page —

<b>Module Replacement Procedures</b> .....	<b>page 19</b>
General Replacement Information .....	page 19
Replacing Power Amplifier Module .....	page 21
Replacing Exciter Module .....	page 22
Replacing Power Supply Module .....	page 23
Replacing Station Control Module .....	page 24
Replacing Wireline Interface Board .....	page 30
Replacing Receiver Module and/or Preselector Assembly (VHF and UHF) .....	page 32
Replacing Receiver Module (800 MHz and 900 MHz) .....	page 33
Replacing ASTRO Modem Card .....	page 34
Replacing Backplane Board .....	page 35
<b>Preselector Field Tuning Procedure</b> .....	<b>page 36</b>
Required Test Equipment .....	page 36
VHF Tuning Procedure .....	page 37
UHF Tuning Procedure .....	page 40

## STATION MODULES

### RECEIVER CIRCUITRY

<b>RECEIVER MODULE (VHF Ranges 1 and 2; Includes Preselector)</b> .....	<b>68P81086E28</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
Overview of Circuitry .....	page 1
<b>Controls, Indicators, and Inputs/Outputs</b> .....	<b>page 2</b>
<b>Functional Theory of Operation</b> .....	<b>page 3</b>
Synthesizer and VCO Circuitry .....	page 3
Preselector Filter Assembly .....	page 4
Receiver Front End Circuitry .....	page 4
Custom Receiver IC Circuitry .....	page 4
Address Decode and A/D Converter Circuitry .....	page 5
Voltage Regulator Circuitry .....	page 5
<b>RECEIVER MODULE (UHF)</b> .....	<b>68P81086E48</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
Overview of Circuitry .....	page 1
<b>Controls, Indicators, and Inputs/Outputs</b> .....	<b>page 2</b>
<b>Functional Theory of Operation</b> .....	<b>page 3</b>
Synthesizer and VCO Circuitry .....	page 3
Preselector Filter Assembly .....	page 4
Receiver Front End Circuitry .....	page 4
Custom Receiver IC Circuitry .....	page 4
Address Decode and A/D Converter Circuitry .....	page 5
Voltage Regulator Circuitry .....	page 5
<b>RECEIVER MODULE (800 MHz)</b> .....	<b>68P81086E76</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
Overview of Circuitry .....	page 1
<b>Controls, Indicators, and Inputs/Outputs</b> .....	<b>page 2</b>
<b>Functional Theory of Operation</b> .....	<b>page 3</b>
Synthesizer and VCO Circuitry .....	page 3
Receiver Front End Circuitry .....	page 4

— continued on next page —

Custom Receiver IC Circuitry .....	page 4
Address Decode and A/D Converter Circuitry .....	page 5
Voltage Regulator Circuitry .....	page 5

**RECEIVER MODULE (900 MHz) ..... 68P81091E92**

<b>Description .....</b>	<b>page 1</b>
General Description .....	page 1
Overview of Circuitry .....	page 1
<b>Controls, Indicators, and Inputs/Outputs .....</b>	<b>page 2</b>
<b>Functional Theory of Operation .....</b>	<b>page 3</b>
Synthesizer and VCO Circuitry .....	page 3
Receiver Front End Circuitry .....	page 4
Custom Receiver IC Circuitry .....	page 4
Address Decode and A/D Converter Circuitry .....	page 5
Voltage Regulator Circuitry .....	page 5

**TRANSMITTER CIRCUITRY**

**EXCITER BOARD (VHF, UHF, 800/900 MHz) ..... 68P81086E24**

<b>Description .....</b>	<b>page 1</b>
General Description .....	page 1
Overview of Circuitry .....	page 1
<b>Controls, Indicators, and Inputs/Outputs .....</b>	<b>page 2</b>
<b>Functional Theory of Operation .....</b>	<b>page 3</b>
Synthesizer and VCO Circuitry .....	page 3
RF Switch Circuitry .....	page 4
Microprocessor Circuitry .....	page 4
TX Power Control Circuitry .....	page 5

**VHF POWER AMPLIFIER MODULE (25W/125W R1 & R2) ..... 68P81086E23**

<b>Description .....</b>	<b>page 1</b>
General Description .....	page 1
Overview of Circuitry .....	page 1
<b>Controls, Indicators, and Inputs/Outputs .....</b>	<b>page 2</b>
<b>Functional Theory of Operation .....</b>	<b>page 3</b>
RF Signal Path .....	page 3
Output Power Control .....	page 3
Sense and Detect Circuitry .....	page 4
Cooling Fans Control Circuitry .....	page 6

**UHF POWER AMPLIFIER MODULE (R0/110W; R1 & R2/25W; R1-3/110W; R4/100W) 68P81088E44**

<b>Description .....</b>	<b>page 1</b>
General Description .....	page 1
Overview of Circuitry .....	page 1
<b>Controls, Indicators, and Inputs/Outputs .....</b>	<b>page 2</b>
<b>Functional Theory of Operation .....</b>	<b>page 3</b>
RF Signal Path .....	page 3
Output Power Control .....	page 3
Sense and Detect Circuitry .....	page 4
Cooling Fans Control Circuitry .....	page 6

<b>POWER AMPLIFIER MODULE (20W/100W 800 MHz; 100W 900 MHz;)</b> .....	<b>68P81091E91</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
Overview of Circuitry .....	page 1
<b>Controls, Indicators, and Inputs/Outputs</b> .....	<b>page 2</b>
<b>Functional Theory of Operation</b> .....	<b>page 3</b>
RF Signal Path .....	page 3
Output Power Control .....	page 3
Sense and Detect Circuitry .....	page 4
Cooling Fans Control Circuitry .....	page 6

<b>STATION CONTROL CIRCUITRY</b>
----------------------------------

<b>STATION CONTROL MODULE (CLN6960/CLN6961)</b> .....	<b>68P81094E76</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
Overview of Circuitry .....	page 2
<b>Controls, Indicators, and Inputs/Outputs</b> .....	<b>page 3</b>
<b>Functional Theory of Operation</b> .....	<b>page 4</b>
Host Microprocessor/Host ASIC Circuitry .....	page 4
Non–Volatile Memory .....	page 5
DRAM Memory .....	page 5
External Line Interface Circuitry .....	page 6
Digital Signal Processor (DSP) and DSP ASIC Circuitry .....	page 7
Station Reference Circuitry .....	page 8
HDLC Bus Control Circuitry .....	page 8
Audio Interface Circuitry .....	page 9
Input/Output Ports .....	page 10
6809/MRTI Interface Circuitry .....	page 10
Front Panel LEDs and Switches .....	page 11
Supply Voltages Circuitry .....	page 11

<b>STATION CONTROL MODULE (CLN1614)</b> .....	<b>68P81096E87</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
Overview of Circuitry .....	page 2
<b>Controls, Indicators, and Inputs/Outputs</b> .....	<b>page 4</b>
<b>Functional Theory of Operation (CLN7060A Control Board)</b> .....	<b>page 6</b>
Host Microprocessor/Host ASIC Circuitry .....	page 6
Non–Volatile Memory .....	page 7
DRAM Memory .....	page 7
External Line Interface Circuitry .....	page 8
Digital Signal Processor (DSP) and DSP ASIC Circuitry .....	page 9
Station Reference Circuitry .....	page 10
HDLC Bus Control Circuitry .....	page 10
Audio Interface Circuitry .....	page 11
Input/Output Ports .....	page 12
6809/MRTI Interface Circuitry .....	page 12
Supply Voltages Circuitry .....	page 13

— *continued on next page* —

<b>Functional Theory of Operation (CLN7098A LED Board)</b> .....	<b>page 14</b>
Front Panel LEDs and Switches .....	page 14
Front Panel Connectors .....	page 14

## **WIRELINE CIRCUITRY**

<b>WIRELINE INTERFACE BOARD (4–WIRE)</b> .....	<b>68P81094E77</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
Overview of Circuitry .....	page 1
<b>Controls, Indicators, and Inputs/Outputs</b> .....	<b>page 2</b>
<b>Functional Theory of Operation</b> .....	<b>page 3</b>
Functional Overview .....	page 3
Description of Audio/Data Signal Paths .....	page 7
<b>WIRELINE INTERFACE MODULE (8–WIRE)</b> .....	<b>68P81094E78</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
Overview of Circuitry .....	page 1
<b>Controls, Indicators, and Inputs/Outputs</b> .....	<b>page 2</b>
<b>Functional Theory of Operation</b> .....	<b>page 3</b>
Functional Overview .....	page 3
Description of Audio/Data Signal Paths .....	page 7

## **STATION BACKPLANE**

<b>STATION BACKPLANE BOARD</b> .....	<b>68P81086E33</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
<b>Location of Backplane Connectors</b> .....	<b>page 2</b>
<b>Backplane Connectors Information</b> .....	<b>page 3</b>

## **STATION POWER SUPPLY MODULES**

<b>265W POWER SUPPLY MODULE (ac input)</b> .....	<b>68P81096E09</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
Power Supply Module Simplified Block Diagram .....	page 2
Overview of Circuitry .....	page 3
<b>Performance Specifications</b> .....	<b>page 6</b>
<b>Controls, Indicators, and Inputs/Outputs</b> .....	<b>page 7</b>
<b>Functional Theory of Operation (AC-to-DC Converter Board)</b> .....	<b>page 8</b>
Input Conditioning Circuitry .....	page 8
Startup Delay Circuitry .....	page 8
Boost/Power Factor Correction Circuitry .....	page 9
Battery Revert Trigger Circuitry .....	page 9
VCC Supply Circuitry .....	page 9
LED Status Indicators .....	page 10
<b>Functional Theory of Operation (DC-to-DC Converter Board)</b> .....	<b>page 11</b>
+14V Main Supply Circuitry .....	page 11

— *continued on next page* —

+5V Supply Circuitry .....	page 12
Battery Charger Control Circuitry .....	page 12
Reference Voltage Circuitry .....	page 12
Diagnostics Circuitry .....	page 13
Address Decode Circuitry .....	page 13
Startup/Shutdown Control Circuitry .....	page 14
<b>Functional Theory of Operation (Battery Charger/Revert Board) .....</b>	<b>page 15</b>
Charger Supply Circuitry .....	page 15
Pulse Width Modulator Circuitry .....	page 16
Battery Revert Circuitry .....	page 16
Current Mode Controller Circuitry .....	page 16
SPI Bus Interface Circuitry .....	page 17
Shutdown Circuitry .....	page 17
Local Supplies Circuitry .....	page 17
<b>625W POWER SUPPLY MODULE (ac input) .....</b>	<b>68P81095E88</b>
<b>Description .....</b>	<b>page 1</b>
<b>Performance Specifications .....</b>	<b>page 6</b>
<b>Controls, Indicators, and Inputs/Outputs .....</b>	<b>page 7</b>
<b>Functional Theory of Operation (AC-to-DC Converter Board) .....</b>	<b>page 8</b>
Input Conditioning Circuitry .....	page 8
Startup Delay Circuitry .....	page 8
Boost/Power Factor Correction Circuitry .....	page 9
Battery Revert Trigger Circuitry .....	page 9
VCC Supply Circuitry .....	page 9
LED Status Indicators .....	page 10
<b>Functional Theory of Operation (DC-to-DC Converter Board) .....</b>	<b>page 11</b>
+28V Main Supply Circuitry .....	page 11
+14V Supply Circuitry .....	page 12
+5V Supply Circuitry .....	page 12
Battery Charger Control Circuitry .....	page 13
Reference Voltage Circuitry .....	page 13
Diagnostics Circuitry .....	page 13
Address Decode Circuitry .....	page 14
Startup/Shutdown Control Circuitry .....	page 14
<b>Functional Theory of Operation (Battery Charger/Revert Board) .....</b>	<b>page 15</b>
Charger Supply Circuitry .....	page 15
Pulse Width Modulator Circuitry .....	page 16
Battery Revert Circuitry .....	page 16
Current Mode Controller Circuitry .....	page 16
SPI Bus Interface Circuitry .....	page 17
Shutdown Circuitry .....	page 17
Local Supplies Circuitry .....	page 17
<b>210W POWER SUPPLY MODULE (12/24 and 48/60 V dc input) .....</b>	<b>68P81085E12</b>
<b>Description .....</b>	<b>page 1</b>
General Description .....	page 1
Overview of Circuitry .....	page 2
<b>Performance Specifications .....</b>	<b>page 3</b>

— continued on next page —

<b>Controls, Indicators, and Inputs/Outputs</b> .....	<b>page 4</b>
<b>Functional Theory of Operation</b> .....	<b>page 5</b>
Input Conditioning Circuitry .....	page 5
Startup Inverter Circuitry .....	page 6
Main Inverter Circuitry .....	page 6
+5 V Inverter Circuitry .....	page 7
Diagnostics Circuitry .....	page 8
Address Decode Circuitry .....	page 8
<b>600W POWER SUPPLY MODULE (24 V dc input)</b> .....	<b>68P81090E44</b>
<b>Description</b> .....	<b>page 1</b>
<b>Performance Specifications</b> .....	<b>page 3</b>
<b>Controls, Indicators, and Inputs/Outputs</b> .....	<b>page 4</b>
<b>Functional Theory of Operation</b> .....	<b>page 5</b>
Input Conditioning Circuitry .....	page 5
Startup Inverter Circuitry .....	page 6
Main Inverter Circuitry .....	page 6
+14.2 V Inverter Circuitry .....	page 7
+5 V Inverter Circuitry .....	page 7
Diagnostics Circuitry .....	page 8
Address Decode Circuitry .....	page 8
<b>600W POWER SUPPLY MODULE (48/60 V dc input)</b> .....	<b>68P81096E84</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
Power Supply Module Simplified Block Diagram .....	page 2
Overview of Circuitry .....	page 3
<b>Performance Specifications</b> .....	<b>page 4</b>
<b>Controls, Indicators, and Inputs/Outputs</b> .....	<b>page 5</b>
<b>Functional Theory of Operation (DC Input Board)</b> .....	<b>page 6</b>
Input Conditioning Circuitry .....	page 6
Inverter Circuitry A and B .....	page 7
Output Filter Circuitry .....	page 7
<b>Functional Theory of Operation (DC Output Board)</b> .....	<b>page 8</b>
Inverters A/B Control Circuitry .....	page 8
+14.2 V Supply Circuitry .....	page 9
+5 V Supply Circuitry .....	page 9
Reference Voltage Circuitry .....	page 9
Diagnostics Circuitry .....	page 10
Address Decode Circuitry .....	page 10
Startup/Shutdown Control Circuitry .....	page 11

## **ANCILLARY EQUIPMENT**

### **ANTENNA RELAY OPTION**

<b>ANTENNA RELAY (Option X371AA)</b> .....	<b>68P81086E22</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
<b>Input and Output Connections</b> .....	<b>page 2</b>
<b>Option Complement</b> .....	<b>page 3</b>

— continued on next page —



Performance Specifications .....	page 3
Mounting Locations .....	page 4
Functional Theory of Operation .....	page 5

**TRIPLE CIRCULATOR OPTIONS**

<b>VHF TRIPLE CIRCULATOR OPTION (Options X676AA–AC) .....</b>	<b>68P81086E34</b>
<b>Description .....</b>	<b>page 1</b>
General Description .....	page 1
<b>Options Complement .....</b>	<b>page 2</b>
<b>Performance Specifications .....</b>	<b>page 3</b>
<b>Inputs/Outputs .....</b>	<b>page 4</b>
<b>Functional Theory of Operation .....</b>	<b>page 5</b>
<b>UHF TRIPLE CIRCULATOR OPTION (Options X676AN and X676AP) .....</b>	<b>68P81088E54</b>
<b>Description .....</b>	<b>page 1</b>
General Description .....	page 1
<b>Option Complement .....</b>	<b>page 2</b>
<b>Performance Specifications .....</b>	<b>page 3</b>
<b>Inputs/Outputs .....</b>	<b>page 4</b>
<b>Functional Theory of Operation .....</b>	<b>page 5</b>
<b>800/900 MHz TRIPLE CIRCULATOR OPTION (Options X676AR and X676AQ) .....</b>	<b>68P81090E86</b>
<b>Description .....</b>	<b>page 1</b>
General Description .....	page 1
<b>Option Complement .....</b>	<b>page 2</b>
<b>Performance Specifications .....</b>	<b>page 2</b>
<b>Inputs/Outputs .....</b>	<b>page 3</b>
<b>Functional Theory of Operation .....</b>	<b>page 4</b>

**DUPLEXER OPTIONS**

<b>VHF DUPLEXERS (OPTIONS X182AA, AB, AJ) .....</b>	<b>68P81086E71</b>
<b>Description .....</b>	<b>page 1</b>
General Description .....	page 1
<b>Adjustments and Inputs/Outputs .....</b>	<b>page 2</b>
<b>Performance Specifications .....</b>	<b>page 3</b>
<b>Typical Mounting Configuration .....</b>	<b>page 3</b>
<b>Field Tuning Procedure .....</b>	<b>page 6</b>
<b>UHF DUPLEXER (Options X182AC thru X182AF) .....</b>	<b>68P81087E94</b>
<b>Description .....</b>	<b>page 1</b>
General Description .....	page 1
<b>Inputs/Outputs .....</b>	<b>page 2</b>
<b>Performance Specifications .....</b>	<b>page 3</b>
<b>Typical Mounting Configuration .....</b>	<b>page 4</b>
<b>Field Tuning Procedure .....</b>	<b>page 6</b>
Field Tuning Overview .....	page 6
Required Test Equipment .....	page 6
Setting Up for Tuning Duplexer .....	page 7
Duplexer Tuning Procedure .....	page 8

<b>800/900 MHz DUPLEXERS (Options X182AG and X182AH)</b> .....	<b>68P81091E93</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
<b>Inputs/Outputs</b> .....	<b>page 2</b>
<b>Performance Specifications</b> .....	<b>page 3</b>
<b>Typical Mounting Configuration</b> .....	<b>page 3</b>

**MODEM OPTION**

<b>ASTRO MODEM CARD (OPTION X437AA)</b> .....	<b>68P81086E38</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1

**PERIPHERAL TRAY OPTION**

<b>PERIPHERAL TRAY (OPTION X696AA)</b> .....	<b>68P81086E37</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
<b>Options Complement</b> .....	<b>page 2</b>
<b>Peripheral Tray Contents and Inputs/Outputs</b> .....	<b>page 3</b>

**UHSO OPTION**

<b>ULTRA HIGH STABILITY OSCILLATOR (UHSO; Option X873AA)</b> .....	<b>68P81088E08</b>
<b>Description</b> .....	<b>page 1</b>
General Description .....	page 1
<b>Inputs/Outputs</b> .....	<b>page 2</b>
<b>Functional Theory of Operation</b> .....	<b>page 3</b>

**SYSTEM APPLICATIONS**

<b>RA/RT CONFIGURATION (TRC CONTROL)</b> .....	<b>68P81090E98</b>
<b>Overview</b> .....	<b>page 1</b>
<b>Electrical Connections (RF Link)</b> .....	<b>page 2</b>
Console to Station 1 Wiring Connections .....	page 2
Station 2 to Station 3 Wiring Connections .....	page 3
<b>Electrical Connections (Microwave Link)</b> .....	<b>page 4</b>
Console to Microwave Station 1 Wiring Connections .....	page 4
Microwave Station 2 to Station 3 Wiring Connections .....	page 5
<b>RSS Programming</b> .....	<b>page 6</b>
<b>TX Wireline Alignment</b> .....	<b>page 7</b>
Station 1 TX Wireline Alignment .....	page 7
Station 2 TX Wireline Alignment .....	page 7
Station 3 TX Wireline Alignment .....	page 8
 <b>RA/RT CONFIGURATION (E &amp; M Keying)</b> .....	 <b>68P81090E99</b>
<b>Overview</b> .....	<b>page 1</b>
<b>Electrical Connections (RF Link)</b> .....	<b>page 2</b>
Console to Station 1 Wiring Connections .....	page 2
Station 2 to Station 3 Wiring Connections .....	page 3

— *continued on next page* —

<b>Electrical Connections (Microwave Link)</b> .....	<b>page 5</b>
Console to Microwave Station 1 Wiring Connections .....	page 5
Microwave Station 2 to Station 3 Wiring Connections .....	page 6
<b>RSS Programming</b> .....	<b>page 8</b>
<b>TX Wireline Alignment</b> .....	<b>page 9</b>
Station 1 TX Wireline Alignment .....	page 9
Station 2 TX Wireline Alignment .....	page 9
Station 3 TX Wireline Alignment .....	page 10
<b>FALL BACK IN-CABINET REPEAT FEATURE</b> .....	<b>68P81095E96</b>
<b>Overview</b> .....	<b>page 1</b>
<b>Configuring the FBICR Feature</b> .....	<b>page 4</b>
<b>MAIN / STANDBY CONFIGURATION</b> .....	<b>68P81095E89</b>
<b>Overview</b> .....	<b>page 1</b>
<b>Electrical Connections</b> .....	<b>page 2</b>
<b>Setting Wireline Impedance Jumpers</b> .....	<b>page 4</b>
<b>RSS Programming</b> .....	<b>page 5</b>
<b>Main/Standby Operation</b> .....	<b>page 6</b>
<b>Customizing Main/Standby Operation</b> .....	<b>page 8</b>
<b>FAST KEYUP FEATURE</b> .....	<b>68P80800A02</b>
<b>Overview</b> .....	<b>page 1</b>
<b>Electrical Connections</b> .....	<b>page 2</b>
<b>RSS Programming</b> .....	<b>page 4</b>
<b>Fast Keyup Performance Characteristics</b> .....	<b>page 5</b>
<b>DUAL CONTROL OF GATED ADDRESS VIA TRC AND SAM</b> .....	<b>68P81096E11</b>
<b>Overview</b> .....	<b>page 1</b>
<b>Station RSS Programming</b> .....	<b>page 4</b>
<b>SAM RSS Programming</b> .....	<b>page 8</b>
<b>INPUT/OUTPUT SPECIFICATIONS FOR EXTERNAL CONTROLLERS</b> .....	<b>68P81096E86</b>
<b>Overview</b> .....	<b>page 1</b>
<b>Electrical Connections</b> .....	<b>page 2</b>
<b>Electrical Characteristics</b> .....	<b>page 3</b>
<b>Editing Wildcard Tables</b> .....	<b>page 8</b>
<b>SERIAL INTERFACE SPECIFICATIONS</b> .....	<b>68P81131E57</b>
<b>Overview</b> .....	<b>page 1</b>
<b>Making Serial Connection to Station</b> .....	<b>page 1</b>
<b>Entering "RSS Mode"</b> .....	<b>page 3</b>
<b>Supported Commands</b> .....	<b>page 4</b>
<b>Important Things to Know</b> .....	<b>page 12</b>

# MODEL AND OPTION SELECTION PROCEDURE (INCLUDES MODEL/OPTION COMPLEMENTS)

The following equipment ordering scenario is used by the sales representative to equip a *Quantar* station with the proper hardware and firmware for specific system types and customer-defined options and features. The scenario is described here to explain the process and to show the structure and contents of the various options and models.

**1**

The sales model is T5365A (as translated from C99ED/001C).

**NOTE:** *The Sales Model includes only a TRN7795A Base Station Nameplate. Equipping the station with the proper modules is accomplished by ordering additional options, as described in the following steps.*

**2**

A System Family Option must be selected as follows:

System Type	Family Option	VHF	UHF	800 MHZ	900 MHZ
Conventional Analog	X597	✓	✓	✓	✓
Conventional <i>ASTRO</i> VSELP	X599	✓	✓	✓	
Conventional <i>ASTRO</i> CAI	X806	✓	✓	✓	
6809 Trunking Analog	X997	✓	✓	✓	✓
6809 Trunking <i>ASTRO</i> VSELP	X992	✓	✓	✓	
6809 Trunking <i>ASTRO</i> CAI	X900	✓	✓	✓	
SMARTZONE 6809 Trunking <i>ASTRO</i> VSELP	X989	✓	✓	✓	
SMARTZONE 6809 Trunking <i>ASTRO</i> CAI	X897	✓	✓	✓	
SMARTZONE <i>IntelliRepeater</i> Trunking	X999	✓	✓	✓	✓
SMARTZONE <i>IntelliRepeater</i> <i>ASTRO</i> VSELP	X990	✓	✓	✓	
SMARTZONE <i>IntelliRepeater</i> <i>ASTRO</i> CAI	X898	✓	✓	✓	

**(Continued)**

### 3

The following tables show the available power and band options.

## VHF

Frequency Range \ Output Power	25W	125W
VHF High Band Range 1 (132–154 MHz)	Option X330AA	Option X530AA
VHF High Band Range 2 (150–174 MHz)		Option X530AB

**NOTE:** Customer–specified frequencies which are in the 150–154 MHz range are automatically assigned to Range 2 by Order Processing **unless** one of the following options is ordered:

**X325 (125W only)** — Specifies Range 1 Exciter (overrides automatic assignment to Range 2) where the transmit frequency is between 150 and 154 MHz.

**X326** — Specifies Range 1 Receiver (overrides automatic assignment to Range 2) where the receive frequency is between 150 and 154 MHz.

These options are typically used to ensure that the transmit and receive frequencies are in the required customer range; this is required for use with a duplexer module.

## UHF

Frequency Range \ Output Power	25W	100W	110W
UHF Range 0 (380–433 MHz)	Not Available	Not Available	Option X640AK
UHF Range 1 (403–433 MHz)	Option X240AA	Not Available	Option X640AA
UHF Range 2 (438–470 MHz)	Option X240AB	Not Available	Option X640AB
UHF Range 3 (470–494 MHz)	Not Available	Not Available	Option X640AC
UHF Range 4 (494–520 MHz)	Not Available	Option X640AD	Not Available

## 800/900 MHz

Frequency Range \ Output Power	20W	100W
800 MHz	Option X250AA	Option X750AA
900 MHz	Not Available	Option X660AA

(Continued)

**4**

If no other options are selected, Motorola's Order Processing appends the appropriate standard options (based on power and frequency band) to complete the station equipment list. The tables below show the completed equipment lists for the available options. If additional options are desired, they must be added to the initial order form. Step 5 lists the available options and the impact each has on the standard equipment configuration.

**VHF**

**OPTION X330AA SELECTED IN STEP 3  
(VHF Range 1; 25W Transmitter)**

**OPTION X330AA SELECTED IN STEP 3  
(VHF Range 2; 25W Transmitter)**

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X330AA</b> TLD3110B TKN8699A TRN7480A TRN7708A CHN6100A	<b>VHF High Band Ranges 1 &amp; 2; 25W Transmitter</b> 25 W Power Amplifier Module (VHF R1 & R2) PA-to-Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X131AA</b> CLD1270A CHN6100A	<b>Exciter Module (VHF High-Band Range 1)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)
	<b>X333AA</b> CLD1250A CLN7334A TRN7799A CHN6100A	<b>Receiver Module (VHF High-Band Range 1)</b> Receiver Module (Board, Preselector, Hardware) Receiver Module Front Panel VHF/UHF Tuning Kit Anti-Vibration/EFI Screws (2)
	<b>X43AB</b> CPN1049B CLN7261A CPN6086A CHN6100A	<b>Power Supply Assembly</b> 265W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)
	<b>X621AY</b> CLN1614A TRN7476A TKN8751A	<b>Station Control Module (SCM); Standard EPIC III</b> Station Control Module SCM Internal Speaker Internal Speaker Cable
	<b>X222AB</b> CGN6157A CHN6100A	<b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)
	<b>X216AA</b> CLN6955A TKN8731A CLN6816A	<b>Wireline Interface Module (WIM) (4-wire)</b> Wireline Interface Board WIM Cable RFI Suppressor
	<b>C831AA</b> TRN7479A	<b>Card Cage</b> Card Cage Assembly (12")
	<b>X142AA</b> TRN7494A	<b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)
	<b>X249AW</b> TKN8753A TKN9126A	<b>RF Cabling</b> Receiver mini-UHF to N-type coax cable Transmitter N-type to N-type coax cable
	<b>X187AA</b> TRN7663A	<b>Domestic Power Cable</b> AC Line Cord
	<b>X163AD</b> TRN7696A CHN6100A	<b>Blank Panels</b> Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)
	<b>X842AB</b> CLN6885A	<b>Ethernet Termination Kit</b> Ethernet Termination Hardware
	<b>X430AA</b> THN6700A TTN5040A	<b>12" Cabinet</b> 12" x 20" Cabinet Grommet
	<b>X362AA</b> TBN6625A	<b>Packing</b> Packing for 12" Cabinet
	<b>X436AA</b> 68P81095E05	<b>Instruction Manual</b> <i>Quantar</i> Station Functional Manual

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X330AA</b> TLD3110B TKN8699A TRN7480A TRN7708A CHN6100A	<b>VHF High Band Ranges 1 &amp; 2; 25W Transmitter</b> 25 W Power Amplifier Module (VHF R1 & R2) PA-to-Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X131AB</b> CLD1280A CHN6100A	<b>Exciter Module (VHF High-Band Range 2)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)
	<b>X333AB</b> CLD1260A CLN7334A TRN7799A CHN6100A	<b>Receiver Module (VHF High-Band Range 2)</b> Receiver Module (Board, Preselector, Hardware) Receiver Module Front Panel VHF/UHF Tuning Kit Anti-Vibration/EFI Screws (2)
	<b>X43AB</b> CPN1049B CLN7261A CPN6086A CHN6100A	<b>Power Supply Assembly</b> 265W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)
	<b>X621AY</b> CLN1614A TRN7476A TKN8751A	<b>Station Control Module (SCM); Standard EPIC III</b> Station Control Module SCM Internal Speaker Internal Speaker Cable
	<b>X222AB</b> CGN6157A CHN6100A	<b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)
	<b>X216AA</b> CLN6955A TKN8731A CLN6816A	<b>Wireline Interface Module (WIM) (4-wire)</b> Wireline Interface Board WIM Cable RFI Suppressor
	<b>C831AA</b> TRN7479A	<b>Card Cage</b> Card Cage Assembly (12")
	<b>X142AA</b> TRN7494A	<b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)
	<b>X249AW</b> TKN8753A TKN9126A	<b>RF Cabling</b> Receiver mini-UHF to N-type coax cable Transmitter N-type to N-type coax cable
	<b>X187AA</b> TRN7663A	<b>Domestic Power Cable</b> AC Line Cord
	<b>X163AD</b> TRN7696A CHN6100A	<b>Blank Panels</b> Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)
	<b>X842AB</b> CLN6885A	<b>Ethernet Termination Kit</b> Ethernet Termination Hardware
	<b>X430AA</b> THN6700A TTN5040A	<b>12" Cabinet</b> 12" x 20" Cabinet Grommet
	<b>X362AA</b> TBN6625A	<b>Packing</b> Packing for 12" Cabinet
	<b>X436AA</b> 68P81095E05	<b>Instruction Manual</b> <i>Quantar</i> Station Functional Manual

(Continued)

# VHF

## OPTION X530AA SELECTED IN STEP 3 (VHF Range 1; 125W Transmitter)

## OPTION X530AB SELECTED IN STEP 3 (VHF Range 2; 125W Transmitter)

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X530AA</b> TLD3101F TKN8699A TRN7480A TRN7708A CHN6100A	<b>VHF High Band Range 1; 125W Transmitter</b> 125 W Power Amplifier Module (VHF R1) PA-to-Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X131AA</b> CLD1270A CHN6100A	<b>Exciter Module (VHF High-Band Range 1)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)
	<b>X333AA</b> CLD1250A CLN7334A TRN7799A CHN6100A	<b>Receiver Module (VHF High-Band Range 1)</b> Receiver Module (Board, Preselector, Hardware) Receiver Module Front Panel VHF/UHF Tuning Kit Anti-Vibration/EFI Screws (2)
	<b>X43AA</b> CPN1047A CLN7261A CPN6086A CHN6100A	<b>Power Supply Assembly</b> 625W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)
	<b>X621AY</b> CLN1614A TRN7476A TKN8751A	<b>Station Control Module (SCM); Standard EPIC III</b> Station Control Module SCM Internal Speaker Internal Speaker Cable
	<b>X222AB</b> CGN6157A CHN6100A	<b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)
	<b>X216AA</b> CLN6955A TKN8731A CLN6816A	<b>Wireline Interface Module (WIM) (4-wire)</b> Wireline Interface Board WIM Cable RFI Suppressor
	<b>C831AA</b> TRN7479A	<b>Card Cage</b> Card Cage Assembly (12")
	<b>X142AA</b> TRN7494A	<b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)
	<b>X249AW</b> TKN8753A TKN9126A	<b>RF Cabling</b> Receiver mini-UHF to N-type coax cable Transmitter N-type to N-type coax cable
	<b>X187AA</b> TRN7663A	<b>Domestic Power Cable</b> AC Line Cord
	<b>X163AD</b> TRN7696A CHN6100A	<b>Blank Panels</b> Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)
	<b>X842AB</b> CLN6885A	<b>Ethernet Termination Kit</b> Ethernet Termination Hardware
	<b>X430AA</b> THN6700A TTN5040A	<b>12" Cabinet</b> 12" x 20" Cabinet Grommet
	<b>X362AA</b> TBN6625A	<b>Packing</b> Packing for 12" Cabinet
	<b>X436AA</b> 68P81095E05	<b>Instruction Manual</b> Quantar Station Functional Manual

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X530AB</b> TLD3102F TKN8699A TRN7480A TRN7708A CHN6100A	<b>VHF High Band Range 2; 125W Transmitter</b> 125 W Power Amplifier Module (VHF R2) PA-to-Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X131AB</b> CLD1280A CHN6100A	<b>Exciter Module (VHF High-Band Range 2)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)
	<b>X333AB</b> CLD1260A CLN7334A TRN7799A CHN6100A	<b>Receiver Module (VHF High-Band Range 2)</b> Receiver Module (Board, Preselector, Hardware) Receiver Module Front Panel VHF/UHF Tuning Kit Anti-Vibration/EFI Screws (2)
	<b>X43AA</b> CPN1047A CLN7261A CPN6086A CHN6100A	<b>Power Supply Assembly</b> 625W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)
	<b>X621AY</b> CLN1614A TRN7476A TKN8751A	<b>Station Control Module (SCM); Standard EPIC III</b> Station Control Module SCM Internal Speaker Internal Speaker Cable
	<b>X222AB</b> CGN6157A CHN6100A	<b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)
	<b>X216AA</b> CLN6955A TKN8731A CLN6816A	<b>Wireline Interface Module (WIM) (4-wire)</b> Wireline Interface Board WIM Cable RFI Suppressor
	<b>C831AA</b> TRN7479A	<b>Card Cage</b> Card Cage Assembly (12")
	<b>X142AA</b> TRN7494A	<b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)
	<b>X249AW</b> TKN8753A TKN9126A	<b>RF Cabling</b> Receiver mini-UHF to N-type coax cable Transmitter N-type to N-type coax cable
	<b>X187AA</b> TRN7663A	<b>Domestic Power Cable</b> AC Line Cord
	<b>X163AD</b> TRN7696A CHN6100A	<b>Blank Panels</b> Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)
	<b>X842AB</b> CLN6885A	<b>Ethernet Termination Kit</b> Ethernet Termination Hardware
	<b>X430AA</b> THN6700A TTN5040A	<b>12" Cabinet</b> 12" x 20" Cabinet Grommet
	<b>X362AA</b> TBN6625A	<b>Packing</b> Packing for 12" Cabinet
	<b>X436AA</b> 68P81095E05	<b>Instruction Manual</b> Quantar Station Functional Manual

(Continued)

# UHF

## OPTION X640AK SELECTED IN STEP 3 (Quantar UHF; Range 0, 110W Transmitter)

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X640AK</b> CTX1146A TKN8699A TRN7480A TRN7708A CHN6100A	<b>Quantar UHF R0; 110W Transmitter</b> 110 W Power Amplifier Module (UHF R0) PA-to-Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X132AV</b> CLX1000A CHN6100A  <b>X334BB</b> CRX1027A CLN7884A TRN7799A CHN6100A  <b>X43AA</b> CPN1047E CLN7261A CPN6086A CHN6100A  <b>X621AB</b> CLN6961D TRN7476A TKN8751A  <b>X222AB</b> TGN6157A CHN6100A  <b>X216AA</b> CLN6955B TKN8731A CLN6816A  <b>C831AA</b> TRN7479A  <b>X142AA</b> TRN7494A  <b>X249AW</b> TKN8753A TKN9126A  <b>X187AA</b> TRN7663A  <b>X163AD</b> TRN7696A CHN6100A  <b>X842AB</b> CLN6885A  <b>X430AA</b> THN6700A TTN5040B  <b>X362AA</b> TBN6625A  <b>X436AJ</b> 68P81095E05	<b>Exciter Module (UHF, R0)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)  <b>Receiver Module (UHF, R0)</b> Receiver Module (Board, Preselector, Hardware) Receiver Module Front Panel w/Tuning Screw Cover VHF/UHF Tuning Kit Anti-Vibration/EFI Screws (2)  <b>Power Supply Assembly</b> 625W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)  <b>Station Control Module (SCM); Standard EPIC II</b> Station Control Module SCM Internal Speaker Internal Speaker Cable  <b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)  <b>Wireline Interface Module (WIM) (4-wire)</b> Wireline Interface Board WIM Cable RFI Suppressor  <b>Card Cage</b> Card Cage Assembly (12")  <b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)  <b>RF Cabling</b> Receiver mini-UHF to N-type coax cable Transmitter N-type to N-type coax cable  <b>Domestic Power Cable</b> AC Line Cord  <b>Blank Panels</b> Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)  <b>Ethernet Termination Kit</b> Ethernet Termination Hardware  <b>12" Cabinet</b> 12" x 20" Cabinet Grommet  <b>Packing</b> Packing for 12" Cabinet  <b>Instruction Manual</b> Quantar Station Functional Manual

(Continued)



# UHF

**OPTION X240AA SELECTED IN STEP 3**  
**(Quantar UHF; Range 1, 25W Transmitter)**

**OPTION X640AA SELECTED IN STEP 3**  
**(Quantar UHF; Range 1, 110W Transmitter)**

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X240AA</b> TLE2731A TKN8699A TRN7480A TRN7708A CHN6100A	<b>Quantar UHF R1; 25W Transmitter</b> 25 W Power Amplifier Module (UHF R1) PA-to-Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X132AA</b> CLE1230A CHN6100A	<b>Exciter Module (UHF, R1)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)
	<b>X334AA</b> CLE1190A CLN7334A TRN7799A CHN6100A	<b>Receiver Module (UHF, R1)</b> Receiver Module (Board, Preselector, Hardware) Receiver Module Front Panel VHF/UHF Tuning Kit Anti-Vibration/EFI Screws (2)
	<b>X43AB</b> CPN1049B CLN7261A CPN6086A CHN6100A	<b>Power Supply Assembly</b> 265W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)
	<b>X621AY</b> CLN1614A TRN7476A TKN8751A	<b>Station Control Module (SCM); Standard EPIC III</b> Station Control Module SCM Internal Speaker Internal Speaker Cable
	<b>X222AB</b> CGN6157A CHN6100A	<b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)
	<b>X216AA</b> CLN6955A TKN8731A CLN6816A	<b>Wireline Interface Module (WIM) (4-wire)</b> Wireline Interface Board WIM Cable RFI Suppressor
	<b>C831AA</b> TRN7479A	<b>Card Cage</b> Card Cage Assembly (12")
	<b>X142AA</b> TRN7494A	<b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)
	<b>X249AW</b> TKN8753A TKN9126A	<b>RF Cabling</b> Receiver mini-UHF to N-type coax cable Transmitter N-type to N-type coax cable
	<b>X187AA</b> TRN7663A	<b>Domestic Power Cable</b> AC Line Cord
	<b>X163AD</b> TRN7696A CHN6100A	<b>Blank Panels</b> Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)
	<b>X842AB</b> CLN6885A	<b>Ethernet Termination Kit</b> Ethernet Termination Hardware
	<b>X430AA</b> THN6700A TTN5040A	<b>12" Cabinet</b> 12" x 20" Cabinet Grommet
	<b>X362AA</b> TBN6625A	<b>Packing</b> Packing for 12" Cabinet
	<b>X436AJ</b> 68P81095E05	<b>Instruction Manual</b> Quantar Station Functional Manual

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X640AA</b> TTE2061A TKN8699A TRN7480A TRN7708A CHN6100A	<b>Quantar UHF R1; 110W Transmitter</b> 110 W Power Amplifier Module (UHF R1) PA-to-Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X132AA</b> CLE1230A CHN6100A	<b>Exciter Module (UHF, R1)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)
	<b>X334AA</b> CLE1190A CLN7334A TRN7799A CHN6100A	<b>Receiver Module (UHF, R1)</b> Receiver Module (Board, Preselector, Hardware) Receiver Module Front Panel VHF/UHF Tuning Kit Anti-Vibration/EFI Screws (2)
	<b>X43AA</b> CPN1047A CLN7261A CPN6086A CHN6100A	<b>Power Supply Assembly</b> 625W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)
	<b>X621AY</b> CLN1614A TRN7476A TKN8751A	<b>Station Control Module (SCM); Standard EPIC III</b> Station Control Module SCM Internal Speaker Internal Speaker Cable
	<b>X222AB</b> CGN6157A CHN6100A	<b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)
	<b>X216AA</b> CLN6955A TKN8731A CLN6816A	<b>Wireline Interface Module (WIM) (4-wire)</b> Wireline Interface Board WIM Cable RFI Suppressor
	<b>C831AA</b> TRN7479A	<b>Card Cage</b> Card Cage Assembly (12")
	<b>X142AA</b> TRN7494A	<b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)
	<b>X249AW</b> TKN8753A TKN9126A	<b>RF Cabling</b> Receiver mini-UHF to N-type coax cable Transmitter N-type to N-type coax cable
	<b>X187AA</b> TRN7663A	<b>Domestic Power Cable</b> AC Line Cord
	<b>X163AD</b> TRN7696A CHN6100A	<b>Blank Panels</b> Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)
	<b>X842AB</b> CLN6885A	<b>Ethernet Termination Kit</b> Ethernet Termination Hardware
	<b>X430AA</b> THN6700A TTN5040A	<b>12" Cabinet</b> 12" x 20" Cabinet Grommet
	<b>X362AA</b> TBN6625A	<b>Packing</b> Packing for 12" Cabinet
	<b>X436AJ</b> 68P81095E05	<b>Instruction Manual</b> Quantar Station Functional Manual

**(Continued)**

# UHF

### OPTION X240AB SELECTED IN STEP 3 (Quantar UHF; Range 2, 25W Transmitter)

### OPTION X640AB SELECTED IN STEP 3 (Quantar UHF; Range 2, 110W Transmitter)

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X240AB</b> TLE2732A TKN8699A TRN7480A TRN7708A CHN6100A	<b>Quantar UHF R2; 25W Transmitter</b> 25 W Power Amplifier Module (UHF R2) PA-to-Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X132AB</b> CLE1240A CHN6100A	<b>Exciter Module (UHF, R2)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)
	<b>X334AB</b> CLE1200A CLN7334A TRN7799A CHN6100A	<b>Receiver Module (UHF, R2)</b> Receiver Module (Board, Preselector, Hardware) Receiver Module Front Panel VHF/UHF Tuning Kit Anti-Vibration/EFI Screws (2)
	<b>X43AB</b> CPN1049B CLN7261A CPN6086A CHN6100A	<b>Power Supply Assembly</b> 265W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)
	<b>X621AY</b> CLN1614A TRN7476A TKN8751A	<b>Station Control Module (SCM); Standard EPIC III</b> Station Control Module SCM Internal Speaker Internal Speaker Cable
	<b>X222AB</b> CGN6157A CHN6100A	<b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)
	<b>X216AA</b> CLN6955A TKN8731A CLN6816A	<b>Wireline Interface Module (WIM) (4-wire)</b> Wireline Interface Board WIM Cable RFI Suppressor
	<b>C831AA</b> TRN7479A	<b>Card Cage</b> Card Cage Assembly (12")
	<b>X142AA</b> TRN7494A	<b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)
	<b>X249AW</b> TKN8753A TKN9126A	<b>RF Cabling</b> Receiver mini-UHF to N-type coax cable Transmitter N-type to N-type coax cable
	<b>X187AA</b> TRN7663A	<b>Domestic Power Cable</b> AC Line Cord
	<b>X163AD</b> TRN7696A CHN6100A	<b>Blank Panels</b> Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)
	<b>X842AB</b> CLN6885A	<b>Ethernet Termination Kit</b> Ethernet Termination Hardware
	<b>X430AA</b> THN6700A TTN5040A	<b>12" Cabinet</b> 12" x 20" Cabinet Grommet
	<b>X362AA</b> TBN6625A	<b>Packing</b> Packing for 12" Cabinet
	<b>X436AJ</b> 68P81095E05	<b>Instruction Manual</b> Quantar Station Functional Manual

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X640AB</b> TTE2062A TKN8699A TRN7480A TRN7708A CHN6100A	<b>Quantar UHF R2; 110W Transmitter</b> 110 W Power Amplifier Module (UHF R2) PA-to-Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X132AB</b> CLE1240A CHN6100A	<b>Exciter Module (UHF, R2)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)
	<b>X334AB</b> CLE1200A CLN7334A TRN7799A CHN6100A	<b>Receiver Module (UHF, R2)</b> Receiver Module (Board, Preselector, Hardware) Receiver Module Front Panel VHF/UHF Tuning Kit Anti-Vibration/EFI Screws (2)
	<b>X43AA</b> CPN1047A CLN7261A CPN6086A CHN6100A	<b>Power Supply Assembly</b> 625W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)
	<b>X621AY</b> CLN1614A TRN7476A TKN8751A	<b>Station Control Module (SCM); Standard EPIC III</b> Station Control Module SCM Internal Speaker Internal Speaker Cable
	<b>X222AB</b> CGN6157A CHN6100A	<b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)
	<b>X216AA</b> CLN6955A TKN8731A CLN6816A	<b>Wireline Interface Module (WIM) (4-wire)</b> Wireline Interface Board WIM Cable RFI Suppressor
	<b>C831AA</b> TRN7479A	<b>Card Cage</b> Card Cage Assembly (12")
	<b>X142AA</b> TRN7494A	<b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)
	<b>X249AW</b> TKN8753A TKN9126A	<b>RF Cabling</b> Receiver mini-UHF to N-type coax cable Transmitter N-type to N-type coax cable
	<b>X187AA</b> TRN7663A	<b>Domestic Power Cable</b> AC Line Cord
	<b>X163AD</b> TRN7696A CHN6100A	<b>Blank Panels</b> Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)
	<b>X842AB</b> CLN6885A	<b>Ethernet Termination Kit</b> Ethernet Termination Hardware
	<b>X430AA</b> THN6700A TTN5040A	<b>12" Cabinet</b> 12" x 20" Cabinet Grommet
	<b>X362AA</b> TBN6625A	<b>Packing</b> Packing for 12" Cabinet
	<b>X436AJ</b> 68P81095E05	<b>Instruction Manual</b> Quantar Station Functional Manual

(Continued)

# UHF

### OPTION X640AC SELECTED IN STEP 3 (Quantar UHF; Range 3, 110W Transmitter)

### OPTION X640AD SELECTED IN STEP 3 (Quantar UHF; Range 4, 100W Transmitter)

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X640AC</b> TTE2063A TKN8699A TRN7480A TRN7708A CHN6100A	<b>Quantar UHF R3; 110W Transmitter</b> 110 W Power Amplifier Module (UHF R3) PA-to-Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X132AC</b> CLE1250A CHN6100A	<b>Exciter Module (UHF, R3)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)
	<b>X334AC</b> CLE1210A CLN7334A TRN7799A CHN6100A	<b>Receiver Module (UHF, R3)</b> Receiver Module (Board, Preselector, Hardware) Receiver Module Front Panel VHF/UHF Tuning Kit Anti-Vibration/EFI Screws (2)
	<b>X43AA</b> CPN1047A CLN7261A CPN6086A CHN6100A	<b>Power Supply Assembly</b> 625W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)
	<b>X621AY</b> CLN1614A TRN7476A TKN8751A	<b>Station Control Module (SCM); Standard EPIC III</b> Station Control Module SCM Internal Speaker Internal Speaker Cable
	<b>X222AB</b> CGN6157A CHN6100A	<b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)
	<b>X216AA</b> CLN6955A TKN8731A CLN6816A	<b>Wireline Interface Module (WIM) (4-wire)</b> Wireline Interface Board WIM Cable RFI Suppressor
	<b>C831AA</b> TRN7479A	<b>Card Cage</b> Card Cage Assembly (12")
	<b>X142AA</b> TRN7494A	<b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)
	<b>X249AW</b> TKN8753A TKN9126A	<b>RF Cabling</b> Receiver mini-UHF to N-type coax cable Transmitter N-type to N-type coax cable
	<b>X187AA</b> TRN7663A	<b>Domestic Power Cable</b> AC Line Cord
	<b>X163AD</b> TRN7696A CHN6100A	<b>Blank Panels</b> Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)
	<b>X842AB</b> CLN6885A	<b>Ethernet Termination Kit</b> Ethernet Termination Hardware
	<b>X430AA</b> THN6700A TTN5040A	<b>12" Cabinet</b> 12" x 20" Cabinet Grommet
	<b>X362AA</b> TBN6625A	<b>Packing</b> Packing for 12" Cabinet
	<b>X436AJ</b> 68P81095E05	<b>Instruction Manual</b> Quantar Station Functional Manual

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X640AD</b> TTE2064A TKN8699A TRN7480A TRN7708A CHN6100A	<b>Quantar UHF R4; 100W Transmitter</b> 100 W Power Amplifier Module (UHF R4) PA-to-Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X132AD</b> CLE1260A CHN6100A	<b>Exciter Module (UHF, R4)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)
	<b>X334AD</b> CLE1220A CLN7334A TRN7799A CHN6100A	<b>Receiver Module (UHF, R4)</b> Receiver Module (Board, Preselector, Hardware) Receiver Module Front Panel VHF/UHF Tuning Kit Anti-Vibration/EFI Screws (2)
	<b>X43AA</b> CPN1047A CLN7261A CPN6086A CHN6100A	<b>Power Supply Assembly</b> 625W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)
	<b>X621AY</b> CLN1614A TRN7476A TKN8751A	<b>Station Control Module (SCM); Standard EPIC III</b> Station Control Module SCM Internal Speaker Internal Speaker Cable
	<b>X222AB</b> CGN6157A CHN6100A	<b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)
	<b>X216AA</b> CLN6955A TKN8731A CLN6816A	<b>Wireline Interface Module (WIM) (4-wire)</b> Wireline Interface Board WIM Cable RFI Suppressor
	<b>C831AA</b> TRN7479A	<b>Card Cage</b> Card Cage Assembly (12")
	<b>X142AA</b> TRN7494A	<b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)
	<b>X249AW</b> TKN8753A TKN9126A	<b>RF Cabling</b> Receiver mini-UHF to N-type coax cable Transmitter N-type to N-type coax cable
	<b>X187AA</b> TRN7663A	<b>Domestic Power Cable</b> AC Line Cord
	<b>X163AD</b> TRN7696A CHN6100A	<b>Blank Panels</b> Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)
	<b>X842AB</b> CLN6885A	<b>Ethernet Termination Kit</b> Ethernet Termination Hardware
	<b>X430AA</b> THN6700A TTN5040A	<b>12" Cabinet</b> 12" x 20" Cabinet Grommet
	<b>X362AA</b> TBN6625A	<b>Packing</b> Packing for 12" Cabinet
	<b>X436AJ</b> 68P81095E05	<b>Instruction Manual</b> Quantar Station Functional Manual

(Continued)

# 800 MHz

## OPTION X250AA SELECTED IN STEP 3 (800 MHz *Quantar*; 20W Transmitter)

## OPTION X750AA SELECTED IN STEP 3 (800 MHz *Quantar*; 100W Transmitter)

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X250AA</b> TLF1940A TKN8699A TRN7480A TRN7708A CHN6100A	<b>Quantar 800 MHz; 20W Transmitter</b> 20 W Power Amplifier Module (800 MHz) PA—to—Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X133AA</b> CLF1510A CHN6100A	<b>Exciter Module (800 MHz)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)
	<b>X335AA</b> CLF1530A CHN6100A	<b>Receiver Module (800 MHz)</b> Receiver Module (Board, Front Panel, Hardware) Anti-Vibration/EFI Screws (2)
	<b>X43AB</b> CPN1049B CLN7261A CPN6086A CHN6100A	<b>Power Supply Assembly</b> 265W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)
	<b>X621AY</b> CLN1614A TRN7476A TKN8751A	<b>Station Control Module (SCM); Standard EPIC III</b> Station Control Module SCM Internal Speaker Internal Speaker Cable
	<b>X222AB</b> CGN6157A CHN6100A	<b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)
	<b>X216AA</b> CLN6955A TKN8731A CLN6816A	<b>Wireline Interface Module (WIM) (4—wire)</b> Wireline Interface Board WIM Cable RFI Suppressor
	<b>C831AA</b> TRN7479A	<b>Card Cage</b> Card Cage Assembly (12")
	<b>X142AA</b> TRN7494A	<b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)
	<b>X249AW</b> TKN8753A TKN9126A	<b>RF Cabling</b> Receiver mini—UHF to N—type coax cable Transmitter N—type to N—type coax cable
	<b>X187AA</b> TRN7663A	<b>Domestic Power Cable</b> AC Line Cord
	<b>X163AL</b> TRN7695A TRN7696A CHN6100A	<b>Blank Panels</b> Single Slot Wide Blank Panel Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)
	<b>X842AB</b> CLN6885A	<b>Ethernet Termination Kit</b> Ethernet Termination Hardware
	<b>X430AA</b> THN6700A TTN5040A	<b>12" Cabinet</b> 12" x 20" Cabinet Grommet
	<b>X362AA</b> TBN6625A	<b>Packing</b> Packing for 12" Cabinet
	<b>X436AH</b> 68P81095E05	<b>Instruction Manual</b> <i>Quantar</i> Station Functional Manual

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X750AA</b> TLF1930C TKN8699A TRN7480A TRN7708A CHN6100A	<b>Quantar 800 MHz; 100W Transmitter</b> 100 W Power Amplifier Module (800 MHz) PA—to—Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X133AA</b> CLF1510A CHN6100A	<b>Exciter Module (800 MHz)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)
	<b>X335AA</b> CLF1530A CHN6100A	<b>Receiver Module (800 MHz)</b> Receiver Module (Board, Front Panel, Hardware) Anti-Vibration/EFI Screws (2)
	<b>X43AA</b> CPN1047A CLN7261A CPN6086A CHN6100A	<b>Power Supply Assembly</b> 625W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)
	<b>X621AY</b> CLN1614A TRN7476A TKN8751A	<b>Station Control Module (SCM); Standard EPIC III</b> Station Control Module SCM Internal Speaker Internal Speaker Cable
	<b>X222AB</b> CGN6157A CHN6100A	<b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)
	<b>X216AA</b> CLN6955A TKN8731A CLN6816A	<b>Wireline Interface Module (WIM) (4—wire)</b> Wireline Interface Board WIM Cable RFI Suppressor
	<b>C831AA</b> TRN7479A	<b>Card Cage</b> Card Cage Assembly (12")
	<b>X142AA</b> TRN7494A	<b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)
	<b>X249AW</b> TKN8753A TKN9126A	<b>RF Cabling</b> Receiver mini—UHF to N—type coax cable Transmitter N—type to N—type coax cable
	<b>X187AA</b> TRN7663A	<b>Domestic Power Cable</b> AC Line Cord
	<b>X163AL</b> TRN7695A TRN7696A CHN6100A	<b>Blank Panels</b> Single Slot Wide Blank Panel Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)
	<b>X842AB</b> CLN6885A	<b>Ethernet Termination Kit</b> Ethernet Termination Hardware
	<b>X430AA</b> THN6700A TTN5040A	<b>12" Cabinet</b> 12" x 20" Cabinet Grommet
	<b>X362AA</b> TBN6625A	<b>Packing</b> Packing for 12" Cabinet
	<b>X436AH</b> 68P81095E05	<b>Instruction Manual</b> <i>Quantar</i> Station Functional Manual

(Continued)

# 900 MHz

## OPTION X660AA SELECTED IN STEP 3 (900 MHz; 100W Transmitter)

Source	Option/ Kit	Description
<b>Option from Initial Sales Order</b>	<b>X660AA</b> TLF1800B TKN8699A TRN7480A TRN7708A CHN6100A	<b>Quantar 900 MHz; 100W Transmitter</b> 100 W Power Amplifier Module (900 MHz) PA-to-Exciter RF Cable Station Interconnect Board (Backplane) PA Module Front Panel Anti-Vibration/EFI Screws (2)
<b>Options/Kits Internally Added by Motorola Order Processing</b>	<b>X134AA</b> CLF1520A CHN6100A  <b>X336AA</b> CLF1540A CHN6100A  <b>X43AA</b> CPN1047A CLN7261A CPN6086A CHN6100A  <b>X621AY</b> CLN1614A TRN7476A TKN8751A  <b>X222AB</b> CGN6157A CHN6100A  <b>X216AA</b> CLN6955A TKN8731A CLN6816A  <b>C831AA</b> TRN7479A  <b>X142AA</b> TRN7494A  <b>X249AW</b> TKN8753A TKN9126A  <b>X187AA</b> TRN7663A  <b>X163AL</b> TRN7695A TRN7696A CHN6100A  <b>X842AB</b> CLN6885A  <b>X430AA</b> THN6700A TTN5040A  <b>X362AA</b> TBN6625A  <b>X436AD</b> 68P81095E05	<b>Exciter Module (900 MHz)</b> Exciter Module (Board and Hardware) Anti-Vibration/EFI Screws (2)  <b>Receiver Module (900 MHz)</b> Receiver Module (Board, Front Panel, Hardware) Anti-Vibration/EFI Screws (2)  <b>Power Supply Assembly</b> 625W Power Supply (AC input; w/o battery chrg) Ferrite RFI Suppressor Front Panel, Dummy Charger Connector Anti-Vibration/EFI Screws (2)  <b>Station Control Module (SCM); Standard EPIC III</b> Station Control Module SCM Internal Speaker Internal Speaker Cable  <b>Front Panel (Station Control Module)</b> Station Control Module Front Panel Anti-Vibration/EFI Screws (2)  <b>Wireline Interface Module (WIM) (4-wire)</b> Wireline Interface Board WIM Cable RFI Suppressor  <b>Card Cage</b> Card Cage Assembly (12")  <b>Duplex Interface Assembly</b> Duplex Interface (includes ant. connector bracket)  <b>RF Cabling</b> Receiver mini-UHF to N-type coax cable Transmitter N-type to N-type coax cable  <b>Domestic Power Cable</b> AC Line Cord  <b>Blank Panels</b> Single Slot Wide Blank Panel Dual Slot Wide Blank Panel Anti-Vibration/EFI Screws (2)  <b>Ethernet Termination Kit</b> Ethernet Termination Hardware  <b>12" Cabinet</b> 12" x 20" Cabinet Grommet  <b>Packing</b> Packing for 12" Cabinet  <b>Instruction Manual</b> Quantar Station Functional Manual

**(Continued)**

The following lists available options that may be selected in addition to the standard model and options (described in Steps 1 thru 4).

### AVAILABLE HARDWARE OPTIONS FOR QUANTAR STATION

Option Category	Option and Complement	
<b>Power Supply</b>	<p><b>AC Input Supplies</b></p> <p><b>X30AA 625W Power Supply with Battery Charger</b>            CPN1048C 625W Power Supply Assembly w/ Battery Charger            TKN8732A Battery Charger Cable Kit            TKN8786A Battery Temperature Sensor            TRN5155A 10' Extension Cable w/connectors and fuse block            CHN6100A Anti-Vibration/EFI Screws (2)            CLN7261A AC Line Cord Ferrite RFI Suppressor            CLN7419A Power Supply Front Panel w/Screws</p> <p><b>X30AB 265W Power Supply with Battery Charger</b>            CPN1050E 265W Power Supply Assembly w/ Battery Charger            TKN8732A Battery Charger Cable Kit            TKN8786A Battery Temperature Sensor            TRN5155A 10' Extension Cable w/connectors and fuse block            CHN6100A Anti-Vibration/EFI Screws (2)            CLN7261A AC Line Cord Ferrite RFI Suppressor            CPN6086A Power Supply Front Panel w/Screws</p>	<p><b>DC Input Supplies</b></p> <p><b>X121AA 210W Power Supply (12/24V DC Input)</b>            TRN7802A 210W Power Supply Assembly (12/24 V DC Input)            TKN8732A Battery Charger Cable Kit            TRN5155A 10' Extension Cable w/connectors and fuse block            CHN6100A Anti-Vibration/EFI Screws (2)</p> <p><b>X112AA 600W Power Supply (24V DC Input)</b>            TRN7801A 600W Power Supply Assembly (24 V DC Input)            TKN8732A Battery Charger Cable Kit            TRN5155A 10' Extension Cable w/connectors and fuse block            CHN6100A Anti-Vibration/EFI Screws (2)</p> <p><b>X113AA 210W Power Supply (48/60 V DC Input)</b>            TRN7803A 210W Power Supply Assembly (48/60 V DC Input)            TKN8732A Battery Charger Cable Kit            TRN5155A 10' Extension Cable w/connectors and fuse block            CHN6100A Anti-Vibration/EFI Screws (2)</p> <p><b>X113AB 600W Power Supply (48/60 V DC Input)</b>            CPN1031B 600W Power Supply Assembly (48/60 V DC Input)            TKN8732A Battery Charger Cable Kit            TRN5155A 10' Extension Cable w/connectors and fuse block            TTN4068A Power Supply Front Panel and Screws            CHN6100A Anti-Vibration/EFI Screws (2)</p>
	<b>Wireline Interface Module</b>	<p><b>X84AA Omit Standard Wireline Interface Module (WIM)</b></p> <p><b>X144AA Add 8-Wire Wireline Interface Module (WIM)</b>            CLN6956A 8-Wire Wireline Interface Board (WIB)            TKN8731A WIM Cable Kit            CLN6816A RFI Suppressor</p>
<b>Antenna Relay</b>	<p><b>X371AA Add Antenna Relay</b>            TRN7664A Antenna Relay, Cables, and Mounting Hardware</p>	
<b>Duplexer</b>	<p><b>X182BV Add Duplexer Module (UHF R0)</b>            0185417U10 Duplexer (UHF R0; 380–412 MHz)            TTN5008A Duplexer Mtg Hdwr</p>	<p><b>X182AA Add Duplexer Module (132–146 MHz)</b>            0185417U01 Duplexer (132–146 MHz)            TTN5008A Duplexer Mtg Hdwr</p>
	<p><b>X182AC Add Duplexer Module (UHF R1)</b>            0185417U04 Duplexer (UHF R1)            TTN5008A Duplexer Mtg Hdwr</p>	<p><b>X182AB Add Duplexer Module (144–160MHz)</b>            0185417U02 Duplexer (144–160 MHz)            TTN5008A Duplexer Mtg Hdwr</p>
	<p><b>X182AD Add Duplexer Module (UHF R2)</b>            0185417U05 Duplexer (UHF R2)            TTN5008A Duplexer Mtg Hdwr</p>	<p><b>X182AJ Add Duplexer Module (158–174 MHz)</b>            0185417U03 Duplexer (158–174 MHz)            TTN5008A Duplexer Mtg Hdwr</p>
	<p><b>X182AE Add Duplexer Module (UHF R3)</b>            0185417U06 Duplexer (UHF R3)            TTN5008A Duplexer Mtg Hdwr</p>	<p><b>X182AG Add Duplexer Module (800 MHz)</b>            TDF6980A Duplexer (800 MHz)            TTN5008A Duplexer Hardware (4 screws)</p>
	<p><b>X182AF Add Duplexer Module (UHF R4)</b>            0185417U07 Duplexer (UHF R4)            TTN5008A Duplexer Mtg Hdwr</p>	<p><b>X182AH Add Duplexer Module (900 MHz)</b>            TDF6542A Duplexer (900 MHz)            TTN5008A Duplexer Hardware (4 screws)</p>
<b>Modem</b>	<p><b>X437AA Add ASTRO Modem</b>            TRN7668A ASTRO Modem Card</p>	

Option Category	Option and Complement	
<b>Circulator</b>	<b>CA00187AA Add Triple Circulator (UHF, R0)</b> TLE9120B Dual Circulator TLN3391A 50 Ohm Load with Heat Sink TLE9140A Low Pass Filter TRN7796A Fan, Peripheral Tray	<b>X676AB Add Triple Circulator (144–160 MHz)</b> Same as X676AA except substitute TYD4002A Dual Circulator
	<b>X676AN Add Triple Circulator (UHF, R1 and R2)</b> TLE9120A Dual Circulator TLN3391A 50 Ohm Load with Heat Sink TLE9140A Low Pass Filter TRN7796A Fan, Peripheral Tray	<b>X676AC Add Triple Circulator (158–174 MHz)</b> Same as X676AA except substitute TYD4003A Dual Circulator
	<b>X676AP Add Triple Circulator (UHF, R3 and R4)</b> TLE9130A Dual Circulator TLN3391A 50 Ohm Load with Heat Sink TLE9140A Low Pass Filter TRN7796A Fan, Peripheral Tray	<b>X676AQ Add Triple Circulator (800 MHz)</b> TLF7320A Dual Circulator TLN3391A 50 Ohm Load with Heat Sink TLF7340A Low Pass Filter TRN7796A Fan, Peripheral Tray
	<b>X676AA Add Triple Circulator (132–146 MHz)</b> TYD4001A Dual Circulator TLN3391A 50 Ohm Load with Heat Sink TYD4010A Low Pass Filter TRN7796A Cooling Fan	<b>X676AR Add Triple Circulator (900 MHz)</b> TLF7330A Dual Circulator TLN3391A 50 Ohm Load with Heat Sink TLF7340A Low Pass Filter TRN7796A Fan, Peripheral Tray
	<b>UHSO</b>	<b>X873AA Add Internal Ultra High Stability Oscillator</b> CLN7012A BNC Terminator CHN6100A Anti-Vibration/EFI Screws (2) CLN1477A UHSO Module TTN5070C UHSO Board TTN5071A UHSO Housing and Front Panel TTN5072A UHSO 5 PPB Ovenized Element
<b>Peripheral Tray</b>	<b>X696AA Add Peripheral Tray</b> TRN7751A <i>Quantar</i> Peripheral Shelf	
<b>Miscellaneous</b>	HSN1000 External Speaker TRN7738A External Speaker Hardware (bracket and cable) HMN1001A Microphone  <i>Note that the external speaker and microphone are not options and must be ordered as line items on the STIC–1 order form.</i>	

---

# FOREWORD

---

## Product Maintenance Philosophy

Due to the high percentage of surface-mount components and multi-layer circuit boards, the maintenance philosophy for this product is one of Field Replaceable Unit (FRU) substitution. The station is comprised of self-contained modules (FRUs) which, when determined to be faulty, may be quickly and easily replaced with a known good module to bring the equipment back to normal operation. The faulty module must then be shipped to the Motorola System Support Center for further troubleshooting and repair to the component level.

---

## Scope of Manual

This manual is intended for use by experienced technicians familiar with similar types of equipment. In keeping with the maintenance philosophy of Field Replaceable Units (FRU), this manual contains functional information sufficient to give service personnel an operational understanding of all FRU modules, allowing faulty FRU modules to be identified and replaced with known good FRU replacements.

The information in this manual is current as of the printing date. Changes which occur after the printing date are incorporated by Instruction Manual Revisions (SMR). These SMRs are added to the manuals as the engineering changes are incorporated into the equipment.



---

## Service and Replacement Modules

Motorola System Support Center  
2214 Galvin Drive  
Elgin, IL 60123

1-800-221-7144  
Int'l 1-847-576-7300  
FAX 1-847-576-2172

For complete information on ordering FRU replacement modules, or instructions on how to return faulty modules for repair, contact the System Support Center (see sidebar).

The following FRU replacement modules are available:

Receiver Module (VHF Range 1)	TLN3250A
Receiver Module (VHF Range 2)	TLN3251A
Receiver Module (UHF, Range 0)	DLN1215A
Receiver Module (UHF, Range 1)	TLN3313A
Receiver Module (UHF, Range 2)	TLN3314A
Receiver Module (UHF, Range 3)	TLN3373A
Receiver Module (UHF, Range 4)	TLN3374A
Receiver Module (800 MHz)	TLN3315A
Receiver Module (900 MHz)	TLN3316A
Exciter Module (VHF Range 1)	TLN3252A
Exciter Module (VHF Range 2)	TLN3253A
Exciter Module (UHF, Range 0)	DLN1214A
Exciter Module (UHF, Range 1)	TLN3305A
Exciter Module (UHF, Range 2)	TLN3306A
Exciter Module (UHF, Range 3)	TLN3375A
Exciter Module (UHF, Range 4)	TLN3376A
Exciter Module (800 MHz)	TLN3307A
Exciter Module (900 MHz)	TLN3308A
Power Amplifier Module (VHF 25W, R1 & R2)	TLN3255A
Power Amplifier Module (VHF 125W, R1)	TLN3379A
Power Amplifier Module (VHF 125W, R2)	TLN3254A
Power Amplifier Module (UHF R0; 110W)	DLN1216A
Power Amplifier Module (UHF R1; 25W)	TLN3443A
Power Amplifier Module (UHF R2; 110W)	TLN3446A
Power Amplifier Module (UHF R4; 100W)	TLN3450A
Power Amplifier Module (800 MHz 20W)	TLN3441A
Power Amplifier Module (800 MHz 100W)	TLN3442A
Power Amplifier Module (900 MHz 100W)	TLN3299A
Station Control Module (Conventional/6809)	CLN1293A
Station Control Module (Conventional/6809 EPIC III)	CLN1621A
Station Control Module (IntelliRepeater)	CLN1294A
4-Wire Wireline Interface Module	CLN1295A
8-Wire Wireline Interface Module	CLN1296A
Power Supply Module (625W AC)	TLN3259A
Power Supply Module (625W AC w/charger)	TLN3260A
Power Supply Module (265W AC)	TLN3261A
Power Supply Module (265W AC w/charger)	TLN3262A
Power Supply Module (210W 12/24 V DC)	TLN3264A
Power Supply Module (210W 48/60 V DC)	TLN3378A
Power Supply Module (600W 24 V DC)	TLN3263A
Power Supply Module (600W 48/60 V DC)	TLN3377A
ASTRO Modem Card	TLN3265A

---

# GENERAL SAFETY INFORMATION

The following general safety precautions must be observed during all phases of operation, service, and repair of the equipment described in this manual. The safety precautions listed below represent warnings of certain dangers of which we are aware. You should follow these warnings and all other safety precautions necessary for the safe operation of the equipment in your operating environment.

## General Safety Precautions

- ▶ Read and follow all warning notices and instructions marked on the product or included in this manual before installing, servicing or operating the equipment. Retain these safety instructions for future reference. Also, all applicable safety procedures, such as Occupational, Safety, and Health Administration (OSHA) requirements, National Electrical Code (NEC) requirements, local code requirements, safe working practices, and good judgement must be used by personnel.
- ▶ Refer to appropriate section of the product service manual for additional pertinent safety information.
- ▶ Because of danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modifications of equipment.
- ▶ Identify maintenance actions that require two people to perform the repair. Two people are required when:
  - A repair has the risk of injury that would require one person to perform first aid or call for emergency support. An example would be work around high voltage sources. A second person may be required to remove power and call for emergency aid if an accident occurs to the first person.  
**Note** Use the National Institute of Occupational Safety and Health (NIOSH) lifting equation to determine whether a one or two person lift is required when a system component must be removed and replaced in its rack.
- ▶ If troubleshooting the equipment while power is applied, be aware of the live circuits.
- ▶ DO NOT operate the transmitter of any radio unless all RF connectors are secure and all connectors are properly terminated.
- ▶ All equipment must be properly grounded in accordance with Motorola Standards and Guideline for Communications Sites “R56” 68P81089E50 and specified installation instructions for safe operation.
- ▶ Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these slots and openings must not be blocked or covered.
- ▶ Only a qualified technician familiar with similar electronic equipment should service equipment.
- ▶ Some equipment components can become extremely hot during operation. Turn off all power to the equipment and wait until sufficiently cool before touching.

## Human Exposure Compliance

This equipment is designed to generate and radiate radio frequency (RF) energy by means of an external antenna. When terminated into a non-radiating RF load, the base station equipment is certified to comply with Federal Communications Commission (FCC) regulations pertaining to human exposure to RF radiation in accordance with the FCC Rules Part 1 section 1.1310 as published in title 47 code of federal regulations and procedures established in TIA/EIA TSB92, Report On EME Evaluation for RF Cabinet Emissions Under FCC MPE Guidelines. Compliance to FCC regulations of the final installation should be assessed and take into account site specific characteristics

---

such as type and location of antennas, as well as site accessibility of occupational personnel (controlled environment) and the general public (uncontrolled environment). This equipment should only be installed and maintained by trained technicians. Licensees of the FCC using this equipment are responsible for insuring that its installation and operation comply with FCC regulations Part 1 section 1.1310 as published in title 47 code of federal regulations.

Whether a given installation meets FCC limits for human exposure to radio frequency radiation may depend not only on this equipment but also on whether the “environments” being assessed are being affected by radio frequency fields from other equipment, the effects of which may add to the level of exposure. Accordingly, the overall exposure may be affected by radio frequency generating facilities that exist at the time the licensee’s equipment is being installed or even by equipment installed later. Therefore, the effects of any such facilities must be considered in site selection and in determining whether a particular installation meets the FCC requirements.

FCC OET Bulletin 65 provides materials to assist in making determinations if a given facility is compliant with the human exposure to RF radiation limits. Determining the compliance of transmitter sites of various complexities may be accomplished by means of computational methods. For more complex sites direct measurement of the power density may be more expedient. Additional information on the topic of electromagnetic exposure is contained in the Motorola Standards and Guideline for Communications Sites publication. Persons responsible for installation of this equipment are urged to consult the listed reference material to assist in determining whether a given installation complies with the applicable limits.

In general the following guidelines should be observed when working in or around radio transmitter sites:

- ▶ All personnel should have electromagnetic energy awareness training
- ▶ All personnel entering the site must be authorized
- ▶ Obey all posted signs
- ▶ Assume all antennas are active
- ▶ Before working on antennas, notify owners and disable appropriate transmitters
- ▶ Maintain minimum 3 feet clearance from all antennas
- ▶ Do not stop in front of antennas
- ▶ Use personal RF monitors while working near antennas
- ▶ Never operate transmitters without shields during normal operation
- ▶ Do not operate base station antennas in equipment rooms

For installations outside of the U.S., consult with the applicable governing body and standards for RF energy human exposure requirements and take the necessary steps for compliance with local regulations.

## References

TIA/EIA TSB92 “Report On EME Evaluation for RF Cabinet Emissions Under FCC MPE Guidelines,” Global Engineering Documents: <http://global.ihs.com/>

FCC OET Bulletin 65 “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields”: <http://www.fcc.gov/oet/rfsafety/>.

Motorola Standards and Guideline for Communications Sites, Motorola manual 68P81089E50.

IEEE Recommended Practice for the Measure of Potentially Hazardous Electromagnetic Fields – RF and Microwave, IEEE Std C95.3–1991, Publication Sales, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855–1331

IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz, IEEE C95.1 – 1991, Publication Sales, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855–1331.

# PERFORMANCE SPECIFICATIONS

## General

TX Sub-Band Range	<b>VHF</b> 132–154 MHz (R1) 150–174 MHz (R2)	<b>UHF</b> 380–433 MHz (R0) 403–433 MHz (R1) 438–470 MHz (R2) 470–494 MHz (R3) 494–520 MHz (R4)	<b>800</b> 851–870 MHz	<b>900</b> 935–941 MHz
RX Sub-Band Range	<b>VHF</b> 132–154 MHz (R1) 150–174 MHz (R2)	<b>UHF</b> 380–433 MHz (R0) 403–433 MHz (R1) 438–470 MHz (R2) 470–494 MHz (R3) 494–520 MHz (R4)	<b>800</b> 806–825 MHz	<b>900</b> 896–902 MHz
Number of Channels	16			
Channel Spacing	<b>VHF:</b> 30, 25, 12.5 kHz		<b>UHF/800:</b> 12.5, 25 kHz	<b>900:</b> 12.5 kHz
Frequency Generation	Synthesized			
Power Supply Type	Switching			
Power Supply Input Voltage	90–280 V ac			
Power Supply Input Frequency	47–63 Hz			
Battery Revert	12V (25W radios) 24V (100W, 110W, and 125W radios)			
T/R Separation (without duplexer option)	<b>VHF/UHF:</b> Any spacing within same sub-band		<b>800:</b> 45 MHz	<b>900:</b> 39 MHz
T/R Separation (with duplexer option)	<b>VHF/UHF:</b> $\geq 1.5$ MHz		<b>800:</b> 45 MHz	<b>900:</b> 39 MHz
Temperature Range (ambient)	–30° C to +60° C			

## PERFORMANCE SPECIFICATIONS (Cont'd)

### Receiver

I–F Frequencies	<b>VHF</b> 21.45 MHz (1st) 450 kHz (2nd)	<b>UHF</b> 73.35 MHz (1st) 450 kHz (2nd)	<b>800</b> 73.35 MHz (1st) 450 kHz (2nd)	<b>900</b> 73.35 MHz (1st) 450 kHz (2nd)
Preselector Bandwidth	<b>VHF/UHF:</b> 4 MHz		<b>800:</b> 19 MHz	<b>900:</b> 6 MHz
Sensitivity (12 dB SINAD)	<b>VHF:</b> 0.25 $\mu$ V	<b>UHF:</b> 0.35 $\mu$ V	<b>800/900:</b> 0.30 $\mu$ V	
Sensitivity (20 dB Quieting)	<b>VHF:</b> 0.35 $\mu$ V	<b>UHF:</b> 0.5 $\mu$ V	<b>800/900:</b> 0.42 $\mu$ V	
Adjacent Channel Rejection	<b>VHF</b> 90 dB (25/30 kHz) 80 dB (23.5 kHz)	<b>UHF</b> 75 dB (12.5 kHz) 85 dB (25 kHz)	<b>800</b> 70 dB (12.5 kHz) 80 db (25 kHz)	<b>900</b> 70dB 80 db (25 kHz)
Intermodulation Rejection	<b>VHF</b> 85 dB (25/30 kHz) 80 dB (30 kHz)	<b>UHF</b> 85 dB	<b>800</b> 85 dB	<b>900</b> 70 dB
Spurious and Image Rejection	100 dB			
Wireline Output	–20 dBm to 0 dBm @ 60% Rated System Deviation, 1 kHz			
Audio Response (Analog Mode)	+1, –3 dB from 6 dB per octave de–emphasis; 300–3000 Hz referenced to 1000 Hz at line input			
Audio Distortion	Less than 3% @ 1000 Hz			
FM Hum and Noise (300 to 3000 kHz bandwidth)	<b>VHF</b> 50 dB (25/30 kHz) 45 dB (12.5 kHz)	<b>UHF</b> 45 dB (12.5 kHz) 50 dB (25 kHz)	<b>800</b> 45 dB (12.5 kHz) 50 dB (25 kHz)	<b>900</b> 45 db
Frequency Stability	<b>VHF/UHF/800:</b> 1 ppm		<b>900:</b> 0.1 ppm	
RF Input Impedance	50 $\Omega$			
FCC Designation (FCC Rule Part 15)	<b>VHF:</b> ABZ89FR3776 <b>900:</b> ABZ89FR5768		<b>UHF:</b> ABZ89FR4796	<b>800:</b> ABZ89FR5757

# PERFORMANCE SPECIFICATIONS (Cont'd)

## Transmitter

Power Output	<b>VHF</b> 6–25W 25–125W	<b>UHF</b> 5–25W 25–110W	<b>800</b> 5–20W 20–100W	<b>900</b> 25–100W
Electronic Bandwidth	Full sub-band			
Intermodulation Attenuation	<b>VHF:</b> 20 dB (single circulator; standard on all PAs) 65 dB (triple circulator – requires triple circulator option) <b>UHF:</b> 50 dB (single circulator; standard on all PAs) <b>800:</b> 50 dB (single circulator; standard on all PAs) <b>900:</b> 20 dB (single circulator; standard on all PAs) 70 dB (triple circulator – requires triple circulator option)			
Spurious and Harmonic Emissions Attenuation	90 dB			
Deviation	<b>VHF, UHF, and 800</b> ±5 kHz (25 kHz) ±2.5 kHz (12.5 kHz)		<b>900</b> ±2.5 kHz	
Audio Sensitivity	–35 dBm to 0 dBm (variable)			
Audio Response (Analog Mode)	+1, –3 dB from 6 dB per octave pre-emphasis; 300–3000 Hz referenced to 1000 Hz at line input			
Audio Distortion	Less than 2% @ 1000 Hz @ 60% rated system deviation			
FM Hum and Noise (300 to 3000 Hz bandwidth)	45 dB nominal (12.5 kHz) 50 dB nominal (25/30 kHz)			
Frequency Stability	<b>VHF, UHF, 800:</b> 1 ppm		<b>900:</b> 0.1 ppm	
RF Output Impedance	50 Ω			
FCC Designation	<b>VHF</b> 25W: ABZ89FC3774 (Parts 22, 74, 80, 90); ABZ89FC3774-D (Part 90) 125W: ABZ89FC3773 (Parts 22, 74, 80, 90); ABZ89FC3773-D (Part 90)			
	<b>UHF</b> 25W/R1-2: ABZ89FC4797 (Parts 22, 74, 90); ABZ89FC4797-D (Part 90) 110W/R0-1: ABZ89FC4798-D (Part 90); ABZ89FC4798-A (Part 90) 110W/R1-4: ABZ89FC4798 (Part 22, 74, 90) (Derate R4 to 100W; 100W limit for Part 74 operation R1-4)			
	<b>800</b> 20W: ABZ89FC5775 (Parts 22, 90); ABZ89FC5775-D (Part 90) 100W: ABZ89FC5776 (Parts 22, 90); ABZ89FC5776-D (Part 90)			
FCC Designation	<b>900</b> 100W: ABZ89FC5767 (FCC Rule Part 90)			

Measurement Methods per TIA/EIA–603  
 Specifications subject to change without notice