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

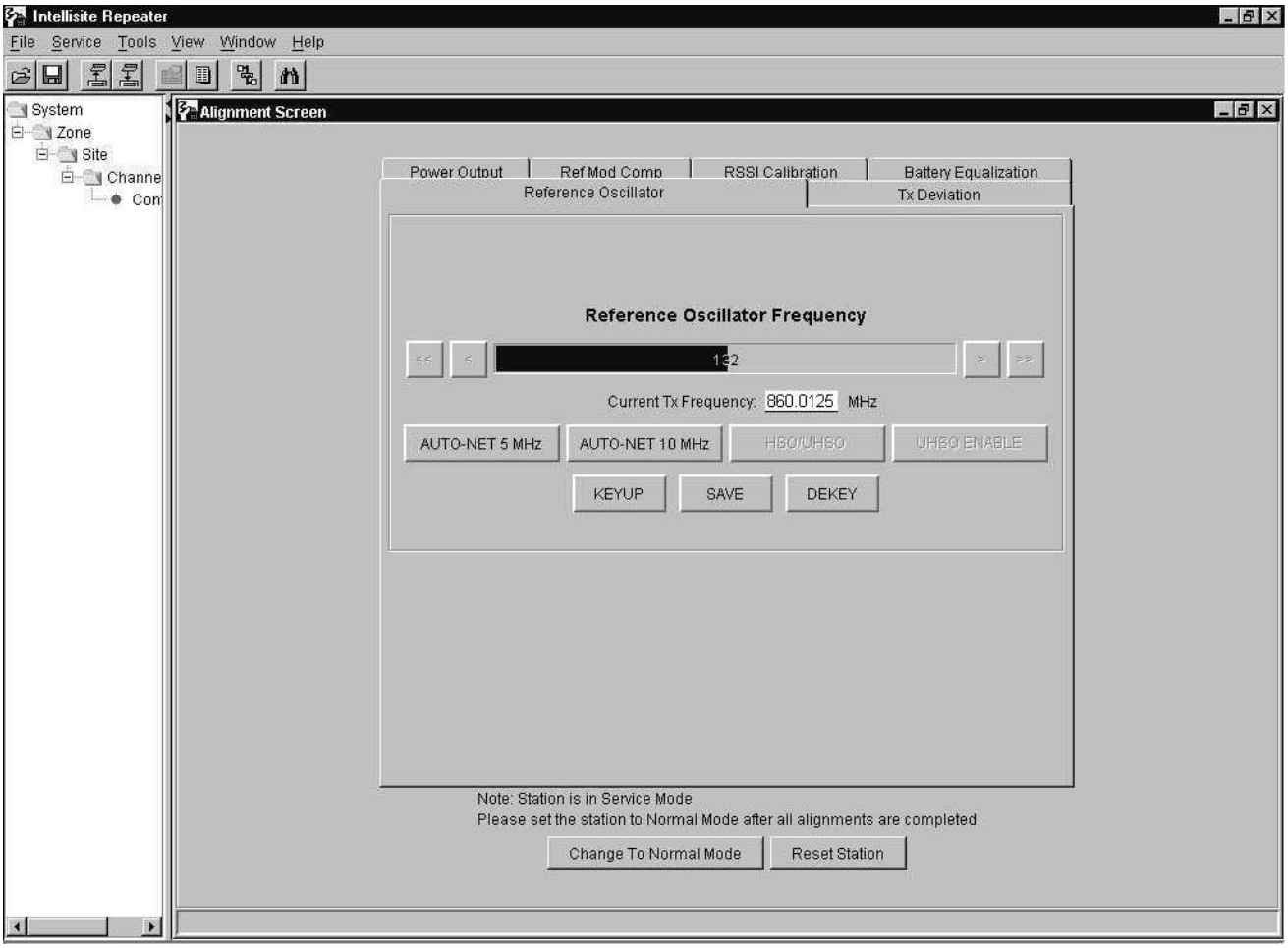
Description	Recommended model
1. Service Monitor	Motorola R-2001 or equivalent
2. PC with CSS	

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.

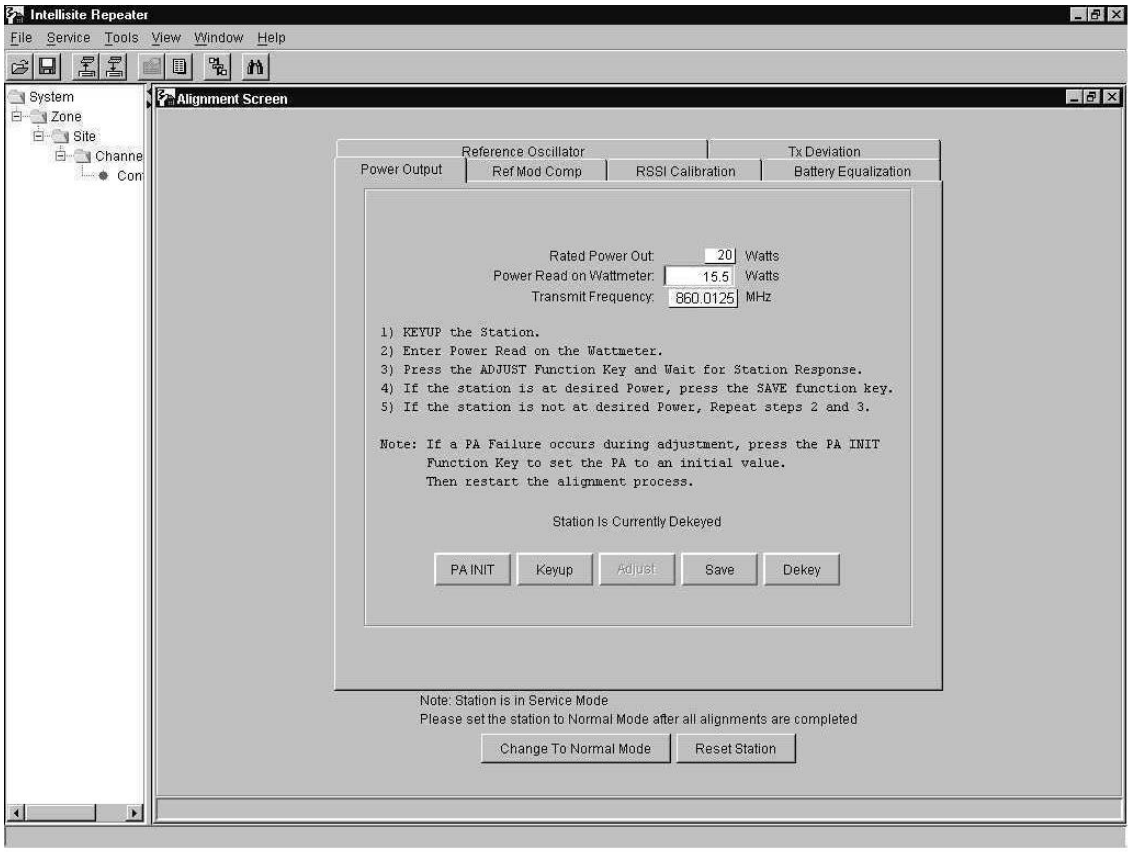
EXHIBIT	DESCRIPTION
9A	Reference Oscillator Alignment Screen
9B	Transmitter Power Output Alignment Screen
9C	Transmitter Deviation Alignment Screen
9D	Reference Modulation Compensation Alignment Screen

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.

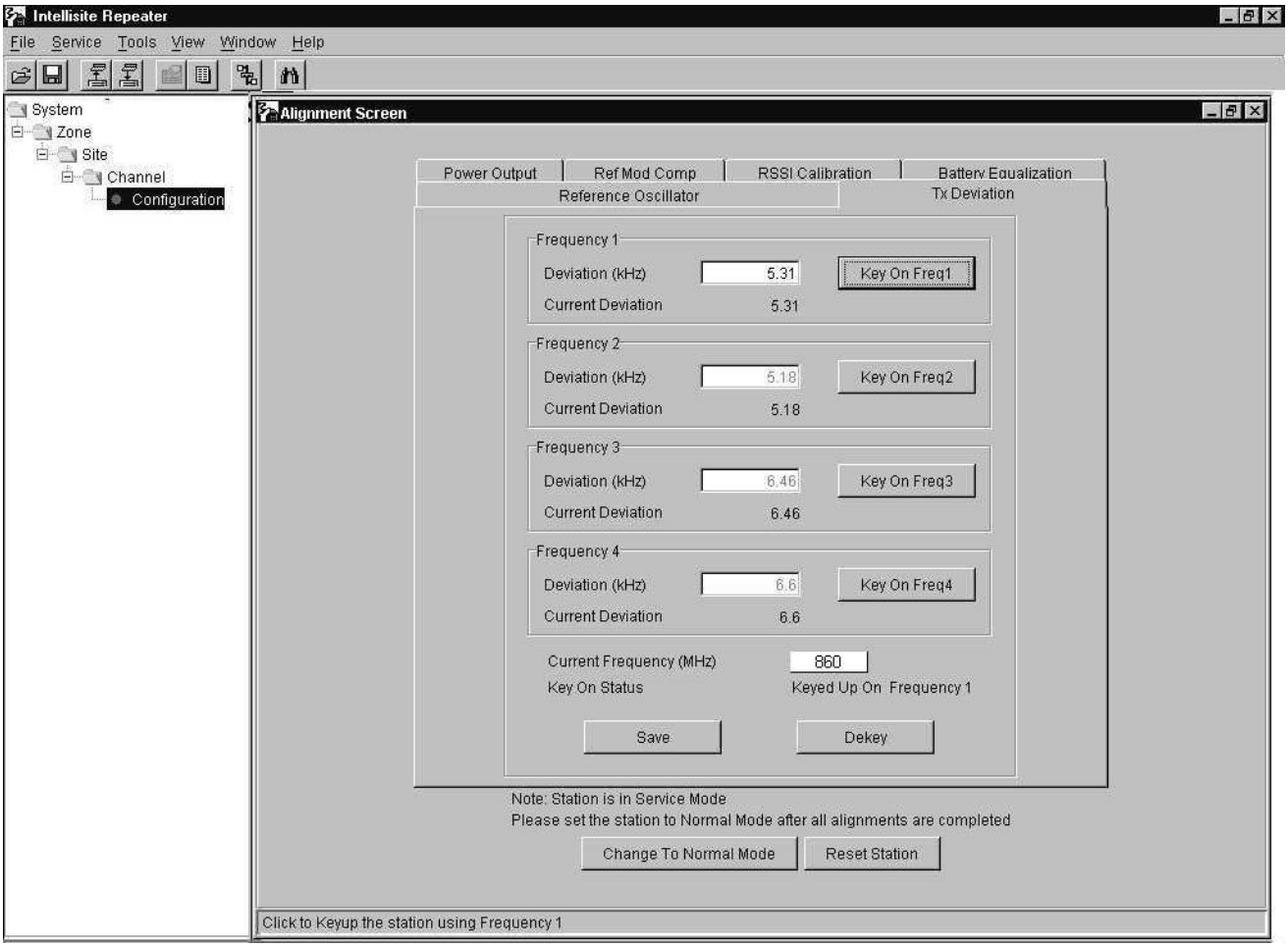
TUNE-UP PROCEDURE - Reference Oscillator Alignment Screen



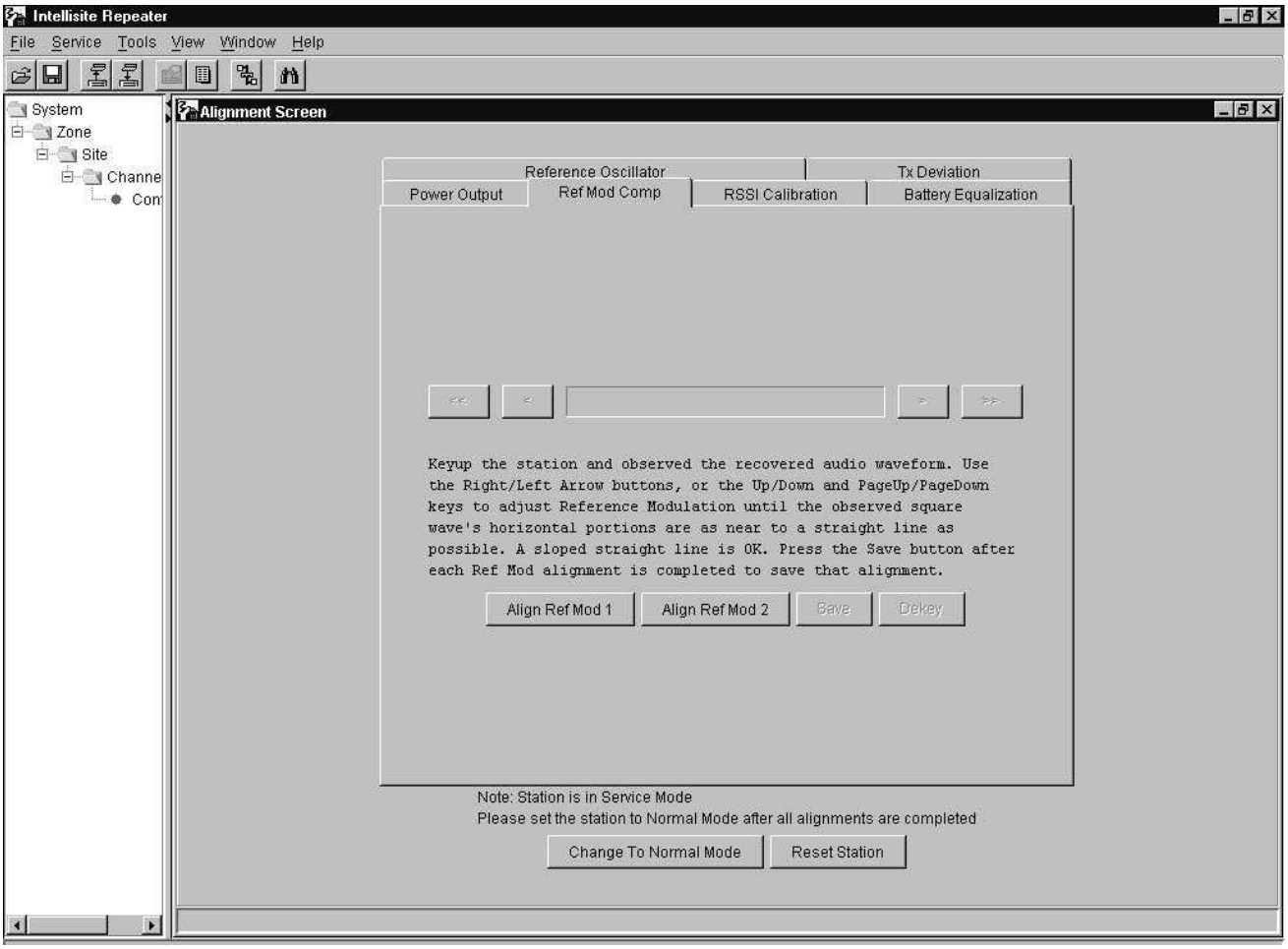
TUNE-UP PROCEDURE - Transmitter Power Output Alignment Screen



TUNE-UP PROCEDURE - Transmitter Deviation Alignment Screen



TUNE-UP PROCEDURE - Reference Modulation Compensation Alignment Screen



MOTOROLA

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

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EPS–34440–B

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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.

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This warranty applies only within the United States.

EPS–48759–O

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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

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1301 E. Algonquin Road, Schaumburg, IL 60196

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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 *ASTRO* VSELP	X599	✓	✓	✓	
Conventional *ASTRO* CAI	X806	✓	✓	✓	
6809 Trunking Analog	X997	✓	✓	✓	✓
6809 Trunking *ASTRO* VSELP	X992	✓	✓	✓	
6809 Trunking *ASTRO* CAI	X900	✓	✓	✓	
SMARTZONE 6809 Trunking *ASTRO* VSELP	X989	✓	✓	✓	
SMARTZONE 6809 Trunking *ASTRO* CAI	X897	✓	✓	✓	
SMARTZONE *IntelliRepeater* Trunking	X999	✓	✓	✓	✓
SMARTZONE *IntelliRepeater ASTRO* VSELP	X990	✓	✓	✓	
SMARTZONE *IntelliRepeater ASTRO* 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)

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

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

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

(Continued)

VHF

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

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

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

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

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UHF

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

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

(Continued)

UHF

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

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

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

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

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

Source	Option/ Kit	Description
Option from Initial Sales Order	**X240AB**	***Quantar* UHF R2; 25W Transmitter**
	TLE2732A	25 W Power Amplifier Module (UHF R2)
	TKN8699A	PA−to−Exciter RF Cable
	TRN7480A	Station Interconnect Board (Backplane)
	TRN7708A	PA Module Front Panel
	CHN6100A	Anti-Vibration/EFI Screws (2)
Options/Kits Internally Added by Motorola Order Processing	**X132AB**	**Exciter Module (UHF, R2)**
	CLE1240A	Exciter Module (Board and Hardware)
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X334AB	**Receiver Module (UHF, R2)**
	CLE1200A	Receiver Module (Board, Preselector, Hardware)
	CLN7334A	Receiver Module Front Panel
	TRN7799A	VHF/UHF Tuning Kit
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X43AB	**Power Supply Assembly**
	CPN1049B	265W Power Supply (AC input; w/o battery chrg)
	CLN7261A	Ferrite RFI Suppressor
	CPN6086A	Front Panel, Dummy Charger Connector
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X621AY	**Station Control Module (SCM); Standard EPIC III**
	CLN1614A	Station Control Module
	TRN7476A	SCM Internal Speaker
	TKN8751A	Internal Speaker Cable
	X222AB	**Front Panel (Station Control Module)**
	CGN6157A	Station Control Module Front Panel
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X216AA	**Wireline Interface Module (WIM) (4−wire)**
	CLN6955A	Wireline Interface Board
	TKN8731A	WIM Cable
	CLN6816A	RFI Suppressor
	C831AA	**Card Cage**
	TRN7479A	Card Cage Assembly (12”)
	X142AA	**Duplex Interface Assembly**
	TRN7494A	Duplex Interface (includes ant. connector bracket)
	X249AW	**RF Cabling**
	TKN8753A	Receiver mini−UHF to N−type coax cable
	TKN9126A	Transmitter N−type to N−type coax cable
	X187AA	**Domestic Power Cable**
	TRN7663A	AC Line Cord
	X163AD	**Blank Panels**
	TRN7696A	Dual Slot Wide Blank Panel
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X842AB	**Ethernet Termination Kit**
	CLN6885A	Ethernet Termination Hardware
	X430AA	**12” Cabinet**
	THN6700A	12” x 20” Cabinet
	TTN5040A	Grommet
	X362AA	**Packing**
	TBN6625A	Packing for 12” Cabinet
	X436AJ	**Instruction Manual**
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OPTION X640AB SELECTED IN STEP 3
(*Quantar* UHF; Range 2, 110W Transmitter)

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

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

Source	Option/ Kit	Description
Option from Initial Sales Order	**X640AC**	***Quantar* UHF R3; 110W Transmitter**
	TTE2063A	110 W Power Amplifier Module (UHF R3)
	TKN8699A	PA−to−Exciter RF Cable
	TRN7480A	Station Interconnect Board (Backplane)
	TRN7708A	PA Module Front Panel
	CHN6100A	Anti-Vibration/EFI Screws (2)
Options/Kits Internally Added by Motorola Order Processing	**X132AC**	**Exciter Module (UHF, R3)**
	CLE1250A	Exciter Module (Board and Hardware)
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X334AC	**Receiver Module (UHF, R3)**
	CLE1210A	Receiver Module (Board, Preselector, Hardware)
	CLN7334A	Receiver Module Front Panel
	TRN7799A	VHF/UHF Tuning Kit
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X43AA	**Power Supply Assembly**
	CPN1047A	625W Power Supply (AC input; w/o battery chrg)
	CLN7261A	Ferrite RFI Suppressor
	CPN6086A	Front Panel, Dummy Charger Connector
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X621AY	**Station Control Module (SCM); Standard EPIC III**
	CLN1614A	Station Control Module
	TRN7476A	SCM Internal Speaker
	TKN8751A	Internal Speaker Cable
	X222AB	**Front Panel (Station Control Module)**
	CGN6157A	Station Control Module Front Panel
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X216AA	**Wireline Interface Module (WIM) (4−wire)**
	CLN6955A	Wireline Interface Board
	TKN8731A	WIM Cable
	CLN6816A	RFI Suppressor
	C831AA	**Card Cage**
	TRN7479A	Card Cage Assembly (12”)
	X142AA	**Duplex Interface Assembly**
	TRN7494A	Duplex Interface (includes ant. connector bracket)
	X249AW	**RF Cabling**
	TKN8753A	Receiver mini−UHF to N−type coax cable
	TKN9126A	Transmitter N−type to N−type coax cable
	X187AA	**Domestic Power Cable**
	TRN7663A	AC Line Cord
	X163AD	**Blank Panels**
	TRN7696A	Dual Slot Wide Blank Panel
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X842AB	**Ethernet Termination Kit**
	CLN6885A	Ethernet Termination Hardware
	X430AA	**12” Cabinet**
	THN6700A	12” x 20” Cabinet
	TTN5040A	Grommet
	X362AA	**Packing**
	TBN6625A	Packing for 12” Cabinet
	X436AJ	**Instruction Manual**
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OPTION X640AD SELECTED IN STEP 3
(*Quantar* UHF; Range 4, 100W Transmitter)

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

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

Source	Option/ Kit	Description
Option from Initial Sales Order	**X250AA**	***Quantar* 800 MHz; 20W Transmitter**
	TLF1940A	20 W Power Amplifier Module (800 MHz)
	TKN8699A	PA−to−Exciter RF Cable
	TRN7480A	Station Interconnect Board (Backplane)
	TRN7708A	PA Module Front Panel
	CHN6100A	Anti-Vibration/EFI Screws (2)
Options/Kits Internally Added by Motorola Order Processing	**X133AA**	**Exciter Module (800 MHz)**
	CLF1510A	Exciter Module (Board and Hardware)
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X335AA	**Receiver Module (800 MHz)**
	CLF1530A	Receiver Module (Board, Front Panel, Hardware)
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X43AB	**Power Supply Assembly**
	CPN1049B	265W Power Supply (AC input; w/o battery chrg)
	CLN7261A	Ferrite RFI Suppressor
	CPN6086A	Front Panel, Dummy Charger Connector
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X621AY	**Station Control Module (SCM); Standard EPIC III**
	CLN1614A	Station Control Module
	TRN7476A	SCM Internal Speaker
	TKN8751A	Internal Speaker Cable
	X222AB	**Front Panel (Station Control Module)**
	CGN6157A	Station Control Module Front Panel
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X216AA	**Wireline Interface Module (WIM) (4−wire)**
	CLN6955A	Wireline Interface Board
	TKN8731A	WIM Cable
	CLN6816A	RFI Suppressor
	C831AA	**Card Cage**
	TRN7479A	Card Cage Assembly (12”)
	X142AA	**Duplex Interface Assembly**
	TRN7494A	Duplex Interface (includes ant. connector bracket)
	X249AW	**RF Cabling**
	TKN8753A	Receiver mini−UHF to N−type coax cable
	TKN9126A	Transmitter N−type to N−type coax cable
	X187AA	**Domestic Power Cable**
	TRN7663A	AC Line Cord
	X163AL	**Blank Panels**
	TRN7695A	Single Slot Wide Blank Panel
	TRN7696A	Dual Slot Wide Blank Panel
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X842AB	**Ethernet Termination Kit**
	CLN6885A	Ethernet Termination Hardware
	X430AA	**12” Cabinet**
	THN6700A	12” x 20” Cabinet
	TTN5040A	Grommet
	X362AA	**Packing**
	TBN6625A	Packing for 12” Cabinet
	X436AH	**Instruction Manual**
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OPTION X750AA SELECTED IN STEP 3
(800 MHz *Quantar*; 100W Transmitter)

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

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

Source	Option/ Kit	Description
Option from Initial Sales Order	**X660AA**	***Quantar* 900 MHz; 100W Transmitter**
	TLF1800B	100 W Power Amplifier Module (900 MHz)
	TKN8699A	PA−to−Exciter RF Cable
	TRN7480A	Station Interconnect Board (Backplane)
	TRN7708A	PA Module Front Panel
	CHN6100A	Anti-Vibration/EFI Screws (2)
Options/Kits Internally Added by Motorola Order Processing	**X134AA**	**Exciter Module (900 MHz)**
	CLF1520A	Exciter Module (Board and Hardware)
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X336AA	**Receiver Module (900 MHz)**
	CLF1540A	Receiver Module (Board, Front Panel, Hardware)
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X43AA	**Power Supply Assembly**
	CPN1047A	625W Power Supply (AC input; w/o battery chrg)
	CLN7261A	Ferrite RFI Suppressor
	CPN6086A	Front Panel, Dummy Charger Connector
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X621AY	**Station Control Module (SCM); Standard EPIC III**
	CLN1614A	Station Control Module
	TRN7476A	SCM Internal Speaker
	TKN8751A	Internal Speaker Cable
	X222AB	**Front Panel (Station Control Module)**
	CGN6157A	Station Control Module Front Panel
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X216AA	**Wireline Interface Module (WIM) (4−wire)**
	CLN6955A	Wireline Interface Board
	TKN8731A	WIM Cable
	CLN6816A	RFI Suppressor
	C831AA	**Card Cage**
	TRN7479A	Card Cage Assembly (12”)
	X142AA	**Duplex Interface Assembly**
	TRN7494A	Duplex Interface (includes ant. connector bracket)
	X249AW	**RF Cabling**
	TKN8753A	Receiver mini−UHF to N−type coax cable
	TKN9126A	Transmitter N−type to N−type coax cable
	X187AA	**Domestic Power Cable**
	TRN7663A	AC Line Cord
	X163AL	**Blank Panels**
	TRN7695A	Single Slot Wide Blank Panel
	TRN7696A	Dual Slot Wide Blank Panel
	CHN6100A	Anti-Vibration/EFI Screws (2)
	X842AB	**Ethernet Termination Kit**
	CLN6885A	Ethernet Termination Hardware
	X430AA	**12” Cabinet**
	THN6700A	12” x 20” Cabinet
	TTN5040A	Grommet
	X362AA	**Packing**
	TBN6625A	Packing for 12” Cabinet
	X436AD	**Instruction Manual**
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5 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	
Power Supply	**AC Input Supplies**	**DC Input Supplies**
	X30AA 625W Power Supply with Battery Charger 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	**X121AA 210W Power Supply (12/24V DC Input)** 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)
	X30AB 265W Power Supply with Battery Charger 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	**X112AA 600W Power Supply (24V DC Input)** 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)
		X113AA 210W Power Supply (48/60 V DC Input) 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)
		X113AB 600W Power Supply (48/60 V DC Input) 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)
Wireline Interface Module	**X84AA Omit Standard Wireline Interface Module (WIM)**	
	X144AA Add 8–Wire Wireline Interface Module (WIM) CLN6956A 8–Wire Wireline Interface Board (WIB) TKN8731A WIM Cable Kit CLN6816A RFI Suppressor	
Antenna Relay	**X371AA Add Antenna Relay** TRN7664A Antenna Relay, Cables, and Mounting Hardware	
Duplexer	**X182BV Add Duplexer Module (UHF R0)** 0185417U10 Duplexer (UHF R0; 380–412 MHz) TTN5008A Duplexer Mtg Hdwr	**X182AA Add Duplexer Module (132–146 MHz)** 0185417U01 Duplexer (132–146 MHz) TTN5008A Duplexer Mtg Hdwr
	X182AC Add Duplexer Module (UHF R1) 0185417U04 Duplexer (UHF R1) TTN5008A Duplexer Mtg Hdwr	**X182AB Add Duplexer Module (144–160MHz)** 0185417U02 Duplexer (144–160 MHz) TTN5008A Duplexer Mtg Hdwr
	X182AD Add Duplexer Module (UHF R2) 0185417U05 Duplexer (UHF R2) TTN5008A Duplexer Mtg Hdwr	**X182AJ Add Duplexer Module (158–174 MHz)** 0185417U03 Duplexer (158–174 MHz) TTN5008A Duplexer Mtg Hdwr
	X182AE Add Duplexer Module (UHF R3) 0185417U06 Duplexer (UHF R3) TTN5008A Duplexer Mtg Hdwr	**X182AG Add Duplexer Module (800 MHz)** TDF6980A Duplexer (800 MHz) TTN5008A Duplexer Hardware (4 screws)
	X182AF Add Duplexer Module (UHF R4) 0185417U07 Duplexer (UHF R4) TTN5008A Duplexer Mtg Hdwr	**X182AH Add Duplexer Module (900 MHz)** TDF6542A Duplexer (900 MHz) TTN5008A Duplexer Hardware (4 screws)
Modem	**X437AA Add *ASTRO* Modem** TRN7668A *ASTRO* Modem Card	

Option Category	Option and Complement
Circulator	**CA00187AA Add Triple Circulator (UHF, R0)** TLE9120B Dual Circulator TLN3391A 50 Ohm Load with Heat Sink TLE9140A Low Pass Filter TRN7796A Fan, Peripheral Tray **X676AN Add Triple Circulator (UHF, R1 and R2)** TLE9120A Dual Circulator TLN3391A 50 Ohm Load with Heat Sink TLE9140A Low Pass Filter TRN7796A Fan, Peripheral Tray **X676AP Add Triple Circulator (UHF, R3 and R4)** TLE9130A Dual Circulator TLN3391A 50 Ohm Load with Heat Sink TLE9140A Low Pass Filter TRN7796A Fan, Peripheral Tray **X676AA Add Triple Circulator (132−146 MHz)** TYD4001A Dual Circulator TLN3391A 50 Ohm Load with Heat Sink TYD4010A Low Pass Filter TRN7796A Cooling Fan **X676AB Add Triple Circulator (144−160 MHz)** Same as X676AA except substitute TYD4002A Dual Circulator **X676AC Add Triple Circulator (158−174 MHz)** Same as X676AA except substitute TYD4003A Dual Circulator **X676AQ Add Triple Circulator (800 MHz)** TLF7320A Dual Circulator TLN3391A 50 Ohm Load with Heat Sink TLF7340A Low Pass Filter TRN7796A Fan, Peripheral Tray **X676AR Add Triple Circulator (900 MHz)** TLF7330A Dual Circulator TLN3391A 50 Ohm Load with Heat Sink TLF7340A Low Pass Filter TRN7796A Fan, Peripheral Tray
UHSO	**X873AA Add Internal Ultra High Stability Oscillator** 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
Peripheral Tray	**X696AA Add Peripheral Tray** TRN7751A *Quantar* Peripheral Shelf
Miscellaneous	HSN1000 External Speaker TRN7738A External Speaker Hardware (bracket and cable) HMN1001A Microphone *Note that the external speaker and microphone are not options and must be ordered as line items on the STIC−1 order form.*

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 if 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, Piscattaway, 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, Piscattaway, NJ 08855–1331.

PERFORMANCE SPECIFICATIONS

General

TX Sub−Band Range	**VHF** 132−154 MHz (R1) 150−174 MHz (R2)	**UHF** 380−433 MHz (R0) 403−433 MHz (R1) 438−470 MHz (R2) 470−494 MHz (R3) 494−520 MHz (R4)	**800** 851−870 MHz	**900** 935−941 MHz
RX Sub−Band Range	**VHF** 132−154 MHz (R1) 150−174 MHz (R2)	**UHF** 380−433 MHz (R0) 403−433 MHz (R1) 438−470 MHz (R2) 470−494 MHz (R3) 494−520 MHz (R4)	**800** 806−825 MHz	**900** 896−902 MHz
Number of Channels	16			
Channel Spacing	**VHF:** 30, 25, 12.5 kHz	**UHF/800:** 12.5, 25 kHz	**900:** 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)	**VHF/UHF:** Any spacing within same sub-band	**800:** 45 MHz	**900:** 39 MHz	
T/R Separation (with duplexer option)	**VHF/UHF:** $\geq$ 1.5 MHz	**800:** 45 MHz	**900:** 39 MHz	
Temperature Range (ambient)	—30° C to +60° C			

PERFORMANCE SPECIFICATIONS (Cont'd)

Receiver

I−F Frequencies	**VHF** 21.45 MHz (1st) 450 kHz (2nd)	**UHF** 73.35 MHz (1st) 450 kHz (2nd)	**800** 73.35 MHz (1st) 450 kHz (2nd)	**900** 73.35 MHz (1st) 450 kHz (2nd)
Preselector Bandwidth	**VHF/UHF:** 4 MHz	**800:** 19 MHz	**900:** 6 MHz	
Sensitivity (12 dB SINAD)	**VHF:** 0.25 µV	**UHF:** 0.35 µV	**800/900:** 0.30 µV	
Sensitivity (20 dB Quieting)	**VHF:** 0.35 µV	**UHF:** 0.5 µV	**800/900:** 0.42 µV	
Adjacent Channel Rejection	**VHF** 90 dB (25/30 kHz) 80 dB (23.5 kHz)	**UHF** 75 dB (12.5 kHz) 85 dB (25 kHz)	**800** 70 dB (12.5 kHz) 80 db (25 kHz)	**900** 70dB
Intermodulation Rejection	**VHF** 85 dB (25/30 kHz) 80 dB (30 kHz)	**UHF** 85 dB	**800** 85 dB	**900** 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)	**VHF** 50 dB (25/30 kHz) 45 dB (12.5 kHz)	**UHF** 45 dB (12.5 kHz) 50 dB (25 kHz)	**800** 45 dB (12.5 kHz) 50 dB (25 kHz)	**900** 45 db
Frequency Stability	**VHF/UHF/800:** 1 ppm	**900:** 0.1 ppm		
RF Input Impedance	50 Ω			
FCC Designation (FCC Rule Part 15)	**VHF:** ABZ89FR3776 **900:** ABZ89FR5768	**UHF:** ABZ89FR4796	**800:** ABZ89FR5757	

PERFORMANCE SPECIFICATIONS (Cont'd)

Transmitter

Power Output	**VHF** 6–25W 25–125W **UHF** 5–25W 25–110W **800** 5–20W 20–100W **900** 25–100W
Electronic Bandwidth	Full sub–band
Intermodulation Attenuation	**VHF:** 20 dB (single circulator; standard on all PAs) 65 dB (triple circulator – requires triple circulator option) **UHF:** 50 dB (single circulator; standard on all PAs) **800:** 50 dB (single circulator; standard on all PAs) **900:** 20 dB (single circulator; standard on all PAs) 70 dB (triple circulator – requires triple circulator option)
Spurious and Harmonic Emissions Attenuation	90 dB
Deviation	**VHF, UHF, and 800** ±5 kHz (25 kHz) ±2.5 kHz (12.5 kHz) **900** ±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	**VHF, UHF, 800:** 1 ppm **900:** 0.1ppm
RF Output Impedance	50 Ω
FCC Designation	**VHF** 25W: ABZ89FC3774 (Parts 22, 74, 80, 90); ABZ89FC3774-D (Part 90) 125W: ABZ89FC3773 (Parts 22, 74, 80, 90); ABZ89FC3773-D (Part 90) **UHF** 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) **800** 20W: ABZ89FC5775 (Parts 22, 90); ABZ89FC5775-D (Part 90) 100W: ABZ89FC5776 (Parts 22, 90); ABZ89FC5776-D (Part 90)
FCC Designation	**900** 100W: ABZ89FC5767 (FCC Rule Part 90)

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