

Function of RF Semiconductors & Other Active Devices

Schematic Key	Designator Motorola	Device Type	Circuit Application	Operating Frequency	Source
<b>PA</b>					
Q3801	M82D50	TRANSISTOR	RF PA	136-174 MHz	MOTOROLA
Q3804	M9859	TRANSISTOR	RF PA	136-174 MHz	MOTOROLA
Q3850	25C28	TRANSISTOR	RF PA	136-174 MHz	MOTOROLA
Q3875	M1104	TRANSISTOR	RF PA	136-174 MHz	MOTOROLA
<b>EXCITER</b>					
Q3401	MMBR901	VCO FDBACK BUFF	SYNTHESIZER	136-174 MHz	MOTOROLA
Q3402	MMBT3904	REFERENCE BUFFER	SYNTHESIZER	2.1 MHz	MOTOROLA
Q3403	MMBT3904	CHARGE PUMP	SYNTHESIZER	DC	MOTOROLA
Q3405	MMBT3904	CHARGE PUMP	SYNTHESIZER	DC	MOTOROLA
Q3407	MMBT3904	CHARGE PUMP	SYNTHESIZER	DC	MOTOROLA
Q3408	MMBT3904	CHARGE PUMP	SYNTHESIZER	DC	MOTOROLA
Q3410	MMBT3904	CHARGE PUMP	SYNTHESIZER	DC	MOTOROLA
Q3411	MMBT3904	CHARGE PUMP	SYNTHESIZER	DC	MOTOROLA
Q3412	MMBT3904	SYNTH ADAPT	SYNTHESIZER	DC	MOTOROLA
U3401	MC33074	LOW PASS FILTER	SYNTHESIZER	AUDIO	MOTOROLA
U3401	MC33074	LO-FREQ MOD COMP	SYNTHESIZER	AUDIO	MOTOROLA
U3402	C42	PHASE LOCKED LOOP	SYNTHESIZER		MOTOROLA
U3403	74HC4066	TRANS. GATE	SYNTHESIZER	DC	MOTOROLA
U3404	MC33184	LO PASS LOOP FILT	SYNTHESIZER	DC	MOTOROLA
Q3100	MMBT3904	RF SWITCH CKT	VCO	136-174 MHz	MOTOROLA
Q3200	MMBFJ310LT1	RF OSCILLATOR	VCO	136-174 MHz	MOTOROLA
Q3201	MMBR901LT1	BUFFER AMP	VCO	136-174 MHz	MOTOROLA
Q3230	MMBFJ310LT1	RF OSCILLATOR	VCO	136-174 MHz	MOTOROLA
Q3231	MMBR901LT1	BUFFER AMP	VCO	136-174 MHz	MOTOROLA
Q3260	MMBT3904T	VCO SELECT	VCO	DC	MOTOROLA
Q3261	MMBT3906T	VCO SELECT	VCO	DC	MOTOROLA
Q3262	MMBT3904T	VCO SELECT	VCO	DC	MOTOROLA
Q3263	MMBT3906T	VCO SELECT	VCO	DC	MOTOROLA
Q3280	MMBT3904T	SUPER FILTER	VCO	DC	MOTOROLA
U3270	MWA0311T1	AMPLIFIER	VCO	136-174 MHz	MOTOROLA
Q3000	MMBT3904T	FAST KEY CTRL	POWER CONTROL	DC	MOTOROLA
Q3001	MMBT3904T	FAST KEY CTRL	POWER CONTROL	DC	MOTOROLA
Q3002	MMBT3904T	FAST KEY CTRL	POWER CONTROL	DC	MOTOROLA
Q3003	MMBT3904	SERIES PASS	POWER CONTROL	DC REG	MOTOROLA
Q3004	MJD32RL	SERIES PASS	POWER CONTROL	DC REG	MOTOROLA
U3000	5183977M73	D/A CONVERTER	POWER CONTROL		MOTOROLA
U3001	5183977M70	PWR CTRL IC	POWER CONTROL	DC	MOTOROLA
U3002	5113819A04	PWR CTRL IC	POWER CONTROL	DC	MOTOROLA
U3002	5113819A04	FAST KEY CTRL	POWER CONTROL	DC	MOTOROLA
<b>STATION CONTROL BOARD</b>					
Q301	MMBT3904	BUFFER		DATA	MOTOROLA
Q302	MUN2211	LEVEL SHIFTER		DATA	MOTOROLA
Q303	MUN2211	LEVEL SHIFTER		DATA	MOTOROLA
U301	74HC4066	GATE		AUDIO	MOTOROLA
U302	MC33074	OP AMP		AUDIO	MOTOROLA
U303	MAX543	D/A CONVERTER		AUDIO	MOTOROLA
U304	MAX543	D/A CONVERTER		AUDIO	MOTOROLA
U305	MC33074	OP AMP		AUDIO	MOTOROLA
U306	MAX281	FILTER		AUDIO	MOTOROLA
U307	74HC4052	4:1 MUX		AUDIO	MOTOROLA
U308	MAX281	FILTER		AUDIO	MOTOROLA
U309	74HC4053	2:1 MUX		AUDIO	MOTOROLA
U310	74HC4052	4:1 MUX		AUDIO	MOTOROLA
U311		EPOT		AUDIO	MOTOROLA
U312	MC3303	OP AMP		AUDIO	MOTOROLA
U313	MC33074	OP AMP		AUDIO	MOTOROLA
U314	74HC4051	ANALOG MUX		AUDIO	MOTOROLA
U315	MAX543	D/A CONVERTER		AUDIO	MOTOROLA
U316	MC145480	PCM CODEC (D/A, A/D)		AUDIO	MOTOROLA
U317	LM380	AUDIO AMP		AUDIO	MOTOROLA

**TUNE UP PROCEDURE**

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

The following adjustments comprise the total transmitter alignment:

- 1. Reference Oscillator
- 2. VCO
- 3. Modulation Compensation
- 4. Instantaneous Deviation Control and Audio Levels
- 5. RF Power Output

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 radiotelephone personnel only.

**TEST EQUIPMENT**

Description	Recommended Model
1. Service Monitor	Motorola R-2600
2. PC with RSS	DOS Based

**TRANSMITTER ALIGNMENT PROCEDURE**

RSS Port

A 9-Pin D-Type connector is provided on the Station Control Module front panel to allow service personnel to connect a PC loaded with the Radio Service Software (RSS) and perform programming and maintenance tasks via this EIA-232 port. The following pages of this exhibit will show the important alignment screens.

ALIGNMENT SCREEN

MS-DOS Prompt

MOTOROLA RADIO SERVICE SOFTWARE  
BASE STATION PRODUCTS  
VER:R10.03.00  
MAIN-SERVICE:ALIGNMENT

Press <F2> To Align Rx Wireline

\*\*\*\*\* Remember to F4-ACCESS DISABLE the station prior to alignment \*\*\*\*\*  
\*\*\*\*\* RESET STATION AFTER PERFORMING ALIGNMENTS \*\*\*\*\*

INSTALL/MODULE REPLACEMENT

Rx Wireline <Line 2>

Tx Wireline  
RSSI Calibrate  
Squelch Adjust  
Battery Equalization  
Reference Oscillator  
ASTRO Tx Align and Test  
TDATA Calibration

MODULE REPLACEMENT

Power Output  
Tx Deviation Gain Adjust  
Reference Modulation Compensation

BIT ERROR RATE AND RSSI REPORTS

U.52 Rx BER And RSSI Report  
PROJECT 25 Rx BER And RSSI Report  
RSSI Monitor

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10  
HELP PERFORM ACCESS RESET ACCESS ACCESS  
ALIGNMENT DISABLE STN ENABLE EXIT

REFERENCE OSCILLATOR ADJUSTMENT

MS-DOS Prompt

MOTOROLA RADIO SERVICE SOFTWARE  
BASE STATION PRODUCTS  
VER:R10.03.00  
MAIN-SERVICE:ALIGNMENT:REF OSCILLATOR

Use Up/Dn Arrow Keys  
Use PgUp/PgDn Keys

REFERENCE OSCILLATOR FREQUENCY

MIN MAX

TRANSMIT FREQUENCY 160.000000 MHz

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10  
HELP AUTO-NET AUTO-NET KEYUP SAVE DEKEY EXIT  
5 MHz 10 MHz



TRANSMIT DEVIATION ADJUSTMENT

MS-DOS Prompt

MOTOROLA RADIO SERVICE SOFTWARE  
BASE STATION PRODUCTS  
VER:R10.03.00  
MAIN:SERVICE:ALIGNMENT:TX DEU GAIN ADJ

NON EDITABLE FIELD:  
Press F2 to Start The Alignment

**TX DEVIATION GAIN ADJUSTMENT**

1st Frequency Deviation	6.308	kHz
2nd Frequency Deviation	6.448	kHz
3rd Frequency Deviation	6.588	kHz
4th Frequency Deviation	6.729	kHz
Current Frequency	0.000000	MHz

F1 HELP    F2 FREQ 1 KEYUP    F3 FREQ 2 KEYUP    F4 FREQ 3 KEYUP    F5 FREQ 4 KEYUP    F6    F7    F8 SAVE    F9 DEKEY    F10 EXIT