

ADJUSTMENT

The following parts are required for adjustment

1. Antenna connector adapter

The antenna connector of this radio uses an SMA terminal. Use an antenna connector adapter [SMA(f) – BNC(f) or SMA(f) – N(f)] for adjustment. (The adapter is not provided as an option, so buy a commercially-available one.)

2. Repair Jig (Chassis)

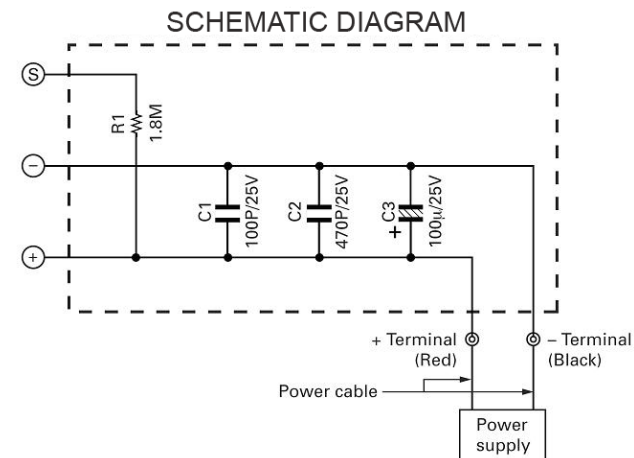
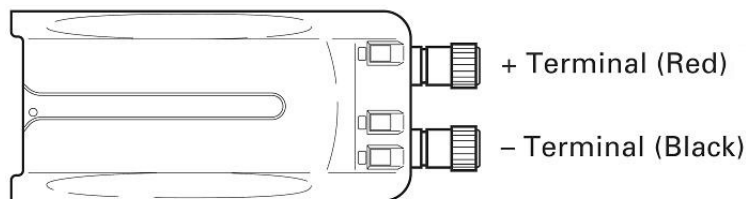
Use jig for repairing the 3308. Place the TX-RX unit on the jig and fit it with screws.

The jig facilitates the voltage check and protects the final amplifier FET when the voltage on the flow side of the TX-RX unit is checked during repairs.

3. Battery Jig

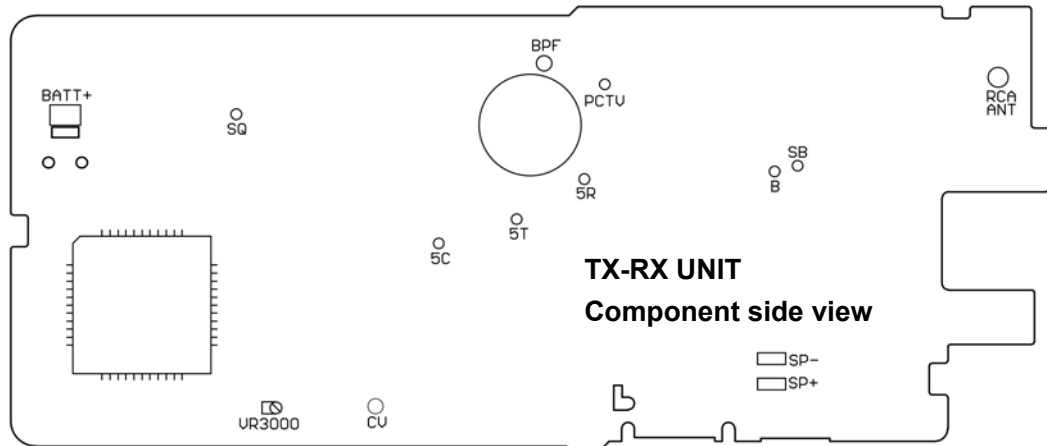
Connect the power cable properly between the battery jig installed in the transceiver and the power supply, and be sure output voltage and the power supply polarity prior to switching the power supply ON, otherwise over voltage and reverse connection may damage the transceiver, or the power supply or both.

Note: When using the battery jig, you must measure the voltage at the terminals of the battery jig. Otherwise, a slight voltage drop may occur within the power cable, between the power supply and the battery jig, especially while the transceiver transmits.



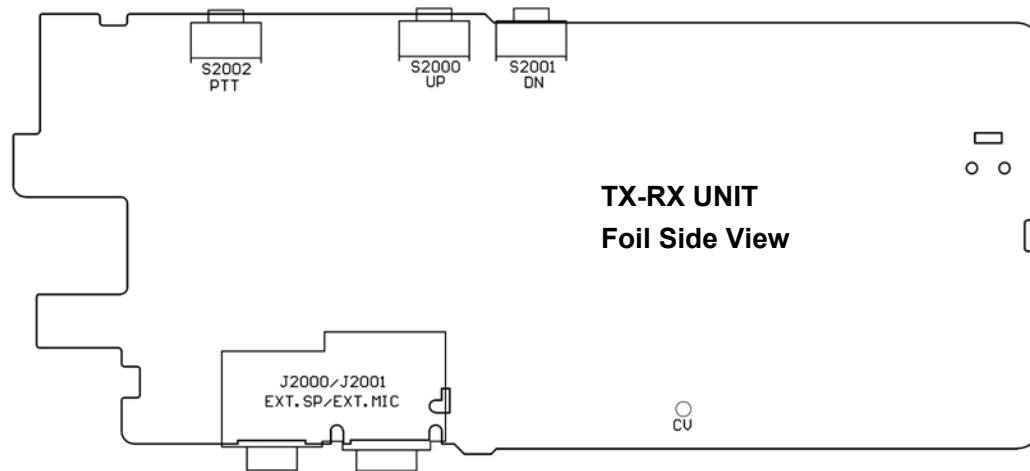
ADJUSTMENT

Adjustment points TX-RX unit (X57-689) Component side view



VR3000 : Frequency adjustment
BPF : Band-pass wave form test point
CV : Lock voltage adjustment terminal

Foil Side View



CV : Lock voltage adjustment terminal

Fig. 1 Adjustment points

ADJUSTMENT

Frequency and signalling

The set has been adjusted for the frequencies shown in the following table. When required, re-adjust them following the adjustment procedure to obtain the frequencies you want in actual operation.

Frequency (MHz)

Channel No.	RX Frequency	TX Frequency
1	422.575MHz	422.575MHz
2	424.665MHz	424.665MHz
3	426.775MHz	426.775MHz
4	428.875MHz	428.875MHz
5	429.975MHz	429.975MHz

Signalling

Channel No.	RX	TX
1	None	None
2	None	None
3	QT 67.0Hz	QT 67.0Hz
4	QT 151.4Hz	QT 151.4Hz
5	QT 250.3Hz	QT 250.3Hz
6	DQT D023N	DQT D023N
7	DQT D754I	DQT D754I

ADJUSTMENT

- **Preparations for tuning the transceiver**

Before attempting to tune the transceiver, connect the unit to a suitable power supply.

Whenever the transmitter is tuned, the unit must be connected to a suitable dummy load (i.e. power meter).

The speaker output connector must be terminated with a 8Ω dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during tuning.

Adjustment Frequency

TEST CH	C2 type	
	RX Frequency	TX Frequency
Center	422.575MHz	422.575MHz
Low	426.775MHz	426.775MHz
High	428.875MHz	428.875MHz

ADJUSTMENT


Common Section

Item	Condition	Measurement		Adjustment		Specifications /Remarks
		Test equipment	Terminal	Parts	Method	
1. Setting	1) BATT terminal voltage: 7.5V 2) SSG standard modulation [Wide] MOD: 1kHz,DEV: 3kHz [Narrow] MOD: 1kHz,DEV:1.5kHz					
2. VCO lock voltage RX	1) CH: High	Power meter DVM	ANT CV		2.8V	±0.1V
	2) CH: Low				Check	0.6V or more
2. VCO lock voltage TX	3) CH: High PTT:ON				2.8V	±0.1V
	4) CH: Low PTT: ON				Check	0.6V or more

Transmitter Section

Item	Condition	Measurement		Adjustment		Specifications /Remarks
		Test equipment	Terminal	Parts	Method	
1. Frequency Adjust	1) CH: High 2) PTT: ON	Frequency counter	ANT	VR3000		High frequency ±50Hz
2. High power Adjust	TEST CH: Low Center High BATT terminal voltage: 7.5V PTT:ON	Power meter Ammeter		Programming Software:QX3308		4.5W ±0.2W 1.5 A or less
	3. Low power Adjust			TEST CH: Low Center High BATT terminal voltage: 7.5V PTT:ON		1W ±0.1W 0.9A or less

ADJUSTMENT

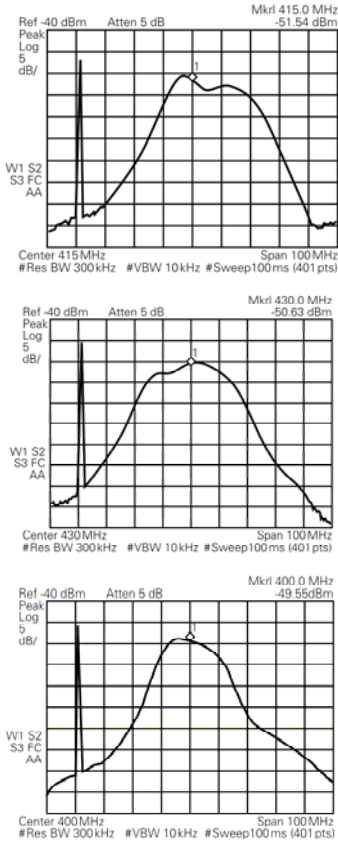
Item	Condition	Measurement		Adjustment		Specifications /Remarks			
		Test equipment	Terminal	Parts	Method				
4. Max deviation Adjust [Wide]	TEST CH: Center Low High (3 points) AG: 1kHz/150mV Deviation meter filter LPF: 15kHz HPF: OFF PTT: ON	Power meter Deviation meter Oscilloscope AG AF VTVM	ANT SP/MIC connector	Programming Software: QX3308	4.4kHz According to the lager +, -)	±50Hz			
	[Narrow]					TEST CH: Center PTT: ON	2.2kHz According to the lager +,-)	±50Hz	
5. VOX 1 Writing	TEST CH: Center AG: 1kHz/45mV								
6. VOX 10 Writing	TEST CH: Center AG: 1kHz/3.0mV								
7. DQT Balance Adjust [Wide]	TEST CH: Center Low High (3 points) LPF: 3kHz HPF: OFF PTT: ON					ANT	Programming Software: QX3308	Make the demodulation wave into square waves	
	[Narrow]		TEST CH: Center PTT: ON						

ADJUSTMENT

Item	Condition	Measurement		Adjustment		Specifications /Remarks	
		Test equipment	Terminal	Parts	Method		
8.QT Deviation Adjust [Wide]	TEST CH: Center Low High (3 points) LPF: 3kHz HPF: OFF PTT: ON	Power meter Deviation meter Oscilloscope AG AF VTVM	ANT	Programming Software:QX3308	0.75kHz	±40Hz	
	[Narrow]					TEST CH: Center PTT: ON	0.35kHz
9.DQT Deviation Adjust [Wide]	TEST CH: Center Low High (3 points) LPF: 3kHz HPF: OFF PTT: ON					0.75kHz	±40Hz
	[Narrow]					TEST CH: Center PTT: ON	0.35kHz

ADJUSTMENT

Receiver section

Item	Condition	Measurement		Adjustment		Specifications /Remarks
		Test equipment	Terminal	Parts	Method	
1.BPF Wave Adjust ST-3308	<p>(1) Center frequency Spectrum analyzer setting Center-f : 426.775MHz Span : 100MHz RBW : 300kHz VBW : 10kHz ATT : 5dB</p> <p>(2) High-edge frequency Spectrum analyzer setting Center-f : 430MHz</p> <p>(3) Low-edge frequency Spectrum analyzer setting Center-f : 400MHz</p>					 <p>The figure contains three spectrum analyzer plots. The top plot is centered at 415.0 MHz with a peak level of -51.54 dBm. The middle plot is centered at 430.0 MHz with a peak level of -50.63 dBm. The bottom plot is centered at 400.0 MHz with a peak level of -49.55 dBm. All plots show a bandpass filter response with a peak and roll-off on both sides. The plots include parameters: Ref -40 dBm, Atten 5 dB, Span 100 MHz, Res BW 300 kHz, VBW 10 kHz, Sweep 100 ms, and 401 pts.</p>
2.Sensitivity check [Wide]	<p>TEST CH: Low Center High</p> <p>SSG output:-117dBm(0.3μV) SSG MOD: 3.0kHz</p>	SSG DVM Oscilloscope AF VTVM	ANT		Check	12dB SINAD or more

ADJUSTMENT

Item	Condition	Measurement		Adjustment		Specifications /Remarks
		Test equipment	Terminal	Parts	Method	
[Narrow]	TEST CH: Center SSG output: -115dBm(0.4μV) SSG MOD: 1.5kHz	SSG DVM Oscilloscope AF VTVM	ANT	Programming Software: QX-3308	Write	12dB SINAD or more
3.SQL1 (Threshold) writing [Wide]	TEST CH: Center Low High SSG output:-123dBm(0.16μV) SSG MOD: 3.0kHz					Squelch open
[Narrow]	TEST CH: Center SSG output:-122dBm(0.18μV) SSG MOD: 1.5kHz					
4.SQL9 (Tight) writing [Wide]	TEST CH: Center Low High SSG output: -117dBm(0.3μV) SSG MOD: 3.0kHz					
[Narrow]	TEST CH: Center SSG output:-116dBm(0.35μV) SSG MOD: 1.5kHz					
5.BATT Detection Writing	BATT terminal voltage: 5.9V	DVM	ANT BATT terminal		Write	BATT terminal voltage:5.9V