

5. ADJUSTMENT



5.1 Adjustment Connection Diagrams

Use only properly configured measuring equipment, and allow it to warm up to a stable operating condition after being turned on.

-- Standard Conditions --

Power supply voltage	: DC +7.2 V	Standard modulation frequency	: 1 kHz
Audio output	: 100 mW	Standard frequency deviation	: ± 3 kHz
Audio load	: 8 Ω	Ambient temperature	: 25°C \pm 5°C
Transmission load	: 50 Ω	Test method	: EIA/TIA-603

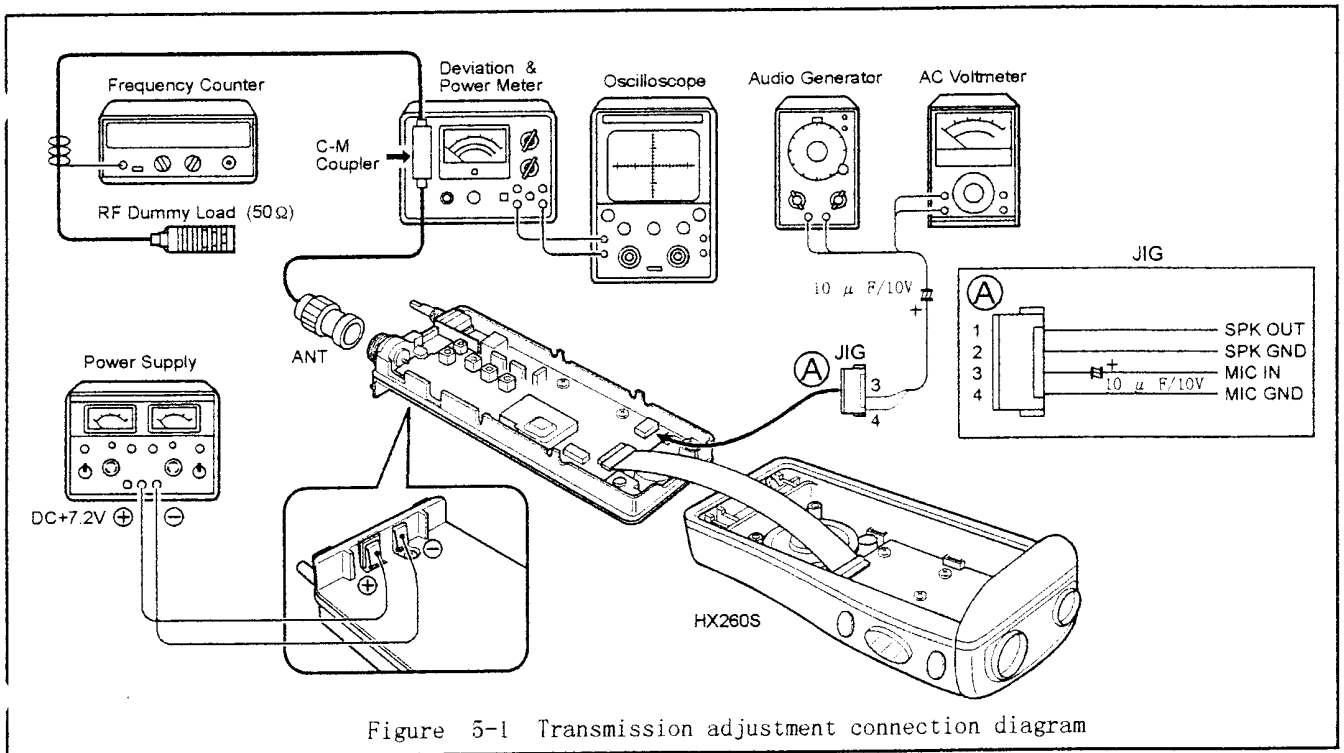
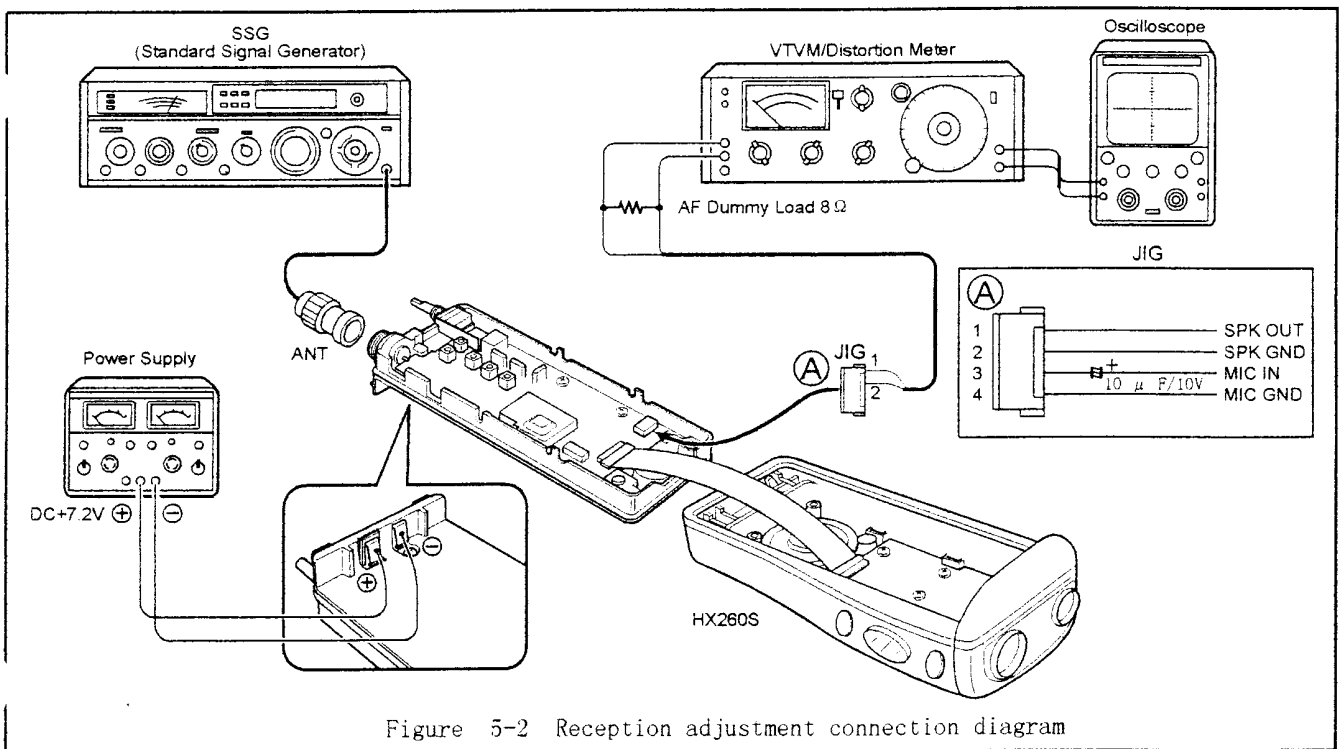


Figure 5-1 Transmission adjustment connection diagram



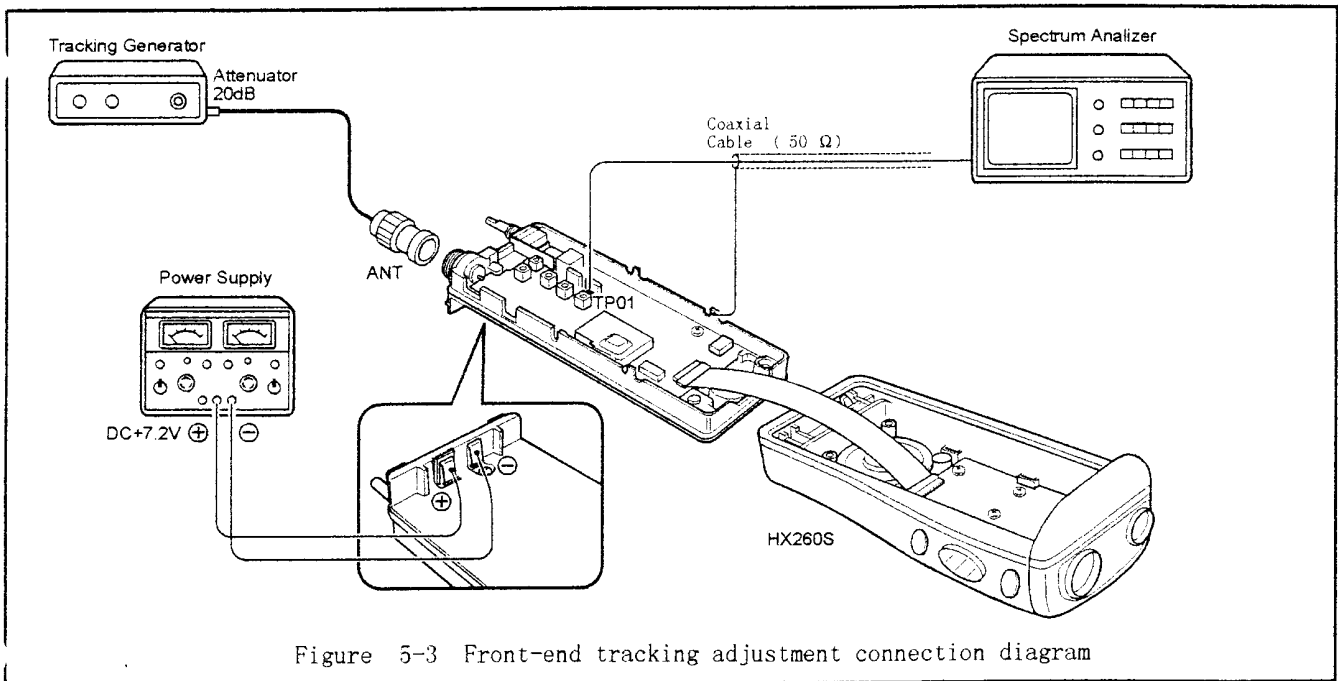
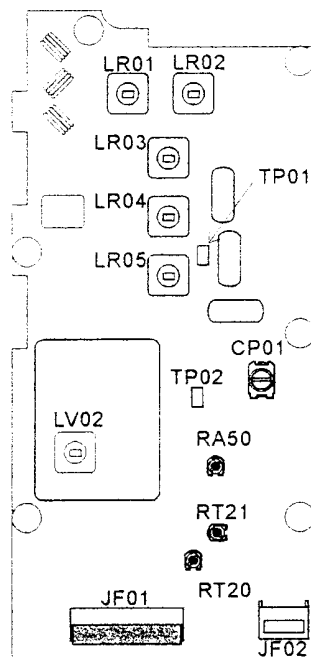


Figure 5-3 Front-end tracking adjustment connection diagram

5.2 Adjustment Point Diagrams



5.3 Adjustment and Confirmation

5.3.1 PLL Block

(Note) These adjustments are performed in the test mode. To activate the test mode, TEST JIG to connect the transceiver and, while holding down the H/L and DOWN keys simultaneously, switch on the power switch.

-- VCO Control Voltage Confirmation --

- (a) Make connections as shown in Figure 5-1.
- (b) Connect an DC voltmeter with an internal resistance of $500\text{ k}\Omega$ or more to test point TP02.
- (c) Put the transceiver into receive status and turn squelch on.
- (d) Set the transceiver to channel 16.
- (e) Confirm that the voltage at TP02 (the VCO control voltage) is $1.8\text{ V} \pm 0.2\text{ V}$.
- (f) Set the transceiver to channel EXP05, and switch to the transmit mode.
- (g) Confirm that the voltage at TP02 (the VCO control voltage) is $3.5\text{ V} \pm 0.4\text{ V}$.

5.3.2 Transmitter Block

(Note) These adjustments are performed in the adjustment mode. To activate the test mode, TEST JIG to connect the transceiver and, while holding down the H/L and DOWN keys simultaneously, switch on the power switch.

-- RF Power Confirmation and Adjustment --

- (a) Make connections as shown in Figure 5-1. Then use the transceiver's H/L key to switch transmission power to the high setting.
- (b) Put the transceiver into transmit status.
- (c) Adjust RT21 so that the RF power is 5.0 W.
- (d) At this point, confirm that current consumption is 1.7A or less.
- (e) Return the transceiver to receive status and set the transmission power to low.
- (f) Put the transceiver into transmit status.
- (g) Adjust RT20 so that the RF power is 0.8 W.
- (h) At this point, confirm that current consumption is 0.8A or less. After confirmation, return the transceiver to receive status.

-- Transmission Frequency Adjustment --

- (a) Put the transceiver into transmit status.
- (b) Adjust CP01 so that the transmission frequency is $156.800\text{ MHz} \pm 100\text{ Hz}$.
- (c) After adjustment, return the transceiver to receive status.

-- Deviation Adjustment --

- (a) Input a 1 kHz, 60 mVrms sine wave from the AG (audio generator) to the transceiver.
- (b) Put the transceiver into transmit status.
- (c) Adjust RA29 so that the maximum deviation is ± 4.5 kHz.
- (d) Adjust the output level of the AG so that deviation is ± 3.0 kHz.
- (e) Next, increase the output level of the AG by 20 dB.
- (f) Once again, adjust RA50 so that the maximum deviation is ± 4.5 kHz.
- (g) Repeat the steps (d) through (f) three times so that the maximum deviation is ± 4.4 kHz to ± 4.6 kHz.

5.3.3 Receiver Block

-- Front End Adjustment --

- (a) Make connections as shown in Figure 5-3.
- (b) Confirm that the transceiver's squelch control set to OFF.
- (Note) Adjust the output level of the tracking generator to -20 dBm or less so that the RF amplifier and spectrum analyzer do not become saturated.
- (c) Adjust LR01, LR02, LR03, LR04 and LR05 in that order, so that the following waveform is produced.

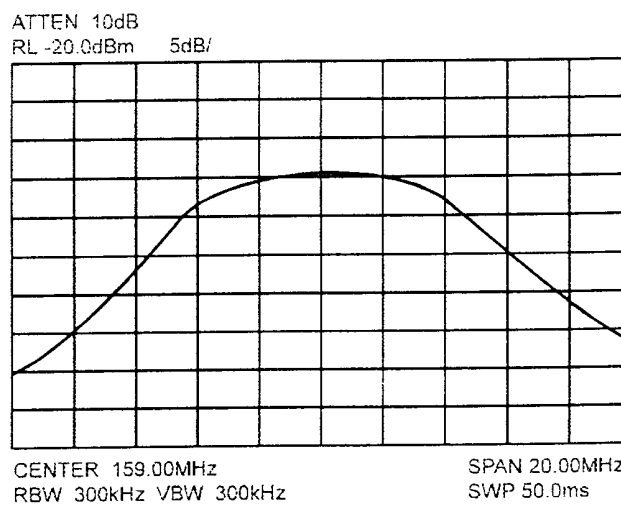


Figure 5-6

-- Receiver sensitivity confirmation --

- (a) Make connections as shown in Figure 5-2.
- (b) Set the channel to CH06 (156.300 MHz) and CH28 (162.000 MHz) using the UP and DOWN keys.
 - Confirm the sensitivity of the receiver.
 - Confirm that 12 dB SINAD is $0.45 \mu\text{V}$ or lower.
 - Confirm that 20 dB QS is $0.5 \mu\text{V}$ or lower.
- (c) If the sensitivity value does not fall within the specified value in the step (b), repeat section 5.3.3 Receiver Block.

-- Weather Alert confirmation --

- (Note) These adjustments are performed in the adjustment mode. To activate the adjustment mode, TEST JIG to connect the transceiver and, while holding down the H/L and DOWN keys simultaneously, switch on the power switch.
- (a) Press the SCAN key and start to MEMORY SCAN mode.
 - (b) Set the frequency of the Standard Signal Generator to WX10 (163.275MHz) and output level of the Standard Signal Generator to 20dBuV.
 - (c) Set the output of the signal Generator to ON.
 - (d) Confirm that the channel of transceiver stops at WX10 and the transceiver outputs the weather alert tone (1050Hz).

5.3.4 Battery Remaining Indicator Confirmation

- (a) In the normal mode, switch on the transceiver's power switch.
- (b) Apply a power supply voltage of 5.7 V to the transceiver.
- (c) Make connections as shown in Figure 5-1. Then use the transceiver's H/L key to switch transmission power to the high setting.
- (d) Put the transceiver into transmit status
- (e) At this point, confirm that the indication "LOW BATT" appears on the LCD.

5.4 Method of Factory Settings

- (a) Remove the TEST JIG. Connect a battery pack.
- (b) While holding down the transceiver's SCAN and WX keys at the same time, switch on the power switch.
This causes all data stored in memory to be cleared.