

Semiconductors and Active Devices

Synthesizer

| | | | |
|------|----------------------------|---------|---------|
| QP01 | PLL Synthesizer | MB15A02 | Fujitsu |
| QV02 | Variable Capacitance Diode | 1SV232 | Toshiba |
| QV03 | Variable Capacitance Diode | 1SV232 | Toshiba |
| QV04 | TX/RX Switch | 1SS314 | Toshiba |
| QV05 | Modulation Diode | 1SV214 | Toshiba |
| QV06 | VCO Oscillator | 2SK210 | Toshiba |
| QV07 | Buffer Amplifier | 2SC4726 | Rohm |

Receiver

| | | | |
|------|---------------------------------|-----------|---------|
| QR01 | RF Amplifier | 2SK882 | Toshiba |
| QR02 | RF Amplifier | 2SK882 | Toshiba |
| QF01 | 1st IF Amplifier | 2SC4726 | Rohm |
| QF02 | 2nd IF/ Squelch/ FM-Detector IC | TA31136FN | Toshiba |
| QB01 | Tone Detector | NJM567M | JRC |
| QA01 | AF Preamplifier | NJM2904M | Rohm |
| QA02 | AF Mute Switch | TC4S66F | Toshiba |
| QA03 | AF Power Amplifier Switch | 2SC2712 | Toshiba |
| QA04 | AF Power Amplifier Switch | 2SB798 | NEC |
| QA05 | AF Power Amplifier | NJM2070M | JRC |
| QA06 | AF Limiter | DAP202U | Rohm |
| QA07 | MIC Amplifier / Limiter | NJM2100M | JRC |

Transmitter

| | | | |
|------|---------------------------|----------|------------|
| QT01 | TX/RX Band Switch | DAN235E | Rohm |
| QT02 | Driver | 2SC5050 | Hitachi |
| QT04 | RF Power Module | PF0314 | Hitachi |
| QT05 | RF Power Detector | MA742 | Matsushita |
| QT06 | Antenna Switch | RLS-135 | Rohm |
| QT07 | Antenna Switch | RLS-135 | Rohm |
| QT08 | Auto Power Control | TA75S01F | Toshiba |
| QT10 | Auto Power Control Switch | UMC5N | Rohm |

Controller

| | | | |
|------|------------------------|------------|---------------|
| QL01 | Microprocessor | HD404849TF | Hitachi |
| QL02 | EE-PROM | BR93LC46F | Rohm |
| QL03 | Liquid Crystal Display | PNA6276 | Adamando |
| QL04 | Back Light Switch | UN9114 | Matsushita |
| QL05 | Reset Switch | PST575D | Mitsumi |
| QL06 | Beep Switch | 1SS314 | Toshiba |
| QL07 | PTT Switch | UN911F | Matsushita |
| QL08 | Lcd Back Light | L1650YG | Nihon Denyo |
| QL09 | Lcd Back Light | L1650YG | Nihon Denyo |
| QL10 | Key Back Light | CL-190YG | Citizen Densi |
| QL11 | Key Back Light | CL-190YG | Citizen Densi |

5.3 Adjustment and Confirmation

5.3.1 PLL Block

(Note) These adjustments are performed in the test mode. To activate the test mode, short JP01 to a ground and, while holding down the UP and DOWN keys simultaneously, switch on the power switch.

-- VCO Control Voltage Adjustment --

- (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 TP01.
- (c) Put the transceiver into receive status and turn squelch on.
- (d) Set the transceiver to channel 16.
- (e) Adjust LV03 so that the voltage at TP01 (the VCO control voltage) is $1.2\text{ V} \pm 0.1\text{ V}$.
- (f) Set the transceiver to channel EXP05, and switch to the transmit mode.
- (g) Confirm that the voltage at TP01 (the VCO control voltage) is $3.5\text{ V} \pm 0.5\text{ V}$.

5.3.2 Transmitter Block

(Note) These adjustments are performed in the adjustment mode. To activate the test mode, short JP01 to a ground 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 RT15 so that the RF power is 5.2 W.
- (d) At this point, confirm that current consumption is 1.8 A 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 RT11 so that the RF power is 0.8 W.
- (h) At this point, confirm that current consumption is 0.8 A 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, 160 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 RA29 so that the maximum deviation is ± 4.5 kHz.

5.3.3 Receiver Block

-- Front End Adjustment --

- (a) Make connections as shown in Figure 5-3.
- (b) Make the following setting on the tracking generator and spectrum analyzer.

Tracking generator: Output level: -20 dBm or less

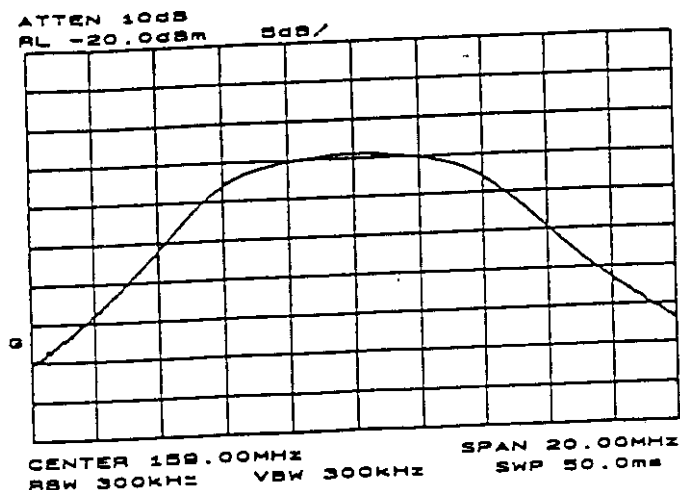
Spectrum analyzer: Center frequency: 159 MHz

Reference level: 0 dBm

Frequency span: 20 MHz

(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, and LR04, in that order, so that the following waveform is produced.



Center Frequency
(センター周波数) 159MHz
SPAN 20MHz

-- Weather Alert Decode Frequency Adjustment --

(Note) These adjustments are performed in the adjustment mode. To activate the adjustment mode, short JP01 to a ground and, while holding down the H/L and DOWN keys simultaneously, switch on the power switch.

- (a) Make connections as shown in Figure 5-4.
- (b) Connect a probe with an input impedance of $1\text{ M}\Omega$ or more to test point TP04, and read the frequency on the frequency counter.
- (c) Adjust RB02 so that decode frequency is $1,045\text{ Hz} \pm 2\text{ Hz}$.

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, and switch to the transmit mode.
- (c) At this point, confirm that the indication "LOW BATT" appears on the LCD.

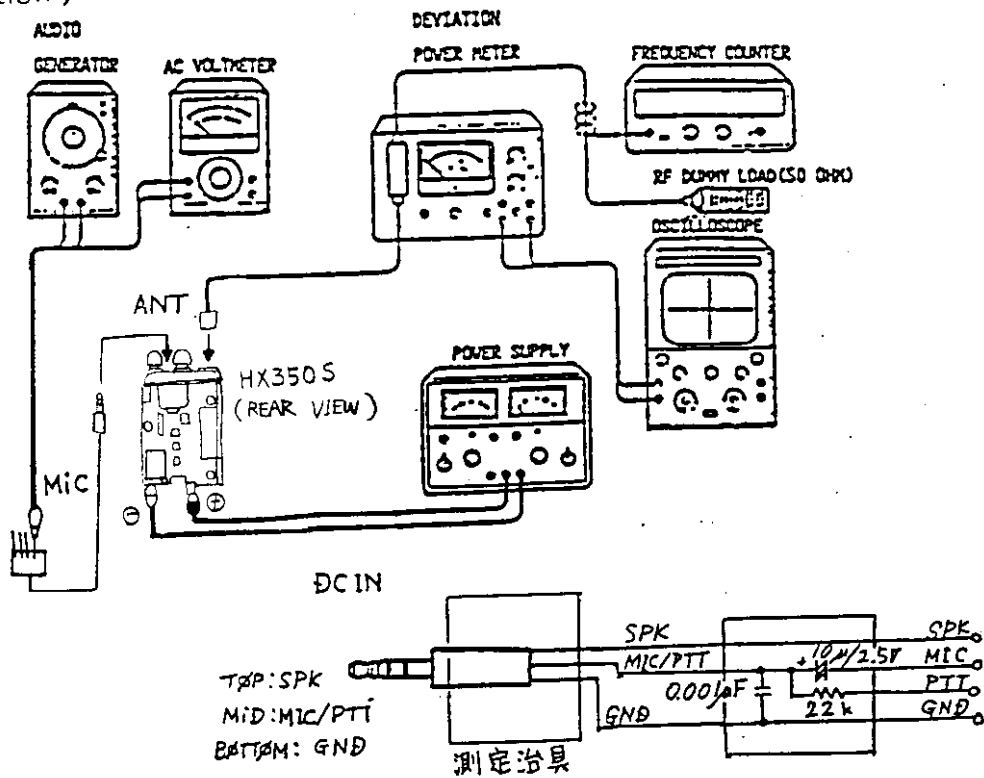
5.4 Method of Factory Settings

- (a) Remove the solder from JP01 to make it open status.
- (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.

Alignment Procedure for HX350S

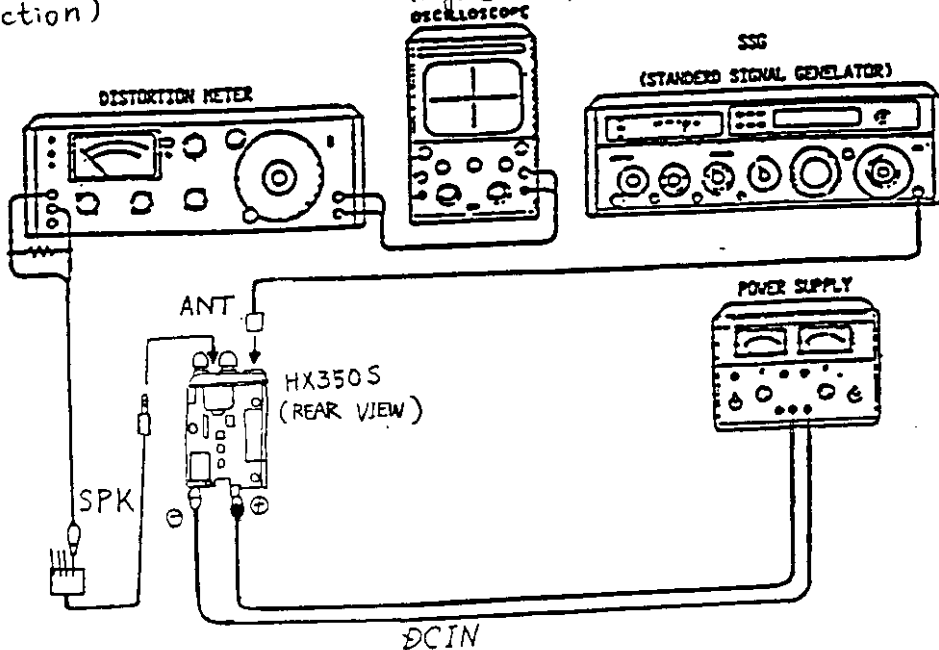
送信調整結線図
(TX connection)

図 1
(Figure 5-1)



受信調整結線図
(RX connection)

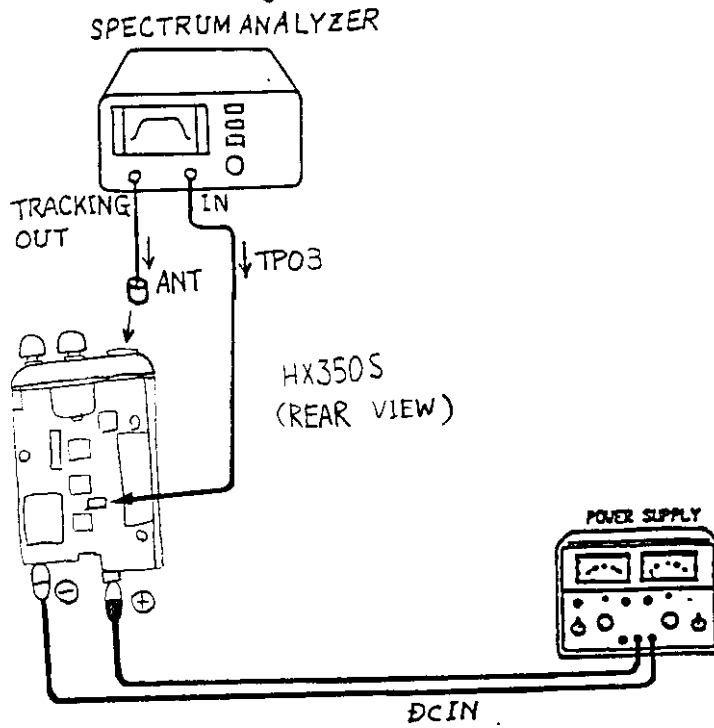
図 2
(Figure 5-2)



Alignment Procedure for HX350S

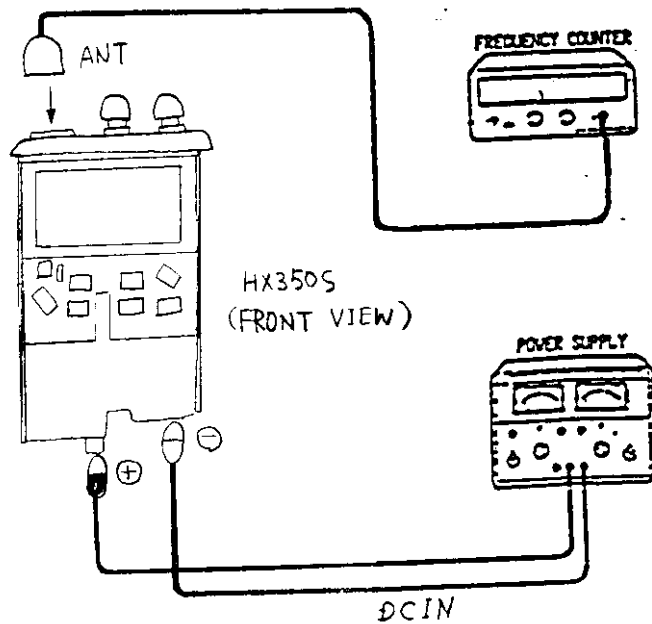
フロントエンド トラッキング調整結線図
(Front End Adjustment)

図 3
(Figure 5-3)



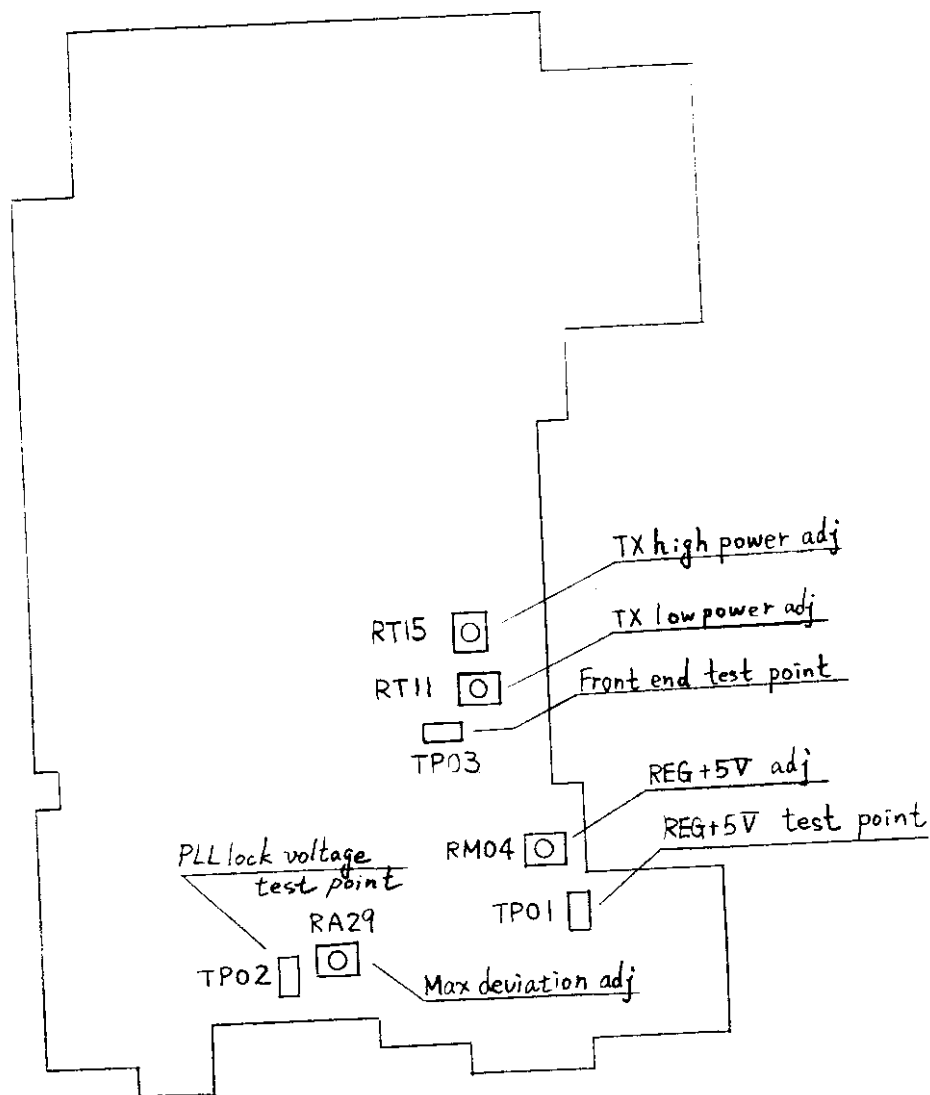
ウェザーアラート周波数調整結線図
(Weather Alert Frequency Adjustment) (Figure 5-4)

図 4



Adjustment point diagram for HX350S

(1) RF PCB
(PARTS SIDE)



(2) μ -COM PCB
(PARTS SIDE)

