

## 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 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 --

- Input a 1 kHz, 160 mVrms sine wave from the AG (audio generator) to the transceiver.
- Put the transceiver into transmit status.
- Adjust RA29 so that the maximum deviation is  $\pm 4.5$  kHz.
- Adjust the output level of the AG so that deviation is  $\pm 3.0$  kHz.
- Next, increase the output level of the AG by 20 dB.
- Once again, adjust RA29 so that the maximum deviation is  $\pm 4.5$  kHz.

### 5.3.3 Receiver Block

-- Front End Adjustment --

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

Tracking generator: Output level: -20 dBm or less

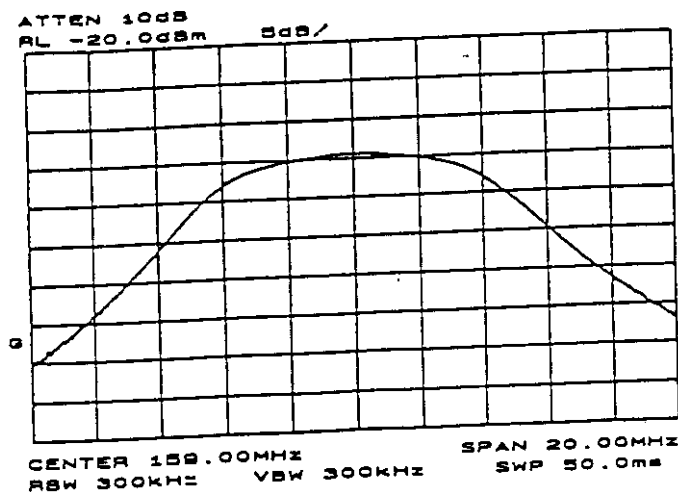
Spectrum analyzer: Center frequency: 159 MHz

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.

- 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.

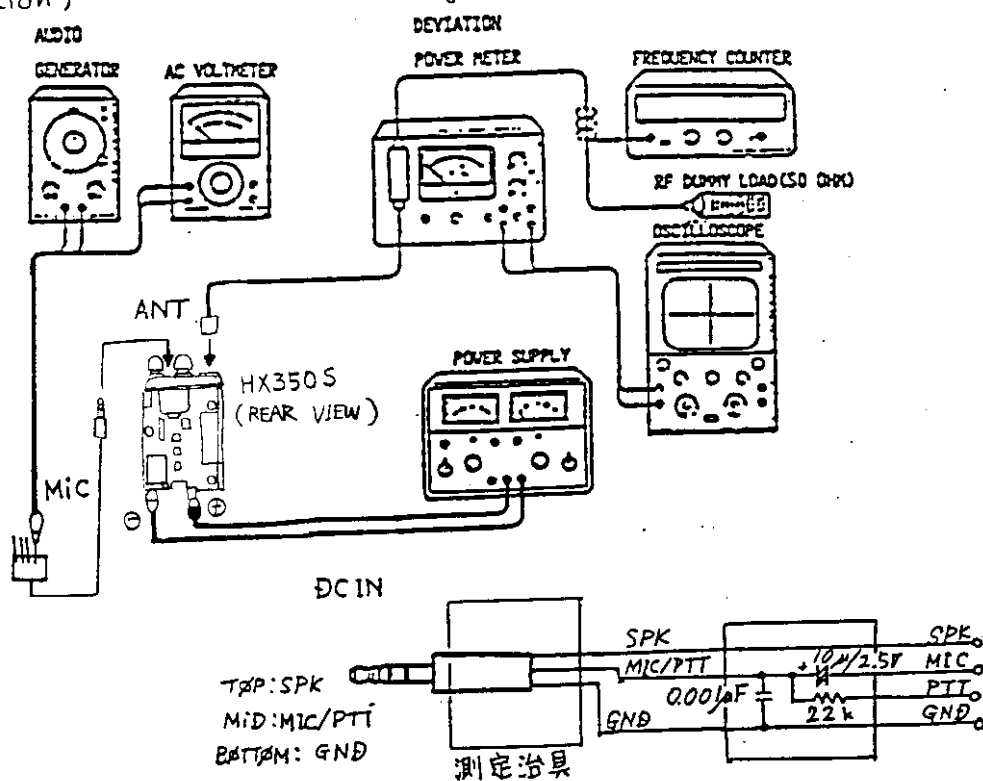
#### 5.4 Method of Factory Settings

- (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

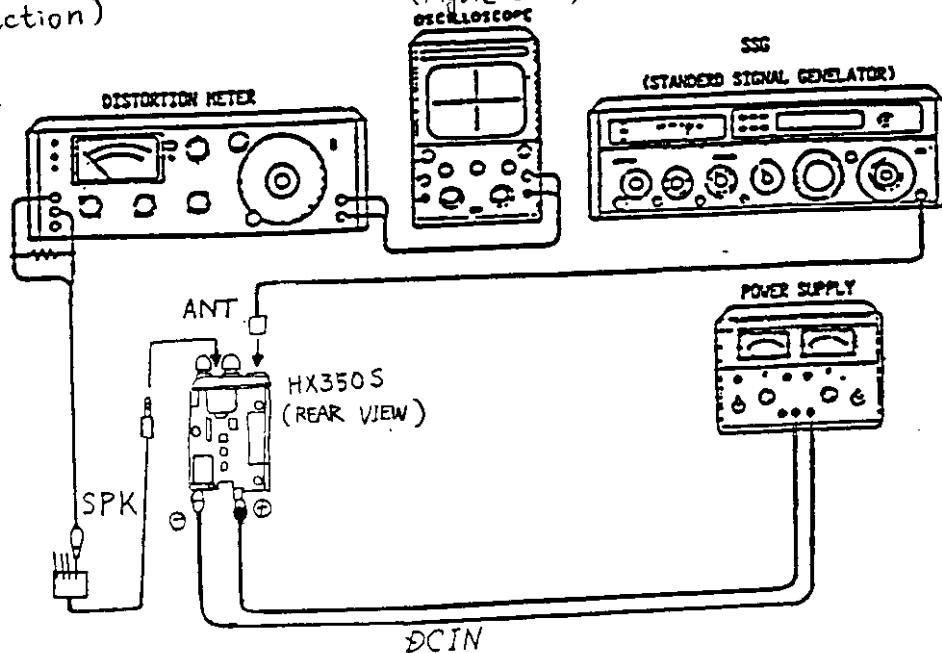
## 送信調整結線図 (TX connection)

図 1  
(Figure 5-1)



## 受信調整結線図 (RX connection)

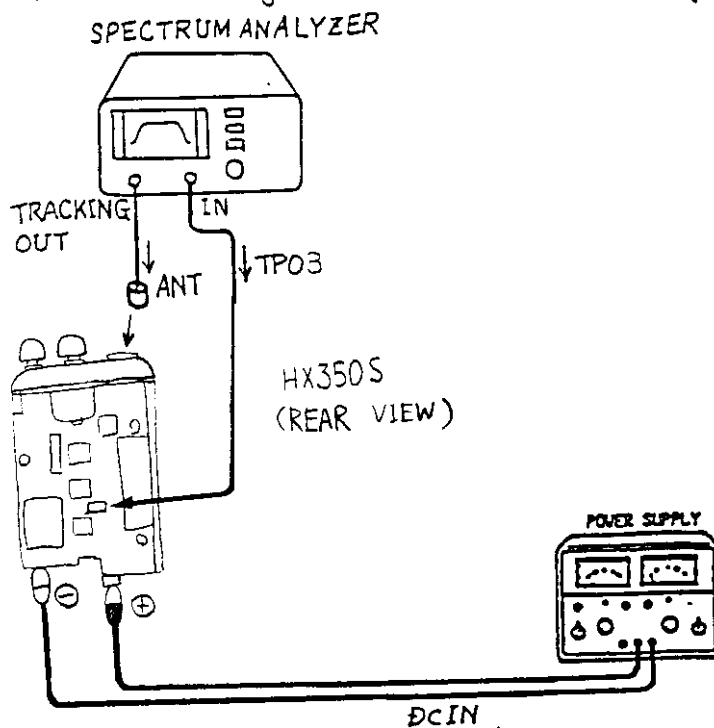
図 2  
(Figure 5-2)



# 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)

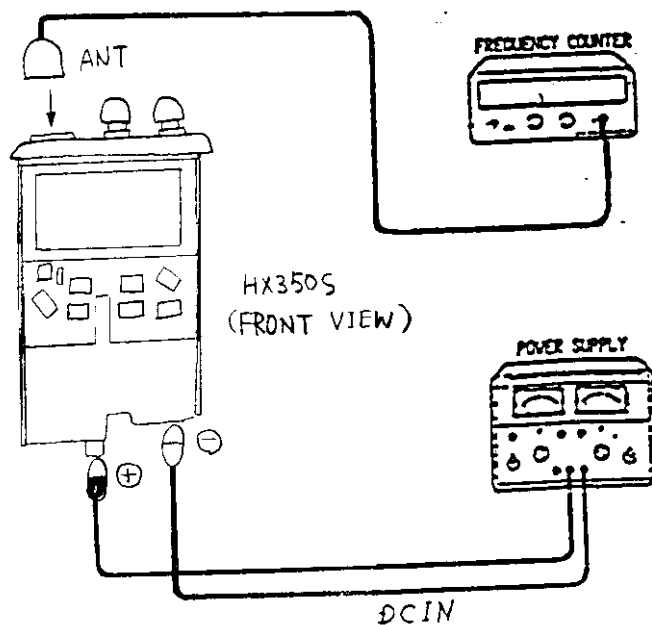
図 3  
(Figure 5-3)



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

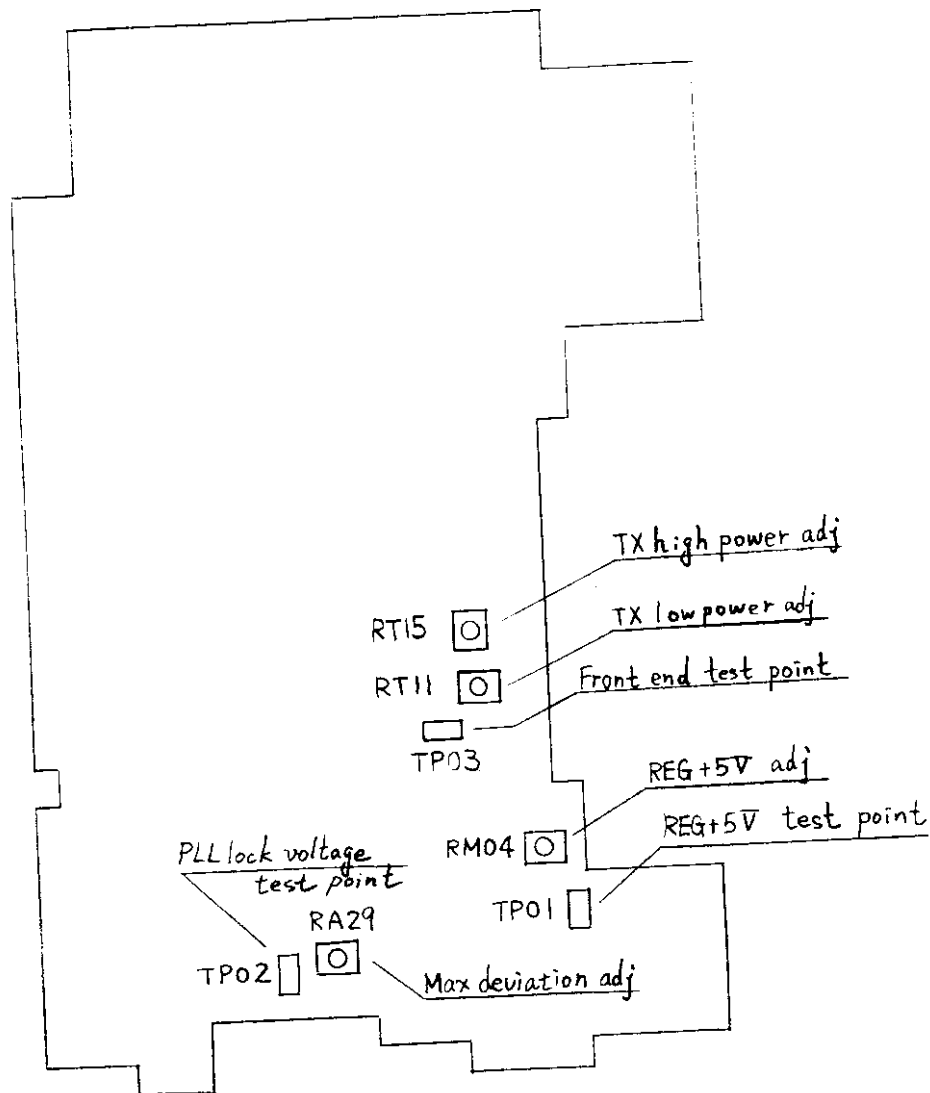
図 4

(Figure 5-4)



# Adjustment point diagram for HX350S

(1) RF PCB  
(PARTS SIDE)



(2)  $\mu$ -COM PCB  
(PARTS SIDE)

