

## ALIGNMENT PROCEDURE FOR 21-1936(UT022ZH)

## TRANSMITTER

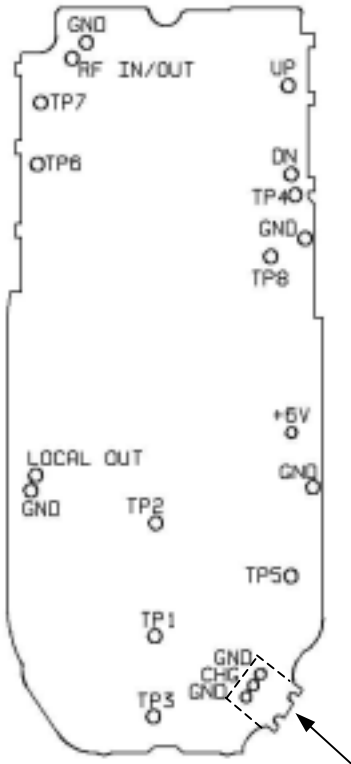
| STEP | MODE      | CHANNEL              | FREQUENCY   | CONDITION                                                                                                                                                                                                                                                                            | ADJUST | METHOD                                                                                                        |
|------|-----------|----------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------|
| 1    | POWER OFF | -                    | -           | CONNECT DC POWER SUPPLY TO THE BATT POWER SUPPLY PATTERN ON THE PCB.                                                                                                                                                                                                                 | -      | INPUT VOLTAGE : DC6.0V/2A                                                                                     |
| 2    | TX        | 8                    | 467.5625MHZ | CONNECT RF WATTMETER TO THE ANTENNA PATTERN ON THE PCB.                                                                                                                                                                                                                              | RT201  | KEY THE TRANSMITTER WITH PTT, AND ADJUST THE OUTPUT POWER AT $0.50W \pm 0.0$                                  |
| 3    | TX        | 1                    | 462.5625MHZ | CONNECT FREQUENCY COUNTER TO THE ANTENNA PATTERN ON THE PCB WITH AN APPROPRIATE ATTENUATOR.                                                                                                                                                                                          | CT401  | KEY THE TRANSMITTER WITHOUT ANY MODULATION. ADJUST TRANSMISSION FREQUENCY TO $462.562500MHz \pm 100Hz$        |
| 4    | TX        | 1                    | 462.5625MHZ | CONNECT MODULATION ANALYZER TO THE ANTENNA PATTERN ON THE PCB.<br>HPF:OFF LPF:3KHz DE-EMP:OFF<br><br>CONNECT OSCILLOSCOPE TO MODULATION OUTPUT OF THE MODULATION ANALYZER.<br><br>CONNECT AUDIO GENERATOR TO TP3(BAL)<br>WAVEFORM:20Hz SQUARE WAVE<br>MAGNITUDE:1.5Vp-p(DC COUPLING) | RT402  | KEY THE TRANSMITTER, AND ADJUST RT402 AS THE WAVEFORM ON THE OSCILLOSCOPE COMES TO BE A CERTAIN SQUARE WAVE   |
| 5    | TX        | 1<br>+CTCSS<br>No.27 | 462.5625MHZ | CONNECT MODULATION ANALYZER TO THE ANTENNA PATTERN ON THE PCB.<br>HPF:OFF LPF:15KHz DE-EMP:OFF<br><br>INJECT 1KHz 60mVp-p SINE WAVE TO MICROPHONE JACK FROM AUDIO GENERATOR.                                                                                                         | RT403  | KEY THE TRANSMITTER, AND ADJUST RT402 AS THE MODULATION ANALYZER INDICATES $\pm 2.2KHz \pm 0.1KHz$ DEVIATION. |

## RECEIVER

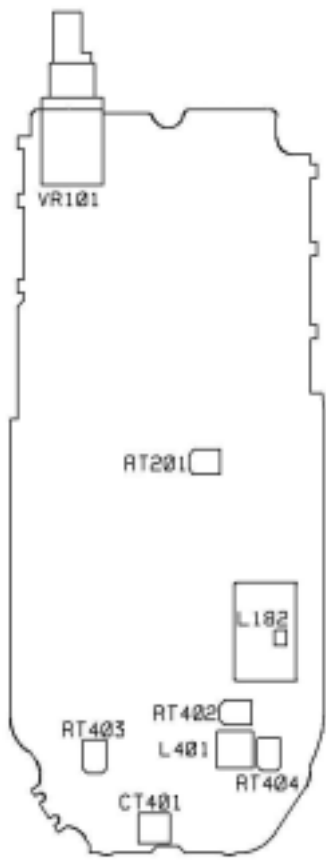
| STEP | MODE | CHANNEL | FREQUENCY   | CONDITION                                                                                                                                                                                                                                      | ADJUST | METHOD                                                                                                                                               |
|------|------|---------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | RX   | 1       | 462.5625MHZ | CONNECT DC VOLTMETER TO TP2<br><br>INJECT -47dBm RF SIGNAL WITHOUT MODULATION FROM SSG TO THE ANTENNA PATTERN ON THE PCB.                                                                                                                      | L403   | ADJUST L403 AS THE VOLTMETER INDICATES $1.3V \pm 0.05V$                                                                                              |
| 2    | RX   | 1       | 462.5625MHZ | CONNECT SINAD METER TO SPEAKER JACK WITH $16\Omega$ DUMMY LOAD.<br><br>INJECT RF SIGNAL FROM SSG AS FOLLOWING CONDITION.<br>MAGNITUDE:AS LARGE AS THE RECEIVER OBTAINS 10dB SINAD SENSITIVITY.<br>DEVIATION: $\pm 1.5KHz$<br>AF FREQUENCY:1KHz | RT404  | TURN TO C.W. MAX,<br>SET TO 10dB SINAD FIRST.<br>TURN TO C.C.W. MAX.<br>ADJUST SLOWLY TO THE POINT WHERE WAVEFORM APPEARS AT THE SPEAKER OUT. (C.W.) |

|                        |  |              |                       |           |  |             |      |         |  |  |
|------------------------|--|--------------|-----------------------|-----------|--|-------------|------|---------|--|--|
| ALIGNMENT<br>PROCEDURE |  | FORM-4       | REFERENCE DIAGRAM NO. |           |  |             | PAGE |         |  |  |
| MODEL                  |  | UNIT         |                       | BLOCK     |  | ISSUE DATE  |      | ISSUED  |  |  |
| UT022ZH                |  |              |                       |           |  | 2006/5/24   |      | SAKAIHI |  |  |
| TITLE                  |  | ADJUST POINT |                       | SUB TITLE |  | REF DIAGRAM |      |         |  |  |

1. MAIN PCB B101 (TOP VIEW)



2. MAIN PCB B101 (BOTTOM VIEW)



TP1 : VCONT                      +6V:DC 6V

TP2 : DISC OUT(De\_Em) LOCAL OUT

TP3 : BALANCE                      RF IN/OUT

TP4 : AF OUT                      UP

TP5 : MIC IN                      DN

TP6 : BOOST                      CHG:DC 11V

TP7 : PTT                                  with CHARGE JIG

TP8 : BATT SEL

L182 : VCONT ADJ.

L401 : DISC.ADJ.

RT201 : TX POWER ADJ.

CT401 : FREQ. ADJ.

RT402 : MOD. BALANCE ADJ

RT403 : MAX DEV. ADJ.

RT404 : SQ ADJ.

|            |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------|--------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| REVISIONS: | REV. CODE    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|            | DATE         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|            | LOT # / RN # |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|            | REVISED BY   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|            | CHECKED BY   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

# E54-3751

| ALIGNMENT PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                             |                           |      |  |           |       |              |  |            | FORM - 3    |         | PAGE |                 |                                  |                      |                |                                 |                  |                            |                                             |  |                  |                     |                           |                                      |                  |                  |
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| MODEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                             |                           | UNIT |  |           | BLOCK |              |  | ISSUE DATE |             | ISSUED  |      |                 |                                  |                      |                |                                 |                  |                            |                                             |  |                  |                     |                           |                                      |                  |                  |
| UT022ZH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                             |                           |      |  |           |       |              |  | 2006/5/24  |             | SAKAIHI |      |                 |                                  |                      |                |                                 |                  |                            |                                             |  |                  |                     |                           |                                      |                  |                  |
| TITLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | TEST MODE                                   |                           |      |  | SUB TITLE |       | CONFIRMATION |  |            | REF DIAGRAM |         |      |                 |                                  |                      |                |                                 |                  |                            |                                             |  |                  |                     |                           |                                      |                  |                  |
| <p><b>TEST MODE</b></p> <p>1.TEST MODE IN<br/> PRESS AND HOLD [WX] , [MON] AND TURN POWER ON<br/> WILL BE STARTED LCD TEST AND LED WILL TURN ON FOR 2sec.</p> <p>2.TEST MODE OUT TURN POWER OFF</p> <p>3.NOTE</p> <p>1) VIBRATION TEST <b>(NOT USE)</b><br/> To enter the vibration test: Press [TONE] SW in All TEST MODE<br/> (except LCD TEST, WX ALERT MODE and GROUP DECODE TEST MODE).<br/> To exit the vibration test: Press [TONE] SW once more.</p> <p>2) SCRAMBLE TEST <b>(NOT USE)</b><br/> To enter the scramble test: Press [WX] SW in All TEST MODE<br/> (except LCD TEST, WX ALERT MODE).<br/> To exit the vibration test: Press [WX] SW once more.</p> <p>4.TEST MODE ITEM<br/> *MODE CHANGE : PRESS [MENU] .</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">1)LCD TEST MODE</td> <td style="width: 33%;">5)VOX TEST MODE <b>(NOT USE)</b></td> <td style="width: 33%;">9)WX ALERT TEST MODE</td> </tr> <tr> <td>2)TX TEST MODE</td> <td>6)RX TEST MODE <b>(NOT USE)</b></td> <td><b>(NOT USE)</b></td> </tr> <tr> <td>3)SUBCODE ENCODE TEST MODE</td> <td>7)SUBCODE DECODE TEST MODE <b>(NOT USE)</b></td> <td></td> </tr> <tr> <td style="text-align: center;"><b>(NOT USE)</b></td> <td>8)STANDBY TEST MODE</td> <td>10)GROUP DECODE TEST MODE</td> </tr> <tr> <td>4)TX CALL TEST MODE <b>(NOT USE)</b></td> <td style="text-align: center;"><b>(NOT USE)</b></td> <td style="text-align: center;"><b>(NOT USE)</b></td> </tr> </table> <p style="text-align: center;"><b>*USE ONLY TX TEST MODE.</b></p> <p>5.TEST MODE PROPER</p> <p>1)LCD TEST MODE<br/> AFTER LOGGING IN TEST MODE,<br/> EACH LCD SEGMENT IS GRADUALLY DISPLAYED(LCD TEST MODE)</p> <p>2)TX TEST MODE<br/> WHEN THE UNIT ENTERS THIS TEST MODE , CH1 AUTOMATICALLY DISPLAY.<br/> PRESS [▲] OR [▼] :</p> <div style="text-align: center; margin: 10px 0;"> <span style="border: 1px solid black; padding: 5px;">→ CH1 ↔ CH8 ↔ CH22 ←</span> </div> <p>PRESS [▲] OR [▼] FOR 500ms. → AUTO REPEAT FUNCTION ON.<br/> PRESS [PTT] , "TX" INDICATOR WILL BE DISPLAYED ON LCD.<br/> RX MUTE ON.<br/> BATTERY SAVE FUNCTION IS ALWAYS OFF.<br/> [TONE] &amp; [MON] &amp; [D-CALL] FUNCTIONS ARE INVALIDATION.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-top: 20px;"> &lt;USE CH&gt;<br/> CH1:462.5625MHz(GMRS)<br/> CH8:467.5625MHz(FRS) </div> |                                             |                           |      |  |           |       |              |  |            |             |         |      | 1)LCD TEST MODE | 5)VOX TEST MODE <b>(NOT USE)</b> | 9)WX ALERT TEST MODE | 2)TX TEST MODE | 6)RX TEST MODE <b>(NOT USE)</b> | <b>(NOT USE)</b> | 3)SUBCODE ENCODE TEST MODE | 7)SUBCODE DECODE TEST MODE <b>(NOT USE)</b> |  | <b>(NOT USE)</b> | 8)STANDBY TEST MODE | 10)GROUP DECODE TEST MODE | 4)TX CALL TEST MODE <b>(NOT USE)</b> | <b>(NOT USE)</b> | <b>(NOT USE)</b> |
| 1)LCD TEST MODE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5)VOX TEST MODE <b>(NOT USE)</b>            | 9)WX ALERT TEST MODE      |      |  |           |       |              |  |            |             |         |      |                 |                                  |                      |                |                                 |                  |                            |                                             |  |                  |                     |                           |                                      |                  |                  |
| 2)TX TEST MODE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 6)RX TEST MODE <b>(NOT USE)</b>             | <b>(NOT USE)</b>          |      |  |           |       |              |  |            |             |         |      |                 |                                  |                      |                |                                 |                  |                            |                                             |  |                  |                     |                           |                                      |                  |                  |
| 3)SUBCODE ENCODE TEST MODE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 7)SUBCODE DECODE TEST MODE <b>(NOT USE)</b> |                           |      |  |           |       |              |  |            |             |         |      |                 |                                  |                      |                |                                 |                  |                            |                                             |  |                  |                     |                           |                                      |                  |                  |
| <b>(NOT USE)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 8)STANDBY TEST MODE                         | 10)GROUP DECODE TEST MODE |      |  |           |       |              |  |            |             |         |      |                 |                                  |                      |                |                                 |                  |                            |                                             |  |                  |                     |                           |                                      |                  |                  |
| 4)TX CALL TEST MODE <b>(NOT USE)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>(NOT USE)</b>                            | <b>(NOT USE)</b>          |      |  |           |       |              |  |            |             |         |      |                 |                                  |                      |                |                                 |                  |                            |                                             |  |                  |                     |                           |                                      |                  |                  |
| REVISIONS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | REV. CODE                                   |                           |      |  |           |       |              |  |            |             |         |      |                 |                                  |                      |                |                                 |                  |                            |                                             |  |                  |                     |                           |                                      |                  |                  |
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