CONTENTS

General

This manual is intended for use by experienced technicians familiar with similar types of commercial grade communications equipment. It contains main required service information and data for the equipment.

The following precautions are recommended for personal safety:

- DO NOT transmit until all RF connectors are verified secure and any open connectors are properly terminated.
- SHUT OFF and DO NOT operate this equipment near electrical blasting caps or in an explosive atmosphere.
- This equipment should be maintained by qualified technicians only.

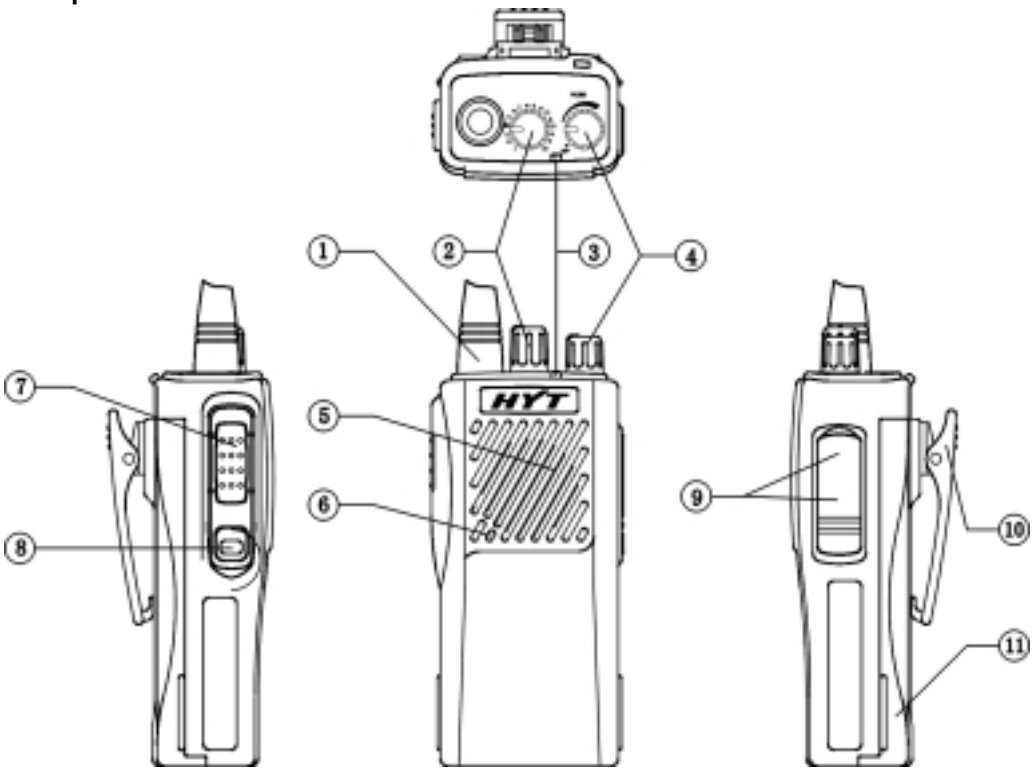
Mode Combination

1. Mode

User mode: Turn on the power to enter.

PC mode：Set and adjust with PC software or programmer.

2. Parts description:



(1) Antenna

(2) Channel (frequency) selector knob

Turn the knob to choose channel from 1~16(channel 16 may be set by distributor as scan channel).

(3) LED light

Lights red while transmitting, green while receiving a signal. Flashes red when the battery voltage is low while transmitting.

(4) Power switch/Volume control

Turn the knob clockwise to switch the transceiver ON, anti-clockwise to turn off the power till there is a “click” sound, rotate to adjust the volume level.

(5) Speaker

(6) Microphone

(7) PTT switch (push to talk)

Press the button while transmitting, and release it while receiving.

(8) Monitor key

Press it to shut off squelch, noise could be heard, release to connect squelch.

(9) Speaker/microphone jack

(10) Belt clip

(11) Battery (TB-82)

RPU416A Circuit Description

1. Frequency configuration

The receiver utilizes double conversion. The first IF is 38.85MHz and the second IF is 450kHz. The first local oscillator signal is supplied from the PLL circuit.

The PLL circuit in the transmitter generates the necessary frequencies. Fig.1 shows the frequencies.

RPU416A frequency range: 450MHz—470MHz

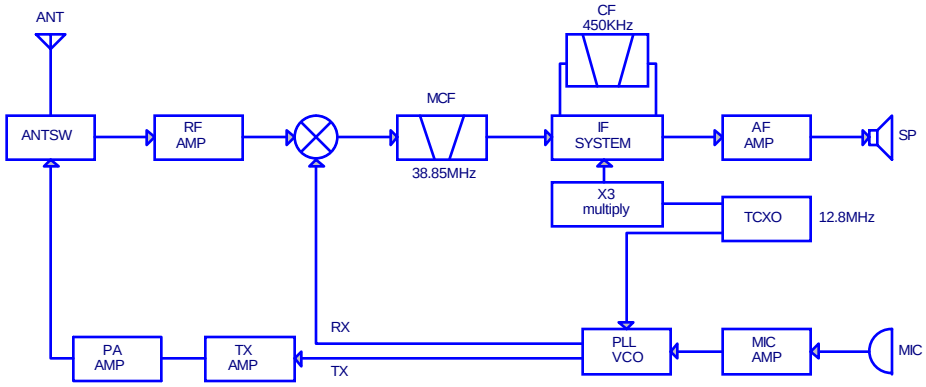


Fig.1 Frequency configuration

2. Receiver

The receiver is double conversion superheterodyne.

1) Front-end RF amplifier

An incoming signal from the antenna is applied to a Preamplifier (Q203) after passing through a transmit/receive switch circuit (K102 and D103 are off) and a 3-pole LC filter. After the signal is amplified (Q203), the signal is filtered by a band pass filter (a3-pole LC filter) to eliminate unwanted signals before it is passed to the first mixer. The voltages of these diodes are controlled by to track the MPU. (See Fig. 2-b)

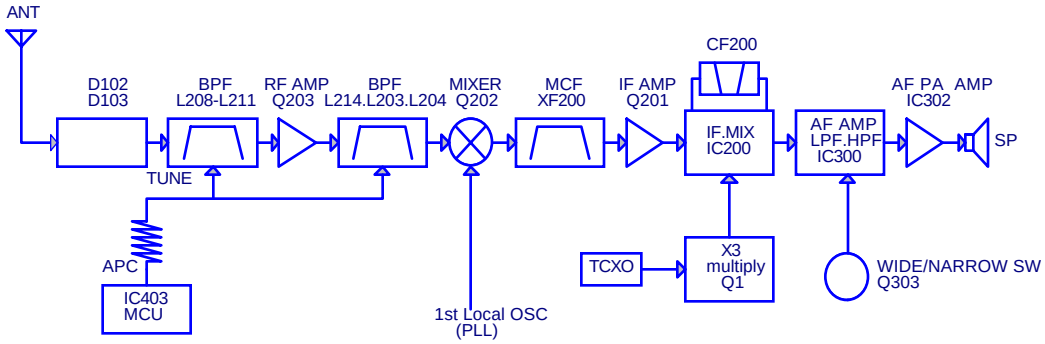


Fig. 2 Receiver section configuration

2) First mixer

The signal from the RF amplifier is heterodyned with the first local oscillator signal from the PLL frequency synthesizer circuit at the first mixer (Q202) to create a 38.85 MHz first intermediate frequency (1st IF) signal. The first IF signal is then fed through two monolithic crystal filters (MCFs: XF200) to further remove spurious signals.

3) IF amplifier

The first IF signal is amplified by Q201, and then enters IC 200 (FM processing IC). The signal is heterodyned again with a second local oscillator signal within IC200 to create a 450kHz second IF

signal. The second IF signal is then fed through a 450kHz ceramic filter (CF200) to further eliminate unwanted signals before it is amplified and FM detected in IC200.

4) AF amplifier

The recovered AF signal obtained from IC200 is amplified by IC300 (1/4), filtered by the IC300 low-pass filter (2/4) and IC300 high-pass filter (3/4) and (4/4), and de-emphasized by R303 and C306. The AF signal is then passed through a WIDE/NARROW switch (Q303). The processed AF signal passes through an AF volume control and is amplified to a sufficient level to drive a loud speaker by an AF power amplifier (IC302).

5) Squelch

Part of the AF signal from the IC enters the FM IC again, and the noise component is amplified and rectified by a filter and an amplifier to produce a DC voltage corresponding to the noise level.

The DC signal from the FM IC goes to the analog port of the microprocessor (IC403). IC403 determines whether to output sounds from the speaker, IC403 sends a high signal to the MUTE and AFCO lines and turns IC302 on through Q302, Q304, Q305, Q306 and Q307. (See Fig.3)

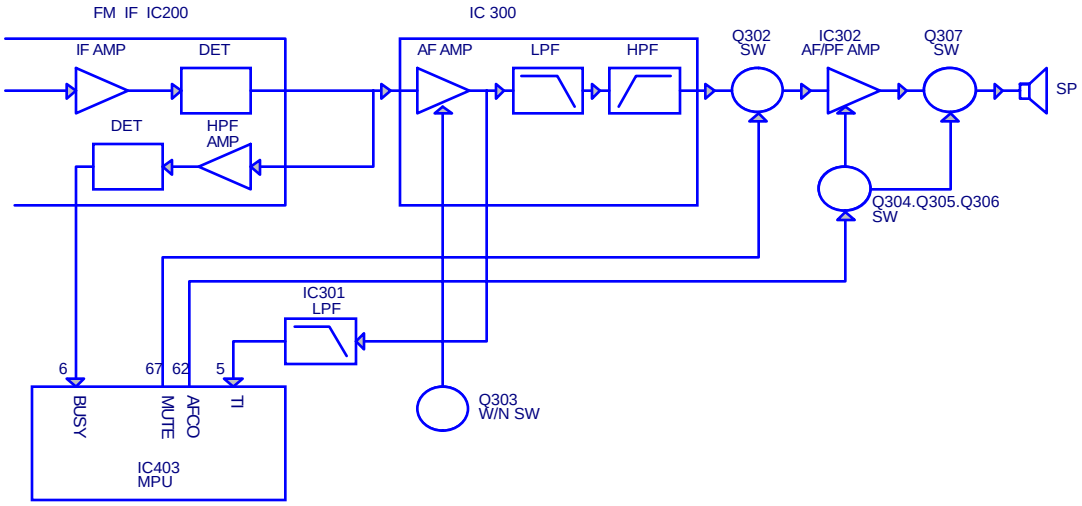


Fig. 3. AF Amplifier and squelch

6) Receiving signaling

QT/DQT

300 Hz and higher audio frequencies of the output signal from IF IC are cut by a low-pass filter (IC301). The resulting signal enters the microprocessor (IC403). IC403 determines whether the QT or DQT matches the preset value, and controls the MUTE and AFCO and the speaker output sounds according to the squelch results.

3. PLL frequency synthesizer

The PLL circuit generates the first local oscillator signal for reception and the RF signal for transmission.

1) PLL

The frequency step of the PLL circuit is 5 or 6.25kHz. A 12.8MHz reference oscillator signal is divided at IC1 by a fixed counter to produce the 5 or 6.25kHz reference frequency. The voltage controlled oscillator (VCO) output signal is buffer amplified by Q6, then divided in IC1 by a dual-module

RPU416A Circuit Description

programmable counter. The divided signal is compared in phase with the 5 or 6.25kHz reference signal in the phase comparator in IC1. The output signal from the phase comparator is filtered through a low-pass filter and passed to the VCO to control the oscillator frequency. (See Fig. 4 of Next Page)

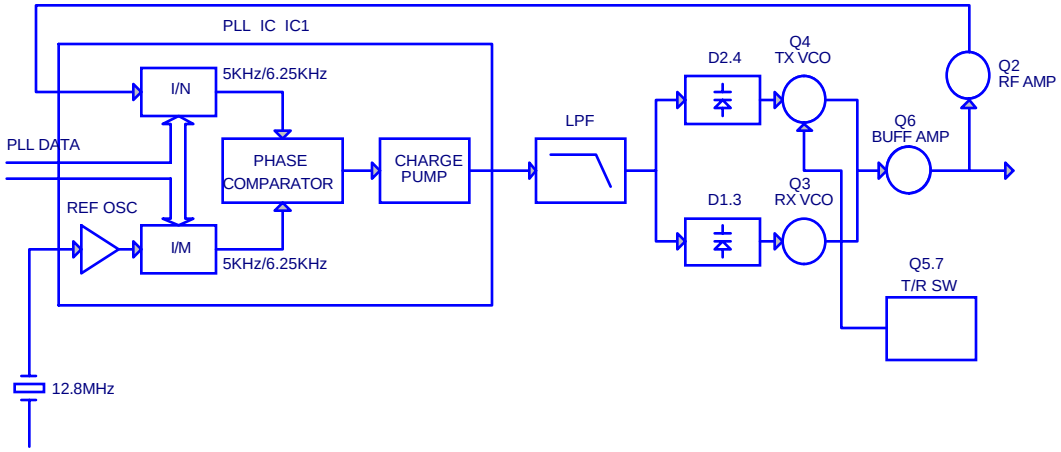


Fig. 4. PLL circuit

2) VCO

The operating frequency is generated by Q4 in transmit mode and Q3 in receive mode. The oscillator frequency is controlled by applying the VCO control voltage, obtained from the phase comparator, to the varactor diodes (D2 and D4 in transmit mode and D1 and D3 in receive mode) . The T/R pin is set high in receive mode causing Q5 and Q7 to turn Q4 off, and turn Q3 on. The T/R pin is set low in transmit mode. The outputs from Q3 and Q4 are amplified by Q6 and sent to the buffer amplifiers.

3) UNLOCK DETECTOR

If a pulse signal appears at the LD pin of IC1, an unlock condition occurs, and the DC voltage obtained from D7, R6, and C1 causes the voltage applied to the UL pin of the microprocessor to go low. When the microprocessor detects this condition, the transmitter is disabled, ignoring the push-to-talk switch input signal. (See Fig. 5)

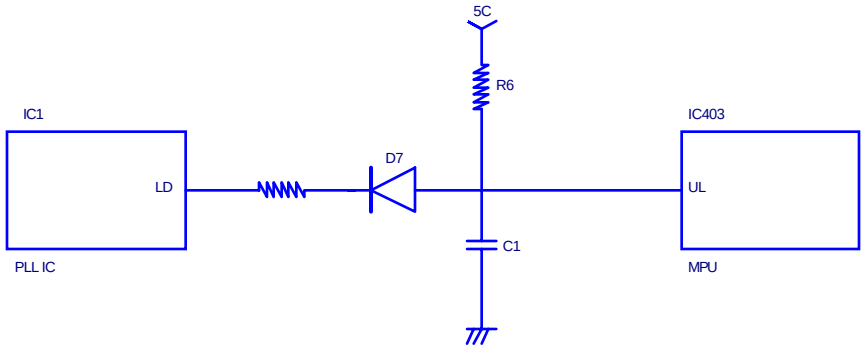


Fig. 5. Unlock detector circuit

4. Transmitter

1) Transmit audio

The modulation signal from the microphone is amplified by IC500 (1/2), passes through a preemphasis circuit, and amplified by the other IC500 (1/2) to perform IDC operation. The signal then passes through a low-pass filter (splatter filter) (Q501 and Q502) and cuts 3kHz and higher frequencies.

The resulting signal goes to the VCO through the VCO modulation terminal for direct FM modulation. (See Fig. 6)

2) QT/DQT encoder

A necessary signal for QT/DQT encoding is generated by IC403 and FM-modulated to the PLL reference signal. Since the reference OSC does not modulate the loop characteristic frequency or higher, modulation is performed at the VCO side by adjusting the balance. (See Fig. 6)

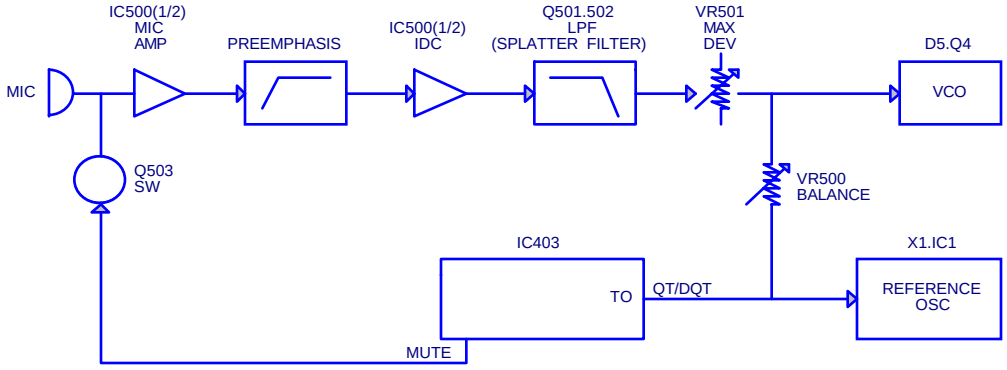


Fig. 6. Transmit audio QT/DQT

3) RF amplifier

The transmit signal obtained from the VCO buffer amplifier Q100, is amplified by Q101 and Q102. This amplified signal is passed to the power amplifier, Q105 and Q107, which consists of a 2-stage FET amplifier and is capable of producing up to 4W of RF power (See Fig. 7-b)

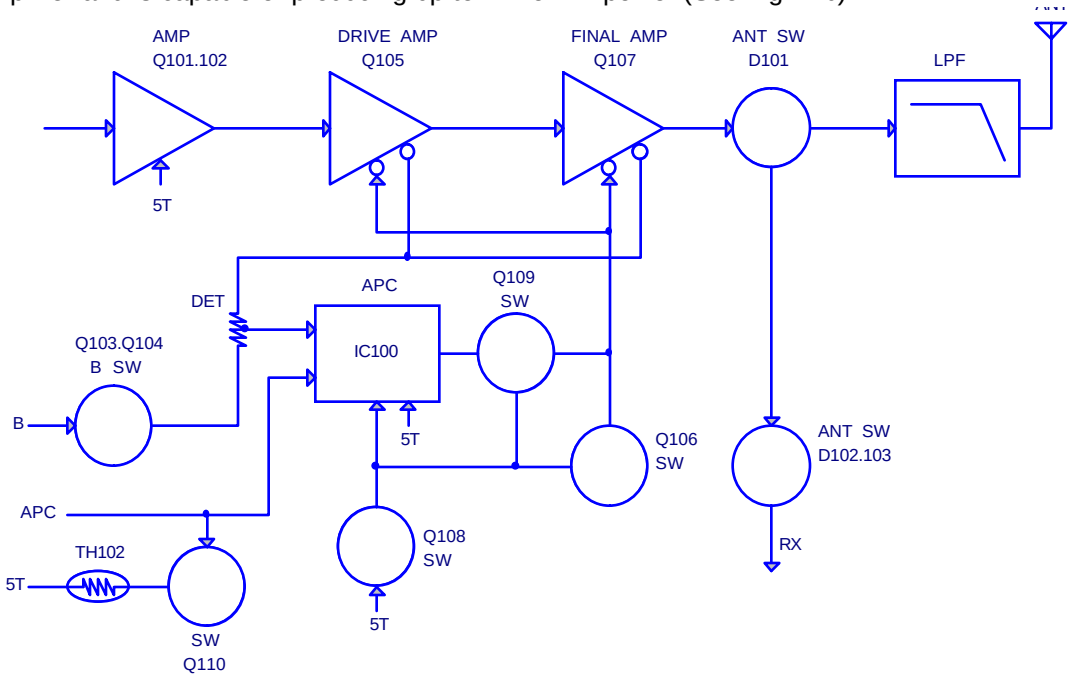


Fig. 7 APC system

4) ANT switch and LPF

The RF amplifier output signal is passed through a low-pass filter network and a transmit/receive

switching circuit before it is passed to the antenna terminal. The transmit/receive switching circuit is comprised of D101, D102 and D103. D102 and D103 turned on (conductive) in transmit mode and off (isolated) in receive mode.

5) APC

The automatic power control (APC) circuit stabilizes the transmitter output power at a predetermined level by sensing the drain current of the final amplifier Field Effect Transistor (FET). The voltage obtained from the above drain current with a reference voltage which is set using the microprocessor. An APC voltage proportional to the difference between the sensed voltage and the reference voltage appears at the output of IC100 (1/2). This output voltage controls the gate of the FET power amplifier, which keeps the transmitter output power can be varied by the microprocessor which in turn changes the reference voltage and hence , the output power.

6) Terminal protection circuit

When the thermistor (TH102) reaches about 80□, the protection circuit turns on Q110 to protect transmitting final amplifier (Q107).

5. Power supply

A 5V reference power supply [5M] for the control circuit is derived from an internal battery. This reference is used to provide a 5V supply in transmit mode [5T] ,a 5V supply in receive mode [5R] , and a 5V, supply common in both modes [5C] based on the control signal sent
from the microprocessor.

6. Control system

The IC403 CPU operates at 7.37MHZ. This oscillator has a circuit that shifts the frequency according to the EEPROM data.

RPU416A Software Specifications

.Specifications:

1. Use mechanical knob to choose from 16 channels.
   Frequency range: UHF: 450~470MHz
2. Monitor
3. Auto power saving
4. Audio alarm
5. Auto squelch control (0~9 level)
6. Timing
7. Channel space 25kHz/12.5kHz(Wide/Narrow)
8. CTCSS & DQT encode
9. CTCSS & DQT decode
10. Two Tone Signal decode
11. Two Tone Signal encode
12. Busy channel lock
13. Clock frequency deviation
14. Scan
15. PC mode
16. PC modifying mode
17. Wire clone
18. Manual modifying mode

.Description:

1. User mode: general radio mode

2. PC mode:

Make settings through external programmer or PC program software:

(1) Receive frequency & Transmit frequency
(2) Receive signaling & Transmit signaling
(3) Lock busy channel
(4) Clock frequency deviation
(5) Timing
(6) Squelch level selectivity
(7) Power saving
(8) Audio Alarm
(9) Channel space 25kHz/12.5kHz(Wide/Narrow)
(10) Monitor mode
(11) Scan mode
(12) Reset scan mode
(13) Scan priority

3. PC modify mode:

Make settings through external programmer or PC program software:

RPU416A Software Specifications

(1) Frequency stability
(2) RF power
(3) Low power alarm
(4) Squelch (level 9&3)
(5) CTCSS deviation (Wide/Narrow).
(6) DQT deviation (Wide/Narrow).
(7) Receive sensitivity(low□medium□high)

4. Wire Clone:

Press MONI to turn on the power , enter wire clone mode 2 seconds later, press PTT, Begin cloning while red lights, finish while light goes out.

5. Mode setting:

(1) Short cut the SELF on PCB, and turn on the power till “BEEP”.
(2) Set channel selector knob to corresponding place according to the model(1-16)

(3) Press [MONI],then press [PTT], to set the channel, channel data and initial data.
(4) Turn off the power, disconnect SELF on PCB to end mode settings.
(5) Remarks:

The old data(frequency, CTCSS/DQT, channel function) will be deleted once set the new mode by pressing MONI AND PTT , part of the function also would be changed. Therefore, do not set this operation unless change the EEPROM, etc.

RPU416A Software Specifications

(6) TC- 368(2) channel frequency diagram (after setting):

No	Model	Frequency(MHz)	Initial (MHz)	IF(MHz)	1CH		2CH(Central)		3CH(L)		4CH(H)	
					Tx(MHz)	Rx(MHz)	Tx(MHz)	Rx(MHz)	Tx(MHz)	Rx(MHz)	Tx(MHz)	Rx(MHz)
1		136.000~149.995	140.000	+38.85	143.100	143.100	143.000	143.100	136.000	136.100	149.975	149.900
2		150.000~173.995	150.000	+38.85	162.100	162.100	162.000	162.100	150.000	150.100	173.975	173.900
3		400.000~419.995	410.000	-38.85	410.100	410.100	410.000	410.100	400.000	400.100	419.975	419.900
4	RPU416A	450.000~469.995	450.000	-38.85	460.100	460.100	460.000	460.100	450.000	450.100	469.975	469.900
5		350.000~369.995	360.000	-38.85	360.100	360.100	360.000	360.100	350.000	350.100	369.975	369.900
6		370.000~389.995	380.000	-38.85	380.100	380.100	380.000	380.100	370.000	370.100	389.975	389.900
7		220.000~239.995	230.000	-38.85	230.100	230.100	230.000	230.100	220.000	220.100	239.975	239.900
8		240.000~259.995	250.000	-38.85	250.100	250.100	250.000	250.100	240.000	240.100	259.975	259.900
9		406.000~429.995	410.000	-38.85	418.100	418.100	418.000	418.100	406.000	406.100	429.975	429.900
10		144.000~147.995	145.000	+38.85	146.100	146.100	146.000	146.100	144.000	144.100	147.975	147.900
11		336.000~367.995	350.000	-38.85	352.100	352.100	352.000	352.100	336.000	336.100	367.975	367.900
12		268.000~395.995	380.000	-38.85	382.100	382.100	382.000	382.100	268.000	268.100	395.975	395.900
13		430.000~439.995	430.000	-38.85	435.100	435.100	435.000	435.100	430.000	430.100	439.975	439.900
14		438.000~449.995	440.000	-38.85	444.100	444.100	444.000	444.100	438.000	438.100	449.975	449.900
15		5.000~494.995	480.000	-38.85	480.100	480.100	480.000	480.100	465.000	465.100	494.975	494.900
16		0.000~519.995	500.000	-38.85	505.100	505.100	505.000	505.100	490.000	490.100	519.975	519.900

Initialization c annel are in the above diagram CH1-CH4, the modify frequency is reset to initial data. Frequency of CH5~CH14 are the same with CH1. The signaling nd CH10 is 67.0Hz; the signaling of CH6 and CH11 is 151.4Hz; the signaling of CH7, CH12 is 250.3Hz; the signaling of CH8 and CH13 is 423(DQT); th g of CH9 and CH14 is -423(DQT). CH1~CH9 are Wide, CH10~CH14 are Narrow.

RPU416A

RPU416A Software Specifications

6. Manual Adjust Mode:

Press PTT and MONI simultaneously to turn on the power□enter manual Adjust mode out 3 seconds later. Choose the settings by turning the channel selector knob 1-12CH, use PTT (upward) or MONI (downward) to adjust (Notice: MIC shouldn't be connected with external cable while modifying),1~12CH are defined as follows:

(1) Frequency stability
(2) RF power
(3) Low power alarm
(4) Receiver sensitivity (center frequency adjust)
(5) Receiver sensitivity (low frequency adjust)
(6) Receiver sensitivity (high frequency adjust)
(7) Squelch (level 9)
(8) Squelch (level 3)
(9) CTCSS deviation (Wide)
(10) CTCSS deviation (Narrow)
(11) DQT deviation (Wide)
(12) DQT deviation (Narrow)

13~16CH are used for adjusting transmitter and receiver. Press PTT to transmit; Press MONI to choose: Wide/Narrow, one Beep sound is Narrow, two Beep sound is Wide. 13~16CH are defined as follows:

(13) center frequency (discrepancy of transmission and receive frequency is 0.1MHz).
(14) Lowest frequency (discrepancy of transmission and receive frequency is 0.1MHz).
(15) Highest frequency (discrepancy of transmission and receive frequency is -0.075MHz).
(16) center frequency: sends 250.3Hz CTCSS signals (discrepancy of transmission and receive frequency is 0.1MHz).

***Note**:*

To enter and shut off manual adjust mode by short cut the SELF. Turn on the power, and enter settings mode, the manual function is automatically on. Press [PTT] to disable manual modify. Once this function is disabled, this mode is not accessible, kindly suggest disable this mode after adjust.

. CPU:

CPU control M38034M4

Pin No.	Port name	I/O	Function
1	TI	I	Input QT/DQT signal
2	BUSY	I	Input busy signal
3	BATT	I	Detect battery voltage
4	NC	I	NC
5	TO	O	Output QT/DQT
6	BEEP	O	Beep output
7	NC	I	NC
8	ENC0	I	Input encode
9	ENC1	I	Input encode
10	ENC2	I	Input encode
11	ENC3	I	Input encode
12	NC	I	NC
13	PTT	I	[PTT] input ,connect RXD
14	TXD	O	RS-232C output

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15	RXD	I	RS-232C input
x16	MONI	I	[MONI] input
17	SELF	I	Program L: set up mode
18	CNVSS	I	Connect VSS
19	RST	I	Reset
20	INT0	I	Power detection
21	NC	I	NC
22	XIN	I	Oscillator(7.3728MHz)

23	XOUT	O	Oscillator
24	VSS	I	Grounding
25	SHIFT	O	Clock frequency deviation H: unlock
26	PABC	O	MOS FET power H: unlock
27	WNRC	O	Audio referential sensitivity L: narrow
28	WNTC	O	Max deviation H: narrow
29	NC	I	NC
30	SDA	I/O	EEPROM data cable
31	SCL	O	EEPROM clock cable
32	UL	I	Lock circuit detector L: unlock
33	DT	O	Common data output
34	CK	O	Common clock output
35	LE	O	PLL IC H: lock up
36	5MC	O	Power control except CPU and EEPROM L: unlock
37	AFCO	O	AF amplifier H: unlock
38	RX	O	TX/RX VCO H: receive
39	GLED	O	Green light control H: light
40	RLED	O	Red light control H: light
41	SAVE	O	Power saving control H: power saving OFF
42	MUTE	O	Squelch control H: mic squelch L:AF squelch
43	5RC	O	Receiver power control L: unlock
44	5TC	O	Transmitter power control H: unlock
45	NC	I	NC
46	NC	I	NC
47	NC	I	NC
48	NC	I	NC
49	NC	I	NC
50	NC	I	NC
51	NC	I	NC
52	NC	I	NC
53	NC	I	NC
54	NC	I	NC
55	VCCN	O	Frequency output
56	APC	O	TX:auto frequency output RX:BPF tune output
57	VCC	I	CPU input power 5V
58	VREF	I	Connect with VCC
59	AVSS	I	Connect with VSS
60	NC	I	NC
61	NC	I	NC
62	NC	I	NC
63	NC	I	NC
64	TIBI	I	QT/DQT exterior circuit central point input

RPU416A Adjust Description

Use programmer or PC software to program RPU416A, or by manual program, refer to"RPU416A software description " for the manual program and mode settings.

. Instrument:

1. Synthesized test instrument 1 set
2. Scanner 1 set
3. 3A/10V power 1 set
4. Digital Voltmeter 1 set
5. 3A DC Ammeter 1 set

. Adjust:

1. Initialization.
   It is necessary to initialize the transceiver because there is useless data in EEPROM. Short cut the SELF on PCB, turn on the power till there comes the sound "BEEP", place the channel selector knob, press [MONI], then press [PTT], to begin initializing the channel and other data. Please refer to the outcome of initialization at"RPU416A software description".
2. Adjustment:
   The adjustment of RPU416A, some are conducted in normal mode, some are in manual program mode. Turn on the power and enter the normal mode., at the same time, press the PTT and MONI to turn on the transceiver□enter the manual program mode 3seconds later.(refer to"RPU416A software description" manual program mode).

VCO SECTION:

ITEM	CONDITION	measurement		Adjustment		Specifications/ Remarks
		Test equip	terminal	part	Method	
1.Setting	1.power 7.5V					
2.Transmit VCO lock voltage	1.CH: TX HIGH	Digital Voltmeter	CV	TC1	3.7V±0.1V	
	2.CH: TX LOW				check	RPU416A >1V
3.Receive VCO lock voltage	1.CH: RX HIGH				3.7V±0.1V	
	2.CH: RX LOW				check	RPU416A>1V

***Note**:*
If unlock VCO, check adjustment is enabled in manual mode.(signal could be transmitted regardless of the lock of VCO in manual mode).

RPU416A Adjust Description

Adjust the receiver section: (enter manual mode)

Item	Condition	Measurement		Adjustment		Specifications /Remarks
		Test equip	Terminal	parts	Method	
4.Band-pass filter	1:CH:RX center turn to channel 4 in manual mode	Spectrum analyzer	ANT . TP2	TC202 TC203	Adjust the undee to the top, the bandwidth is about 10MHz, the sign of central frequency is in the middle of the undee	
	2. CH: RX LOW turn to channel 5 in manual mode			PTT(up) MONI (down)	Adjust the undee to the top to receive Low frequency , the sign is on the left of the top of the undee	
	3.CH:RX HIGH turn to channel 6 in manual mode			PTT(up) MONI (down)	Adjust the undee to the top to receive High frequency , the sign is on the right of the top of the undee	
5.Sensitivity (Wide)	1. CH:RX center Turn to channel 13 in manual mode Dev : Wide	Synthetical test SSG output : -118dBm MOD:1kHz DEV:±3kHz FILER: 0.3-3.4kHz	ANT SP		check	SINAD: 12dB or higher
	2. CH: RX center Turn to channel 14 in manual mode Dev : Wide					
	3. CH: RX center Turn to channel 15 in manual mode Dev : Wide					
6.Sensitivity (Narrow)	1. CH: RX center Turn to channel 13 in manual mode Dev : narrow	Synthetical test SSG output : -116dBm MOD:1kHz DEV:±1.5kHz FILER: 0.3-3.4kHz	ANT SP		check	SINAD: 12dB or higher
	2. CH: RX center Turn to channel 14 in manual mode Dev : narrow					
	3. CH: RX center Turn to channel 15 in manual mode dev : narrow					
7.Squelch	1.CH: RX center Turn to channel 7 in manual mode	Synthetical test SSG output : -117dBm	ANT SP	PTT(up) MONI (down)	Level 9 Adjust to close the squelch.	The squelch must be closed
	2.CH:RX center Turn to channel 8 in manual mode	Synthetical test SSG output : -125dBm			Level 3 Adjust to close the squelch.	The squelch must be closed

RPU416A Adjust Description

Adjust the transmitter section:

Item	Condition	Measurement		Adjustment		Specifications /Remarks
		Test equip	Terminal	Parts	Method	
8.Transmit frequency	CH: TX center Turn to channel 1 in manual mode	Synthetical test	ANT	PTT(up)MONI(down)	Adjust it to center frequency	Error<150Hz
9.Power	1.CH:TX center Turn to channel 2 in manual mode	Synthetical test Ammeter	ANT	PTT(up)MONI(down)	Adjust it to: 3.7<Po<4.5W I<1.6A	
	2.CH: TX LOW Turn to channel 3 Press PTT				Adjust it to: 3.7<Po<4.5 W I<1.6A	
	3.CH:TX HIGH Turn to channel 4 Press PTT				Adjust it to: 3.7<Po<4.5W I<1.6A	
10.MAX DEV	1.CH: TX center, turn to channel 13 in manual mode, dev: wide Press PTT	Synthetical test LPF: 15kHz AF:1kHz 120mV	ANT MIC	VR501	Adjust it to:4.2kHz±100Hz	Wide
	2.CH: TX center, turn to channel 13 in manual mode, dev: narrow Press PTT				Check:1.8kHz-2.2kHz	Narrow
11.MIC SENS	1.CH: TX center, turn to channel 13 in manual mode, dev: wide Press PTT	Synthetical test FILER: 0.3-3.4kHz AF:1kHz 12mV	ANT MIC	VR501	Check:2.2kHz-3.6kHz	Wide
	2.CH: TX center, turn to channel 13 in manual mode, dev: narrow Press PTT				Check:1.1kHz-1.8kHz	Narrow
12.DQT/QT	1.CH: TX center, turn to channel 9 in manual mode	Synthetical test LPF: 300Hz	ANT	VR500	Adjust VR500,the test value of on condition 1 & condition 2 is consistent, the difference value<20Hz	67.0Hz CTCSS
	2.CH: TX center, turn to channel 16 in manual mode, press PTT					250.3Hz CTCSS
13.QT DEV	1.CH: TX center, turn to channel 9 in manual mode	Synthetical test LPF:300Hz	ANT	PTT(up)MONI(down)	Adjust it to:0.75kHz±50Hz	Wide

RPU416A Adjust Description

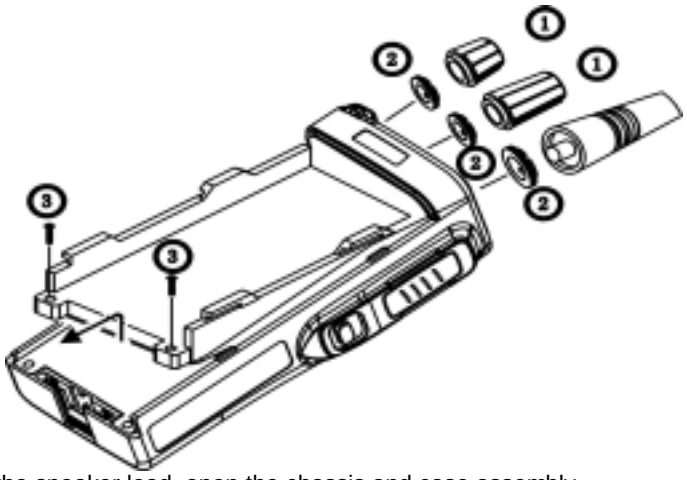
	2.CH: TX center, turn to channel 10 in manual mode	Synthetical test LPF:300H	ANT	PTT：up；MONI：down	Adjust it to:0.35kHz±50Hz	Narrow
14.DQT DEV	1.CH: TX center, turn to channel 11 in manual mode				Adjust it to:0.75kHz±50Hz	Wide
	2.CH:TX center, turn to channel 12 in manual mode				Adjust it to:0.35kHz±50Hz	Narrow
15.Low Battery level	Turn to channel 3 in manual mode, Adjust the battery to 5.8V	Digital voltmeter		PTT：up；MONI：down	Adjust so that the LED flashes	

***Note**:*
In manual mode , channel selector 1-12, MIC can't connect line, after adjust complete, short SELF, enter mode setting press PTT, disable manual adjust.

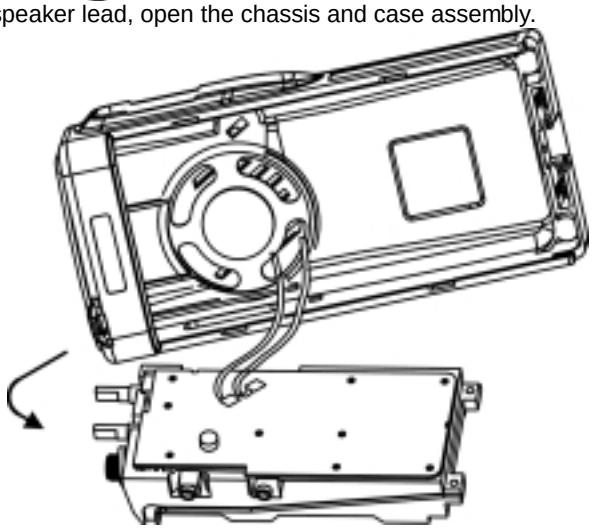
Disassembly for Repair

Separating the case assembly from the chassis

1. Remove the two knobs ♊ and three round nuts ♋.
2. Remove the two screws ♌.
3. Expand the right and left sides of the bottom of the case assembly lift the chassis, and remove it from the case assembly.



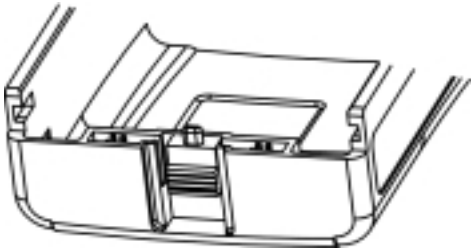
4. Taking care not to cut the speaker lead, open the chassis and case assembly.



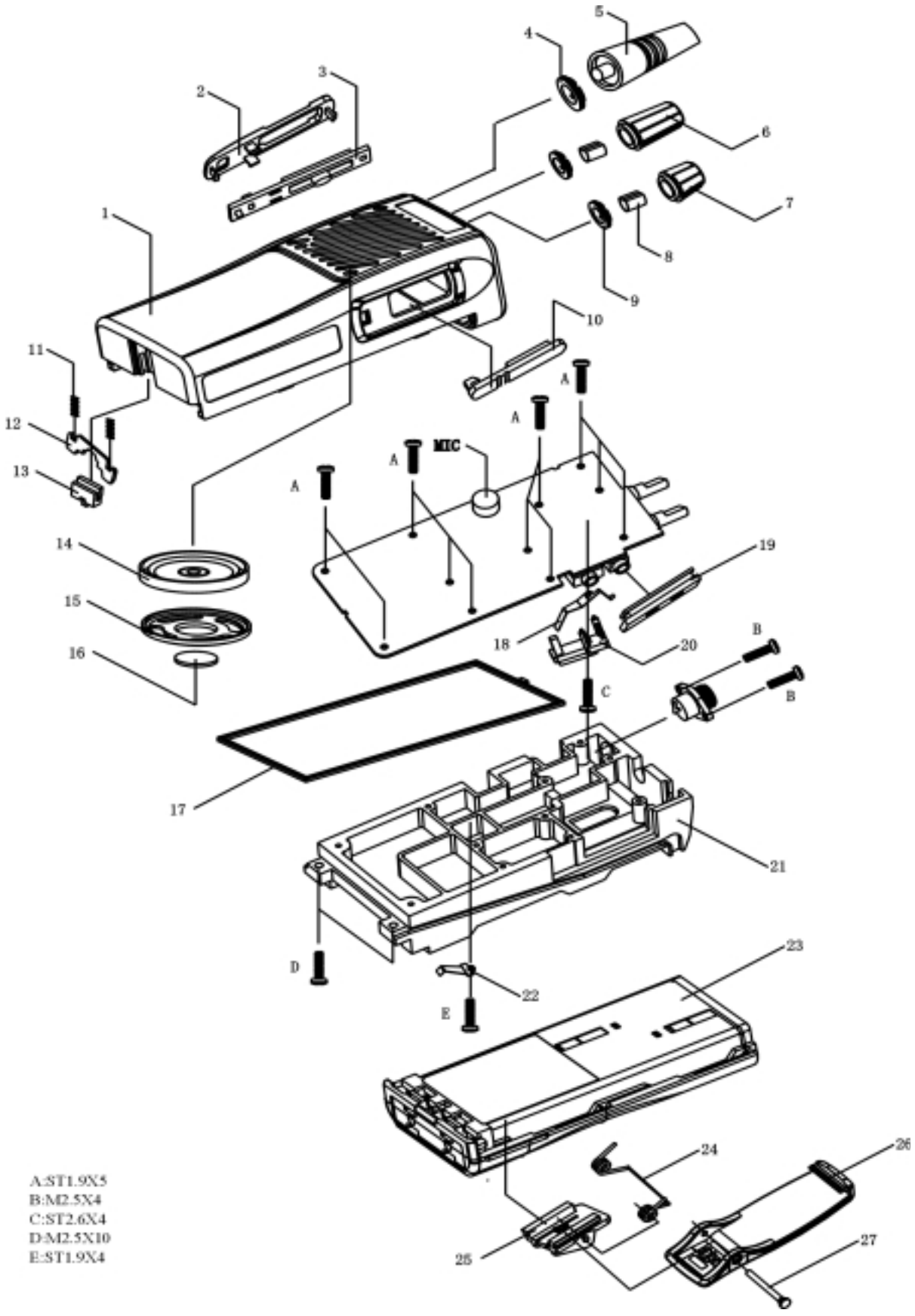
Removing the lever

Raise the lever on the lower case, insert a small flat screwdriver into the space between the case and lever , open the case carefully and lift the lever off .

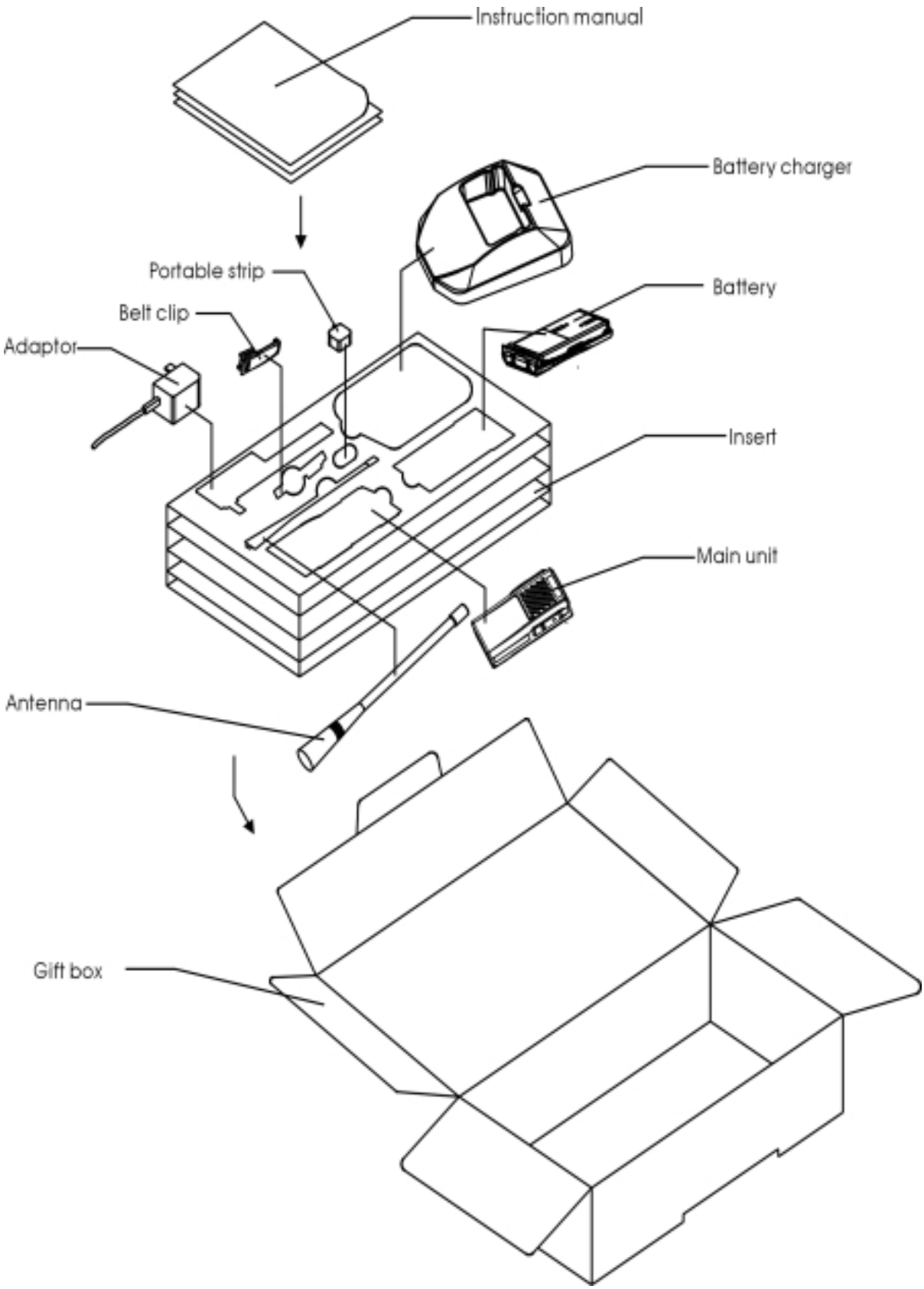
***Note**: Do not force to separate the case from the lever.*



Exploded View



Packing

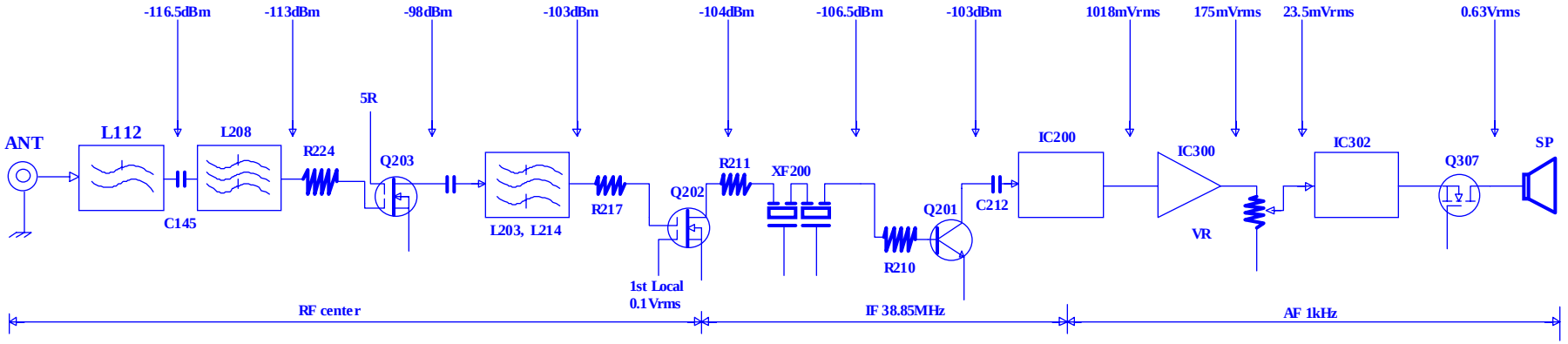

Instruction manual
Battery charger
Portable strip
Battery
Belt clip
Adaptor
Insert
Main unit
Antenna
Gift box

RPU416A Level Diagram

Rx Section

SG output level for obtaining 12Db/SINAD when injected to each point

Modulate the AF level with a frequency of 1kHz and deviation of 1.5kHz

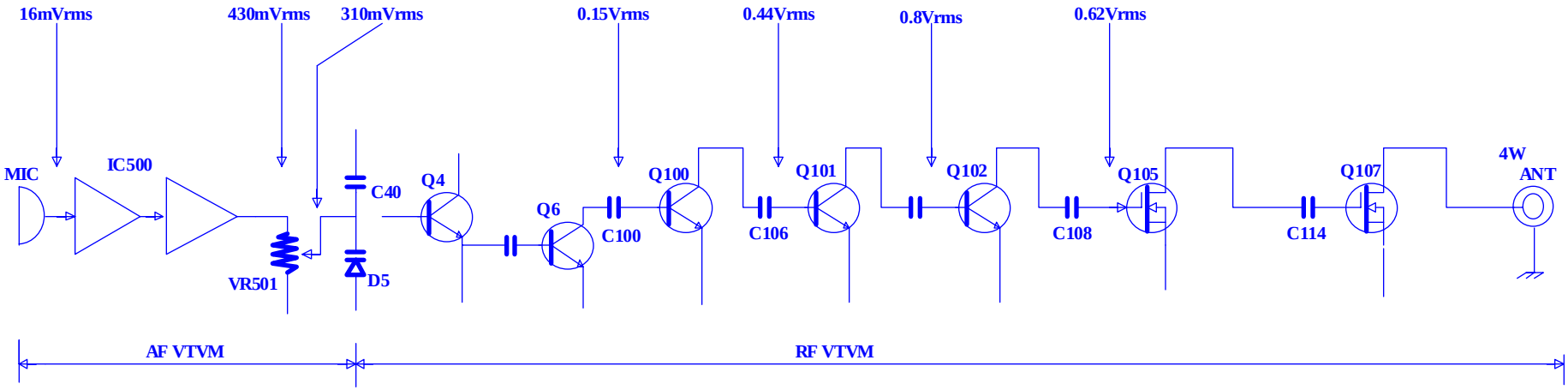


through a 470pF coupling capacitor.
Measure the 1st Local level on a RF VTVM.

(Narrow), 3kHz(Wide) . Then take the signal form the signal generator when the AF output has been adjusted to 0.63Vrms with the AF vol.

Tx Section

Measure the audio frequency on an AFVTVM and radio frequency on a RF VTVM at high impedance . Set the MIC input to obtain a modulation factor of 60%



with the transmit frequency at center and a modulation frequency of 1kHz .

Main Technical Specifications

Frequency range	450 MHz ~470 MHz
Channel	16
Channel space	25kHz / 12.5kHz
Antenna impedance	50
Transmitter impedance	2K
Input voltage	7.2V DC
Frequency stability	±2.5×10^{-6}
	Transmitter
Frequency stability	±2.5×10^{-6}
Output power	4.0±0.5W
Operating sensitivity	12±3mV
Audio distortion	5%
Modulation limiting	5kHz / 2.5kHz
Bandwidth	16 kHz/8kHz
Modulate specialty	3dB
Spurious RF	7.5W
Adjacent power	-65 d B / -55dB
	Receiver
Reference sensitivity	Precede 0.28V / 0.35V
Squelch turnon sensitivity	0.4V
Audio frequency	500mW
Audio deviation	7%
Operating bandwidth	±7 kHz/±3.5 kHz
Audio response	+2dB -8dB
Channel restrain	-8 d B
Obstruct	85d B
Selectivity	65 d B / 60dB
Spurious response	60 d B
Intermodulation	60 d B