

## **Circuit Description ( PARENT UNIT)**

### **1. POWER SUPPLY**

DC 7.5V from Adapter or 4 X AAA size battery is input to U3 regulator. U3 outputs 3.8V DC which gives supply to other parts of circuit of the unit.

### **2. POWER SWITCH**

K5 is used as power on/off control of the unit.

### **3. DATA SHAPER**

Q7, Q8 form a data shaper which regulate the data transmitted from base, such as channel selection.

### **4. DATA TRANSMISSION**

Data command to nursery is sourced from pin 61 of U1. The data signal is fed into RF module through R88 and R7. The RF module transmission power is supplied from main PCB through turning on switching transistors Q13 and Q14.

## 5. PILOT TONE DETECTOR

Pilot tone received is filter at several stages of passive RC filters and amplified by Q16 and Q17. Then it is shaped at D7 and Q10 and fed into CPU U1 for recognition of audio from the base. Q5 and Q12 are then turned on for passing audio into speaker amplifier U2.

## 6. AUDIO OUTPUT AND LEVEL DETECTOR

Demodulated signal is amplified by Q3 and Q15 and passes through audio switch Q5 once pilot tone is verified. After passing through the second switch Q12, the audio signal is amplified by the U2 and output as sound at speaker SPK1.

Volume level output at speaker is controlled by K1 and K2 buttons which give CPU command to set terminals at R2, R3, R4 and R9 logic as varying the signal input to U2.

Part of demodulated audio signal is amplified by Q1 and rectified by D1 and D5 to let CPU know the audio strength from the transmitter. The audio level is displayed by 10 levels bar of LCD display which is driven by CPU U1.

## 7. LCD display and Back light

LCD display, LCD1 is driven by ports on CPU of LCD\_C0 to LCD\_C3 and LCD\_S0 to LCD\_S10. Back light of LCD is supported by LED1 which is driven by CPU U1.

## 8. RF MODULE OPERATION

### I. RX part

Radiated signal (926-927.6MHz) from nursery is collected by antenna HANT1 and passed through matching components HC48 and HL4 to dielectric filter HDF1 (927MHz). The received signal is amplified by HQ4 amplifier. Amplified received signal is mixed with VCO frequency (936.7-938.3MHz) from HQ4 at HQ5 mixer.

The output of HQ5 is of 10.7MHz and passes through first 10.7MHz filter HCF2 and amplified by HQ6 and then pass to 10.7MHz filter HCF1.

Filtered 10.7MHz signal is fed into the input of IF IC HU1. Filtered 10.7MHz is mixed with 11.15MHz (HX1 oscillation) inside HU1 and a second IF 450kHz is generated. The 450kHz IF is output from pin 3 of HU1 and then filtered by components HL5,6 and HC69-71, 450kHz filter and then through HC67 back to HU1 pin 5 into internal demodulator. The audio (or data) from nursery is finally recovered from demodulator of HU1 which uses conventional quadrature detector contributed by HIFT1. The demodulated audio signal then passes into base band PCB at AF OUT pin (pin 1) of the module.

### II. TX part

Data signal is input into the RF module and modulates the RF signal through HVD1. HU2 PLL is controlled by CPU U1 and drives the TXVCO HQ1 in which transmission frequency is adjusted by tuning HVC1.

Transmission frequency (2401.7-2402.9MHz) amplified at amplifiers HQ2 and HQ3 and then filtered by HDF2, dielectric filter (2403MHz).

RF signal (2401.7-2402.9MHz) is radiated out at antenna HANT2 which is matched with HL7 and HC28. HANT2 is a wire antenna which is fixed on PCB and without gain.

## AC401 FREQUENCY TABLE

### 1. PARENT UNIT

#### A. RECEIVING FREQUENCY CHANNELS

CHANNEL NUMBER	RX FREQUENCY (MHz)
0	926.0
1	926.2
2	926.4
3	926.6
4	926.8
5	927.0
6	927.2
7	927.4
8	927.6

#### B. TRANSMISSION FREQUENCY CHANNELS

CHANNEL NUMBER	TX FREQUENCY (MHz)
00	2401.7
01	2402.3
02	2402.9