CIRCUIT DESCRIPTION OF AC401

A. BABY UNIT
1. POWER SUPPLY

DC 7.5V from AC adapter or 6V battery is input and they are input to BU1 regulator to provide main DC supply to the rest of circuit.
(4 pieces of AAA size alkaline batteries can be used to power up the unit instead of using AC adapter.)

2. POWER AND NIGHTLIGHT SWITCHES

BSW1 is built to control power on/off of the unit.
BSW2 is built to turn on and off the night light (LED at the eye of angel).

3. MOVEMENT SENSOR PAD SENSITIVITY ADJUST

Movement vibration is input through SJ1 and the signal is filtered by active filter formed by SU1-A and SU1-B op-amps.   The filtered signal is input into pin 26 of CPU BU4 through SCN1-2 and normal movement display is shown by BLED2 with tic sound from BBUZ1 which is located on the microphone PCB. If movement signal is found abnormal or no vibration detected, alarm sound will alert from BBUZ1. In addition, data will be sent to parent side for alerting alarm. SVR1 is used to adjust a level what user wants for the application.

4. PAGE AND REGISTRATION BUTTON

Switch BSW3 is used as:
a. Press and release for paging parent unit.
b. Press and hold for 2 seconds for registration with parent unit in order to link up data communication.

5. SOUND DETECT AND TRANSMISSION

Microphone BMIC1 collects surrounding sound and the signal is enlarged by BU2-A and BU2-B. BU2-B output is also used for detecting level of input sound if it is large enough to turn on transmission to parent unit.
BU4 CPU turns on audio MUTE switching transistor BQ3 for audio passing into RF module.
RF TX power is turned ON by switching transistors, BQ5 for TXVCC and BQ10 for VPA (power amplifier DC) from BU4 control.

6. PILOT TONE SHAPER

Pilot tone shaper is formed by BR71,19,24,27 and BC37,39,40,41 which filters the signal from CPU and forms the pilot tone into RF module.

7. DATA SHAPER

BQ68, BQ9 form a data shaper which regulates the data transmitted from parent unit, such as commands to change operation modes and channel selection.

8. BATTERY DETECT AND LOW ALERT

While using alkaline battery, battery level is detected by voltage level detected at junction of BR43 and BR55. If battery is detected low, BLED3 will flash to alert user.

9. RF MODULE OPERATION

I. TX part

Audio or data signal is input into the RF module and modulates the RF signal through DVD1. DU2 PLL is controlled by CPU BU4 and drives the TXVCO DQ1 in which transmission frequency is adjusted by tuning DVC1.

Transmission frequency (926-927.6MHz) is amplified at amplifiers DQ2 and DQ3 and then filtered by DDF2, dielectric filter (927MHz).

RF signal (926-927.6MHz) is radiated out at antenna DANT2 which is matched with DL3 and DC28. DANT2 is a rod antenna which is fixed on PCB and without gain.

II. RX part

Radiated signal (2401.7-2402.9MHz) from parent is collected by antenna DANT1 and passed through matching components DC48 and DL8 to dielectric filter DDF1 (2403MHz). The received signal is amplified by DQ4 amplifier. Amplified received signal is mixed with VCO frequency (2391-2392.2MHz) from DQ5 at DQ7 mixer. The VCO frequency from DQ7 is doubled from PLL IC DU2 which generates the fundamental VCO frequency (1195.5-1196.1MHz).

The output of DQ5, 10.7MHz, passes through first 10.7MHz filter DCF2 and amplified by DQ6 and then passes to 10.7MHz filter DCF1.

Filtered 10.7MHz signal is fed into the input of IF IC DU1. Filtered 10.7MHz is mixed with 11.15MHz (DX1 oscillation) inside DU1 and a second IF 450kHz is generated. The 450kHz IF is output from pin 3 of DU1 and then filtered by components DL5,6 and DC69-71, 450kHz filter and then through DC67 back to DU1 pin 5 into internal demodulator. The received data is finally recovered from demodulator of DU1 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.

AC401 FREQUENCY TABLE

1. Baby Unit

A. Transmission Frequency Channels

CHANNEL NUMBER	TX 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. Receiving Frequency Channels

CHANNEL NUMBER	TX FREQUENCY (MHz)
0	2401.7
1	2402.3
2	2402.9