AC601 CIRCUIT DESCRIPTION

I. AC601 Parent Unit Circuit Description

Category	Number	Name	Location	Description
IC	TMP86FM29UG	MAIN PROCESSOR UNIT	CHIP1	Handle all LEDs lighting, RX data, audio and control of RF module.
SLIDE SWITCH	SKA-24D08-G4-NA-PA	DUAL 2P4T SWITCH	SW1	SW1-A for power ON /OFF. SW1-B for speaker volume level select as MPU controlling on R3,2
SLIDE SWITCH	SKA13D07GA-PA46	1P3T SWITCH	SW2	Channel select switch
IC	UTC34119D	AUDIO POWER AMP	U2	Amplification of audio signal to speaker SPK1.
LED	KPT1608SYCK	RANGE LED	LED1	Indication of out of range function and also visual alert.
LED	KPT1608SGC	POWER/ LOW BATTERY LED	LED2	Steady ON for power ON and blinking for battery capacity running out
LED	KPT1608SGC	SOUND LEVEL/ CHARGE LED	LED3 LED4 LED5	Indication of sound level and also charging of batteries.
IC	AIC1734-30PU	REGULATOR 3V OUTPUT	U3	Supply stable DC 3V to MCU and other parts of the unit.
TRAN-SISTORS	2N3904	AF PRE-AMPLIFIER	Q3,Q15	Amplification of received AF signal and sent to audio amplifier IC.
TRAN-SISTORS	2N3904	DATA SHAPER	Q7,Q8	Handle TX data from nursery unit and shaping to RX data into MPU.
TRAN-SISTORS	2N3904	PILOT TONE DETECT	Q10, Q17,16	Detect pilot tone transmitted from nursery unit.
TRAN-SISTOR	8550C	AF MUTE SWITCH	Q5	On mute the AF signal into audio amplifier IC.
DIODES	LL4148	LEVEL DETECTOR	D1,D5	Detection of sound level transmitted from nursery unit.
BATTER-IES	GN60AAAHC	AAA NiMH BATTERIES	BAT+	DC power source 3.6Vof the Parent unit
TRAN-SISTORS	2N3906, 2N3904	CHARGING CONTROL	Q4,Q18	Controlled by processor CHIP1 to enable charging of batteries
DIODE	LL4148	PROTECTION DIODE FOR U3	D3	As power source is 7.5V DC from adapter, this provides suitable Voltage input to regulators U3
RESONAT-OR	8MHz	OSCILLATOR	X1	Provides a stable clock oscillation for MPU CHIP1
TRAN-SISTOR	8550C	SWITCH FOR RX_VCC ON	Q9	On and Off switch for RX_VCC which is controlled by MPU CHIP1.
TRAN-SISTORS	2N3904	RESET SWITCH FOR MPU CHIP1	Q6,Q11	Form reset circuit to processor CHIP1.
DC JACK	DC111S0700	7.5V I/P JACK	JACK1	Connection with 7.5DC adapter as an alternative power source input into circuit other than batteries.

TRANSIS-TOR	8550C	SWITCH FOR BATTERIES I/P	Q2	As power source from DC jack is detected, switched open for stopping batteries power input into circuit.
RESIST-ORS	150K	ADAPTER DETECT	R67,68	Provide DC voltage to processor for detecting adapter DC 7.5V
RESIST-ORS	100K, 150K,100K	BATTERY DETECT	R28 R35,118	Provide DC voltage to processor for detecting batteries capacity status.
TRANSIS-TOR	8050C	GROUND SWITCH	Q1	To connect power source and circuit ground for charge indication when power key selected OFF.
MODULE	CN1	RF MODULE	CN1	Receives RF signals from Nursery unit (Baby side) and recovers audio and data signals to main PU circuit.

II. AC601 Nursery Unit (Baby side) Circuit Description

Category	Number	Name	Location	Description
IC	TMP86FM29UG	MAIN PROCESSOR UNIT	BCHIP1	Handle all LEDs lighting, RX data, audio and control of RF module.
TACT SWITCH	KPT1105	POWER KEY	BMK1	Button key for ON/ OFF power
TACT SWITCH	TS1157ASNP2	ANGEL EYE BUTTON SW.	BK1	Press key for night light switch. Press and hold to ON out of range.
SLIDE SWITCH	SKA13D07G4NA-PA46	MODE SELECT	BSW1	Slide switch for operation mode select.
SLIDE SWITCH	SKA13D07G4NA-PA46	CHANNEL SELECT	BSW2	Channel A, B, C selection
LED	HX52E4NNWCN-7A	NIGHT LIGHT LED	BLED1	On for soothing night light illuminated at halo of nursery unit.
TRAN-SISTOR	8050C	SWITCH FOR NIGHT LIGHT	BQ7	On for turning ON night light LED BLED1.
LED	4LYG1D	POWER/BAT. LOW	BLED2	Steady ON as indication for Power ON. Blink for low batteries detect.
LED	4LYG1D	MOVEMENT	BLED3	Slowly blink for movement detect.
LED	L934YD	OUT OF RAGNE	BLED4	ON for out of range function is being used.
TRAN-SISTOR	2N3904	MIC. PRE-AMPLIFIER	BQ1	Pre-amplification of audio signal input by microphone BMIC1
IC	LM324D	OP-AMP	BU2-B	Amplification of audio signal for processor BCHIP1 detect and also to RF module for transmission
TRAN-SISTOR	8550C	AUDIO MUTE SW.	BQ3	Processor BCHIP1 turns mute ON as TX data or pilot tone being transmitted.
IC	XC6204B382MR	REGULATOR 3.8V OUTPUT	BU3	Supply steady 3.8V to processor BCHIP1, main circuit and provides power supply to RF module

MODULE	BRF1	RF MODULE	BRF1	Main RF operation for sending audio signal from microphone with also data signal of alarm and movement.
BATTER-IES	GN24A	AAA ALKALINE BATTERIES	BATT1	Backup power source 6Vof the Nursery unit
DIODE	LL4148	PROTECTION DIODE	BD2	Provide protection to regulator in case wrong polarity adapter used.
JACK	DCC050S0300	DC POWER JACK	SJ2	DC 7.5V power connection
JACK	EY502	SENSOR PAD JACK	SJ1	Movement signal input from sensor pad
VR	100KB	FOR EXTERNAL ADJUST OF SENSITIVITY	SVR1	Through external knob to adjust the VR value as movement sensitivity adjustment.
OP-AMP	LM324D	LF SIGNAL AMPLIFIER	BU2-C, BU2-D	Amplification of low frequency signal detected from sensor pad to processor BCHIP1.
OP-AMP	LM324D	RESET BCHIP1	BU2-A	Reset circuit for processor BCHIP1.
DIODE	1SS344	PROTECTION DIODE	BD6	Protect alkaline batteries from being charged.
RESIST-ORS	240K, 330K	DC IN DETECT	BR55,43	Detection DC IN of adapter or batteries.
RESONA-TOR	8MHz	OSCILLATOR	BX1	Provides a stable clock oscillation for processor BCHIP1
TRAN-SISTORS	2N3906 2N3904	DC VAMP SUPPLY	BQ4 BQ2	Provide regulated voltage VAMP to OP-AMP BU2 from power V+.
TRAN-SISTORS	2N3904	BUZZER DRIVER	BQ6	Buzzer tone sent from processor BCHIP1 uses BQ6 to drive output to buzzer
BUZZER	THC12-2P	ALARM OUTPUT	SBUZ1	Device to emit off alarm sound signal sent out from processor BCHIP1.
TRANSIS-TOR	2N3906	TRANSMISS-ION POWER SWITCH	BQ5	Switch controlled by processor BCHIP1 to enable TXVCC ON for RF transmission.

III. AC601 Parent Unit RF module Circuit Description

Category	Number	Name	Location	Description
IC	GP214D	PLL IC	HU1	Frequency synthesizer programmed by processor CHIP1 to generate oscillation frequency for local oscillator.
IC	MC3361BP	NARROW BAND FM IF	HU2	FM demodulation device to recover received signals (audio, pilot tone and data) .and send to main circuit.
TRAN-SISTOR	MT3S37T	RX LNA	HQ2	Amplification of received RF signal from antenna
TRAN-SISTOR	C5066Y	RX VCO	HQ1	With the aid of var-cap diode HVD1 JDV2S08S to generate high frequency oscillation to step down input RF signal frequency.
TRAN-SISTOR	MT3S37T	MIXER	HQ3	Mix input received RF signal from LNA with high frequency generated by RX VCO and sends out IF 10.7MHz.
BPF	LT10.7MJA10	10.7MHz IF FILTER	HCF1	1st stage 10.7MHz IF Filter for output signal from mixer.
TRAN-SISTOR	2N3904	IF AMPLIFIER	HQ4	Amplification of 10.7MHz IF signal
BPF	LT10.7MJA10	10.7MHz IF FILTER	HCF2	2nd stage 10.7MHz IF Filter and emits off IF to FM demodulator HU2.
CRYSTAL	11.15MHz	OSCILLATOR	HX1	Provide an oscillation source to both HU1 and HU1 for generation of RX VCO frequency and steps down 10.7MHz to 450kHz in HU2.
PASSIVE PARTS	2200pF, 100pF, 220uH, 100uH	SMT CAP., INDUCTOR	HC39,40 HL5,6	450kHz filter for down converted 450kHz signal.
IFT	5DL-C5001S	QUAD COIL	HIFT1	Quad coil for internal quadrature detector inside HU2 to recover AF signals from 450kHz signal
WIRE	AWG#18 WIRE	RF ANTENNA	HANT1	Wire antenna to pick up RF signals from air and inject the signals into RF module circuit to recover signals from nursery unit (baby side).
PASSIVE PARTS	100pF, 0.015uH	SMT CAP., INDUCTOR	HC18 HL2	LC antenna matching circuit to get most efficient for RF reception.
DIELEC-TRIC FILTER	DFC927B02A	927MHz BAND PASS FILTER	HDF1	High frequency filter specified for the received RF signals frequencies.

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IV. AC601 Nursery Unit (Baby) RF module Circuit Description

Category	Number	Name	Location	Description
IC	GP214D	PLL IC	DU1	Frequency synthesizer programmed by processor BCHIP1 to generate oscillation frequency for TX local oscillator.
CRYSTAL	11.15MHz	OSCILLATOR	DX1	Provide an oscillation source to DU1 for generation of TX VCO frequency.
MODULA-TOR	JDV2S08S	VARI-CAP DIODE	DVD1	FM Modulation of transmitted audio and data signal from base band circuit. By tuning DVR1 to adjust frequency modulation level.
TRAN-SISTOR	C5066Y	TX VCO	DQ1	Using oscillation frequency from PLL IC DU1, TX VCO of transmitted frequency is formed.
PASSIVE PARTS	0.015uH,0.015uH 5pF	BPF	DL2,3 DC18	Suppress harmonic and noise from VCO and let TX frequency signal into amplifier.
TRAN-SISTOR	C5066Y	TX AMP	DQ2	Amplification of carrier signal for RF transmission.
PASSIVE PARTS	0.015uH,0.015uH 5pF	TX FILTER	DL4,5 DC28	Suppress harmonic and noise from TX AMP and let TX frequency signal feed into antenna for transmission.
PASSIVE PARTS	3.3pF 0.01uH	SMT CAP. INDUCTOR	DC31 DL6	Matching circuit to antenna to achieve most efficient transmission of RF signal.
ANTENNA	METAL ROD	RF ANTENNA	DANT1	Metal rod antenna converts electric signal from circuit into EM wave for RF transmission.

V. AC601 Channel Table

Channel frequencies applied in AC601 are shown as in tables below:

TX

A: 926.2MHz
B. 926.8MHz
C. 927.6MHz

RX:

A: 926.2MHz
B. 926.8MHz
C. 927.6MHz