

Circuit Description of Cordless Headset Telephone (CA10)

The BE-900MHZCID Cordless headset telephone with caller ID is 900MHz band(ISM BAND) Cordless Telephone and Full DUPLEX System.

It performs Transmission and reception through the ANTENNA of the module. It has 40 channels with 50KHz channel spacing

General RF specifications are below

■ Remote

- (1) TX Frequency : 925.30 ~ 927.25MHz (Attached Frequency table)
- (2) RX Frequency : 902.80 ~ 904.75MHz (Lower Heterodyne)
- (3) Channel Number : 40 Channel Full Duplex
- (4) Channel Separation : 50KHz
- (5) 1st IF : 10.7MHz
- (6) 2nd IF : 450KHz
- (7) 2nd Local frequency : 10.25MHz
- (8) Modulation : FM
- (9) Standard Test Modulation : Modulation Frequency 1KHz
Standard Deviation 6KHz
- (10) Power supply voltage range : 3.3 to 5.0VDC

■ Base

- (1) TX frequency : 902.80 ~ 904.75MHz
- (2) RX frequency : 925.30 ~ 927.25MHz
- (3) Channel Number : 40channel Full Duplex
- (4) Channel Separation : 50KHz
- (5) 1st IF : 10.7MHz
- (6) 2nd IF : 450KHz
- (7) 2nd Local Frequency : 10.25MHz
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Standard Deviation 6KHz
- (10) Power Supply Voltage Range : 3.3 to 5.0VDC

1. BASE UNIT

1.1 Power supply and Regulator circuit

- AC/DC adapter converts 120V AC/60Hz to DC 9V 800mA and supplies 9VDC to the baseunit.
- Regulated voltage used IC(KIA7805) and IC706(KIA7806)

1.2 Charge circuit

- Whenever the handset cradles on the charge contacts, baseunit starts battery charge on handset and charge LED on baseunit lights blink.
- Charge circuit designed with Q304~Q312.
- If the battery voltage is less than 3.0 volt, battery will be charged during 12hours, 0.1C
If the battery voltage is less than 3.5 volt, battery will be charged during 9hours, 0.1C
If the battery voltage is less than 4.0 volt, battery will be charged during 7hours, 0.1C
If the battery voltage is more than 4.5 volt, battery will be charged during 5hours, 0.1C

1.3 Channel access circuit

- In normal state, 40 Channel MCA is applied.
- It is designed by access to .01~40 channel by using SW303, 304.
- If it is putted in 00 channel, by using SW303, 304, it will be AUTO Channel Scanning state,

1.4 Speech circuit

- When Talk switch is on, the Base RL302 operate.
- Switch 302 is alternative switch for R/TX.
- When there is an audio signal on telephone line, the audio signal through T301 applies pin 8 of IC302 (compander) for compressing audio signal, then the compressed audio signal outputs from pin 2 of IC302. RV302 adjusts the compressed audio signal to keep proper modulation ratio.
- Receive signal from handset is detected by RF module then after the receive signal amplified by IC303, the signal is input to the pin 14 of IC302.
And the expended audio signal is output from pin 19 of IC 302(compander), and RV302 adjusts the expressed audio signal output to keep proper level.
The audio level is amplified by IC304 and supply to telephone line through T302.

1.5 RF module curcuit

- The RF module includes Duplexer, RF receive circuit, Receive VCO, FM detector.

1.6 Audio transmit signal flow

Telephone line → pin 8 of IC302 → pin 2 of IC302 → RV301 → pin 1 of RF module → antenna

1.7 Audio receive signal flow

Antenna → pin 11 of RF module → pin 1 of IC303 → pin 14 of IC302 → pin 19 of IC302 → Telephone line

1.8 Data transmit flow

Telephone line → pin 1 of IC302 → pin 43 of IC301 → pin 38 of IC301 → RF module → pin 1 of antenna

1.9 Data receive flow

Antenna → pin 11 of RF module → pin 1 of IC304 → pin 7 of IC304 → pin 35 of IC301 → pin 31 of IC301

■ Frequency Table

CH NO	BASE			HAND		
	RX	LOCAL	TX	RX	LOCAL	TX
CH1	925.30	936.00	902.80	902.80	892.10	925.30
CH2	925.35	936.05	902.85	902.85	892.15	925.35
CH3	925.40	936.10	902.90	902.90	892.20	925.40
CH4	925.45	936.15	902.95	902.95	892.25	925.45
CH5	925.50	936.20	903.00	903.00	892.30	925.50
CH6	925.55	936.25	903.05	903.05	892.35	925.55
CH7	925.60	936.30	903.10	903.10	892.40	925.60
CH8	925.65	936.35	903.15	903.15	892.45	925.65
CH9	925.70	936.40	903.20	903.20	892.50	925.70
CH10	925.75	936.45	903.25	903.25	892.55	925.75
CH11	925.80	936.50	903.30	903.30	892.60	925.80
CH12	925.85	936.55	903.35	903.35	892.65	925.85
CH13	925.90	936.60	903.40	903.40	892.70	925.90
CH14	925.95	936.65	903.45	903.45	892.75	925.95
CH15	926.00	936.70	903.50	903.50	892.80	926.00
CH16	926.05	936.75	903.55	903.55	892.85	926.05
CH17	926.10	936.80	903.60	903.60	892.90	926.10
CH18	926.15	936.85	903.65	903.65	892.95	926.15
CH19	926.20	936.90	903.70	903.70	893.00	926.20
CH20	926.25	936.95	903.75	903.75	893.05	926.25
CH21	926.30	937.00	903.80	903.80	893.10	926.30
CH22	926.35	937.05	903.85	903.85	893.15	926.35
CH23	926.40	937.10	903.90	903.90	893.20	926.40
CH24	926.45	937.15	903.95	903.95	893.25	926.45
CH25	926.50	937.20	904.00	904.00	893.30	926.50
CH26	926.55	937.25	904.05	904.05	893.35	926.55
CH27	926.60	937.30	904.10	904.10	893.40	926.60
CH28	926.65	937.35	904.15	904.15	893.45	926.65
CH29	926.70	937.40	904.20	904.20	893.50	926.70
CH30	926.75	937.45	904.25	904.25	893.55	926.75
CH31	926.80	937.50	904.30	904.30	893.60	926.80
CH32	926.85	937.55	904.35	904.35	893.65	926.85
CH33	926.90	937.60	904.40	904.40	893.70	926.90
CH34	926.95	937.65	904.45	904.45	893.75	926.95
CH35	927.00	937.70	904.50	904.50	893.80	927.00
CH36	927.05	937.75	904.55	904.55	893.85	927.05
CH37	927.10	937.80	904.60	904.60	893.90	927.10
CH38	927.15	937.85	904.65	904.65	893.95	927.15
CH39	927.20	937.90	904.70	904.70	894.00	927.20
CH40	927.25	937.95	904.75	904.75	894.05	927.25

2. Handset

2.1 Power supply

- 3.6VDC 720mAh NiMH battery

2.2 Speech circuit

- Received signal is detected by RF module and supplies IC102 (expander) through IC103A. The expanded audio signal output on pin 19 of IC201 is supplied to speaker after being adjusted the level by SW102, 103 volume control.
- Audio signal input on microphone is supplied to pin 8 of IC102 (compressor) and the compressed output signal level on pin 1 of IC102 is adjusted the level by RV101 to keep proper modulation ratio.

2.3 Audio transmit signal route

- Microphone → pin 8 of IC102 → RV101 → RF module → antenna

2.4 Audio receive signal route

- Antenna → pin 11 of RF module → pin 14 of IC102 → pin 19 of IC102 → Speaker

2.5 Data transmit route

- Talk data → pin 27 of IC101 → pin 1 of RF module → antenna

2.6 Data receive route

- Antenna → pin 11 of RF module → pin 1 of IC103 → pin 7 of IC103 → pin 31 of IC101