Circuit Description of Cordless Headset Telephone (BE-900MHZCID)

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

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1. BASE UNIT

1.1 Power supply and Regulator circuit (R150~R153 and C144~C146 and ZD103)

- AC/DC adaptor converts 120VAC/60Hz to DC 9V and Supplies 9VDC to the baseunit.
- Supply +4.2VDC to relay through D103 and R158.
- Supply +7.8VDC to pin 4 of IC104 through R133.
- Supply +4.3VDC to RF module B+ terminal through regulator circuit.
- Supply +4.5VDC to pin 20 of IC201.
- Supply +4.9VDC to pin 32 of IC101.
- Supply +4.9VDC to pin 16 of IC106.

1.2 Charge circuit

- Whenever the cradles on the charge contacts, baseunit starts battery charge on remote and charge LED on baseunt lights on.
- Q102 turns on to make low level on pin 6 of IC101 and IC101 is reset by impulse to pin 7 of IC101 through C160.

1.3 Speech circuit

- CZ101 is for surge protection and there are RF interference protection components L103, L104, C149 and C150.
- IC105, C151, R156 and R159 are for ringer circuitry.
  When the baseunit receives a ring signal, a pulse on pin 4 of IC105 inputs
  Pin15 of IC101 then pin 19 of IC101 sends a data output to remote.
- When there is an audio signal on telephone line, the audio signal through T101 applies pin 8 of IC201 (compandor) for compressing audio signal, then the compressed audio signal outputs from pin 1 of IC201.
  RV201 adjusts the compressed audio signal to keep proper modulation ratio.
- Receive signal form remote is detected by RF module then expended by the IC201 (compandor), and the expressed audio signal output to keep proper level.
  The audio level is amplified by IC104 and supplis to telephon line through T101.
- R160~R163 are the components for proper sidetone level.
- Dialing function
  When a dial data from remote is received by baseunit, the detected dial data by RF module applies to pin 5 of IC101 through IC104 (comparator).

Then the dial data in IC101 is changed to DTMF data by DTMF generator.

IC104 drives the output level of DTMF data on pin 23 of IC101 then supplies the data to telephone line.

1.4. RF module circuit

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

1.5Caller ID circuit

- When the Tip/Ring receive a FSK signal, the FSK Signal through C168, 169 applies pin1,2 of IC106 (Calling line identification receiver), then the signal output from pin14 of IC106.

1.6 Audio transmit signal flow

- Telephone line (Tip/ Ring)→ pin 8 of IC201 → pin 1 of IC102 → RV201 → RF module → antenna

1.7 Audio receive signal flow

- Antenna → pin 11 of RF module → pin 2 of IC104 → pin 17 of IC201 → pin 19 of IC201 → pin 6 of IC104 → Telephone line (Tip/ Ring)

1.8 Data transmit flow

- Telephone line (ring signal) → pin 4 of IC105 → pin 15 of IC101 → RF module → antenna

1.9 Data receive flow

- Antenna → pin 11 of RF module → pin 2 of IC104 → pin 9 of IC104 → pin 5 of IC101.

■ 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 600mAH NiMH battery

2.2 Speech circuit

- Received signal is detected by RF module and spplies IC201 (expendor) through IC103B. The expended audio signal output on pin 19 of IC201 is supplied to speaker after being adjused the level by RV101 volume control.
- Audio signal input on microphone is supplied to pin 8 of IC201 (compandor) and the compressed output signal level on pin 1 of IC102 is sdjusted the level by RV201 to keep proper modulation ratio.

2.3 Audio transmit siganl route

- Microphone → pin 1 of IC102 → RV201 → RF module → antenna

2.4 Audio receive signal route

- Antenna → pin 11 of RF module → pin 7 of IC103 → pin 15 of IC201 → RV101 → Speaker

2.5 Data transmit route

- Talk data → pin 32 of IC101 → pin 1 of RF module → antenna

2.6 Data receive route

- Antenna → pin 11 of RF module → IC103B → IC103A → pin 24 fo IC101