FF2115AT

2115 Circuit Description

1. Introduction

The model 2115 is a 40 channel (902.125 - 926.125Mhz) Caller ID cordless telephone.
The whole unit is divided into two main parts as follow :

    a. A remote Handset.
    b. A Base unit.

2. Functional Blocks of the Remote Handset

    2.1 Keyboard matrix and function LED
    2.2 LCD
    2.3 MCU and MCU interface
    2.4 Antenna and RF module
    2.5 Compander
    2.6 Data shaper
    2.7 Charge detector
    2.8 Low battery detector
    2.9 Buzzer amplifier

3. Circuit Block Description

3.1 Keyboard matrix and function LED

Pin 46 to pin51, pin 55 to pin 58 of the MCU:U1 NT93420 form a keyboard, and
the talk LED is controlled by the pin 54 of the MCU.

3.2 LCD

LCD1 is controlled by the MCU: U1 NT93420 pin 1 to pin 39, pin 74 to pin 100.

3.3 MCU and MCU interface

The handset and the base is link up by the pins(40,62 in HS and 43,78 in Base).
Besides, the PLL of the RF Module is controlled by the pins 35 to pin 37 of
the MCU.

3.4 Antenna and RF module

ANT is the common point for transmitting and receiving through antenna.

MD1 is a RF module which consists of Duplexer, Power amplifier, Mixer & IF, RXVCO, TXVCO, VCC & TXVCC control, Synthesizer and DEMO Audio Output circuits.

3.5 Compander

A compander U2 is used for improving the S/N of the transmit and receive audio signal.

3.6 Data shaper

The information which sending from base unit, is recovered by the amplifier KQ1 and KQ2.

3.7 Charge detector

D1 to D5, ZD1, R5, R6 form a charge detector to direct the charging signal to the MCU pin 34.

3.8 Low battery detector

A battery low detector is built-in by the KQ3 which detects the battery dropping and sends a signal to pin 36 of MCU

3.9 Buzzer amplifier

Q1 is a buzzer amplifier driven directly by the MCU pin 61

4. Functional Blocks of the Base unit

4.1 Power supply

4.2 MCU and MCU interface

4.3 Calling line identifier

4.4 Antenna and RF module

4.5 Compander

4.6 Data shaper

4.7 Charge detector

4.8 Line audio interface

4.9 Ring detector

4.10 Led function board

4.11 Carrier detector

5. Circuit Block Description

5.1 Power supply

BU1 7805 regulate the input DC 9V to 5V which provides power to every part of the circuit.

5.2 MCU and MCU interface

The heart of the base is MCU BMU1. NT93423A that communicates with the PLL   of BMD1 through pins 19,20 and 21. Transmitter is controlled by the signal TX_DC which output from MCU via pin 53. MCU pin 95 isfor generating DTMF signal. The communication between Handset and Base is via the pin 43 and pin 76 through the RF link.

5.3 Calling line identifier

MCU pin 87 to pin 88, when receiving caller ID data, MCU controls the LCD to display the correct information.

5.4 Antenna and RF modulator

ANT is antenna transmit and receive signal. BMD1 is a RF modulator which consist of Duplexer, Power amplifier, Mixer & IF, RXVCO, TXVCO, VCC & TXVCC control, Synthesizer and DEMO Audio Output circuits.

5.5 Compander

A compander BU2 is used for improving the S/N of the transmit and receive audio signal.

5.6 Data shaper

The information which sending from handset unit, is recovered by the amplifier BQ5, BQ7.

5.7 Charge detector

BQ1 is a charge detector to direct the charging signal to the MCU pin 80.

5.8 Line audio interface

BR72, BK1, BR73, BC17, BL3, BL4 and BTR1 line transformer are the audio interface to the telephone line. The transformer is also used for telephone isolation.

5.9 Ring detector

BC2, BR71, BZD3, BZD2, BD7, BU7(LTV817) form a ring detector which feed the signal through pin 93 of MCU.

5.10 LED function board

BMLED1 is used for indicating "IN USE/CHARGE".

5.11 Carrier detector

The RF Module BMD1 pin 12 is an output pin of the carrier detector signal to MCU pin79

Channel frequencies

CH.	BASE TX	H/S TX	CH.	BASE TX	HS/TX
1	902.125	926.125	21	902.625	926.625
2	902.150	926.150	22	902.650	926.650
3	902.175	926.175	23	902.675	926.675
4	902.200	926.200	24	902.700	926.700
5	902.225	926.225	25	902.725	926.725
6	902.250	926.250	26	902.750	926.750
7	902.275	926.275	27	902.775	926.775
8	902.300	926.300	28	902.800	926.800
9	902.325	926.325	29	902.825	926.825
10	902.350	926.350	30	902.850	926.850
11	902.375	926.375	31	902.875	926.875
12	902.400	926.400	32	902.900	926.900
13	902.425	926.425	33	902.925	926.925
14	902.450	926.450	34	902.950	926.950
15	902.475	926.475	35	902.975	926.975
16	902.500	926.500	36	903.000	927.000
17	902.525	926.525	37	903.025	927.025
18	902.550	926.550	38	903.050	927.050
19	902.575	926.575	39	903.075	927.075
20	902.600	926.600	40	903.100	927.100