

Circuit Description for VG7993

This is a 2400MHz ISM Band cordless telephone for domestic use. Radio transmitter with FM technology provides greater mobility to the user within approximately 150 meters radius around the base.

Following paragraphs describe the detail of major building blocks.

1. Ringer Detection

a. Base

Incoming ringer signal is first attenuated by C60, Z2, Z3 and R60. The signal is then feed to micro-controller (MCU) U1 for generating response signal according to the setting of inputs. When the ringer switch is set to on position MCU sends digitally coded information to handset via RF link.

b. Handset

When digitally coded information is received from the base it will be decoded at MCU U2. Then necessary ringer is generated and applied to Q10, which drive the Buzzer BP2.

2. Surge protection

The surge absorber V1 is mounted in the Base unit. It designed to operate when voltage over 330V. In general it is common to have induced surges in the telephone line due to lightening. If it allow entering the unit damage to the unit is imminent. The line interface, fuse and ringer detected circuit is most venerable to high voltage surges and V1 surge absorber can prevent it.

3. Line control

When the unit is operated by remote handset, line control is done by MCU. It turns on transistor Q11. Then telephone line power feeds to line interface circuit (Q8, Q9), turn on the telephone line and internal voice path, and around component.

4. Power Control

a. Base unit

The main power is come from AC/DC adaptor, which provide 12V DC to the unit. Inside the unit there are two different voltages available for different modules. 12V non-back up voltage is supplied to the audio amplifier. Radio part, MCU and line interface related circuit is supplied with non-backup regulated 5V voltage.

b. Handset

Three cells of Ni-MH battery(3.6V) provided necessary power to the handset. In order to keep power consumption to minimum, the radio receiver is turn on and off periodically by MCU with Q1 and Q2. The MCU is supplied with regulated 3.6V by U3.

5 Radio Module

Both handset and base use 2400MHz ISM band analogue radio that transmits and receive signal in full duplex mode. Audio and data signal is FM modulated before transmitting from the module. The radio module is fully cover with shield plate in order to minimize interference to other equipment.

6 DTAM (Digital Answering Machine)

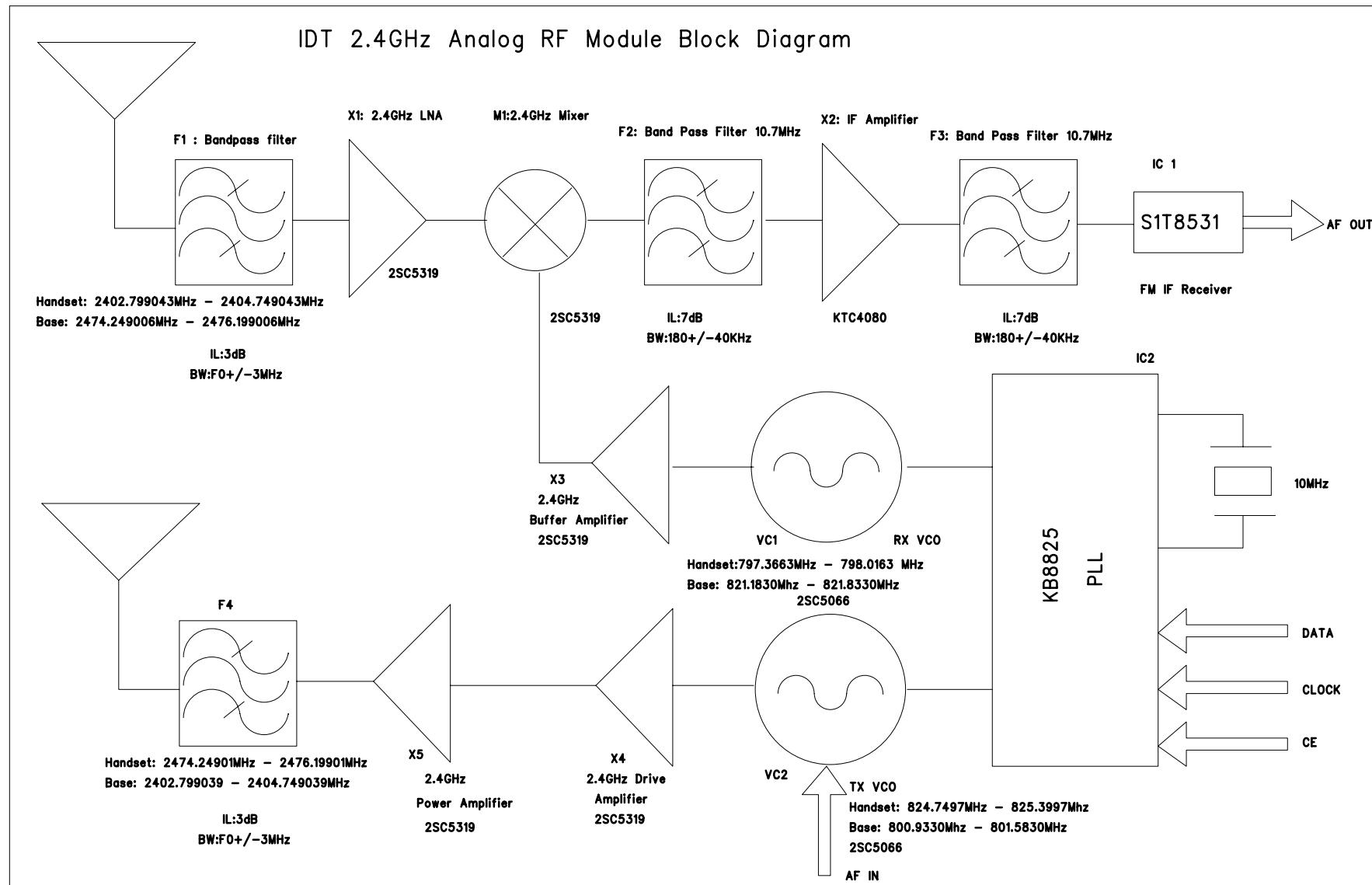
The DTAM circuit mainly consist of MX93132 (DSP) U1, the 00F800MC(A Flash) U2 , the user interface key board(with 9 function key) and the seven segment display .The Q1 and Q2 provide a reset circuit for U1. The Q10 and Q11 drive the 7 segment display. The DTAM capable to provide total 14 minute of recording time.

The DSP is controlled by the Base MCU through the user interface key such as volume up, down. To check the recorded message by pressing play, reverse and forward key. To record out going message (OGM) by pressing the announce key for long press, to play the out going message(OGM) by short press. The erase key is to erase message, the DTAM On/Off key is to turn On/Off the DTAM function. The note(memo) key is to invoke memo recording. The SW2 is for the ring time select. The SW3 is to adjust the time.

5 Radio Module

Both handset and base use 2400MHz ISM band analogue radio that transmits and receive signal in full duplex mode. Audio and data signal is FM modulated before transmitting from the module. The radio module is fully cover with shield plate in order to minimize interference to other equipment. The two metal antennas are permanently attached to the RF module. For detail please refer to the block diagram.

F1	:Band Pass Filter
X1	:2.4G Linear Amplifier
M1	:2.4GHz Mixer
F2	:Band Pass Filter 10.7MHz
X2	:IF Amplifier
F3	:Band Pass Filter 10.7MHz
IC1	:FM IF Receiver
IC2	:PLL
VC1	:RX VCO
X3	:2.4GHz Buffer Amplifier
VC2	:TX VCO
X4	:2.4GHz Drive Amplifier
X5	:2.4GHz Power Amplifier
F4	:Band Pass Filter



2.4G FREQUENCY TABLE

CH	B/U TX	B/U RX	H/S TX	H/S RX
1	2402.799039	2474.249006	2474.24901	2402.799043
2	2402.849039	2474.299006	2474.29901	2402.849043
3	2402.899039	2474.349006	2474.34901	2402.899043
4	2402.949039	2474.399006	2474.39901	2402.949043
5	2402.999039	2474.449006	2474.44901	2402.999043
6	2403.049039	2474.499006	2474.49901	2403.049043
7	2403.099039	2474.549006	2474.54901	2403.099043
8	2403.149039	2474.599006	2474.59901	2403.149043
9	2403.199039	2474.649006	2474.64901	2403.199043
10	2403.249039	2474.699006	2474.69901	2403.249043
11	2403.299039	2474.749006	2474.74901	2403.299043
12	2403.349039	2474.799006	2474.79901	2403.349043
13	2403.399039	2474.849006	2474.84901	2403.399043
14	2403.449039	2474.899006	2474.89901	2403.449043
15	2403.499039	2474.949006	2474.94901	2403.499043
16	2403.549039	2474.999006	2474.99901	2403.549043
17	2403.599039	2475.049006	2475.04901	2403.599043
18	2403.649039	2475.099006	2475.09901	2403.649043
19	2403.699039	2475.149006	2475.14901	2403.699043
20	2403.749039	2475.199006	2475.19901	2403.749043
21	2403.799039	2475.249006	2475.24901	2403.799043
22	2403.849039	2475.299006	2475.29901	2403.849043
23	2403.899039	2475.349006	2475.34901	2403.899043
24	2403.949039	2475.399006	2475.39901	2403.949043
25	2403.999039	2475.449006	2475.44901	2403.999043
26	2404.049039	2475.499006	2475.49901	2404.049043
27	2404.099039	2475.549006	2475.54901	2404.099043
28	2404.149039	2475.599006	2475.59901	2404.149043
29	2404.199039	2475.649006	2475.64901	2404.199043
30	2404.249039	2475.699006	2475.69901	2404.249043
31	2404.299039	2475.749006	2475.74901	2404.299043
32	2404.349039	2475.799006	2475.79901	2404.349043
33	2404.399039	2475.849006	2475.84901	2404.399043
34	2404.449039	2475.899006	2475.89901	2404.449043
35	2404.499039	2475.949006	2475.94901	2404.499043
36	2404.549039	2475.999006	2475.99901	2404.549043
37	2404.599039	2476.049006	2476.04901	2404.599043
38	2404.649039	2476.099006	2476.09901	2404.649043
39	2404.699039	2476.149006	2476.14901	2404.699043
40	2404.749039	2476.199006	2476.19901	2404.749043