

# The Technical Description of GH3000

Made by: L.S HE

## 1. RF Module

### **TX Part:**

The TX-VCO generates the transmitting frequency, and it is controlled by the MCU in the base-band through the combo-chip (TB31261AF). The output signal is tripled by the TX-BUF and amplified by power amplifier (PAMP-1 and PAMP-2), then fed to the TX-antenna.

The audio signal is fed to the MIC-AMP from the base-band part and then modulated to the RF signal in TX-VCO through the compressor.

The DATA is used to transfer the commands between the base unit and the handset.

### **RX Part:**

The received signal from the RX-antenna is fed to the mixer (Q2) after amplified by LNA-1 and LNA-2. In the mixer it is mixed with the local frequency generated by the RX-VCO and tripled by the tripler (Q14) converted to the IF (10.7MHz) signal, The RX-VCO (Q15) is controlled by the MCU in the base-band part. After amplified by IF-Amp in IC1 (TB31261AF) the IF signal is fed to the FM-demodulator in which the audio signal is picked up. The audio signal is fed to the base-band part through the expander and the speaker amplifier in TB31261AF.

The combo chip (TB31261AF) also detects the voltage of the battery and the RSSI to inform the MCU and it is controlled by the MCU through the interface of COMBO\_DATA, COMBO\_CLK, COMBO\_EN. And the other hand, TB31261AF also demodulates the data signal from the received signal and sends to the MCU.

## 2. The Base Band Part of The Base Unit:

**Tel. Line Interface:** Separate the incoming and outgoing audio signals and make the sidetone cancellation. Make the telephone line on- hook and off hook.

**Ring Detector:** detects the ring signal from the telephone line in on hook status and inform the MCU.

**Charge Control and Charge Detecting Circuit:** Controls the charge current for charging the battery in handset when the handset is in cradle. And detect if the handset on cradle or not and inform the MCU.

**Ref. OSC (4MHz):** Provide the standard frequency to RX-PLL and TX-PLL of the RF Module as the reference frequency.

**Power Control Circuit:** Switch on or off the powers of TX part RX part of the RF module. It is controlled by the MCU.

**MCU:** It's the central controller. It manages the all parts in the base unit to work properly and makes the communication with the handset through the RF link.

### **3. The Base Band Part of The Handset:**

**Keyboard:** The user interface.

**Power Control Circuit:** Switch on or off the power of TX-part and RX-part of the handset RF module.

**Charge Circuit and Charge Detector:** Charge the battery in the handset when the handset is in the base cradle and detect if the handset is charging or not, and then inform the MCU.

**REF OSC (4MHz):** Provide the standard frequency to the RX-PLL and TX-PLL of the RF module as the reference frequency.

**MCU:** The central controller. It manages the operation of the handset and communicates with the base unit through the RF link.

### **4. The Antennas of Base and Handset:**

There are two antennas that are single pole type and soldered permanently on the RF module of both base and handset, one for TX and one for RX.

**END**

## 40 Channels Sequencing Table in Test Mode of Base

|                                 |           |  |                     |
|---------------------------------|-----------|--|---------------------|
| No. of channel                  | 40        |  | $F_{osc}/F_{ref}=R$ |
| Ch Separation                   | 100kHz    |  | $F_{in}/F_{ref}=P$  |
| Ref Freq ( $F_{ref}$ )          | 16.667kHz |  |                     |
| Crystal connected ( $F_{osc}$ ) | 4MHz      |  |                     |
| Ref counter (R)                 | 240       |  |                     |
| 1st IF                          | 10.7MHz   |  |                     |

| CH No. | TX freq    | N for TX | RX freq    | Triple RX LO freq | N for RX |
|--------|------------|----------|------------|-------------------|----------|
| 0      | 2401000000 | 48020    | 2473500000 | 2484200000        | 49684    |
| 1      | 2401100000 | 48022    | 2473600000 | 2484300000        | 49686    |
| 2      | 2401200000 | 48024    | 2473700000 | 2484400000        | 49688    |
| 3      | 2401300000 | 48026    | 2473800000 | 2484500000        | 49690    |
| 4      | 2401400000 | 48028    | 2473900000 | 2484600000        | 49692    |
| 5      | 2401500000 | 48030    | 2474000000 | 2484700000        | 49694    |
| 6      | 2401600000 | 48032    | 2474100000 | 2484800000        | 49696    |
| 7      | 2401700000 | 48034    | 2474200000 | 2484900000        | 49698    |
| 8      | 2401800000 | 48036    | 2474300000 | 2485000000        | 49700    |
| 9      | 2401900000 | 48038    | 2474400000 | 2485100000        | 49702    |
| 10     | 2402000000 | 48040    | 2474500000 | 2485200000        | 49704    |
| 11     | 2402100000 | 48042    | 2474600000 | 2485300000        | 49706    |
| 12     | 2402200000 | 48044    | 2474700000 | 2485400000        | 49708    |
| 13     | 2402300000 | 48046    | 2474800000 | 2485500000        | 49710    |
| 14     | 2402400000 | 48048    | 2474900000 | 2485600000        | 49712    |
| 15     | 2402500000 | 48050    | 2475000000 | 2485700000        | 49714    |
| 16     | 2402600000 | 48052    | 2475100000 | 2485800000        | 49716    |
| 17     | 2402700000 | 48054    | 2475200000 | 2485900000        | 49718    |
| 18     | 2402800000 | 48056    | 2475300000 | 2486000000        | 49720    |
| 19     | 2402900000 | 48058    | 2475400000 | 2486100000        | 49722    |
| 20     | 2403000000 | 48060    | 2475500000 | 2486200000        | 49724    |
| 21     | 2403100000 | 48062    | 2475600000 | 2486300000        | 49726    |
| 22     | 2403200000 | 48064    | 2475700000 | 2486400000        | 49728    |
| 23     | 2403300000 | 48066    | 2475800000 | 2486500000        | 49730    |
| 24     | 2403400000 | 48068    | 2475900000 | 2486600000        | 49732    |
| 25     | 2403500000 | 48070    | 2476000000 | 2486700000        | 49734    |
| 26     | 2403600000 | 48072    | 2476100000 | 2486800000        | 49736    |
| 27     | 2403700000 | 48074    | 2476200000 | 2486900000        | 49738    |
| 28     | 2403800000 | 48076    | 2476300000 | 2487000000        | 49740    |
| 29     | 2403900000 | 48078    | 2476400000 | 2487100000        | 49742    |
| 30     | 2404000000 | 48080    | 2476500000 | 2487200000        | 49744    |
| 31     | 2404100000 | 48082    | 2476600000 | 2487300000        | 49746    |
| 32     | 2404200000 | 48084    | 2476700000 | 2487400000        | 49748    |
| 33     | 2404300000 | 48086    | 2476800000 | 2487500000        | 49750    |
| 34     | 2404400000 | 48088    | 2476900000 | 2487600000        | 49752    |
| 35     | 2404500000 | 48090    | 2477000000 | 2487700000        | 49754    |
| 36     | 2404600000 | 48092    | 2477100000 | 2487800000        | 49756    |
| 37     | 2404700000 | 48094    | 2477200000 | 2487900000        | 49758    |
| 38     | 2404800000 | 48096    | 2477300000 | 2488000000        | 49760    |
| 39     | 2404900000 | 48098    | 2477400000 | 2488100000        | 49762    |

**1. 40 Channels Sequencing Table in Test Mode of Handset**

| Channel | TX freq (Hz) | TX counter | Triple RX LO freq (Hz) | RX counter |
|---------|--------------|------------|------------------------|------------|
| 0       | 2473500000   | 49470      | 2390300000             | 47806      |
| 1       | 2473600000   | 49472      | 2390400000             | 47808      |
| 2       | 2473700000   | 49474      | 2390500000             | 47810      |
| 3       | 2473800000   | 49476      | 2390600000             | 47812      |
| 4       | 2473900000   | 49478      | 2390700000             | 47814      |
| 5       | 2474000000   | 49480      | 2390800000             | 47816      |
| 6       | 2474100000   | 49482      | 2390900000             | 47818      |
| 7       | 2474200000   | 49484      | 2391000000             | 47820      |
| 8       | 2474300000   | 49486      | 2391100000             | 47822      |
| 9       | 2474400000   | 49488      | 2391200000             | 47824      |
| 10      | 2474500000   | 49490      | 2391300000             | 47826      |
| 11      | 2474600000   | 49492      | 2391400000             | 47828      |
| 12      | 2474700000   | 49494      | 2391500000             | 47830      |
| 13      | 2474800000   | 49496      | 2391600000             | 47832      |
| 14      | 2474900000   | 49498      | 2391700000             | 47834      |
| 15      | 2475000000   | 49500      | 2391800000             | 47836      |
| 16      | 2475100000   | 49502      | 2391900000             | 47838      |
| 17      | 2475200000   | 49504      | 2392000000             | 47840      |
| 18      | 2475300000   | 49506      | 2392100000             | 47842      |
| 19      | 2475400000   | 49508      | 2392200000             | 47844      |
| 20      | 2475500000   | 49510      | 2392300000             | 47846      |
| 21      | 2475600000   | 49512      | 2392400000             | 47848      |
| 22      | 2475700000   | 49514      | 2392500000             | 47850      |
| 23      | 2475800000   | 49516      | 2392600000             | 47852      |
| 24      | 2475900000   | 49518      | 2392700000             | 47854      |
| 25      | 2476000000   | 49520      | 2392800000             | 47856      |
| 26      | 2476100000   | 49522      | 2392900000             | 47858      |
| 27      | 2476200000   | 49524      | 2393000000             | 47860      |
| 28      | 2476300000   | 49526      | 2393100000             | 47862      |
| 29      | 2476400000   | 49528      | 2393200000             | 47864      |
| 30      | 2476500000   | 49530      | 2393300000             | 47866      |

|    |            |       |            |       |
|----|------------|-------|------------|-------|
| 31 | 2476600000 | 49532 | 2393400000 | 47868 |
| 32 | 2476700000 | 49534 | 2393500000 | 47870 |
| 33 | 2476800000 | 49536 | 2393600000 | 47872 |
| 34 | 2476900000 | 49538 | 2393700000 | 47874 |
| 35 | 2477000000 | 49540 | 2393800000 | 47876 |
| 36 | 2477100000 | 49542 | 2393900000 | 47878 |
| 37 | 2477200000 | 49544 | 2394000000 | 47880 |
| 38 | 2477300000 | 49546 | 2394100000 | 47882 |
| 39 | 2477400000 | 49548 | 2394200000 | 47884 |

|                          |           |  |             |
|--------------------------|-----------|--|-------------|
| No. of channel           | 40        |  | Fosc/Fref=R |
| Ch Separation            | 100kHz    |  | Fin/Fref=P  |
| Ref Freq (Fref)          | 16.667kHz |  |             |
| Crystal connected (Fosc) | 4MHz      |  |             |
| Ref counter (R)          | 240       |  |             |
| 1st IF                   | 10.7MHz   |  |             |