

Circuit Description :

Handset Unit

1. Receiving path

The receiving path is established by below stages:

a) Low Noise Amplifier (LNA)

FM signal filtering by the 2403MHz dielectric filter F16, and input to tuning amplifier Q18. Then input to second tuning amplifier Q23 before output to mixer.

b) Mixer

Mixer is included Q23 and local oscillator Q20 & Q14 , which is controlled by the U1 PLL pin . The IF (808MHz) is filtering by a 808MHz dielectric filter F18 and to Q19 for amplifier then go to second mixer Q24, then mix to 10.7MHz IF signal by CF1. The filtered IF signal then amplified by Q25 before input to U1 pin 40.

c) IF amplifier

IF amplifier has built in U1. Amplified IF is filtering again by a ceramic filter F2 , the filtered IF will input to FM demodulator U1 pin 33.

d) FM demodulator and expandor

The second IF signal is demodulated by quadrature coil T1 , then the recovered audio signal is input to the expandor stage in U1 for dc-emphasis before output to the handset speaker through the audio amplifier in U1.

2. Transmitting path

The transmitting path is established by below stages:

a) Mic amplifier and compressor

Audio pick up by handset microphone is amplified by internal mic amplifier of U1 , then input to compressor for pre-emphasis before input to the Modulator(Tx VCO).

b) Modulator and Tx VCO

The transmit VCO is constructed by & Q13 , which is controlled by PLL of U1. Both audio and data signal are input to the transmit VCO will cause a frequency modulation progress.

c) RF power amplifier

FM signal is amplified by Q12, Q11 & Q7 and fit to the antenna though 2475MHz dielectric filter F15.

Base Unit

1. Receiving Path

The receiving path is established by below stages:

a) Low Noise Amplifier (LNA)

FM signal filtering by the 2475MHz dielectric filter , and input to tuning amplifier Q18. Then input to second tuning amplifier Q17 before output to mixer .

b) Mixer

Mixer stage is included of Q23 and local oscillator Q20 & Q14 , which is controlled by the U1 PLL pin . The IF (808MHz) is filtering by a 808MHz dielectric filter F18 and to Q19 for amplifier then go to second mixer Q24, then mix to 10.7MHz IF signal by CF1. The filtered IF signal then amplified by Q25 before input to U1 pin 40.

c) IF amplifier

IF amplifier has built in U1. Amplified IF is filtering again by a ceramic filter F2 , the filtered IF will input to FM demodulator U1 pin 33.

d) FM demodulator and expandor

The second IF signal is demodulated by quadrature coil T1 , then the recovered audio signal is input to the expandor stage in U1 for de-emphasis before output to the handset speaker through the audio amplifier in U1.

2. Transmitting Path

The transmitting path is established by below stages.

a) Mic amplifier and compressor

Audio pick up by handset microphone is amplified by internal mic amplifier of U1 , then input to compressor for pre-emphasis before input to the Modulator(Tx VCO).

b) Modulator and Tx VCO

The transmit VCO is constructed by Q13, which is controlled by PLL of U1. Both audio and data signal are input to the transmit VCO will cause a frequency modulation progress.

c) RF power amplifier

FM signal is amplified by Q13, Q11 & Q7 and fit to the antenna through 2403MHz dielectric filter.

3. Telephone Line Interface

The telephone line interface circuit is established by below stages:

a) Audio power amplifier

IC3b & IC3d are built as a audio amplifier, according to high current output requirement for line interface.

b) Line relay & isolation transformer

T4 is the line isolation transformer, both audio input and output is through this transformer. RL1 is the reed relay for line seize, which is controlled by Q3.

c) Ring detect circuitry

IC3a and IC3d are used as a differential amplifier for pick up the ring signal, which is input through two 20M ohm resistor (R44 and R45) as an isolation from the line.

FREQUENCY TABLE

Handset Unit Frequency Allocation

Channel No.	Tx Freq.	TXVCO Freq.	RX Freq.	RXVCO Freq.	Channel No.	Tx Freq.	TXVCO Freq.	RX Freq.	RXVCO Freq.
1	2474.700	824.9000	2402.300	797.2000	21	2477.700	825.9000	2405.300	798.2000
2	2474.850	824.9500	2402.450	797.2500	22	2477.850	825.9500	2405.450	798.2500
3	2475.000	825.0000	2402.600	797.3000	23	2478.000	826.0000	2405.600	798.3000
4	2475.150	825.0500	2402.750	797.3500	24	2478.150	826.0500	2405.750	798.3500
5	2475.300	825.1000	2402.900	797.4000	25	2478.300	825.5000	2405.900	798.4000
6	2475.450	825.1500	2403.050	797.4500	26	2478.450	825.5500	2406.050	798.4500
7	2475.600	825.2000	2403.200	797.5000	27	2478.600	825.6000	2406.200	798.5000
8	2475.750	825.2500	2403.350	797.5500	28	2478.750	825.6500	2406.350	798.5500
9	2475.900	825.3000	2403.500	797.6000	29	2478.900	825.7000	2406.500	798.6000
10	2476.050	825.3500	2403.650	797.6500	30	2479.050	825.7500	2406.650	798.6500
11	2476.200	825.4000	2403.800	797.7000	31	2479.200	825.8000	2406.800	798.7000
12	2476.350	825.4500	2403.950	797.7500	32	2479.350	825.8500	2406.950	798.7500
13	2476.500	825.5000	2404.100	797.8000	33	2479.500	825.9000	2407.100	798.8000
14	2476.650	825.5500	2404.250	797.8500	34	2479.650	825.9500	2407.250	798.8500
15	2476.800	825.6000	2404.400	797.9000	35	2479.800	826.0000	2407.400	798.9000
16	2476.950	825.6500	2404.550	797.9500	36	2479.950	826.0500	2407.550	798.9500
17	2477.100	825.7000	2404.700	798.0000	37	2480.100	826.1000	2407.700	799.0000
18	2477.250	825.7500	2404.850	798.0500	38	2480.250	826.1500	2407.850	799.0500
19	2477.400	825.8000	2405.000	798.1000	39	2480.400	826.2000	2408.000	799.1000
20	2477.550	825.8500	2405.150	798.1500	40	2480.550	826.2500	2408.150	799.1500

Base Unit Frequency Allocation

Channel No.	Tx Freq.	TXVCO Freq.	RX Freq.	RXVCO Freq.	Channel No.	Tx Freq.	TXVCO Freq.	RX Freq.	RXVCO Freq.
1	2402.300	800.7667	2474.700	828.4667	21	2405.300	801.7667	2477.700	829.4667
2	2402.450	800.8167	2474.850	828.5167	22	2405.450	801.8167	2477.850	829.5167
3	2402.600	800.8667	2475.000	828.5667	23	2405.600	801.8667	2478.000	829.5667
4	2402.750	800.9167	2475.150	828.6167	24	2405.750	801.9167	2478.150	829.6167
5	2402.900	800.9667	2475.300	828.6667	25	2405.900	801.9667	2478.300	829.6667
6	2403.050	801.0167	2475.450	828.7167	26	2406.050	802.0167	2478.450	829.7167
7	2403.200	801.0667	2475.600	828.7667	27	2406.200	802.0667	2478.600	829.7667
8	2403.350	801.1167	2475.750	828.8167	28	2406.350	802.1167	2478.750	829.8167
9	2403.500	801.1667	2475.900	828.8667	29	2406.500	802.1667	2478.900	829.8667
10	2403.650	801.2167	2476.050	828.9167	30	2406.650	802.2167	2479.050	829.9167
11	2403.800	801.2667	2476.200	828.9667	31	2406.800	802.2667	2479.200	829.9667
12	2403.950	801.3167	2476.350	829.0167	32	2406.950	802.3167	2479.350	830.0167
13	2404.100	801.3667	2476.500	829.0667	33	2407.100	802.3667	2479.500	830.0667
14	2404.250	801.4167	2476.650	829.1167	34	2407.250	802.4167	2479.650	830.1167
15	2404.400	801.4667	2476.800	829.1667	35	2407.400	802.4667	2479.800	830.1667
16	2404.550	801.5167	2476.950	829.2167	36	2407.550	802.5167	2479.950	830.2167
17	2404.700	801.5667	2477.100	829.2667	37	2407.700	802.5667	2480.100	830.2667
18	2404.850	801.6167	2477.250	829.3167	38	2407.850	802.6167	2480.250	830.3167
19	2405.000	801.6667	2477.400	829.3667	39	2408.000	802.6667	2480.400	830.3667
20	2405.150	801.7167	2477.550	829.4167	40	2408.150	802.7167	2480.550	830.4167