

Equipment Description

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The model EXP9300 is a telephone terminal device that is designed for voice operation in a similar fashion to an ordinary residential or business telephone without the inconvenience and restraint of a handset cord.

This device consists of a base unit and a handset. The base unit is connected to a standard telephone modular jack (USOC RJ 11C Type) and is supplied electric power from a standard AC power line by using with the AC Adapter. The handset is powered from an internal battery pack..

The EXP9300 Cordless Telephone operates by means of a full duplex radio frequency TX/RX system in 902 - 928 MHz band. These radio frequency systems operate in accordance with Part 15 of the FCC Rules.

The EXP9300 has been specifically designed to comply with the requirements set forth in Part 68 of the FCC Rules as well as the Part 15 requirements.

The specifications are as below:

General:

Frequency Control : PLL Synthesized
Modulation : FSK
Operating Temperature : -10 deg. C to +50 deg. C

Base Unit:

Transmitting Frequency: 924.77793103 MHz to 927.84993013 MHz
Receiving Frequency : 902.10868966 MHz to 905.18068966 MHz
Power Requirements : 9V DC (Use with the AC Adapter)

Handset:

Transmitting Frequency: 902.10868966 MHz to 905.18068966 MHz
Receiving Frequency : 924.77793103 MHz to 927.84993103 MHz
Power Requirements : 3.6 V DC (Rechargeable Battery)

Circuit Description and Operating Frequency

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Overview:

This equipment is a Cordless Telephone System that operates within the 900MHz ISM band. This equipment consists of a base unit and a handset. The base unit is associated with either Analog Interface Board or Digital Interface Board, which is connected to a telephone network, and has transmitter and receiver circuits that are served to communication with the handset. The handset also has a transmitter and receiver portions in addition to regular dialing circuit.

Both the handset and the base unit have PLL circuits that enables this device to communicate on an available (empty) channel. When pressing the CH key on the handset, the communications will move to another open channel without disconnecting the telephone. This situation is true even if their interference which causes an interruption to voice communications.

1. Handset

1) Local Frequencies and Intermediate Frequencies

TX VCO Frequency: 451.0543448 MHz to 452.5903448 MHz

RX 1st Local Freq.: 935.4769655 MHz to 938.5489655 MHz

1st Intermediate Frequency: 10.69903448 MHz

2) Communication Link to Base unit

RX Circuit:

An incoming RF signal from the base unit is received through the antenna. PLL IC (IC601) and RX VCO (IC601) produce RX VCO frequency shown above. Then, this frequency produces the RX 1st Local frequency. This 1st local signal is applied to the 1st Mixer (IC601) which produces 1st IF of 10.69903448MHz. Demodulated signal by IC601 is fed to D/A converter IC401 for AF signal and then amplified by the audio amplifier (IC401) to drive a speaker.

- TO BE CONTINUED -

TX Circuit:

TX VCO signal is generated at the PLL circuit and the TX VCO (IC601). Meanwhile, voice signal from the microphone (MC401) modulates the TX VCO signal at IC601. This modulated signal is multiplied twice by the Doubler (IC601) to produce the TX RF frequencies as listed above.

Then, the TX RF signal is amplified by RF AMP (IC601) and fed into the antenna through a band pass filter (FL601).

3) Dialing Signal

When this equipment is in Talk Mode, the transmitting circuit and dialing circuit are activated to make outgoing call. In this condition, when any number keys are pressed, the CPU (IC402) generates corresponding dial pulse codes.

2. Base Unit

1) Local Frequencies and Intermediate Frequencies

TX VCO Frequency: 462.498341 MHz to 463.946927 MHz

RX 1st Local Freq.: 891.579317 MHz to 894.476488 MHz

1st Intermediate Frequency: 10.69903448 MHz

2) Communication Link to Handset

RX Circuit:

An incoming RF signal from the base unit is received through the antenna.

RX VCO frequency shown above is produced by PLL AND VCO IC (IC201). Then, this frequency produces the RX 1st Local frequency. This 1st local signal is applied to the 1st Mixer (IC201) which produces 1st IF of 10.69903448MHz.

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The demodulated signal by IC201 is fed to D/A converter IC1 for AF signal and then amplified by the audio amplifier (IC1) and fed to either Analog Interface Board or Digital Interface Board which is connected to telephone line.

TX Circuit:

TX VCO signal is generated at the PLL circuit and the TX VCO (IC201). Meanwhile, voice signal from either Analog Interface Board or Digital Interface that is connected to telephone network is fed to A/D converter IC1 to produce a digital signal and then fed to the TX VCO for modulation. This modulated signal is multiplied twice by the Doubler (IC201) to produce the TX RF frequencies as listed above. Then, the TX RF signal is amplified by RF AMP (IC201) and fed into the antenna through a band pass filter (FL201).

3) Dialing Signal

Dial pulse code sent from the handset is demodulated by IC201 and is fed into CPU (IC2) to control Analog Interface Board.

4) Power Supply Circuit

The power supply circuits are composed of Q9, Q5 and a zener diode type HZ4A1. These are voltage regulator circuits to stabilize input voltage from the AC Adapter to attain a stable operation.

Digital Security Code Information

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65536 Digital Security Code

This cordless telephone system automatically selects a different security code from 65536 possible discrete digital codes each time the cordless telephone is used.

[APPENDIX] TEST MODE AND OPERATION FREQUENCY

TEST MODE

This cordless telephone has test mode function which enable to perform TX/RX testing.

Test Mode for Base Unit

To enter the test mode, connect the AC Adapter to the unit while pressing the SW1 and SW2 button. When test mode is set up, and the STATUS LED lights. The unit is set for CH 14 Transmitting mode.

To change the transmitting frequency, press the SW1 button during the unit is set the TX Test mode, so that the channel is changed from CH 14 to CH 15. Every pressing the SW1 key, channel is changed as below.

14 15 16 30 1 2 3 - - - 29 30 1 2 3 4 ---

To cancel the test mode, disconnect the AC Adapter and connect it again, so that the test mode is easily canceled.

Test Mode for Handset

First, disconnect the battery pack. Then, connect the battery pack again while pressing # and * keys. When test mode is set up, long beep tone is heard. By pressing "1" key, the unit is set for CH 16 Transmitting mode. Every pressing the CH key, channel is changed as below.

16 15 14 30 1 2 3 - - - 29 30 1 2 3 4 ---

To cancel the test mode, press the TALK key.

Channel	Portable(TX Frequency)	Base(TX Frequency)
1	902.10868966 MHz	924.77793103 MHz
2	902.21462069 MHz	924.88386207 MHz
3	902.32055172 MHz	924.98979310 MHz
4	902.42648276 MHz	925.09572414 MHz
5	902.53241379 MHz	925.20165517 MHz
6	902.63834483 MHz	925.30758621 MHz
7	902.74427586 MHz	925.41351724 MHz
8	902.85020690 MHz	925.51944828 MHz
9	902.95613793 MHz	925.62537931 MHz
10	903.06206897 MHz	925.73131034 MHz
11	903.16800000 MHz	925.83724138 MHz
12	903.27393103 MHz	925.94317241 MHz
13	903.37986207 MHz	926.04910345 MHz
14	903.48579310 MHz	926.15503448 MHz
15	903.59172414 MHz	926.26096552 MHz
16	903.69765517 MHz	926.36689655 MHz
17	903.80358621 MHz	926.47282759 MHz
18	903.90951724 MHz	926.57875862 MHz
19	904.01544828 MHz	926.68468966 MHz
20	904.12137931 MHz	926.79062069 MHz
21	904.22731034 MHz	926.89655172 MHz
22	904.33324138 MHz	927.00248276 MHz
23	904.43917241 MHz	927.10841379 MHz
34	904.54510345 MHz	927.21434483 MHz
25	904.65103448 MHz	927.32027586 MHz
26	904.75696552 MHz	927.42620690 MHz
27	904.86289655 MHz	927.53213793 MHz
28	904.96882759 MHz	927.63806897 MHz
29	905.07475862 MHz	927.74400000 MHz
30	905.18068966 MHz	927.84993103 MHz