

BEARCAT 101



Made in Cumberland, Ind., U.S.A.

Manufactured under one or more of the following U.S. Patents:
3,551,724 - 3,665,318 - 3,714,585 - 3,821,651 - 3,873,924

OPERATING INSTRUCTIONS

and

FREQUENCY PROGRAMMING DIRECTORY

- ... 16 Reprogrammable Channels
 - ... Unique circuits permit instant selection from more than 6,000 frequencies
 - ... No channel crystals required
 - ... "Remembers" frequencies without batteries even when unplugged.
 - ... Exclusive "track-tuning" offers full band coverage on all Public Service Bands
 - ... Exclusive electronically tuned single antenna
 - ... Exclusive "auxiliary memory" can be programmed for selective scan delay or external control of accessories on desired channels
 - ... Exclusive five band coverage
 1. 30-50MHz (LOW)
 2. 146-148MHz (HAMS)
 3. 148-174MHz (HIGH)
 4. 450-470MHz (UHF)
 5. 470-512MHz (UHF TV)
- Plus: 416-450MHz (UHF Govt.)

Electra COMPANY

DIVISION OF MASCO CORPORATION OF INDIANA
CUMBERLAND, INDIANA 46229

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GENERAL DESCRIPTION

The Bearcat 101 is a unique "synthesized" automatic scanning monitor receiver for home, office or mobile use. Through the use of advanced computer technology, Electra has designed exclusive frequency synthesis integrated circuits which provide "crystal controlled" operation of over 15,000 frequencies without the expense of crystals. Changing frequencies is achieved simply from the front panel as explained in the Programming Section.

The Bearcat 101 will monitor any 16 frequencies desired in any order and band combinations. Each individual channel may be changed by "programming" it with a new frequency code. By combining the advantages of "track tuning" (full band coverage) and "frequency synthesis," the Bearcat 101 receives thousands more frequencies than any other scanning monitor available.

| Bearcat 101 Coverage: | Band | Frequency Spacing | No. of Frequencies |
|-----------------------|---------|-------------------|--------------------|
| | 30-50 | 10kc | 2,000 |
| | 146-148 | 5kc | 400 |
| | 148-174 | 5kc | 5,000 |
| | 416-450 | 12.5kc | 2,720 |
| | 450-470 | 12.5kc | 1,600 |
| | 470-512 | 12.5kc | <u>3,360</u> |
| | | | 15,080 |

With very few exceptions the Bearcat 101 is capable of receiving all of these frequencies more than 6,000 of which are channels presently assigned by the FCC. Note that this includes the newly allocated 470 to 512 MHz band.

The most advanced developments in solid state circuitry are incorporated in this receiver; dual-gate MOS Field-Effect R-F and mixer transistors provide low noise and low cross-modulation. Single conversion into monolithic quartz crystal I-F filters reduces spurious responses and radiation and improves selectivity; linear integrated circuits provide I-F gain, detection, audio amplification and output; desired channels are scanned with no time lost scanning unwanted channels. An exclusive track-tuning system using voltage-variable capacitors provides high performance, full-band coverage. Exclusive design custom MOS and TTL integrated circuits provide frequency synthesis and scanning.

The Bearcat 101 is another outstanding Electra "first" from the inventors of automatic scanning monitors -- the complete scanning monitor.

SPECIFICATIONS

Size: 9"W x 3-5/8"H x 7 1/4"D

Weight: 6 1/4 lbs.

Cabinet: Heavy duty vinyl-clad steel. Non-sliding feet.

Power Requirements: 117Vac, 30W

Audio Output: 3W RMS

Antenna: Telescoping antenna. Connector for outside or mobile antenna.

Input Impedance: 50 - 70 ohms

Sensitivity: H and L bands: readable at .25 microvolt for \pm 5KHz deviation, .6 microvolt for 20db signal-to-noise ratio; U/T band slightly less.

Channels: Up to 16 channels may be scanned automatically or selected individually or in any combination.

Frequency Selection: New frequencies are entered simply from the front panel. No plug-in crystals required.

Frequency Retention or "Memory": Without batteries or other power.

Scan Delay: Programmable for individual channels

Frequency Range:

Low Band 30-50MHz, total spread 20MHz

2-Meter HAM 146-148, total spread 2MHz

High-band 148-174MHz, total spread 26MHz

UHF-band 416-450MHz, total spread 34MHz

UHF-band 450-470MHz, total spread 20MHz

UHF "T" band 470-512MHz, total spread 42MHz

Scan Rate: Approximately 20 channels per second.

Accessories Supplied: All-band telescoping antenna/connector

Optional Accessories: Mobile installation kit including power converter and mounting bracket.

Front Panel Features: Squelch control; volume control; combined manual-scan channel-select switch; 16-channel switches (also used for frequency programming); 16 L.E.D. channel indicators; programming indicator; programming "ready" and "enter" switches; forward facing oval speaker.

Listed by Underwriters' Laboratories, Inc.

Certified under FCC Regulations, Part #15

WARNING: TO PREVENT FIRE OR SHOCK HAZARD DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

OPERATION

GENERAL

This receiver is shipped complete with telescoping antenna and programming instructions allowing full-band, all-band coverage of signals in fair-to-good signal-strength areas.

1. With the power cable and antenna properly connected, turn the receiver ON by rotating the "VOLUME" control clockwise.
2. Place the 16-channel switches in the up (ON) position.
3. Set the "MANUAL-SCAN" switch on "MANUAL."
4. Adjust the "SQUELCH" control clockwise until a rushing noise is heard. Then adjust the "SQUELCH" control counterclockwise until the rushing noise disappears.
5. Press the "MANUAL-SCAN" switch downward and continue to step through all channels. If the noise should reappear or "break the squelch" on any channel, adjust the squelch control counterclockwise again slightly, to quiet the receiver. **THIS MUST BE DONE BETWEEN STATION TRANSMISSIONS.**
6. If your receiver has been programmed to receive your local frequencies, it is now ready for operation. If not, follow instructions in the Programming Section of this book.
7. The "MANUAL-SCAN" switch may now be used to select and monitor any desired channel.
8. To sample all channels automatically, return the "MANUAL-SCAN" switch to "SCAN." Any channel may be omitted as desired by moving the individual channel switch downward (OFF).

EXTERNAL ANTENNA

If an outside antenna is necessary for fringe reception, you may use an "all-band" or "Tri-band" design for low-high UHF reception. Also, acceptable results may often be obtained on a 40MHz or 155MHz antenna. Such antennas, available at most radio dealers, should be coupled to the receiver external antenna jack by 50 ohm coaxial cable, such as RG-58 A/U, using the supplied automotive type connector.

MOBILE INSTALLATION

This receiver may be installed in any car, truck, boat, etc., having 12Vdc or, in the case of some boats, 117Vac.

Obtain the optional Mobile Installation Kit containing the bracket, power converter and hardware from your dealer.

1. Place the mobile mounting bracket under the dash to hold the receiver in the desired position.
2. Mark and drill two holes using a 7/64 drill bit and secure the bracket with the two No. 6 self-tapping screws.
3. Insert the two plastic "T" washers, flanges turned inward, in the desired pair of mounting holes and secure the receiver in place with the two ¼-20 bolts and two ¼" ID x 9/16" OD flat washers.
4. Mount the power converter in the same manner, attaching the black lead to the car frame or ground and the red lead to the "Accessory" or "Radio" terminal on the fuse block. Plug the radio power cord into the power converter receptacle.

NOTE: Reverse black and red leads for 12VDC POSITIVE ground systems.

5. External mobile antennas may be used as described above. The automotive antenna may be used fully extended for I. or H bands. It should be reduced to approximately 18" for U bands.

The BC-101 is designed for excellent noise immunity; however, the noise generated by the auto electrical system and other parts of the car is sometimes a problem, particularly in areas of low signal strength. The subject of noise elimination is too lengthy to deal with adequately in this instruction book.

It is recommended for those who wish to become familiar with the subject to purchase the "The Radio Amateur's Handbook" or the "The Mobile Manual" published by the American Radio Relay League and sold by most electronic parts stores. It is further recommended that the vehicle be taken to a service center which specializes in VHF-UHF two-way radio communications equipment for correction of a noise problem.

IN SOME AREAS IT IS ILLEGAL for unauthorized persons to receive police communications on a mobile receiver. The user of this radio is responsible for obtaining any necessary authorization through local agencies and the manufacturer cannot be responsible for any illegal installation or usage.

SELECTIVE RESCAN DELAY FEATURE

Some communications systems ("simplex") use a common frequency for both base station and mobiles. On these channels, it is desirable for a scanning monitor to pause for about one second after a transmission for a possible reply before resuming scanning. Other systems (duplex) use separate frequencies for base and mobiles. Rescan delay is undesirable on these channels as the delay is unnecessary and may result in missed communications.

BC-101 provides selective rescan delay which can be used only on those channels where it is desirable. Rescan delay is selected at the time a channel is programmed by placing the #16 programming switch in the UP position (step #7 of programming instructions).

ACCESSORY CONTROL FEATURE

Available from Electra dealers is an adapter which allows the BC-101 to control an external device such as an alarm, external speaker or tape recorder. The adapter, ACA-402, connects to TB1 on the back panel of the receiver and is programmed just as rescan delay is programmed. Then, when the receiver stops on a channel which has been programmed for accessory control, the accessory will operate.

The ACA-402 provides single-pole, double-throw contacts which can switch up to .5Amps and 40V. To avoid personal injury, **DO NOT CONNECT HAZARDOUS VOLTAGES (Greater than 40V) to the ACA-402.**

Accessory control and rescan delay cannot be used together. Connecting the ACA-402 automatically disables rescan delay.

USER HINTS

Radio equipment usually operates in an environment of man-made electro-magnetic noise which radiates from power lines, fluorescent lights, motors, appliances, ignition systems, etc. Modern radios are designed to minimize interference from such sources but operation may be affected under conditions of unusually strong noise.

Distant weak, "skip" or noise signals may be received by this receiver because of its high sensitivity. Whenever such conditions interrupt scanning or whenever a very busy channel prevents reception of other desired signals, the affected channel may be by-passed by means of its individual panel switch.

In cases of strong interfering noise or signals, it may be desirable to reduce the length of the antenna to reduce noise pick-up below a critical level. This may be very effective in medium and strong signal areas.

Continuous-carrier signals such as the NOAA weather broadcasts on 162.55MHz or 162.400MHz, which are available in many areas, may be received when desired by use of the individual channel switches.

In mobile service the commonly encountered poor reception conditions are signal fading, nearby faulty ignition systems, power lines and proximity to very strong signals. Careful setting of the squelch control will minimize these conditions.

When moving or shipping the radio, remove the telescoping antenna to avoid damage to it or to the internal circuit assemblies.

Failure to receive a signal may be caused by:

1. No signal being transmitted
2. Inadequate signal strength
3. Local interference
4. Improper programming (If in doubt, program again)

The BC-101 is certified to meet FCC radiation requirements which allow a low level of radiation. This low level may still cause occasional interference with nearby radio or T.V. receivers for certain programming.

PRODUCT SERVICE

It is strongly recommended that servicing of this receiver be done by the Factory Service Department. Special equipment and skills are maintained at the factory to give fast and efficient service on all of our products. When returning radio receivers to the factory for service, pack carefully and include a brief, detailed description of the difficulty you are having.

All tuned circuits in the R-F sections are tuned by voltage-variable capacitors which optimize the radio for each frequency individually, regardless of where it falls in any band. This tuning is done automatically and allows the Bearcat 101 to tune all parts of any band without compromise. Bandswitching is achieved as part of the programming code. Factory alignment of the R-F and track-tuning system involves highly specialized equipment and training not available to normal service activities. Because this unique feature is outside the experience of even the most highly trained technicians, these adjustments should be made only by Electra.

WARNING: The complex, expensive, large-scale integration networks employed in this receiver are likely to be ruined by normal handling if removed from the receiver or by the connection of test equipment to the digital board.

PROGRAMMING SECTION

By simple front panel programming, any frequencies in the bands shown can be selected from the code table and put into the 16 channels in any desired order. Having determined the frequencies you wish to receive, follow the programming instructions listed below.

In step #1 when the "ready" switch is pushed down, the 16 channel switches are changed from their normal lock-out function to become "data entry" switches. When the "enter" switch is actuated, an automatic cycle begins which erases any previous data in the memory for that channel and "enters" the new data (or frequency) then set up by the 16 switches.

PROGRAMMING INSTRUCTIONS

To program a channel frequency:

1. Move "ready" switch to down position (Program indicator will light).
2. Move all of the 16 lever switches to the down position.
3. Manually step channel indicator to channel number to be programmed.
4. Determine exact frequency you wish to receive on that channel.
5. Find the frequency in the "look-up" chart. If the desired frequency is not in the chart, refer to "Programming by Formula" on page 21.
6. The numbers alongside the frequency in the look-up chart indicate which lever switches should be moved to the "up" position. Move indicated switches to the "up" position. Recheck the numbers and switch positions to be sure they are correct.
7. If you desire "rescan delay" on this channel, move lever switch #16 to the "up" position.
8. Move the momentary contact (spring return) "enter" switch to the "down" position and release. Channel indicator will turn off for about one second. This channel is now programmed.
9. Repeat steps 2 thru 7 for each frequency to be programmed.
10. When programming is complete, return the "ready" switch to the "up" position ("program" indicator light will go off). The 16 switches now function as channel lock-out switches again.

GENERAL INFORMATION

The electromagnetic (Radio) frequency spectrum is considered a natural resource and the use and pollution of this publicly-owned communication medium is regulated by the Federal Communications Commission. Channel allocation to various services and the assignment, licensing and operational regulation of qualified users are all administered by the F.C.C.

As few as a dozen or as many as 600 of these channels may be in use in your community. Usage is mixed and changing. Some channels are shared - no complete list can be supplied for your area only. You can learn about most of the active frequencies in your area from your Electra Bearcat dealer, or write to Electra. Conventional scanning monitor receivers can receive only those frequencies for which you have purchased crystals. Your BC-101 can be programmed to receive any of them quicker than plugging in a crystal, and much quicker than selecting crystals from a box of 6,000 expensive crystals.

The following is an approximate listing of some of the services covered by the Bearcat 101. More than 6,000 channels are included. Only the first and last frequency in each group is shown.

ABBREVIATIONS

| | |
|--------------------------------------|---------------|
| Police | P.D. |
| State Police | St. P.D. |
| Fire Department | F.D. |
| Special Emergency | Sp. Emer. |
| Highway Maintenance | Hwy. |
| Forestry-Conservation | Fors. Cons. |
| Government | Govt. |
| Local Government | L. Govt. |
| Business Radio | Bus. |
| Manufacturers | Mfg. |
| Broadcast Remote | BC. R. |
| Mobile Telephone | Mob. Tel. |
| Radio Paging | Page |
| Marine | |
| Relay Press | Press |
| Special Industrial | Sp. Ind. |
| Motion Picture | Mot. P. |
| Power Utilities | Power |
| Petroleum | Pet. |
| Forest Products | For. Prod. |
| Motor Carrier | Buses, Trucks |
| Taxicab Radio | Taxi |
| Railroad | R. R. |
| Automobile Emergency | Auto. Emer. |
| Red Cross | |
| U.S. Weather Bureau | U.S.W.B. |
| U.S. Coastal & Geodetic Survey | U.S.C.G.S. |
| National Parks | Nat. Pk. |
| Indian Affairs | |
| Bureau of Reclamation | Bur. Recl. |
| Department of Agriculture & Forestry | Agr. & For. |
| Land Transportation | Land Tr. |

30-50MHz Band (.020MHz or 20KHz spacing)

| | |
|---------------|---|
| 30.01 - 30.56 | Govt. |
| 30.56 - 30.62 | Sp. Ind. |
| 30.66 - 31.24 | Ind. (Pet. For. Cons. Bus., For. Prod.) |
| 31.26 - 31.98 | Sp. Ind., For. Cons. |
| 32.00 - 33.00 | Govt. |
| 33.02 - 33.16 | Hwy., Sp. Emer., Bus. |
| 33.18 - 33.38 | Pet. |
| 33.42 - 33.98 | F.D. |
| 34.00 - 35.00 | Govt. |
| 35.02 - 35.18 | Bus. |
| 35.22 - 35.66 | Mob. Tel. & Page |
| 35.70 - 35.72 | Bus. |
| 35.74 - 35.98 | Sp. Ind. & Bus. |
| 36.00 - 37.00 | Govt. |
| 37.02 - 37.44 | P.D. & L. Govt. |
| 37.46 - 37.86 | Power |
| 37.90 - 37.98 | Hwy. & Sp. Emer. |
| 38.00 - 39.00 | Govt. |
| 39.02 - 39.98 | P.D., L. Govt. |
| 40.00 - 42.00 | Govt. |
| 42.02 - 42.94 | St. P.D. |
| 42.96 - 43.18 | Sp. Ind. & Bus. |
| 43.22 - 43.68 | Mob. Tel. Page |
| 43.70 - 44.60 | Trucks, Bus. |
| 44.62 - 45.06 | St. P.D., For. Cons. |
| 45.08 - 45.66 | P.D. |
| 45.68 - 46.04 | P.D. Hwy., Sp. Emer. |
| 46.06 - 46.50 | F.C. |
| 46.52 - 46.58 | I Govt. |
| 46.60 - 47.00 | Govt. |
| 47.02 - 47.40 | St. Hwy. |
| 47.42 | Red Cross |
| 47.44 - 47.68 | Sp. Ind., Sp. Emer. |
| 47.70 - 48.54 | Power |
| 48.56 - 49.58 | For. Prod., Pet. |
| 49.60 - 50.00 | Govt. |

148-174MHz Band Mixed Spacing (15, 20, 25KHz)

| | |
|-------------------|-------------------|
| 148.010 | MARS |
| 148.15 | CAP |
| 148.155 - 148.250 | MIL |
| 148.290 - 150.750 | USN |
| 150.815 - 150.995 | Bus. |
| 151.010 - 151.130 | Hwy. |
| 151.145 - 151.475 | For. Cons. |
| 151.505 - 151.595 | Sp. Ind. |
| 151.625 - 151.955 | Bus. |
| 151.985 - 152.240 | Mob. Tel. (RCC) |
| 152.270 - 152.450 | Taxi |
| 152.480 - 152.840 | Mob. Tel., Page |
| 152.870 - 153.020 | Sp. Ind., Mot. P. |
| 153.050 - 153.440 | Pet., For. Prod. |

| | |
|-------------------|--|
| 153.470 - 153.710 | Power |
| 153.740 - 154.115 | L. Govt. |
| 154.130 - 154.445 | F. D. |
| 154.460 - 164.600 | Sp. Ind., Pet., Bus. |
| 154.655 - 155.145 | P.D., L. Govt., St. P.D. |
| 155.160 - 155.400 | Sp. Emer., P.D. |
| 155.415 - 156.030 | P.D., L. Govt. |
| 156.045 - 156.240 | Hwy., P.D. |
| 156.275 - 157.425 | Marine |
| 157.456 - 157.500 | Emer. Auto |
| 157.530 - 157.710 | Taxi |
| 157.740 - 158.100 | Mob. Tel., Page |
| 158.130 - 158.460 | Power, For. Prod., Pet. |
| 158.490 - 158.700 | Mob. Tel. (RCC) |
| 158.730 - 158.970 | P.D., L. Govt. |
| 158.985 - 159.210 | P. D., Hwy. |
| 159.225 - 159.465 | For. Cons. |
| 159.510 - 160.200 | Trucks |
| 160.215 - 161.565 | R. R. |
| 161.600 - 162.000 | Marine |
| 162.026 - 162.175 | Bur. Recl. |
| 162.400 | U.S.W.B. |
| 162.550 | U.S.W.B. |
| 163.125 | Indian Affairs |
| 163.175 | Bur. Recl. |
| 163.275 | U.S.W.R. |
| 163.388 - 163.538 | MIL |
| 163.825 - 163.975 | Govt. |
| 164.025 - 164.075 | U.S.C.G.S. |
| 164.175 - 165.188 | Bur. Recl., Nat. Pk., Govt., Agr. & For. |
| 169.300 | F.A.A. |
| 169.450 - 169.725 | Ind., Data |
| 170.150 | F. D., BC. R. |
| 170.200 - 170.220 | U.S.C.G.S. |
| 170.225 - 170.325 | Ind., Land Tr. |
| 170.425 - 170.575 | For. Cons. |
| 170.975 - 171.250 | Govt. Ind., Land Tr. |
| 171.388 - 172.725 | Bur. Recl., For. Cons., Ind., Dept. Ag. & For., Govt. |
| 172.775 | Nat. Pk. |
| 173.025 | U.S.W.B. |
| 173.075 | U.S.C.G.S. |
| 173.204 | Press Relay, Mot. P., Pet. Bur. Recl. |

**450-512MHz Band
(25KHz Spacing)**

| | |
|-------------------|-------------------------------------|
| 450.050 - 450.950 | Remote Br. |
| 451.025 - 451.150 | Util. |
| 451.175 - 451.750 | For. Prod., Pet., Pwr., Tel. Maint. |
| 451.775 - 451.975 | Spec. Ind. |
| 452.000 - 452.500 | Taxi, Mot. Carrier, R.R. |
| 452.525 - 452.600 | Auto Club |
| 452.625 - 452.975 | Motor Carr., R.R. |
| 453.025 - 453.975 | L. Govt., P. D., F. D. |
| 454.025 - 454.975 | Mob. Tel. |
| 455.000 - 455.975 | Remote Br. |
| 456.000 - 458.975 | P.D., F.D., Ind., Lan Tr. |

| | |
|---------------------|-----------------------------|
| 459.000 - 459.975 | Domestic Public |
| 460.025 - 460.625 | P. D., F. D. |
| 460.650 - 462.175 | Bus. |
| 462.200 - 462.450 | Taxi |
| 462.550 - 462.725 | C. B. |
| 462.750 - 462.975 | Bus. |
| 463.000 - 463.175 | Med. |
| 463.200 - 464.975 | Bus. |
| 465.000 - 467.500 | P.D., F.D., Ind., Land Tr. |
| 467.750 - 467.925 | Bus. |
| 467.5375 - 467.7375 | C. B. |
| 467.7375 - 469.975 | Pub. Safety, Ind., Land Tr. |

In some large metropolitan areas, 1 or 2 channels of the "T.V. Band" (470MHz to 512MHz) are used for communication purposes. Each station (channels 14 through 20) utilizes 6MHz:

| |
|-------------------------|
| 470-476 T.V. Channel 14 |
| 476-482 T.V. Channel 15 |
| 482-488 T.V. Channel 16 |
| 488-494 T.V. Channel 17 |
| 494-500 T.V. Channel 18 |
| 500-506 T.V. Channel 19 |
| 606-512 T.V. Channel 20 |

Where these frequencies are assigned for communication purposes, in lieu of a T.V. station, the 6MHz segment is allocated as shown here for channel 14 (470-476MHz).

| | |
|---------------------|----------------------------------|
| 470.0125 - 470.2875 | Domestic Public, (Base, Mob.) |
| 470.3125 - 471.1375 | Public Safety |
| 471.1625 - 471.2875 | Reserve Pool A |
| 471.3125 - 471.4125 | Pwr., Tel. Maint. |
| 471.4375 - 471.6375 | Spec. Ind. |
| 471.6625 - 471.7875 | Reserve Pool B |
| 471.8125 - 472.3375 | Bus. |
| 472.3625 - 472.4375 | Taxi |
| 472.4625 - 472.7875 | R. R., Motor Carrier, Auto Emer. |
| 472.8125 - 472.9875 | Pet., For. Prod., Mfg. |
| 473.0125 - 473.2875 | Domestic Public |
| 473.3125 - 474.1375 | Public Safety |
| 474.1625 - 474.2875 | Reserve Pool A |
| 474.3125 - 474.4125 | Pwr., Tel. Maint. |
| 474.4375 - 474.6375 | Spec. Ind. (Mobile) |
| 474.6625 - 474.7875 | Reserve Pool B |
| 474.8125 - 475.3375 | Bus. |
| 475.3625 - 475.4375 | Taxi |
| 475.4625 - 475.7875 | R. R., Motor Carrier, Auto Emer. |
| 475.8125 - 475.9875 | Pet., For. Prod., Mfg. |

The same allocation pattern is repeated for each of the T.V. channels 14 thru 20. For example; if channel 17 is assigned for communications in your area, "Taxi" would be 490.3625 to 490.4375 and 493.3625 to 493.4375 (corresponding to 472.3625 to 472.4375 and 475.3625 to 475.4375 above). Note that in the example, we added three T.V. channels (18MHz) to the channel 14 frequencies.

LOW BAND

| 30.0000 | | | | | | | | | | | 32.0000 | | | | | | | | | | | 34.0000 | | | | | | | | | | | 36.0000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|------|---|---|----|----|----|---|---|---|----|---------|------|----|----|----|---------|---|---|---|---|---|---------|------|----|---|----|----|----|----|----|----|---------|---------|------|---|---|---|----|----|----|---|----|----|----|----|----|----|---------|---|---|---|---|---|---|----|----|---|----|----|----|----|----|----|
| Ch | CODE | | | | | | | | | | Ch | CODE | | | | | | | | | | Ch | CODE | | | | | | | | | | Ch | CODE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Freq. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Freq. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Freq. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Freq. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 30.0000 | 1 | 6 | 7 | 8 | 9 | 11 | | | | | | | | | | 32.0000 | 2 | 3 | 4 | 5 | 7 | 8 | 11 | | | | | | | | | 34.0000 | 2 | 3 | 5 | 6 | 7 | 9 | 11 | | | | | | | | | 36.0000 | 2 | 3 | 4 | 5 | 7 | 8 | 11 | | | | | | | | |
| 30.0200 | 1 | 6 | 7 | 8 | 9 | | | | | | | | | | | 32.0200 | 2 | 3 | 4 | 5 | 7 | 8 | | | | | | | | | | 34.0200 | 2 | 3 | 5 | 6 | 7 | 9 | | | | | | | | | | 36.0200 | 2 | 3 | 4 | 5 | 7 | | | | | | | | | | |
| 30.0400 | 1 | 6 | 7 | 8 | 10 | 11 | | | | | | | | | | 32.0400 | 2 | 3 | 4 | 5 | 7 | 9 | 10 | 11 | | | | | | | | 34.0400 | 2 | 3 | 5 | 6 | 7 | 10 | 11 | | | | | | | | | 36.0400 | 2 | 3 | 4 | 5 | 7 | 8 | 10 | 11 | | | | | | | |
| 30.0600 | 1 | 6 | 7 | 8 | 10 | | | | | | | | | | | 32.0600 | 2 | 3 | 4 | 5 | 7 | 9 | 10 | | | | | | | | | 34.0600 | 2 | 3 | 5 | 6 | 7 | 10 | | | | | | | | | | 36.0600 | 2 | 3 | 4 | 5 | 7 | 8 | 10 | 11 | | | | | | | |
| 30.0800 | 1 | 6 | 7 | 8 | 11 | | | | | | | | | | | 32.0800 | 2 | 3 | 4 | 5 | 7 | 9 | 11 | | | | | | | | | 34.0800 | 2 | 3 | 5 | 6 | 7 | 11 | | | | | | | | | | 36.0800 | 2 | 3 | 4 | 5 | 7 | 8 | 10 | 11 | | | | | | | |
| 30.1000 | 1 | 6 | 7 | 8 | | | | | | | | | | | | 32.1000 | 2 | 3 | 4 | 5 | 7 | 9 | | | | | | | | | | 34.1000 | 2 | 3 | 5 | 6 | 7 | | | | | | | | | | | 36.1000 | 2 | 3 | 4 | 5 | 7 | 8 | 9 | | | | | | | | |
| 30.1200 | 1 | 6 | 7 | 9 | 10 | 11 | | | | | | | | | | 32.1200 | 2 | 3 | 4 | 5 | 7 | 10 | 11 | | | | | | | | | 34.1200 | 2 | 3 | 5 | 6 | 8 | 9 | 10 | 11 | | | | | | | | 36.1200 | 2 | 3 | 4 | 5 | 7 | 8 | 10 | 11 | | | | | | | |
| 30.1400 | 1 | 6 | 7 | 9 | 10 | | | | | | | | | | | 32.1400 | 2 | 3 | 4 | 5 | 7 | 10 | | | | | | | | | | 34.1400 | 2 | 3 | 5 | 6 | 8 | 9 | 10 | | | | | | | | | 36.1400 | 2 | 3 | 4 | 5 | 7 | 8 | 10 | | | | | | | | |
| 30.1600 | 1 | 6 | 7 | 9 | 11 | | | | | | | | | | | 32.1600 | 2 | 3 | 4 | 5 | 7 | 11 | | | | | | | | | | 34.1600 | 2 | 3 | 5 | 6 | 8 | 11 | | | | | | | | | | 36.1600 | 2 | 3 | 4 | 5 | 7 | 8 | 11 | | | | | | | | |
| 30.1800 | 1 | 6 | 7 | 8 | | | | | | | | | | | | 32.1800 | 2 | 3 | 4 | 5 | 7 | | | | | | | | | | | 34.1800 | 2 | 3 | 5 | 6 | 8 | | | | | | | | | | | 36.1800 | 2 | 3 | 4 | 5 | 7 | 8 | | | | | | | | | |
| 30.2000 | 1 | 6 | 7 | 9 | 10 | 11 | | | | | | | | | | 32.2000 | 2 | 3 | 4 | 5 | 7 | 9 | 10 | 11 | | | | | | | | 34.2000 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | | | | | | | | | 36.2000 | 2 | 3 | 4 | 5 | 7 | 8 | 10 | 11 | | | | | | | |
| 30.2200 | 1 | 6 | 7 | 10 | | | | | | | | | | | | 32.2200 | 2 | 3 | 4 | 5 | 7 | 10 | | | | | | | | | | 34.2200 | 2 | 3 | 5 | 6 | 8 | 10 | | | | | | | | | | 36.2200 | 2 | 3 | 4 | 5 | 7 | 8 | | | | | | | | | |
| 30.2400 | 1 | 6 | 7 | 11 | | | | | | | | | | | | 32.2400 | 2 | 3 | 4 | 5 | 7 | 11 | | | | | | | | | | 34.2400 | 2 | 3 | 5 | 6 | 8 | 11 | | | | | | | | | | 36.2400 | 2 | 3 | 4 | 5 | 7 | 8 | 11 | | | | | | | | |
| 30.2600 | 1 | 6 | 7 | | | | | | | | | | | | | 32.2600 | 2 | 3 | 4 | 5 | 7 | | | | | | | | | | | 34.2600 | 2 | 3 | 5 | 6 | 8 | | | | | | | | | | | 36.2600 | 2 | 3 | 4 | 5 | 7 | 8 | | | | | | | | | |
| 30.2800 | 1 | 6 | 8 | 9 | 10 | 11 | | | | | | | | | | 32.2800 | 2 | 3 | 4 | 5 | 7 | 10 | 11 | | | | | | | | | 34.2800 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | | | | | | | | | 36.2800 | 2 | 3 | 4 | 5 | 7 | 8 | 10 | 11 | | | | | | | |
| 30.3000 | 1 | 6 | 8 | 9 | 10 | | | | | | | | | | | 32.3000 | 2 | 3 | 4 | 5 | 7 | 10 | | | | | | | | | | 34.3000 | 2 | 3 | 5 | 6 | 8 | 10 | | | | | | | | | | 36.3000 | 2 | 3 | 4 | 5 | 7 | 8 | | | | | | | | | |
| 30.3200 | 1 | 6 | 8 | 9 | 11 | | | | | | | | | | | 32.3200 | 2 | 3 | 4 | 5 | 7 | 11 | | | | | | | | | | 34.3200 | 2 | 3 | 5 | 6 | 8 | 11 | | | | | | | | | | 36.3200 | 2 | 3 | 4 | 5 | 7 | 8 | 11 | | | | | | | | |
| 30.3400 | 1 | 6 | 8 | 9 | | | | | | | | | | | | 32.3400 | 2 | 3 | 4 | 5 | 7 | | | | | | | | | | | 34.3400 | 2 | 3 | 5 | 6 | 8 | | | | | | | | | | | 36.3400 | 2 | 3 | 4 | 5 | 7 | 8 | | | | | | | | | |
| 30.3600 | 1 | 6 | 8 | 10 | 11 | | | | | | | | | | | 32.3600 | 2 | 3 | 4 | 5 | 7 | 10 | 11 | | | | | | | | | 34.3600 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | | | | | | | | | 36.3600 | 2 | 3 | 4 | 5 | 7 | 8 | 10 | 11 | | | | | | | |
| 30.3800 | 1 | 6 | 8 | 10 | | | | | | | | | | | | 32.3800 | 2 | 3 | 4 | 5 | 7 | 10 | | | | | | | | | | 34.3800 | 2 | 3 | 5 | 6 | 8 | 10 | | | | | | | | | | 36.3800 | 2 | 3 | 4 | 5 | 7 | 8 | | | | | | | | | |
| 30.4000 | 1 | 6 | 8 | 11 | | | | | | | | | | | | 32.4000 | 2 | 3 | 4 | 5 | 7 | 11 | | | | | | | | | | 34.4000 | 2 | 3 | 5 | 6 | 8 | 11 | | | | | | | | | | 36.4000 | 2 | 3 | 4 | 5 | 7 | 8 | 11 | | | | | | | | |
| 30.4200 | 1 | 6 | 8 | | | | | | | | | | | | | 32.4200 | 2 | 3 | 4 | 5 | 7 | | | | | | | | | | | 34.4200 | 2 | 3 | 5 | 6 | 8 | | | | | | | | | | | 36.4200 | 2 | 3 | 4 | 5 | 7 | 8 | | | | | | | | | |
| 30.4400 | 1 | 6 | 8 | 10 | 11 | | | | | | | | | | | 32.4400 | 2 | 3 | 4 | 5 | 7 | 10 | 11 | | | | | | | | | 34.4400 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | | | | | | | | | 36.4400 | 2 | 3 | 4 | 5 | 7 | 8 | 10 | 11 | | | | | | | |
| 30.4600 | 1 | 6 | 9 | 10 | | | | | | | | | | | | 32.4600 | 2 | 3 | 4 | 5 | 7 | 10 | | | | | | | | | | 34.4600 | 2 | 3 | 5 | 6 | 8 | 10 | | | | | | | | | | 36.4600 | 2 | 3 | 4 | 5 | 7 | 8 | | | | | | | | | |
| 30.4800 | 1 | 6 | 9 | 11 | | | | | | | | | | | | 32.4800 | 2 | 3 | 4 | 5 | 7 | 11 | | | | | | | | | | 34.4800 | 2 | 3 | 5 | 6 | 8 | 11 | | | | | | | | | | 36.4800 | 2 | 3 | 4 | 5 | 7 | 8 | 11 | | | | | | | | |
| 30.5000 | 1 | 6 | 9 | | | | | | | | | | | | | 32.5000 | 2 | 3 | 4 | 5 | 7 | | | | | | | | | | | 34.5000 | 2 | 3 | 5 | 6 | 8 | | | | | | | | | | | 36.5000 | 2 | 3 | 4 | 5 | 7 | 8 | | | | | | | | | |
| 30.5200 | 1 | 6 | 8 | 10 | 11 | | | | | | | | | | | 32.5200 | 2 | 3 | 4 | 5 | 7 | 10 | 11 | | | | | | | | | 34.5200 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | | | | | | | | | 36.5200 | 2 | 3 | 4 | 5 | 7 | 8 | 10 | 11 | | | | | | | |
| 30.5400 | 1 | 6 | 8 | 10 | | | | | | | | | | | | 32.5400 | 2 | 3 | 4 | 5 | 7 | 10 | | | | | | | | | | 34.5400 | 2 | 3 | 5 | 6 | 8 | 10 | | | | | | | | | | 36.5400 | 2 | 3 | 4 | 5 | 7 | 8 | | | | | | | | | |
| 30.5600 | 1 | 6 | 8 | 11 | | | | | | | | | | | | 32.5600 | 2 | 3 | 4 | 5 | 7 | 11 | | | | | | | | | | 34.5600 | 2 | 3 | 5 | 6 | 8 | 11 | | | | | | | | | | 36.5600 | 2 | 3 | 4 | 5 | 7 | 8 | 11 | | | | | | | | |
| 30.5800 | 1 | 6 | | | | | | | | | | | | | | 32.5800 | 2 | 3 | 4 | 5 | 7 | | | | | | | | | | | 34.5800 | 2 | 3 | 5 | 6 | 8 | | | | | | | | | | | 36.5800 | 2 | 3 | 4 | 5 | 7 | 8 | | | | | | | | | |
| 30.6000 | 1 | 7 | 8 | 9 | 10 | 11 | | | | | | | | | | 32.6000 | 2 | 3 | 4 | 5 | 7 | 10 | 11 | | | | | | | | | 34.6000 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | | | | | | | | | 36.6000 | 2 | 3 | 4 | 5 | 7 | 8 | 10 | 11 | | | | | | | |
| 30.6200 | 1 | 7 | 8 | 10 | | | | | | | | | | | | 32.6200 | 2 | 3 | 4 | 5 | 7 | 10 | | | | | | | | | | 34.6200 | 2 | 3 | 5 | 6 | 8 | 10 | | | | | | | | | | 36.6200 | 2 | 3 | 4 | 5 | 7 | 8 | | | | | | | | | |
| 30.6400 | 1 | 7 | 8 | 11 | | | | | | | | | | | | 32.6400 | 2 | 3 | 4 | 5 | 7 | 11 | | | | | | | | | | 34.6400 | 2 | 3 | 5 | 6 | 8 | 11 | | | | | | | | | | 36.6400 | 2 | 3 | 4 | 5 | 7 | 8 | 11 | | | | | | | | |
| 30.6600 | 1 | 7 | 8 | | | | | | | | | | | | | 32.6600 | 2 | 3 | 4 | 5 | 7 | | | | | | | | | | | 34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

HIGH BAND

| 148.0100 | | | | | | | | | | | | | | | 150.0100 | | | | | | | | | | | | | | | 152.0000 | | | | | | | | | | | | | | | 154.0100 | | | | | | | | | | | | | | | | | | |
|----------|------|---|---|---|---|---|---|----|----|----|----|----|----|----|----------|----------|---|---|---|---|---|---|----|----|----|----|----|----|----|----------|----------|------|---|---|---|---|---|----|----|----|----|----|----|----|----------|----------|----------|------|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| Ch | CODE | | | | | | | | | | | | | | Ch | CODE | | | | | | | | | | | | | | Ch | CODE | | | | | | | | | | | | | | Ch | CODE | | | | | | | | | | | | | | | | | |
| Freq | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Freq | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Freq | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Freq | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 148.0100 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.0100 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 12 | | | | | | 15 | 151.7450 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.2100 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | | | | | | 15 | |
| 148.0300 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.0300 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 12 | | | | | | 15 | 151.7600 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | | | | | | 15 | 153.2300 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | | |
| 148.0500 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.0500 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 12 | | | | | | 15 | 151.7750 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.2450 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.0700 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 11 | 12 | | | | | 15 | 150.0700 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | | | | | 15 | 151.7900 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.2600 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.0900 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.0900 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 12 | | | | | | 15 | 151.8050 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.2750 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.1100 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.1100 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 12 | | | | | | 15 | 151.8200 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | | | | | | 15 | 153.2900 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | | |
| 148.1300 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.1300 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 12 | | | | | | 15 | 151.8350 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.3050 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.1500 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 11 | 12 | | | | | 15 | 150.1500 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | | 15 | 151.8500 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.3200 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.1700 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.1700 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 151.8650 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.3350 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.1900 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.1900 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 151.8800 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.3500 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.2100 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.2100 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 151.8950 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.3650 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.2300 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 11 | 12 | | | | | 15 | 150.2300 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | | 15 | 151.9100 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.3800 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.2500 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 11 | 12 | | | | | 15 | 150.2500 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 151.9250 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.3950 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.2700 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.2700 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 151.9400 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | | | | | | 15 | 153.4100 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | | |
| 148.2900 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.2900 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 151.9550 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.4250 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.3100 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 11 | 12 | | | | | 15 | 150.3100 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | | 15 | 151.9700 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.4400 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.3300 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.3300 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 151.9850 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.4550 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.3500 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.3500 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 151.9100 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.4700 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.3700 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.3700 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 151.9250 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.4850 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.3900 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 11 | 12 | | | | | 15 | 150.3900 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | | 15 | 152.0050 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.5000 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.4100 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.4100 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 152.0150 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.5150 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.4300 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.4300 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 152.0300 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.5300 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.4500 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.4500 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 152.0450 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.5450 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.4700 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 11 | 12 | | | | | 15 | 150.4700 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | | 15 | 152.0600 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.5600 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.4900 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.4900 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 152.0750 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.5750 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.5100 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.5100 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 152.0900 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.5900 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.5300 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.5300 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 152.1050 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.6050 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.5500 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.5500 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 152.1200 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.6200 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.5700 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.5700 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | 10 | 12 | | | | | 15 | 152.1350 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | 153.6350 | 1 | 2 | 4 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | 15 | |
| 148.5900 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | | | | | | 15 | 150.5900 | 1 | 2 | 4 | 6 | 7 | 8 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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|----------|---|---|---|---|---|---|---|----|----|----|----|----|----|----------|----------|-------|---|---|---|----|----|----|----|----|----|----|----|----------|----------|------|----|-------|---|----|----|----|----|---|----|----|----|----------|----------|----|------|----|----|-------|----|----|----|---|---|----|----|----|----|----|----|----|----|----|----|
| CODE | | | | | | | | | | | | | | | CODE | | | | | | | | | | | | | | | CODE | | | | | | | | | | | | | | | CODE | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | | | | |
| Ch | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Ch | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Ch | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Ch | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| Freq. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Freq. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Freq. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Freq. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 461.0750 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | | 463.5250 | 2 | 3 | 4 | 5 | 8 | 10 | 12 | 14 | | | | | | 465.9750 | 2 | 3 | 4 | 7 | 8 | 11 | 12 | 14 | | | | | | 468.3750 | 2 | 3 | 5 | 6 | 8 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.1000 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 14 | | | | 463.5500 | 2 | 3 | 4 | 5 | 8 | 10 | 14 | | | | | | | 466.0000 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.4000 | 2 | 3 | 5 | 6 | 8 | 11 | 14 | | | | | | | | | | | | | | |
| 461.1250 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 12 | 14 | | | | 463.5750 | 2 | 3 | 4 | 5 | 8 | 11 | 12 | 14 | | | | | | 466.0250 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.4250 | 2 | 3 | 5 | 6 | 8 | 12 | 14 | | | | | | | | | | | | | | |
| 461.1500 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 12 | 14 | | | | 463.6000 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.0500 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.4500 | 2 | 3 | 5 | 6 | 8 | 12 | 14 | | | | | | | | | | | | | | |
| 461.1750 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.6250 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.0750 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.4750 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.2000 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 14 | | | | 463.6500 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.1000 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.5000 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.2250 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.6750 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.1250 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.5250 | 2 | 3 | 5 | 6 | 8 | 10 | 12 | 14 | | | | | | | | | | | | | |
| 461.2500 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.7000 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.1500 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.5500 | 2 | 3 | 5 | 6 | 8 | 10 | 12 | 14 | | | | | | | | | | | | | |
| 461.2750 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.7250 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.1750 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.5750 | 2 | 3 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.3000 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.7500 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.2000 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.6000 | 2 | 3 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.3250 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.7750 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.2250 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.6250 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.3500 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.8000 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.2500 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.6500 | 2 | 3 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.3750 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.8250 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.2750 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.6750 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.4000 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.8500 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.3000 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.7000 | 2 | 3 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.4250 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.8750 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.3250 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.7250 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.4500 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.9000 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.3500 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.7500 | 2 | 3 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.4750 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.9250 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.3750 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.7750 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.5000 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.9500 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.4000 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.8000 | 2 | 3 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.5250 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 463.9750 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.4250 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.8250 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | 12 | 14 | | | | | | | | | | | | |
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| 461.6250 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 464.0750 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.5250 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.9250 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.6500 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 464.1000 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.5500 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.9500 | 2 | 3 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.6750 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 464.1250 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.5750 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 468.9750 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.7000 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 464.1500 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.6000 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 469.0000 | 2 | 3 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.7250 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 464.1750 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.6250 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 469.0250 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.7500 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 464.2000 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.6500 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 469.0500 | 2 | 3 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.7750 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 464.2250 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.6750 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 469.0750 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.8000 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 464.2500 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.7000 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 469.1000 | 2 | 3 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | | | | | | | | | | | | |
| 461.8250 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | | | 464.2750 | 2 | 3 | 4 | 5 | 8 | 11 | 14 | | | | | | | 466.7250 | 2 | 3 | 4 | 7 | 8 | 11 | 14 | | | | | | | 469.1250 | 2 | 3 | 5 | 6 | 8 | 10 | 11 | 12 | 14 | | | | | | | | | | | | |
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T BAND

| Ch Freq. | CODE | Ch Freq. | CODE | Ch Freq. | CODE | Ch Freq. | CODE |
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| 480.5625 | 2 5 6 7 9 11 12 13 14 | 483.0125 | | 485.4125 | 2 7 9 12 13 14 | 487.8625 | 3 4 5 8 10 11 12 13 14 |
| 480.5875 | 2 5 6 7 9 11 13 14 | | | 485.4375 | 2 7 9 13 14 | 487.8875 | 3 4 5 8 10 11 13 14 |
| 480.6125 | 2 5 6 7 9 12 13 14 | 483.0375 | 2 5 9 12 13 14 | 485.4625 | 2 7 10 11 12 13 14 | 487.9125 | 3 4 5 8 10 12 13 14 |
| 480.6375 | 2 5 6 7 9 12 13 14 | 483.0625 | 2 5 10 11 12 13 14 | 485.4875 | 2 7 10 11 13 14 | 487.9375 | 3 4 5 8 10 13 14 |
| 480.6625 | 2 5 6 7 10 11 12 13 14 | 483.0875 | 2 5 10 11 13 14 | 485.5125 | 2 7 10 12 13 14 | 487.9625 | 3 4 5 8 11 12 13 14 |
| 480.6875 | 2 5 6 7 10 11 13 14 | 483.1125 | 2 5 10 12 13 14 | 485.5375 | 2 7 10 13 14 | 487.9875 | 3 4 5 8 11 13 14 |
| 480.7125 | 2 5 6 7 10 12 13 14 | 483.1375 | 2 5 10 13 14 | 485.5625 | 2 7 11 12 13 14 | 488.0125 | |
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| 480.7625 | 2 5 6 7 11 12 13 14 | 483.1875 | 2 5 11 13 14 | 485.6125 | 2 7 12 13 14 | 488.0125 | 3 4 5 8 12 13 14 |
| 480.7875 | 2 5 6 7 11 13 14 | 483.2125 | 2 5 12 13 14 | 485.6375 | 2 7 13 14 | 488.0375 | 3 4 5 8 13 14 |
| 480.8125 | 2 5 6 7 12 13 14 | 483.2375 | 2 5 13 14 | 485.6625 | 2 8 9 10 11 12 13 14 | 488.0625 | 3 4 5 8 9 10 11 12 13 14 |
| 480.8375 | 2 5 6 7 12 13 14 | 483.2625 | 2 5 13 14 | 485.6875 | 2 8 9 10 11 13 14 | 488.0875 | 3 4 5 8 9 10 11 13 14 |
| 480.8625 | 2 5 6 8 9 10 11 12 13 14 | 483.2875 | 2 6 7 8 9 10 11 12 13 14 | 485.7125 | 2 8 9 10 12 13 14 | 488.1125 | 3 4 5 8 9 10 12 13 14 |
| 480.8875 | 2 5 6 8 9 10 11 13 14 | 483.3125 | 2 6 7 8 9 10 11 13 14 | 485.7375 | 2 8 9 10 13 14 | 488.1375 | 3 4 5 8 9 10 13 14 |
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| 480.9375 | 2 5 6 8 9 10 13 14 | 483.3625 | 2 6 7 8 9 11 12 13 14 | 485.7875 | 2 8 9 11 13 14 | 488.1875 | 3 4 5 8 9 11 13 14 |
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| 481.1125 | 2 5 6 8 10 12 13 14 | 483.5625 | 2 6 7 8 11 12 13 14 | 485.9875 | 2 8 11 13 14 | 488.3875 | 3 4 5 8 11 13 14 |
| 481.1375 | 2 5 6 8 10 13 14 | 483.5875 | 2 6 7 8 11 13 14 | 486.0125 | | 488.4125 | 3 4 5 8 11 13 14 |
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| 481.1875 | 2 5 6 8 11 13 14 | 483.6375 | 2 6 7 8 11 13 14 | 486.0375 | 2 8 13 14 | 488.4625 | 3 4 5 8 9 10 11 12 13 14 |
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| 481.2875 | 2 5 6 8 9 10 11 13 14 | 483.7375 | 2 6 7 9 10 13 14 | 486.1375 | 2 8 9 11 12 13 14 | 488.5625 | 3 4 5 8 9 11 12 13 14 |
| 481.3125 | 2 5 6 8 9 10 12 13 14 | 483.7625 | 2 6 7 9 11 12 13 14 | 486.1625 | 2 8 9 11 13 14 | 488.5875 | 3 4 5 8 9 11 13 14 |
| 481.3375 | 2 5 6 8 9 10 13 14 | 483.7875 | 2 6 7 9 11 13 14 | 486.1875 | 2 8 9 12 13 14 | 488.6125 | 3 4 5 8 9 12 13 14 |
| 481.3625 | 2 5 6 8 9 11 12 13 14 | 483.8125 | 2 6 7 9 11 13 14 | 486.2125 | 2 8 9 13 14 | 488.6375 | 3 4 5 8 9 13 14 |
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| 481.4125 | 2 5 6 8 9 12 13 14 | 483.8625 | 2 6 7 10 11 13 14 | 486.2625 | 2 8 10 11 13 14 | 488.6875 | 3 4 5 8 9 10 11 13 14 |
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| 481.4625 | 2 5 6 8 10 11 12 13 14 | 483.9125 | 2 6 7 10 12 13 14 | 486.3125 | 2 8 10 13 14 | 488.7375 | 3 4 5 8 9 10 13 14 |
| 481.4875 | 2 5 6 8 10 11 13 14 | 483.9375 | 2 6 7 10 13 14 | 486.3375 | 2 8 11 12 13 14 | 488.7625 | 3 4 5 8 9 11 13 14 |
| 481.5125 | 2 5 6 8 10 12 13 14 | 483.9625 | 2 6 7 11 12 13 14 | 486.3625 | 2 8 11 13 14 | 488.7875 | 3 4 5 8 9 11 13 14 |
| 481.5375 | 2 5 6 8 10 13 14 | 483.9875 | 2 6 7 11 13 14 | 486.3875 | 2 8 12 13 14 | 488.8125 | 3 4 5 8 9 12 13 14 |
| 481.5625 | 2 5 6 8 11 12 13 14 | 484.0125 | | 486.4125 | 2 8 13 14 | 488.8375 | 3 4 5 8 9 13 14 |
| 481.5875 | 2 5 6 8 11 13 14 | 484.0125 | 2 6 7 12 13 14 | 486.4375 | 2 8 13 14 | 488.8625 | 3 4 5 8 9 10 11 12 13 14 |
| 481.6125 | 2 5 6 8 12 13 14 | 484.0375 | 2 6 7 13 14 | 486.4625 | 2 8 9 10 11 12 13 14 | 488.8875 | 3 4 5 8 9 10 12 13 14 |
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| 481.6625 | 2 5 6 7 8 9 10 11 12 13 14 | 484.0875 | 2 6 7 8 9 10 11 13 14 | 486.5125 | 2 8 9 10 12 13 14 | 488.9375 | 3 4 5 8 9 11 12 13 14 |
| 481.6875 | 2 5 6 7 8 9 10 11 13 14 | 484.1125 | 2 6 7 8 9 10 12 13 14 | 486.5375 | 2 8 9 10 13 14 | 488.9625 | 3 4 5 8 9 11 12 13 14 |
| 481.7125 | 2 5 6 7 8 9 10 12 13 14 | 484.1375 | 2 6 7 8 9 10 13 14 | 486.5625 | 2 8 9 11 12 13 14 | 488.9875 | 3 4 5 8 9 11 13 14 |
| 481.7375 | 2 5 6 7 8 9 10 13 14 | 484.1625 | 2 6 7 8 9 10 13 14 | 486.5875 | 2 8 9 11 13 14 | 489.0125 | |
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| 481.7875 | 2 5 6 7 8 9 11 13 14 | 484.2125 | 2 6 7 8 9 11 13 14 | 486.6375 | 2 8 9 11 13 14 | 489.0375 | 3 4 5 8 9 13 14 |
| 481.8125 | 2 5 6 7 8 9 12 13 14 | 484.2375 | 2 6 7 8 9 12 13 14 | 486.6625 | 2 8 9 12 13 14 | 489.0625 | 3 4 5 8 10 11 12 13 14 |
| 481.8375 | 2 5 6 7 8 9 13 14 | 484.2625 | 2 6 7 8 10 11 12 13 14 | 486.6875 | 2 8 9 12 13 14 | 489.0875 | 3 4 5 8 10 11 13 14 |
| 481.8625 | 2 5 6 7 8 10 11 12 13 14 | 484.2875 | 2 6 7 8 10 11 13 14 | 486.7125 | 2 8 9 13 14 | 489.1125 | 3 4 5 8 10 12 13 14 |
| 481.8875 | 2 5 6 7 8 10 11 13 14 | 484.3125 | 2 6 7 8 10 12 13 14 | 486.7375 | 2 8 9 13 14 | 489.1375 | 3 4 5 8 10 13 14 |
| 481.9125 | 2 5 6 7 8 10 12 13 14 | 484.3375 | 2 6 7 8 10 13 14 | 486.7625 | 2 8 9 13 14 | 489.1625 | 3 4 5 8 11 12 13 14 |
| 481.9375 | 2 5 6 7 8 10 13 14 | 484.3625 | 2 6 7 8 11 12 13 14 | 486.7875 | 2 8 9 13 14 | 489.1875 | 3 4 5 8 11 13 14 |
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| 482.0375 | 2 5 6 7 8 13 14 | 484.4875 | 2 6 7 9 10 11 13 14 | 486.9125 | 2 8 9 13 14 | 489.3125 | 3 4 5 8 9 10 12 13 14 |
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| 482.1125 | 2 5 6 7 9 10 12 13 14 | 484.5625 | 2 6 7 9 11 12 13 14 | 486.9875 | 2 8 9 13 14 | 489.3875 | 3 4 5 8 9 11 13 14 |
| 482.1375 | 2 5 6 7 9 10 13 14 | 484.5875 | 2 6 7 9 11 13 14 | 487.0125 | | 489.4125 | 3 4 5 8 9 12 13 14 |
| 482.1625 | 2 5 6 7 9 11 12 13 14 | 484.6125 | 2 6 7 9 12 13 14 | 487.0125 | 2 8 9 12 13 14 | 489.4375 | 3 4 5 8 9 13 14 |
| 482.1875 | 2 5 6 7 9 11 13 14 | 484.6375 | 2 6 7 9 12 13 14 | 487.0375 | 2 8 9 13 14 | 489.4625 | 3 4 5 8 10 11 12 13 14 |
| 482.2125 | 2 5 6 7 9 12 13 14 | 484.6625 | 2 6 7 10 11 12 13 14 | 487.0625 | 2 8 9 13 14 | 489.4875 | 3 4 5 8 10 11 13 14 |
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| 482.3625 | 2 5 6 7 11 12 13 14 | 484.8125 | 2 6 7 11 13 14 | 487.21 | | | |

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| Ch Freq | CODE 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | Ch Freq | CODE 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | Ch Freq | CODE 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | Ch Freq | CODE 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 |
|----------|--|----------|--|----------|--|----------|--|
| 509.6125 | 6 7 12 13 14 | 510.1875 | 6 9 11 13 14 | 510.8125 | 7 8 12 13 14 | 511.3875 | 8 9 11 13 14 |
| 509.6375 | 6 7 12 13 14 | 510.2125 | 6 9 12 13 14 | 510.8375 | 7 8 12 13 14 | 511.4125 | 8 9 12 13 14 |
| 509.6625 | 6 8 9 10 11 12 13 14 | 510.2375 | 6 9 13 14 | 510.8625 | 7 9 10 11 12 13 14 | 511.4375 | 8 9 13 14 |
| 509.6875 | 6 8 9 10 11 12 14 | 510.2625 | 6 10 11 12 13 14 | 510.8875 | 7 9 10 11 13 14 | 511.4625 | 8 10 11 12 13 14 |
| 509.7125 | 6 8 9 10 12 13 14 | 510.2875 | 6 10 11 13 14 | 510.9125 | 7 9 10 12 13 14 | 511.4875 | 8 10 11 13 14 |
| 509.7375 | 6 8 9 10 13 14 | 510.3125 | 6 10 12 13 14 | 510.9375 | 7 9 10 13 14 | 511.5125 | 8 10 12 13 14 |
| 509.7625 | 6 8 9 11 12 13 14 | 510.3375 | 6 10 13 14 | 510.9625 | 7 9 11 12 13 14 | 511.5375 | 8 10 13 14 |
| 509.7875 | 6 8 9 11 13 14 | 510.3625 | 6 11 12 13 14 | 510.9875 | 7 9 11 13 14 | 511.5625 | 8 11 12 13 14 |
| 509.8125 | 6 8 9 12 13 14 | 510.3875 | 6 11 13 14 | | | 511.5875 | 8 11 13 14 |
| 509.8375 | 6 8 9 13 14 | 510.4125 | 6 12 13 14 | 511.0125 | 7 9 12 13 14 | 511.6125 | 8 12 13 14 |
| 509.8625 | 6 8 10 11 12 13 14 | 510.4375 | 6 13 14 | 511.0375 | 7 9 13 14 | 511.6375 | 8 13 14 |
| 509.8875 | 6 9 10 11 12 13 14 | 510.4625 | 7 8 9 10 11 12 13 14 | 511.0625 | 7 10 11 12 13 14 | 511.6625 | 9 10 11 12 13 14 |
| 509.9125 | 6 8 10 12 13 14 | 510.4875 | 7 8 9 10 11 13 14 | 511.0875 | 7 10 11 13 14 | 511.6875 | 9 10 11 13 14 |
| 509.9375 | 6 8 10 13 14 | 510.5125 | 7 8 9 10 12 13 14 | 511.1125 | 7 10 12 13 14 | 511.7125 | 9 10 12 13 14 |
| 509.9625 | 6 8 11 12 13 14 | 510.5375 | 7 8 9 10 13 14 | 511.1375 | 7 10 13 14 | 511.7375 | 9 10 13 14 |
| 509.9875 | 6 8 11 13 14 | 510.5625 | 7 8 9 11 12 13 14 | 511.1625 | 7 11 12 13 14 | 511.7625 | 9 11 12 13 14 |
| | 510.0125 | 510.5875 | 7 8 9 11 13 14 | 511.1875 | 7 11 13 14 | 511.7875 | 9 11 13 14 |
| 510.0125 | 6 8 12 13 14 | 510.6125 | 7 8 9 12 13 14 | 511.2125 | 7 11 13 14 | 511.8125 | 9 12 13 14 |
| 510.0375 | 6 8 13 14 | 510.6375 | 7 8 9 13 14 | 511.2375 | 7 12 13 14 | 511.8375 | 9 13 14 |
| 510.0625 | 6 9 10 11 12 13 14 | 510.6625 | 7 8 10 11 12 13 14 | 511.2625 | 7 13 14 | 511.8625 | 10 11 12 13 14 |
| 510.0875 | 6 9 10 11 13 14 | 510.6875 | 7 8 10 11 13 14 | 511.2875 | 8 9 10 11 12 13 14 | 511.8875 | 10 11 13 14 |
| 510.1125 | 6 9 10 12 13 14 | 510.7125 | 7 8 10 12 13 14 | 511.3125 | 8 9 10 11 13 14 | 511.9125 | 10 12 13 14 |
| 510.1375 | 6 9 10 13 14 | 510.7375 | 7 8 10 13 14 | 511.3375 | 8 9 10 12 13 14 | 511.9375 | 10 13 14 |
| 510.1625 | 6 9 11 12 13 14 | 510.7625 | 7 8 11 12 13 14 | 511.3625 | 8 9 11 12 13 14 | 511.9625 | 11 12 13 14 |
| | | 510.7875 | 7 8 11 13 14 | | | 511.9875 | 11 13 14 |

PROGRAMMING BY FORMULA

For frequencies not listed in the look-up Table.

Low-Band: (30-50MHz)

To determine the switch settings for a LOW-BAND frequency:

- Multiply the frequency by 200 and round off to the nearest whole number.
- Subtract the number obtained in step A from 10340. Call the result "M."
- Next we must mark the underscored numbers shown below which will add up to exactly M. This is easily done by the following step-by-step procedure:
 - Place an "X" in the square corresponding to the largest underscored number which is less than or equal to M.

| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|---|---|---|
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ | ⑭ | ⑮ | ⑯ |

- Subtract the number corresponding to this column from M.
 - Repeat steps 1 and 2 until M = 0.
 - To check the program, add all of the numbers marked by an X. The sum should equal M.
- D. Place an X in columns ⑭ and ⑮.
- E. If rescan delay is desired on this channel, place an X in column ⑯.
- F. The Columns with X's denote channel switches to be placed in the UP position. The columns without an X denote channel switches to be placed in the DOWN position.

High Band: (146-174MHz)

To determine the switch settings for a HIGH-BAND frequency:

- Multiply the frequency by 200 and round off to the nearest whole number.
- Subtract the number obtained in step A from 36940. Call the result "M."
- Next we must mark the underscored numbers shown below which will add up to exactly "M." This is easily done by the following step-by-step procedure:
 - Place an "X" in the square corresponding to the largest underscored number which is less than or equal to M.

| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|---|---|---|
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ | ⑭ | ⑮ | ⑯ |

- Subtract the number corresponding to this column from M.
- Repeat steps 1 and 2 until M = 0.
- To check the program, add all of the numbers marked by an X. The sum should equal M.

D. Place an X in column ⑮.

E. If rescan delay is desired on this channel, place an X in column ⑯.

F. The columns with X's denote channel switches to be placed in the UP position. The columns without an X denote channel switches to be placed in the DOWN position.

U & T Bands: (416-512MHz)

To determine the switch settings for U and T BAND frequencies:

- Multiply the frequency by 80 and round off to the nearest whole number.
- Subtract the number obtained in step A from 40964. Call the result "M."
- Next we must mark the underscored numbers shown below

Next we must mark the underscored numbers shown below which will add up to exactly "M." This is easily done by the following step-by-step procedure:

- Place an "X" in the square corresponding to the largest underscored number which is less than or equal to M.

| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|---|---|---|
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ | ⑭ | ⑮ | ⑯ |

- Subtract the number corresponding to this column from M.
- Repeat steps 1 and 2 until M = 0.
- To check the program, add all of the numbers marked by an X. The sum should equal M.

D. Place an X in column ⑭.

- E. If rescan delay is desired on this channel, place an X in column (16).
- F. The columns with X's denote channel switches to be placed in the UP position. The columns without an X denote switches to be placed in the DOWN position.

EXAMPLE: To program a LOW BAND frequency of 40.000MHz:

A. $40 \times 200 = 8000$

B. $10340 - 8000 = 2340 = M$

| | | | | | | | | | | | | | | | |
|------|------|------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|
| 4000 | 7048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | X | | | X | | | X | | | X | | | X | X | X |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |

C. (1-3) 2340 (4) 2048

$$\begin{array}{r}
 2340 \\
 -2048 \\
 \hline
 292 \\
 -256 \\
 \hline
 36 \\
 -32 \\
 \hline
 4 \\
 -4 \\
 \hline
 0
 \end{array}$$

$$\begin{array}{r}
 2048 \\
 + 32 \\
 \hline
 4 \\
 2340 = M
 \end{array}$$

D. X in columns (14) and (15)

E. Rescan delay is desired for this channel so an X is placed in column (16).

F. To program this channel for 40.000MHz, switches (2), (5), (8), (11), (14), (15) and (16) must be UP on the radio while programming.

FORMULA WORKSHEET

| | | | | | | | | | | | | | | | |
|-------------|-------------|-------------|------------|------------|------------|-----------|-----------|-----------|----------|----------|----------|----------|---|---|---|
| <u>4096</u> | <u>2048</u> | <u>1024</u> | <u>512</u> | <u>256</u> | <u>128</u> | <u>64</u> | <u>32</u> | <u>16</u> | <u>8</u> | <u>4</u> | <u>2</u> | <u>1</u> | | | |
| | | | | | | | | | | | | | | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ | ⑭ | ⑮ | ⑯ |

| | | | | | | | | | | | | | | | |
|-------------|-------------|-------------|------------|------------|------------|-----------|-----------|-----------|----------|----------|----------|----------|---|---|---|
| <u>4096</u> | <u>2048</u> | <u>1024</u> | <u>512</u> | <u>256</u> | <u>128</u> | <u>64</u> | <u>32</u> | <u>16</u> | <u>8</u> | <u>4</u> | <u>2</u> | <u>1</u> | | | |
| | | | | | | | | | | | | | | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ | ⑭ | ⑮ | ⑯ |

| | | | | | | | | | | | | | | | |
|-------------|-------------|-------------|------------|------------|------------|-----------|-----------|-----------|----------|----------|----------|----------|---|---|---|
| <u>4096</u> | <u>2048</u> | <u>1024</u> | <u>512</u> | <u>256</u> | <u>128</u> | <u>64</u> | <u>32</u> | <u>16</u> | <u>8</u> | <u>4</u> | <u>2</u> | <u>1</u> | | | |
| | | | | | | | | | | | | | | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ | ⑭ | ⑮ | ⑯ |

| | | | | | | | | | | | | | | | |
|-------------|-------------|-------------|------------|------------|------------|-----------|-----------|-----------|----------|----------|----------|----------|---|---|---|
| <u>4096</u> | <u>2048</u> | <u>1024</u> | <u>512</u> | <u>256</u> | <u>128</u> | <u>64</u> | <u>32</u> | <u>16</u> | <u>8</u> | <u>4</u> | <u>2</u> | <u>1</u> | | | |
| | | | | | | | | | | | | | | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ | ⑭ | ⑮ | ⑯ |

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|-------------|-------------|-------------|------------|------------|------------|-----------|-----------|-----------|----------|----------|----------|----------|---|---|---|
| <u>4096</u> | <u>2048</u> | <u>1024</u> | <u>512</u> | <u>256</u> | <u>128</u> | <u>64</u> | <u>32</u> | <u>16</u> | <u>8</u> | <u>4</u> | <u>2</u> | <u>1</u> | | | |
| | | | | | | | | | | | | | | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ | ⑭ | ⑮ | ⑯ |

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|-------------|-------------|-------------|------------|------------|------------|-----------|-----------|-----------|----------|----------|----------|----------|---|---|---|
| <u>4096</u> | <u>2048</u> | <u>1024</u> | <u>512</u> | <u>256</u> | <u>128</u> | <u>64</u> | <u>32</u> | <u>16</u> | <u>8</u> | <u>4</u> | <u>2</u> | <u>1</u> | | | |
| | | | | | | | | | | | | | | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ | ⑭ | ⑮ | ⑯ |

| | | | | | | | | | | | | | | | |
|-------------|-------------|-------------|------------|------------|------------|-----------|-----------|-----------|----------|----------|----------|----------|---|---|---|
| <u>4096</u> | <u>2048</u> | <u>1024</u> | <u>512</u> | <u>256</u> | <u>128</u> | <u>64</u> | <u>32</u> | <u>16</u> | <u>8</u> | <u>4</u> | <u>2</u> | <u>1</u> | | | |
| | | | | | | | | | | | | | | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ | ⑭ | ⑮ | ⑯ |

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|-------------|-------------|-------------|------------|------------|------------|-----------|-----------|-----------|----------|----------|----------|----------|---|---|---|
| <u>4096</u> | <u>2048</u> | <u>1024</u> | <u>512</u> | <u>256</u> | <u>128</u> | <u>64</u> | <u>32</u> | <u>16</u> | <u>8</u> | <u>4</u> | <u>2</u> | <u>1</u> | | | |
| | | | | | | | | | | | | | | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ | ⑭ | ⑮ | ⑯ |

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|-------------|-------------|-------------|------------|------------|------------|-----------|-----------|-----------|----------|----------|----------|----------|---|---|---|
| <u>4096</u> | <u>2048</u> | <u>1024</u> | <u>512</u> | <u>256</u> | <u>128</u> | <u>64</u> | <u>32</u> | <u>16</u> | <u>8</u> | <u>4</u> | <u>2</u> | <u>1</u> | | | |
| | | | | | | | | | | | | | | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ | ⑭ | ⑮ | ⑯ |

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
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- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
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- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
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- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

| | | | | | | | | | | | | | | | |
|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

| | | | | | | | | | | | | | | | |
|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

| | | | | | | | | | | | | | | | |
|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
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- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
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- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
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- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
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- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

| | | | | | | | | | | | | | | | |
|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

| | | | | | | | | | | | | | | | |
|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

| | | | | | | | | | | | | | | | |
|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

| | | | | | | | | | | | | | | | |
|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

| | | | | | | | | | | | | | | | |
|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

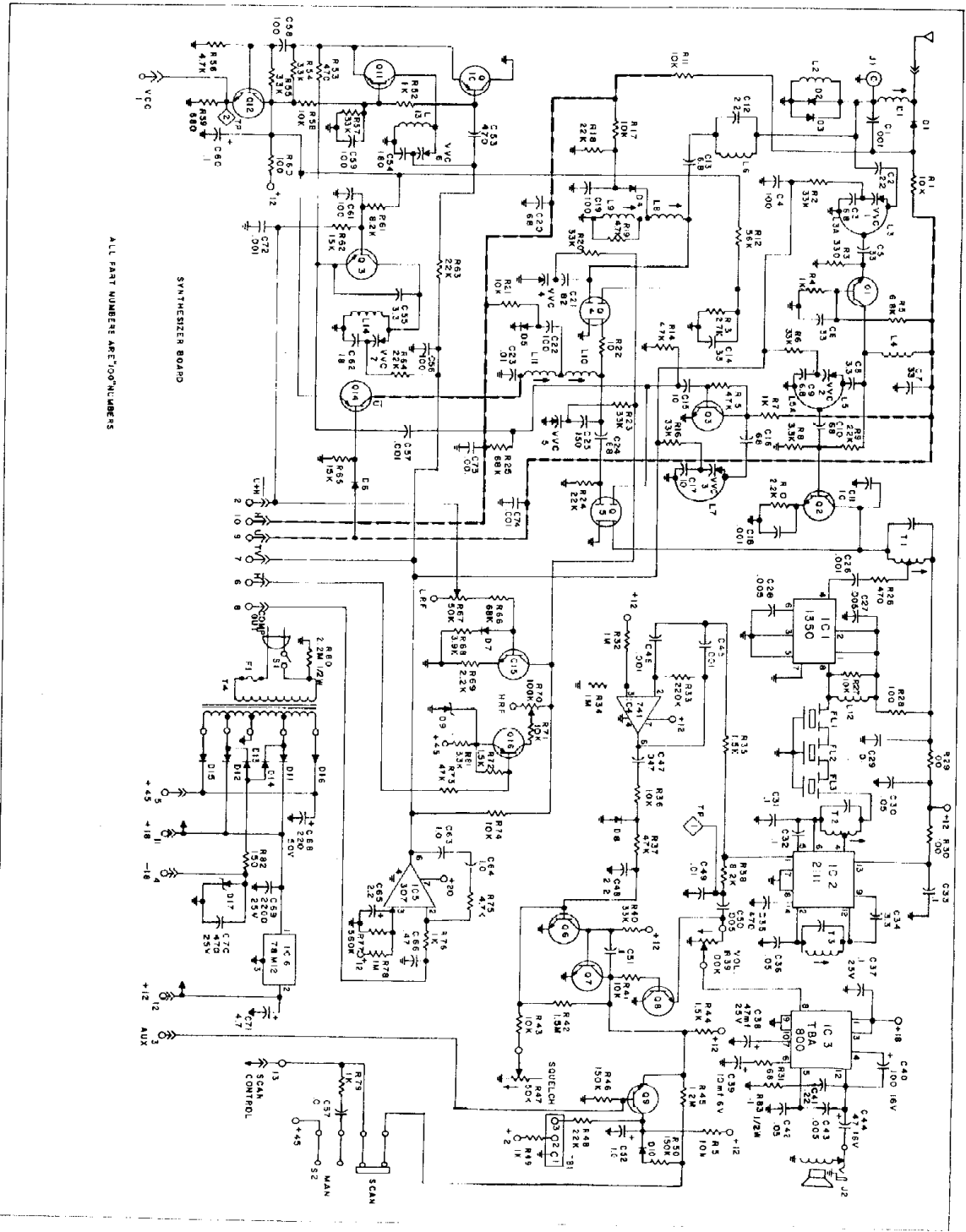
- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

| | | | | | | | | | | | | | | | |
|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
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- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

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|------|------|------|-----|-----|-----|----|----|----|---|---|---|---|--|--|--|
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | | |
| | | | | | | | | | | | | | | | |

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯



ALL PART NUMBERS ARE 100 NUMBERS

SYNTHESIZER BOARD

RETURN WARRANTY CARD WITHIN 10 DAYS

DO NOT ABUSE OR MODIFY RADIO

NEVER REMOVE A SERIAL NUMBER

LIMITED WARRANTY

This receiver is warranted to be free from defects in material and workmanship. We agree to remedy such defect or to furnish a new part in exchange for any part which, under normal installation, use and service, discloses such defect, provided the receiver is delivered to us, intact, for our examination, with all transportation charges prepaid to our factory, within one year from the date of sale to the original purchaser, and provided such examination discloses, in our judgement, that it is thus defective.

This warranty does not apply if the receiver has been subject to misuse, neglect, accidents, incorrect wiring not our own; improper installation, destruction of serial number, or to use in violation of instructions furnished by us, nor to receivers that have been repaired or altered outside our factory.

This warranty excludes all oral or other implied warranties, and the manufacturer shall in no event be liable for damages for a breach of warranty in any amount exceeding the purchase price of the alleged defective equipment.

TO PLACE WARRANTY IN FORCE FILL OUT AND RETURN WARRANTY CARD WITHIN TEN (10) DAYS OF PURCHASE.

ELECTRA COMPANY
DIVISION OF MASCO CORPORATION OF INDIANA
300 East County Line Road, South
Cumberland, Indiana 46229

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