OPTIMA

YeticomNZ 's 50W AM/FM/SSB 10 -12 Meter Mobile Transceiver

SPECIFICATIONS

Internally Configurable for: NZ 40ch CB .
(jumpers to move) USA /Aust 40 ch CB.
10 & 12 meter Ham bands only
Freeband mode 24.5-29.999 mhz

RF Power Output 50W SSB / 15W AM/ 50W FM
Shielded Dual MOSFET Final section on Heat Sink
Automatic Fan on Heatsink.
Modes: AM, FM, USB, LSB
Microprocessor Controlled
- 5 memories (remain after power disconnected)
- Last Channel Recall
- Frequency and memory scanning
- 5khz channel step (default)
- Adjustable Repeater offset (Shift)
- 1Mhz/100khz/10khz/1khz continuous Steps

Variable RF Output Power
Variable Mic Gain
5 Digit LCD Frequency Display
Scanning Microphone
Night Illuminated Display
Surface Mount Technology throughout
White Screen LCD

GENERAL SPECIFICATIONS:

Frequency Coverage 10 meter mode	24.500 - 24.999 Mhz & 28.000 - 29.999 Mhz
Frequency Coverage 11m freeband mode	24.500 - 29.999 Mhz (continuous)
Frequency Coverage NZ/US CB mode	26.330 - 26.770 MHZ in 10khz steps (40 NZ CB channels) 26.965 - 27.405 Mhz in 10khz steps (40 US CB channels)
Frequency Control	Digital Phase-Lock Loop(PLL)Frequency Accuracy Better than +10ppm from 0-40° C after 15 min warm up.
Power Requirement	10.5 - 15VDC ~ Negative Ground (13.8V Nominal)
Current Consumption	6.0 amps maximum
Dimensions	6 x 2 x 9.5 in (W x H x D)
Weight	2.9 lbs.

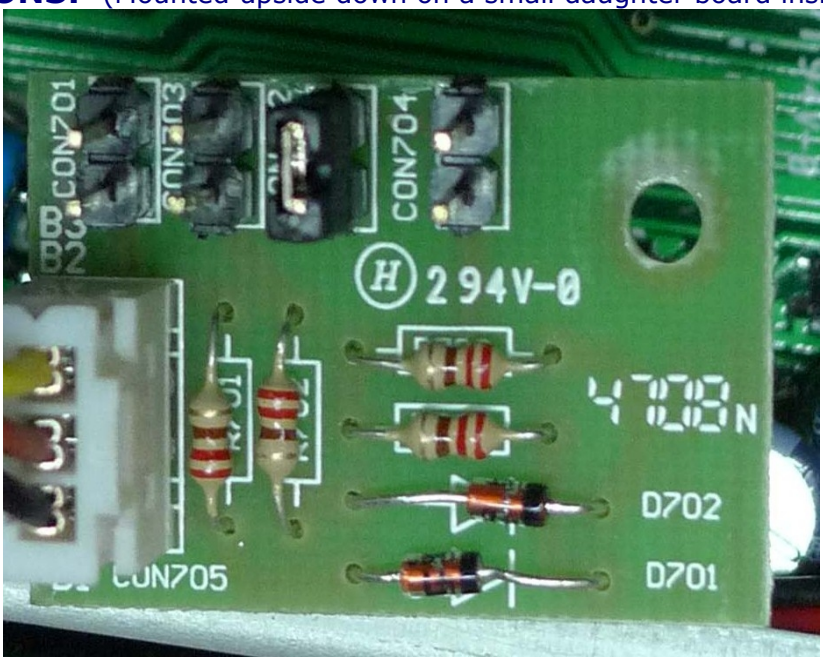
TRANSMITTER SPECIFICATIONS:

Power Output	SSB / FM ~ 50 Watts AM ~ 12 Watts Average / 50 Watts PEP
Tuning Steps	1kHz / 10kHz / 100kHz/ 1mhz
Final Transistors	MOSFET IRF 520
Spurious Emissions	More than 50dB below peak output power
Carrier Suppression	More than 40dB below peak output power
FM Deviation	+/- 2kHz maximum
Audio Response	More than 30dB below peak output power
Frequency Response	400 to 2800Hz
Microphone Impedance	ECM 600 to 1K ohms

RECEIVER SPECIFICATIONS:

Circuit Type	Dual Conversion Superheterodyne
Intermediate Frequencies	1st IF / SSB IF ~ 10.695 MHZ ~ 2nd IF ~ 455 kHz
Sensitivity	SSB 0.25 V at 10dB S + N/N / AM ~ 1.0uV at 10dB S + N/N / FM ~ 0.3 uV at 12dB SINAD
Selectivity	**AM/FM** 6.0kHz (-6dB) / 18kHz (-60dB) / **SSB** 4.2kHz (-6dB) / 8.5 kHz (-60dB)
Clarifier Range	+/- 1.0 kHz
Adjacent Channel Rejection	Better than 70dB
IF Rejection	Better than 80dB for all frequencies
Frequency Response	250 to 3000 Hz
Audio Output Power	2 watts minimum at 10% THD with an 8 ohm load

RADIO OPTIONS: (Mounted upside down on a small daughter board inside the radio.)



Optima Internal Jumper board. (294V-0)
(Note the Jumpers are not in sequence. 01, 03, 02, 04)

There are Four operating conditions available depending on the position of the jumper setting on the board above.
Each jumper position will provide a different frequency range and configuration.
Memories are not lost when switching between jumper modes.

CON701: **CB Mode (26.965 - 27.405 MHz)**
40 USA/Aust CB channels in 10khz steps.
All modes and all power ranges.
No shift function available
No step functions available
To bring up the channel number instead of frequency; press Func and then press Call
No alpha channels available.
Scan operational
Memories operational

CON702: **Freeband Mode 24.5 – 29.995MHz**
All frequencies and functions operate
Press call to step in 1MHz steps

CON703: **10m and 12m amateur bands only**
24.5-25.0 Mhz and 28.000 – 29.995 MHz
Press Call (Button 2) to navigate between 12m and 10m
All functions available

CON704 **CB NZ Mode (26.330 – 26.770 MHz)**
NZ CB channels in 10khz steps
All modes and all powers
No shift function available
No step functions available
To bring up the channel number instead of frequency press Func and then press Call
No alpha channels available.

OPTIMA Placement of Controls

1. On/Off and Volume Control
2. RF Gain and Mic Gain Control
3. Clarifier. Rotate (+/- 1khz). Push in to activate Function Options
4. Frequency/Channel Selector Control
5. Squelch and All Mode power control
6. Button 1, Activate Step Functions,
   Activates Noise Blanker
   Holds Memory 1 (Press Func, Button 6 then Button 1 to write)
   (Press Button 6 then Button 1 to Recall)
7. Button 2, 1 Mhz step in Freeband mode,
   Switch 10-12m in Ham Mode,
   Toggle channel and Frequency in CB mode.
   Holds Memory 2
8. Button 3, Scan (all modes)
   Shift (Ham and Freeband modes only)
   Holds Memory 3
9. Button 4, Recall last transmit frequency.
   Scan Memories.
   Holds Memory 4
10. Button 5, Change Mode. USB/LSB/AM/FM.
    Engage low Tone on Rx.
    Holds Memory 5
11. Button 6, Recalls Stored Memories.
    Writes Frequency/channel to Memory
12. Narrow Filter activation Light

RADIO CONTROLS

KNOBS from left to right

1. On/Off and volume control.
2. Dual function RF Gain and Mic gain. Mic gain is the inner control.
3. Clarifier. +/- 1.0 khz. Press momentarily to enter function (Func) mode. Press and hold for further functions.
4. Dual function power and squelch control. Power is inner control. Turn clockwise for max output.
5. Channel/Frequency selector. Also works when in step mode.

Front Panel Buttons (from 1 to 6)

Button 1 (Step and NB)

Primary Function
When pushed this activates the step feature which will determine how many Khz the radio will move when the channel selector is rotated. The first push will activate the last or 1khz digit. As the channel selector is rotated the frequency will continue to increase or decrease in 1khz segments for each click of the channel selector. The 1khz digit will remain blinking on and off during the time it is activated.
If the step button is depressed again with the 1khz digit blinking the 10khz digit will start blinking and the frequency can be altered in 10khz steps. Pressed again, the 100khz digit will blink allowing user to change frequency in 100khz steps to navigate quickly to another frequency. Pressing step again gets out of step mode.
Programs and stores memory number 1

Secondary function.
When the clarifier is depressed momentarily, the Func will appear top left of LCD screen and when button 1 is depressed the noise-blanker option will be activated and NB will be visible in the middle of the top of the LCD screen.

Button 2 (Call)

Primary Function
In Freeband mode pressing the call button will step up in 1mhz jumps.
In the Ham mode it toggles between 10 and 12 meter band segments.
In the CB modes it operates with the Func control to switch between a frequency and a channel.
Programs and stores memory number 2

Button 3 (Scan and Shift)

Primary Function (Scan)
Initiates scan in 5khz steps stopping on a used frequency or channel.
Works in all modes.
Programs and stores memory number 3

Secondary Function (Shift)
When pressed momentarily while Func is activated it initiates the shift + control.
While in the shift plus mode it is pressed again with Func activated it initiates shift – control.
While in shift minus if pressed again with Func activated it will clear all shifts
If button 3 (shift) is depressed for 3 seconds with the Func active it will allow user to set the amount of shift from 5khz to 995khz in 5khz steps only by rotating the channel selector knob.

Button 4 (LCR and Memory Scan)

Primary Function
When depressed returns user to Last frequency or Channel Transmitted on.
Programs and stores memory number 4.

Secondary Function (Undocumented Memory Scan)
When depressed with Func activated it initiates a scan of memories only.

Button 5 (Mode and T-Low)

Primary Function (Mode)
When depressed the mode will cycle through the available modes with each press. From USB to LSB to AM to FM and then back to USB and so on.
Programs and stores memory number 5

Secondary Function

When depressed while Func is active the low tone audio mode is engaged and some hiss and high frequencies be reduced a little.

Button 6 (M-load and M-save)

Primary Function
Press momentarily and then quickly press a button from 1 to 5 to recall the memory stored.

Secondary Function
When Func is activated and then the Button 6 or Mload/Msave depressed the user must now depress a button from 1-5 to store the current frequency or channel into memory.
To recall the memory see M-load above. Memories are stored with mode.

OTHER FEATURES:

PROGRAMING TONE

This tone sounds each time the CPU is being programmed. It is helpful, in the beginning so you can be sure the command has been entered. You may eliminate the annoying beeps by simply pressing the PTT switch on the microphone and turning on the ON/OFF POWER switch at the same time. To reinstate the beeps repeat the action above.

MEMORY BACK UP

The **YeticomNZ Optima** features *non volatile memory back up* for the 5 memory channels and the radio will always turn on exactly how it was turned off regardless of the DC power being connected or not. The radio can be disconnected from a power source for months without the memories being lost.

Memory Storage
Memories stored while in a particular CB mode will be available in that CB mode when the mode is next engaged. All 4 modes store the memory details independently

Fan
The rear mounted fan on the heat sink is designed to come on when the PTT is pushed and remain on for 60 seconds after the PTT is released There is no temperature sensor controlling the fan on the current radios

Additional IF Filter
As soon as we perfect the filter for this radio it will be incorporated. The filter can be switched in and out of circuit by depressing and holding the Func (clarifier) button for 3 seconds. A small orange light above the channel selector switch will illuminate when the guard band filter is engaged.

Additional Features under Consideration.
Addition of 3rd 520 Power Transistor for 80W PEP output
Enabling a CB mode from the front panel
Enabling six digits in display. Show 0.1khz Digit.
Enabling Step function in 0.1 Khz steps
Enabling chosen step to be default until changed
Speech Processor
IF Shift
Audio DSP
Workshop Manual
Inclusion of FM CB channels for European Users.

YeticomNZ Web based Radio Sales.

www.yeticomnz.com

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SSB 10-12m Export Radios
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