C-211-G
R.F. AMPLIFIER

The Mirage C-211-G is the next generation of Power Amplifiers for 222 - 225 MHz. New features make it the most useful and versatile amplifier available. Features include automatic power shut-down circuitry for protection against high antenna VSWR, high temperature and excessive R.F. power input. A newly designed GaAsFET receive pre-amp provides high gain and low noise amplification for weak signal applications. The pre-amp includes an attenuator to reduce signal output level. This is useful in preventing Receiver Overload and subsequent Intermodulation Distortion caused by strong signals. Provision is made for automatic or remote (external) keying, and for remote control of all front panel functions using the Mirage RC-1 Remote Control Unit. The Mirage C-211-G is capable of FM, SSB, and CW operational modes.

SPECIFICATIONS

Frequency Range	222 - 225 MHz
R.F. Input Power (Drive)	250 mW to 5 Watts
R.F. Output Power	110 Watts with 2 Watts drive
Duty Cycle	Intermittent (ICAS)
Modes	FM, SSB, CW
Receive Pre-amp	GaAsFET, Gain 21/15 dB-Nominal. Noise figures less than 0.6 dB. 1 dB compression point greater than -13 dBm input (Nominal)
VSWR Power Shutdown Point	3:1 Approximately
R.F. Input Power Shutdown Point	5 Watts nominal
Temperature Power Shutdown Point	175 degrees F.
Keying	Automatic (R.F. sensing) or remote (external)
Input/Output Impedance	50 Ohms
R.F. Connectors	SO-239 (UHF)
Remote keying connector	RCA phono
Remote control connector	6 pin Molex
Supply Voltage	13.8 VDC (for full R.F. power output)

Supply Current	25 Amps (nominal)
Fuse	Low voltage, fast blow. 35 Amps
Physical Dimensions	12 x 3 x 5-1/2 inches
Weight	5 lbs.

INSTALLATION

The Mirage C-211-G may be mounted using the brackets supplied or simply placed in a convenient operating position. In either case, there must be adequate ventilation for the finned heat-sink. This generally means at least 1 inch clearance from the sink to any surrounding enclosure and an unobstructed flow from the front to the back of the sink. **CAUTION: With extended use the heat sink becomes very hot.** If it is necessary to extend the D.C. power leads use a minimum #8 gauge wire. Use a minimum length of good quality 50 Ohm cable between the radio and the amplifier. The antenna system should have a VSWR of 1.5:1 or better for best performance. The receiving pre-amp gain is set to the high value at the factory. To switch to minimum gain move the DIP switch, which is located under the left side cover near the power supply leads, in the "up" position. The switch may be accessed through the fourth slot from the rear using an appropriate small tool. If desired, the transmit relay hold-in (hang-time) may be adjusted by adjusting the potentiometer located behind the twelfth slot from the rear on the right side of the amplifier. If external amplifier keying is desired, a switched ground connection must be provided to the center pin of the RCA phono jack.

FRONT PANEL SWITCHES/LED'S

POWER ON/OFF SWITCH	Turns the D.C. power ON or OFF.
SSB/FM SWITCH	Selects relay time delay for the mode of operation. The relay drop time is lengthened for the SSB mode of operation.
PRE-AMP ON/OFF SWITCH	Turns Pre-amp power ON or OFF.
POWER LED	Indicates that D.C. power is applied.
PRE-AMP LED	Indicates that the pre-amp is turned on.
TX LED	Indicates that the amplifier is keyed on.

SWR/OVERLOAD LED ..... Indicates amplifier shutdown due to excessive VSWR, temperature, or R.F. drive power.

REAR PANEL CONNECTORS

RADIO (SO-239) ..... R.F. input from radio.

ANT (SO-239)..... R.F. output to antenna.

RCA phono (Unmarked) ..... Remote keying.

Molex (Unmarked)..... Remote control.

INTERNAL ADJUSTMENTS

SSB DELAY ..... This allows you to change the holding time on the XMT relay. This adjustment is accessible through the 11th or 12th slot from the back on the right side.

PRE-AMP ATTENUATOR SWITCH ..... Sets the PRE-AMP gain to full or reduced value.

INPUT VSWR AND OUTPUT POWER ..... These adjustments are made at the factory and should not require field adjustment.

PRE-AMP TUNING ..... These adjustments are also made at the factory for best gain and noise figure performance. They should not require field adjustment.

TROUBLESHOOTING

The Mirage C-211-G is designed for long, trouble-free performance and should not require extensive troubleshooting in the field. Many causes of common malfunctions are eliminated by the built-in protective circuitry. **NOTE: In the event of automatic power shut-down, the amplifier must be turned off, and the cause of shut-down determined and removed.** In case of difficulty check the following before assuming amplifier malfunction:

a. Loose antenna or power supply connections.

b. VSWR of antenna system.

c. Coaxial cables from radio to amplifier, and amplifier to antenna.

d. Output voltage of power supply.

e. Power output of radio.

f. Improper fuse rating.

WARNING: This unit should not be operated with the cover removed The cover confines R.F. radiation, including harmonics, to the inside of the case. Operation of the unit without the cover could result in direct harmonic radiation. The harmonic filters contained in the circuit will not suppress direct radiation.

IMPORTANT REMINDER

All MIRAGE amplifiers manufactured for amateur radio - with the exception of repeater amplifiers - are rated as ICAS - Intermittent Commercial and Amateur Service. This generally means 5 minute duty cycles, i.e. 5 minutes transmitting, 5 minutes receiving.

Although all of our units, except the hand helds, have thermal protection, continued use where this cut out occurs can damage transistors.

TECHNICAL ASSISTANCE

If you have any problem with this unit first check the appropriate section of this manual. If the manual does not reference your problem or your problem is not solved by reading the manual you may call MIRAGE at 601-323-8287. You will be best helped if you have your unit, manual and all information on your station handy so you can answer any questions the technicians may ask.

You can also send questions by mail to MIRAGE, 921 HWY 25 South, Starkville, MS 39759 or by Fax to 601-323-6551. Send a complete description of your problem, an explanation of exactly how you are using your unit, and a complete description of your station.