Condensed Setup of OPTIMOD-FM Models 2200 and 2200-D

This setup guide is for qualified personnel only. Use this guide to help you get your 2200 installed and operating as quickly as possible. If, at any time, you require more details to complete installation, refer to the relevant steps in Section 2 of the 2200 Operating Manual.

1. Unpack and inspect. (Refer to page 2-2.)

A ☐ If you note obvious physical damage, contact the carrier immediately to make a damage claim. A complete list of items included in the 2200 package is on page 2-2.

B ☐ *Save all packing materials*, in case you should ever have to ship the 2200.

C ☐ Complete the Registration Card and return it to Orban.

2. Change standard factory configuration, if required. (Refer to page 2-3.)

[Skip this step if your installation does not have any special requirements.]

The 2200 is supplied from the factory with its jumpers set to the configuration correct for most installations.

Stereo Encoder Composite Output Impedance	0Ω
Input Impedance	10kΩ
Input Sensitivity	–10dBu or greater (+5dBu to +27dBu peak)



A ☐ If you are changing any jumper settings, remove the top cover of the 2200 to access the main circuit board. (Make sure power is not connected.)

B ☐ Refer to Figure 2-1 in the manual to find the jumpers on the main circuit board and to position them according to your application.

C ☐ Replace the 2200 top cover.

3. Check the line voltage, fuse and power cord. (Refer to page 2-7.)

A ☐ *DO NOT connect power to the unit yet!*

B ☐ Check the voltage selector on the rear panel, and change the setting if it is incorrect.

Refer to the unit's rear panel for your Model Number and the inside of the front cover of the 2200 manual for your Model Number's line voltage setting.

C ☐ Check the value of the fuse and change the fuse if the value is incorrect.

For safety, the fuse must be Slow-Blow ½-amp for 115V, or 250mA (¼-amp) "T" type for 230V.

D ☐ Check power cord.

If you need to change the plug to meet your country's standard and you are qualified to do so, refer to the manual. Otherwise, purchase a new mains cord with the correct line plug attached.

4. Set Ground Lift switch. (Refer to page 2-8.)

The GND LIFT switch, located on the rear panel, is shipped from the factory set to GND (to connect the 2200's circuit ground to its chassis ground). If you are using the 2200's stereo encoder, and are driving its composite output into an *unbalanced* exciter input, set the GND LIFT switch to LIFT. If you are not using the 2200's stereo encoder, or are using it to drive a balanced exciter input, set the GND LIFT switch to GND.

5. Mount the 2200 in a rack. (Refer to page 2-8.)

The 2200 requires one standard rack unit (1¾ inches/4.4 cm). There should be a good ground connection between the rack and the 2200 chassis — check this with an ohmmeter to verify that the resistance is less than 0.5Ω.

6. Connect remote control (optional). (Refer to page 2-2.)

7. Connect inputs and outputs. (Refer to page 2-9.)

See the hook-up and grounding information in the manual.

8. Power up the 2200. (refer to page 2-14.)

A ☐ Plug in the 2200's power cord.

With no input program material, the red Gated LED and one of the green Function LEDs should be on. The AGC meter should indicate 10.0. The main screen appears in the front window display.

9. Recall Classical Protect preset. (Refer to page 2-17.)

A ☐ Press Recall Preset button, turn control knob until next: is CLASSICAL PROTECT, then press the RECALL NEXT soft key button.

10. Set pre-emphasis to the standard used in your country. (Refer to page 2-18.)

A ☐ Press System Setup button, press STEREO ENCODER soft key button, then set processing (PROC PRE-E) to your country's standards:

75µs	NORTH, CENTRAL, SOUTH AMERICA
50µs	EUROPE, ASIA, AFRICA, PACIFICA EXCEPT
75µs	TAIWAN, KOREA, THAILAND

11. Set Analog Output pre-emphasis. (Refer to page 2-18.)

[Skip this step if you are not using the 2200's analog outputs.]

A ☐ Access ANLG OUTP CALIB control screen: Press System Setup button, press I/O CALIB soft key button, then press ANLG OUTP CALIB soft key button.

B ☐ Set Analog Output pre-emphasis to [flat] or [pre-emph].

This controls whether the analog left/right outputs produce a flat signal, or a pre-emphasized signal, following the pre-emphasis set with Stereo Encoder PROC PRE-E control in the previous step.

12. Model 2200-D only: Set Digital Output pre-emphasis status. (Refer to page 2-19.)

[Skip this step if you are not using the 2200-D's digital output.]

A ☐ Access I/O CALIB control screen: Press System Setup button, press the I/O CALIB soft key button, then press DIG OUTP CALIB soft key button..

B ☐ Set DO PRE-E (Digital Output pre-emphasis status).

See page 2-19 for an explanation of the the following options:
[flat], [pre-emph], [J.17], or [J.17+pre-e].

13. Model 2200-D only: Enable Analog Inputs. (Refer to page 2-20.)

[Skip this step if you are not using the 2200-D's analog inputs.]

A ☐ Access ANLG INP CALIB control screen: Press System Setup button, press the I/O CALIB soft key button, then press ANLG INP CALIB soft key button.

B ☐ Enable Analog Inputs.

14. Adjust analog left/right input peak clipping level. (Refer to page 2-20.)

[Skip this step if you are not using the 2200's analog inputs.]

A ☐ Press the meter button so that the L/R Channel Input meters are active.

B ☐ Access ANLG INP CALIB control screen: Press System Setup button, press I/O CALIB soft key button, then press ANLG INP CALIB.

C ☐ Set Analog Input Clip level.

This step calibrates the level at which the 2200's A-D (Analog-to-Digital) converter clips to the absolute maximum peak level that your installation supplies to the 2200's analog input.

This setup maximizes the 2200's signal-to-noise ratio. If the clip level is set too low, the 2200's analog-to-digital converters will overload and

distort on program peaks. If the clip level is set too high, the signal-to-noise ratio will suffer. Use care and attention in setting this adjustment.

a) Play program material from your studio at a much higher level than normal — turn the faders up all the way! This will produce the highest peak level output that your system can produce.

b) Adjust the 2200's AI CLIP so that the program peaks just reach to –3dB on the L/R Channel Input meters.

   Hold down the button directly below the words "AI CLIP," turn the control knob to scroll from +5.0dBu to +27.0dBu (or –17.0dBu to +5dBu, if input sensitivity jumpers were reset), then release the button.

   Observe the L/R Channel Input meters on the 2200 for a long period of time; be sure to observe live announcer voice. If this setting is mis-adjusted, distortion will result.

   0dB indicates input clipping on the 2200. These meters should never peak as high as 0dB with program material.

c) If you are using an Orban 4000A Transmission Limiter or Orban 8200ST OPTIMOD ahead of the 2200, activate the tone oscillator on either unit. Then adjust the 2200's AI PEAK so that the 2200's L/R Channel Input meters reads –3dB.

15. Calibrate analog inputs to your standard studio level. (Refer to page 2-22.)

[Skip this step if you are not using the 2200's analog inputs.]

A ☐ Press the meter button so that the L/R Channel Input meters are active.

B ☐ Access ANLG INP CALIB control screen: Press System Setup button, press I/O CALIB soft key button, then press ANLG INP CALIB.

C ☐ Set Analog Input Reference level.

This step calibrates the 2200 to the level to which your studio operators peak their program material on the studio meters. This assures that the 2200's processing presets will operate in their preferred range.

If you are able to interrupt or distort programming, use a standard reference/line-up level tone from your studio or play program material; this will achieve the most precise calibration. Adjust the appropriate 2200 reference level control (either AI REF VU or AI REF PPM) for an average of –10dB on the Master Gain Reduction meter when audio is peaking at normal levels (e.g., 0VU).

If you cannot interrupt or distort programming, calibrate by numbers, adjusting the appropriate 2200 reference level control (either AI REF VU or AI REF PPM) to your studio's reference level.

16. Model 2200-D only: Enable Digital Input. (Refer to page 2-23.)

[Skip this step if you are not using the digital input.]

A ☐ Access DIG INP CALIB control screen: Press System Setup button, press the I/O CALIB soft key button, then press DIG INP CALIB.

Note: If DIG STAT is no lock, then the AES/EBU digital input is not valid. Check connections, cabling, and digital source.

B ☐ Enable Digital Input.

17. Calibrate Digital Input to your standard studio level. (Refer to page 2-22.)

[Skip this step if you do not have Model 2200-D or if you are not using the 2200-D's digital input.]

A ☐ Press System Setup button, press the I/O CALIB soft key button, then press DIG INP CALIB.

B ☐ Set Digital Input Reference level.

This step calibrates the 2200 to the level to which your studio operators peak their program material on the studio meters. This assures that the 2200's processing presets will operate in their preferred range.

If you are able to interrupt or distort programming, play program material; this will achieve the most precise calibration. Then adjust the appropriate 2200 reference level control (either DI REF VU or DI REF PPM) for an average of −10dB on the AGC Gain Reduction meter when audio is peaking at normal levels (e.g., 0VU).

If you cannot interrupt or distort programming, calibrate by numbers, adjusting the appropriate 2200 reference level control (either DI REF VU or DI REF PPM) to your studio's reference level. Note that the numbers you see represent dB below digital full-scale.

18. Adjust Composite Output level controls. (Refer to page 2-25.)

[Skip this step if you are not using the 2200's composite outputs. These are the outputs of the 2200's stereo encoder.]

A ☐ Feed the 2200 with program material or activate the built-in 400Hz TEST tone.

To turn on the TEST tone: Press System Setup button, press TEST soft key button, set TONE to 400Hz (hold down the TONE soft key button, turn the control knob to 400 Hz, then release the button), and activate 400Hz test tone (hold down the MODE soft key button, turn the control knob to scroll to tone, then release the button).

To turn off TEST tone, hold down the MODE tone soft key button, turn the control knob to scroll to operate, then release the button.

B ☐ Adjust the 2200's Comp 1 and Comp 2 level controls — screwdriver slots on the left side of the front panel — for 100% Total Peak Modulation of your FM exciter, as indicated on a modulation monitor, or modulation indicator on your exciter.

In the U.S., you can modulate higher than 100% when using SCAs. Refer to the appropriate FCC rules.

19. Adjust Analog Left/Right or Digital Output level controls. (Refer to page 2-25.)

[Skip this step if you are not using the analog Left/Right or Digital Outputs.]

A ☐ Access analog or digital output level control: Press System Setup button, then press ANLG OUTP CALIB or DIG OUTP CALIB as required.

B ☐ Set Output level.

Hold down AO 100% or DO 100%, as applicable, and adjust the knob.

Adjust the output level controls for 100% Total Modulation of your FM exciter, or discrete left/right STL, as indicated on a modulation monitor, or modulation indicator on your exciter or STL. In the U.S., you can modulate higher than 100% when using SCAs. Refer to the appropriate FCC rules.

20. Select a preset that complements the program format of your station. (Refer to page 2-26.)

A ☐ Press Recall Preset button to access the Recall Preset screen, then select a preset.

21. Quick Setup Completed!

If you want to set up additional input/output parameters, or reset any setup adjustments, continue to "System Setup Controls," starting on page 2-27. If you are ready to use the 2200, proceed to Section 3 for important 2200 operation information.