



**LCM-500-550
TELEVISION MODULATOR**

INSTRUCTION MANUAL

Phone: (209) 586-1022
(800) 545-1022

Fax: (209) 586-1026

E-Mail: salesupport@olsontech.com

www.olsontech.com

LCM-500-550

FREQUENCY AGILE - F.C.C. COMPATIBLE TELEVISION MODULATOR

1) INTRODUCTION

The Olson Technology LCM-500-550 is a frequency agile F.C.C. compatible television modulator. This unit will provide $>+55\text{dBmV}$ output on any channel from 55.25MHz to 547.25MHz (VHF channels 2 through 13 and cable channels A through PPP). All channels are selectable by front panel DIP switches and a front panel adjustment allows setting to F.C.C. offset frequencies.

The LCM-500-550 offers the unique Olson Technology feature of $>75\text{dB}$ out-of-band carrier to noise ratio. Also, this unit uses SAW filtering for adjacent channel operation, and it provides 60dB of spurious free dynamic range. These features allow virtually unlimited numbers of LCM-500-550's to be combined without the need for external bandpass filters.

The LCM-500-550 has low power consumption (14 watts @ 115 VAC) for reliable long term operation.

2) CHANNEL SELECTION

Remove the small cover plate from the front panel to expose the channel select switches and the F.C.C. offset adjust control as shown in Figure #1. Note that the RF Level control is accessible through the level adjustment hole in the cover plate.

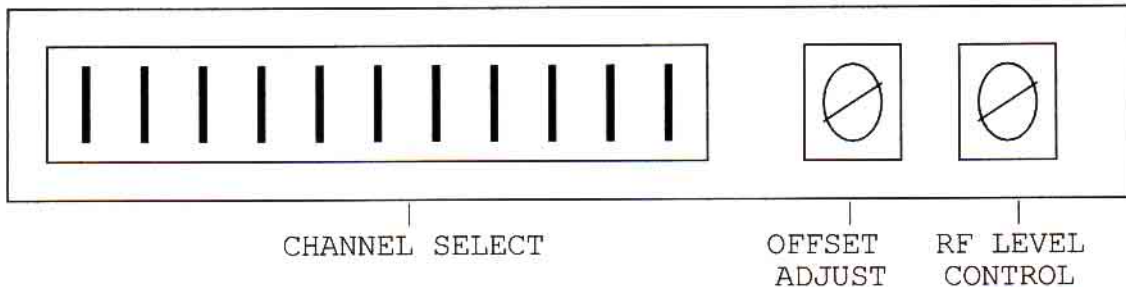
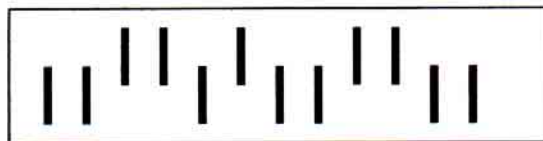



FIGURE 1 - CHANNEL SELECT/OFFSET ADJUST

Channel selection is made by properly setting the 12-position DIP switches to the corresponding channel code. Channel codes are shown in Figure #2 and on the code card attached to the cover plate. Set the DIP switches from left to right. For example, if channel 11 is desired, its corresponding channel code is:



3) F.C.C. OFFSET ADJUSTMENT

F.C.C. offset frequencies are shown in Table 1 and summarized on the card attached to the cover plate. To adjust the frequency of a selected channel to provide the correct F.C.C. offset, look up its offset frequency in Table 1 (or use the summary attached to the cover plate). Remove the video input and connect a counter to the RF output of the LCM-500-550. Use the offset adjust control (marked OA) behind the cover plate to set the output frequency to the correct value.



0 = Switch in DOWN Position
1 = Switch in UP Position

0 0 0 1 1 1 0 1 0 1 0 0

0

CHANNEL SELECT SWITCH F.C.C. OFFSET

NOTE

- 1) ABOVE DIP SWITCH POSITION DENOTES CHANNEL 6
- 2) TO SELECT DESIRED CHANNEL, SET THE CHANNEL SELECT SWITCHES PER ATTACHED CODE CARDS
- 3) TO SELECT F.C.C. OFFSET VALUE FOR A DESIRED CHANNEL, DISCONNECT THE VIDEO-INPUT SIGNAL AND CONNECT A COUNTER TO THE RF OUTPUT. THAN ADJUST THE F.C.C. OFFSET CONTROL POT UNTIL COUNTER READS CHANNEL FREQUENCY PLUS OFFSET.

OFFSET SELECTION INFORMATION

- 1) CHANNELS A, B, C, L TO W, AA TO KK & GG TO QQ = 12.5kHz.
- 2) CHANNELS A-2, A-1 & FF = 25kHz.
- 3) ALL OTHERS = 0kHz

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CH	LCM-500-550		
2	0011	1001	0100
3	0100	0101	0100
4	0001	0101	0100
5	0100	1101	0100
6	0001	1101	0100
A-5	0000	0011	0100
A-4	0110	0011	0100
A-3	0011	0011	0100
A-2	0100	1011	0100
A-1	0001	1011	0100
7	0010	1000	1100
8	0101	1000	1100
9	0000	0100	1100
10	0110	0100	1100
11	0011	0100	1100
12	0100	1100	1100
13	0001	1100	1100
A14	0111	1011	0100
B15	0010	0111	0100
C16	0101	0111	0100
D17	0000	1111	0100
E18	0110	1111	0100
F19	0011	1111	0100
G20	0100	0000	1100
H21	0001	0000	1100
I22	0111	0000	1100
J23	0111	1100	1100
K24	0010	0010	1100
L25	0101	0010	1100
M26	0000	1010	1100
N27	0110	1010	1100
O28	0011	1010	1100
P29	0100	0110	1100
Q30	0001	0110	1100
R31	0111	0110	1100
S32	0010	1110	1100
T33	0101	1110	1100
U34	0000	0001	1100
V35	0110	0001	1100
W36	0011	0001	1100

CH	LCM-500-550		
AA	0100	1001	1100
BB	0001	1001	1100
CC	0111	1001	1100
DD	0010	0101	1100
EE	0101	0101	1100
FF	0000	1101	1100
GG	0110	1101	1100
HH	0011	1101	1100
II	0100	0011	1100
JJ	0001	0011	1100
KK	0111	0011	1100
LL	0010	1011	1100
MM	0101	1011	1100
NN	0000	0111	1100
OO	0110	0111	1100
PP	0011	0111	1100
QQ	0100	1111	1100
RR	0001	1111	1100
SS	0111	1111	1100
TT	0010	0000	0010
UU	0101	0000	0010
VV	0000	1000	0010
WW	0110	1000	0010
XX	0011	1000	0010
YY	0100	0100	0010
ZZ	0001	0100	0010
AAA	0111	0100	0010
BBB	0010	1100	0010
CCC	0101	1100	0010
DDD	0000	0010	0010
EEE	0110	0010	0010
FFF	0011	0010	0010
GGG	0100	1010	0010
HHH	0001	1010	0010
III	0111	1010	0010
JJJ	0010	0110	0010
KKK	0101	0110	0010
LLL	0000	1110	0010
MMM	0110	1110	0010
NNN	0011	1110	0010
OOO	0100	0001	0010
PPP	0001	0001	0010

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FIGURE 2 - CHANNEL SELECT CODES

<u>CHANNEL</u>	<u>F.C.C. OFFSET</u>	<u>CHANNEL FREQUENCY</u> (including offset)
A-2	25KHz	109.275MHz
A-1	25KHz	115.275MHz
A	12.5KHz	121.2625MHz
B	12.5KHz	127.2625MHz
C	12.5KHz	133.2625MHz
L	12.5KHz	229.2625MHz
M	12.5KHz	235.2625MHz
N	12.5KHz	241.2625MHz
O	12.5KHz	247.2625MHz
P	12.5KHz	253.2625MHz
Q	12.5KHz	259.2625MHz
R	12.5KHz	265.2625MHz
S	12.5KHz	271.2625MHz
T	12.5KHz	277.2625MHz
U	12.5KHz	283.2625MHz
V	12.5KHz	289.2625MHz
W	12.5KHz	295.2625MHz
AA	12.5KHz	301.2625MHz
BB	12.5KHz	307.2625MHz
CC	12.5KHz	313.2625MHz
DD	12.5KHz	319.2625MHz
EE	12.5KHz	325.2625MHz
FF	25KHz	331.275MHz
GG	12.5KHz	337.2625MHz
HH	12.5KHz	343.2625MHz
II	12.5KHz	349.2625MHz
JJ	12.5KHz	355.2625MHz
KK	12.5KHz	361.2625MHz
LL	12.5KHz	367.2625MHz
MM	12.5KHz	373.2625MHz
NN	12.5KHz	379.2625MHz
OO	12.5KHz	385.2625MHz
PP	12.5KHz	391.2625MHz
QQ	12.5KHz	397.2625MHz

Table 1. F.C.C. OFFSET FREQUENCIES

4) VIDEO MODULATION ADJUSTMENT

- A) Connect a video source of approximately 1v p-p to the video input connector (75Ω input Z) on the rear panel. The video should be of a reasonably bright scene (commercials are usually excellent).
- B) Rotate the video modulation control (MOD) slowly clockwise until the video overmodulation light (O/M) just turns on. The light may blink with differences in average picture level. CAUTION: If the modulation is set too high, compression or lack of contrast will occur during high intensity scenes.

5) AUDIO MODULATION ADJUSTMENT

- A) Connect an audio source of 300mv p-p (minimum) to the input connector (10K ohms input Z) on the rear panel.
- B) Rotate the audio modulation (MOD) control slowly clockwise until the audio overmodulation light (O/M) just begins to blink. CAUTION: Overmodulation can result in severe distortion in some TV sets. Set this control at peak program levels.

6) RF OUTPUT AND AURAL CARRIER LEVEL ADJUSTMENT

- A) Using a field strength meter or spectrum analyzer, set the video carrier to the desired level with the RF output “level” adjust pot (typically +55dBmV).
- B) Tune the field strength meter to the aural carrier, which is located 4.5MHz above the video carrier.
- C) Adjust the aural carrier level control (A/V) to the desired level, typically 15dB below the video carrier. CAUTION: Reducing the visual/aural carrier ratio to less than 15dB can result in high out-of-band spurious signals in adjacent channels.

7) MISCELLANEOUS

- A) The LCM-500-550 is BTSC stereo compatible. It is shipped in the “mono” mode. To defeat the pre-emphasis, in order to use a composite baseband BTSC input signal, move the internal jumper plug from W-6 “PRE” to W-6 “BY”. This plug is located on the right side of P.C. board.
- B) When installing this unit in an equipment rack, it is best to leave an empty rack space above and below this unit to allow for optimum air circulation.
- C) The LCM-500-550 is equipped with a 0.5A slo-blo fuse. For continued safety, and to maintain proper performance of the unit, please replace only with an equivalent fuse.