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## 23/24cm transmitter and receiver technical notes

This document contains technical information to help you use your 23cm transmitter and / or receiver. This document is provided as-is, without any warranty.

### Power supply

The transmitter and receiver require a supply of 12 to 18V DC, **tip (centre) positive**. Reverse polarity will cause very serious damage. Do NOT use less than 12V.

- The transmitter gives best output power at 13.8V or more.
- The small black heatsinks on the receiver can get very hot over 15V, and run coolest at 12V.
- Do not use *unregulated* mains plug-in power supplies - their off-load voltage is often high to damage the on-board voltage regulators.

### Video and audio connections

Video and audio connections (inputs on the Tx and outputs on the Rx) are as follows:

- Yellow phono socket - composite video
- White phono socket - audio for/from 6.0MHz subcarrier
- Red phono socket - audio for/from 6.5MHz subcarrier

### Setting up the 23cm transmitter

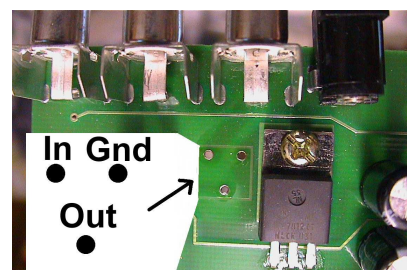
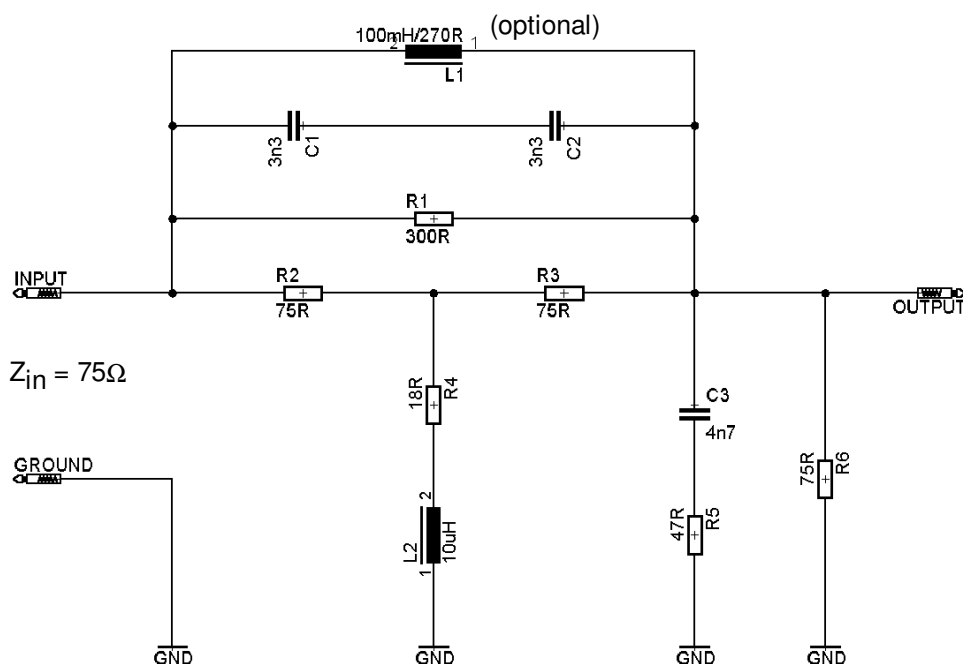
As supplied, the transmitter has an input impedance in the region of  $220\Omega$ , and the video gain (deviation) is set using the pre-set resistor on the board.

- To change the input impedance to  $75\Omega$  (nominal), solder a  $120\Omega$  (or  $100\Omega$ ) resistor across the video input socket.

### CCIR pre-emphasis

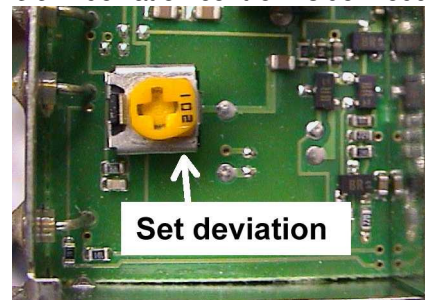
The following circuit can be used to add CCIR pre-emphasis to the transmitter.

- Remove the existing deviation pre-set resistor to fit the circuit.
- Deviation can then be set using the pre-set resistor inside the RF module.



Above: remove deviation control to fit pre-emphasis circuit

Below: deviation control inside module



## Setting up the 23cm receiver

The pre-set resistor on the receiver is the video gain control. Set it for proper amplitude video output.

- Note that the receiver is intended for standard amateur deviation (3MHz nominal), with a maximum RF bandwidth of 16-18MHz. Excessively wide deviation signals ('satellite standard') can cause poor colour performance because some of the colour subcarrier will be outside the IF pass-band. Wide deviation signals do not go as far as standard deviation, and are an inefficient use of the amateur spectrum!

## 23cm transmitter and receiver operating frequencies

The following tables show the DIP switch settings for both the transmitter and receiver. Note that 0=off and 1=on, and SW1 is the switch farthest from the metal box.

Cautions: An appropriate transmitting license is required to operate the transmitter.

Note that some of these frequencies are outside the 23cm amateur band allocation.

Frequency (MHz)	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 7	SW 8
1240.0	0	0	0	0	0	0	0	0
1240.5	1	0	0	0	0	0	0	0
1241.0	0	1	0	0	0	0	0	0
1241.5	1	1	0	0	0	0	0	0
1242.0	0	0	1	0	0	0	0	0
1242.5	1	0	1	0	0	0	0	0
1243.0	0	1	1	0	0	0	0	0
1243.5	1	1	1	0	0	0	0	0
1244.0	0	0	0	1	0	0	0	0
1244.5	1	0	0	1	0	0	0	0
1245.0	0	1	0	1	0	0	0	0
1245.5	1	1	0	1	0	0	0	0
1246.0	0	0	1	1	0	0	0	0
1246.5	1	0	1	1	0	0	0	0
1247.0	0	1	1	1	0	0	0	0
1247.5	1	1	1	1	0	0	0	0
1248.0	0	0	0	0	1	0	0	0
1248.5	1	0	0	0	1	0	0	0
1249.0	0	1	0	0	1	0	0	0
1249.5	1	1	0	0	1	0	0	0
1250.0	0	0	1	0	1	0	0	0
1250.5	1	0	1	0	1	0	0	0
1251.0	0	1	1	0	1	0	0	0
1251.5	1	1	1	0	1	0	0	0
1252.0	0	0	0	1	1	0	0	0
1252.5	1	0	0	1	1	0	0	0
1253.0	0	1	0	1	1	0	0	0
1253.5	1	1	0	1	1	0	0	0
1254.0	0	0	1	1	1	0	0	0
1254.5	1	0	1	1	1	0	0	0
1255.0	0	1	1	1	1	0	0	0
1255.5	1	1	1	1	1	0	0	0
1256.0	0	0	0	0	0	1	0	0
1256.5	1	0	0	0	0	1	0	0
1257.0	0	1	0	0	0	1	0	0
1257.5	1	1	0	0	0	1	0	0
1258.0	0	0	1	0	0	1	0	0

Frequency (MHz)	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 7	SW 8
1258.5	1	0	1	0	0	1	0	0
1259.0	0	1	1	0	0	1	0	0
1259.5	1	1	1	0	0	1	0	0
1260.0	0	0	0	1	0	1	0	0
1260.5	1	0	0	1	0	1	0	0
1261.0	0	1	0	1	0	1	0	0
1261.5	1	1	0	1	0	1	0	0
1262.0	0	0	1	1	0	1	0	0
1262.5	1	0	1	1	0	1	0	0
1263.0	0	1	1	1	0	1	0	0
1263.5	1	1	1	1	0	1	0	0
1264.0	0	0	0	0	1	1	0	0
1264.5	1	0	0	0	1	1	0	0
1265.0	0	1	0	0	1	1	0	0
1265.5	1	1	0	0	1	1	0	0
1266.0	0	0	1	0	1	1	0	0
1266.5	1	0	1	0	1	1	0	0
1267.0	0	1	1	0	1	1	0	0
1267.5	1	1	1	0	1	1	0	0
1268.0	0	0	0	1	1	1	0	0
1268.5	1	0	0	1	1	1	0	0
1269.0	0	1	0	1	1	1	0	0
1269.5	1	1	0	1	1	1	0	0
1270.0	0	0	1	1	1	1	0	0
1270.5	1	0	1	1	1	1	0	0
1271.0	0	1	1	1	1	1	0	0
1271.5	1	1	1	1	1	1	0	0
1272.0	0	0	0	0	0	0	1	0
1272.5	1	0	0	0	0	0	1	0
1273.0	0	1	0	0	0	0	1	0
1273.5	1	1	0	0	0	0	1	0
1274.0	0	0	1	0	0	0	1	0
1274.5	1	0	1	0	0	0	1	0
1275.0	0	1	1	0	0	0	1	0
1275.5	1	1	1	0	0	0	1	0
1276.0	0	0	0	1	0	0	1	0
1276.5	1	0	0	1	0	0	1	0

Frequency (MHz)	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 7	SW 8
1277.0	0	1	0	1	0	0	1	0
1277.5	1	1	0	1	0	0	1	0
1278.0	0	0	1	1	0	0	1	0
1278.5	1	0	1	1	0	0	1	0
1279.0	0	1	1	1	0	0	1	0
1279.5	1	1	1	1	0	0	1	0
1280.0	0	0	0	0	1	0	1	0
1280.5	1	0	0	0	1	0	1	0
1281.0	0	1	0	0	1	0	1	0
1281.5	1	1	0	0	1	0	1	0
1282.0	0	0	1	0	1	0	1	0
1282.5	1	0	1	0	1	0	1	0
1283.0	0	1	1	0	1	0	1	0
1283.5	1	1	1	0	1	0	1	0
1284.0	0	0	0	1	1	0	1	0
1284.5	1	0	0	1	1	0	1	0
1285.0	0	1	0	1	1	0	1	0
1285.5	1	1	0	1	1	0	1	0
1286.0	0	0	1	1	1	0	1	0
1286.5	1	0	1	1	1	0	1	0
1287.0	0	1	1	1	1	0	1	0
1287.5	1	1	1	1	1	0	1	0
1288.0	0	0	0	0	0	1	1	0
1288.5	1	0	0	0	0	1	1	0
1289.0	0	1	0	0	0	1	1	0
1289.5	1	1	0	0	0	1	1	0
1290.0	0	0	1	0	0	1	1	0
1290.5	1	0	1	0	0	1	1	0
1291.0	0	1	1	0	0	1	1	0
1291.5	1	1	1	0	0	1	1	0
1292.0	0	0	0	1	0	1	1	0
1292.5	1	0	0	1	0	1	1	0
1293.0	0	1	0	1	0	1	1	0
1293.5	1	1	0	1	0	1	1	0
1294.0	0	0	1	1	0	1	1	0
1294.5	1	0	1	1	0	1	1	0
1295.0	0	1	1	1	0	1	1	0
1295.5	1	1	1	1	0	1	1	0
1296.0	0	0	0	0	1	1	1	0
1296.5	1	0	0	0	1	1	1	0
1297.0	0	1	0	0	1	1	1	0
1297.5	1	1	0	0	1	1	1	0
1298.0	0	0	1	0	1	1	1	0
1298.5	1	0	1	0	1	1	1	0
1299.0	0	1	1	0	1	1	1	0
1299.5	1	1	1	0	1	1	1	0
1300.0	0	0	0	1	1	1	1	0
1300.5	1	0	0	1	1	1	1	0
1301.0	0	1	0	1	1	1	1	0
1301.5	1	1	0	1	1	1	1	0
1302.0	0	0	1	1	1	1	1	0
1302.5	1	0	1	1	1	1	1	0

Frequency (MHz)	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 7	SW 8
1303.0	0	1	1	1	1	1	1	0
1303.5	1	1	1	1	1	1	1	0
1304.0	0	0	0	0	0	0	0	1
1304.5	1	0	0	0	0	0	0	1
1305.0	0	1	0	0	0	0	0	1
1305.5	1	1	0	0	0	0	0	1
1306.0	0	0	1	0	0	0	0	1
1306.5	1	0	1	0	0	0	0	1
1307.0	0	1	1	0	0	0	0	1
1307.5	1	1	1	0	0	0	0	1
1308.0	0	0	0	1	0	0	0	1
1308.5	1	0	0	1	0	0	0	1
1309.0	0	1	0	1	0	0	0	1
1309.5	1	1	0	1	0	0	0	1
1310.0	0	0	1	1	0	0	0	1
1310.5	1	0	1	1	0	0	0	1
1311.0	0	1	1	1	0	0	0	1
1311.5	1	1	1	1	0	0	0	1
1312.0	0	0	0	0	1	0	0	1
1312.5	1	0	0	0	1	0	0	1
1313.0	0	1	0	0	1	0	0	1
1313.5	1	1	0	0	1	0	0	1
1314.0	0	0	1	0	1	0	0	1
1314.5	1	0	1	0	1	0	0	1
1315.0	0	1	1	0	1	0	0	1
1315.5	1	1	1	0	1	0	0	1
1316.0	0	0	0	1	1	0	0	1
1316.5	1	0	0	1	1	0	0	1
1317.0	0	1	0	1	1	0	0	1
1317.5	1	1	0	1	1	0	0	1
1318.0	0	0	1	1	1	0	0	1
1318.5	1	0	1	1	1	0	0	1
1319.0	0	1	1	1	1	0	0	1
1319.5	1	1	1	1	1	0	0	1
1320.0	0	0	0	0	0	1	0	1
1320.5	1	0	0	0	0	1	0	1
1321.0	0	1	0	0	0	1	0	1
1321.5	1	1	0	0	0	1	0	1
1322.0	0	0	1	0	0	1	0	1
1322.5	1	0	1	0	0	1	0	1
1323.0	0	1	1	0	0	1	0	1
1323.5	1	1	1	0	0	1	0	1
1324.0	0	0	0	1	0	1	0	1
1324.5	1	0	0	1	0	1	0	1
1325.0	0	1	0	1	0	1	0	1
1325.5	1	1	0	1	0	1	0	1
1326.0	0	0	1	1	0	1	0	1
1326.5	1	0	1	1	0	1	0	1
1327.0	0	1	1	1	0	1	0	1
1327.5	1	1	1	1	0	1	0	1
1328.0	0	0	0	0	1	1	0	1
1328.5	1	0	0	0	1	1	0	1

