

**25p**

**HOW TO  
MAKE AERIALS FOR T.V.**

**(BAND 1 and 3)**

**and V.H.F. (BAND 2)  
FREQUENCY MODULATED  
TRANSMISSIONS**

**Data for all  
Channels**

**10**

**DIFFERENT DESIGNS  
FOR**

**LOCAL and FRINGE AREAS**

**Full Constructional Details  
and Diagrams**

**BERNARDS RADIO  
MANUALS**

**138**

**HOW TO MAKE YOUR OWN  
T.V. (Band 1 and Band 3) AND  
V.H.F. (F.M.) AERIALS**

**BY**

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## SOME SIMPLE AERIALS FOR BAND I

### THE DIPOLE

Let us start with the simplest of the aerials the two element Dipole which is quite useful at close range to the transmitter. The simple Dipole is the basis for all types of aerial arrays.

The construction of such an aerial can be completed in a relatively short space of time. All that is needed is an electrician's aluminium junction box, two lengths of 3/8" or 1/2" O.D. Duralumin tubing cut to length for the channel desired. Three holes are then drilled into the circumference of the junction box, two suitable for the diameter of the Duralumin tube used and diametrically opposite, the third one at 90° to these to take the co-axial cable (Fig.1). One of the diametrically opposite holes should be made a trifle larger than the other to take an insulating bush or grommet, to prevent the high potential or upper limb of the dipole from shorting to the lower, which would be the case if the two rods were screwed into the junction box. The other hole can now be threaded to accept the lower limb.

A 2BA tapping size hole is drilled into each aerial rod about a quarter of an inch from the ends which are inside the box. Tap these holes to take a 2BA aluminium bolt. One of the rods should now be threaded approximately 1.5" in length. Screw on a suitable aluminium nut, and screw the rod into the junction box to a suitable distance to allow for an 0.5 inch gap between the upper and lower limbs when both are fitted into the box. Screw on a second aluminium nut and clamp down tightly on the inside

of the box (Fig.2). Screw both nuts up firmly.

The upper limb can now be fitted, and a piece of insulating sleeving is suggested to be fitted on the end entering the box as an added protection, clear of the 2BA hole in the end of the rod.

Now screw a 2BA aluminium bolt with a 2BA solder tag under, into the holes made in the ends of each rod. The upper limb will perhaps be rather "wobbly". This can easily be made rigid by a bracket which can be screwed to the support arm and the dipole. To do this, drill a hole to take a 4BA aluminium bolt through an insulating bush on each side of the upper limb, approximately 6 inches above where it enters the box and fit a stout aluminium bracket. Bolting to the horizontal support through another bush fitting.

A co-axial downlead can now be fixed to the aerial. The P.V.C. sleeving should be cut away to expose about one inch of braiding, which can be unravelled to make a "tail", for soldering on to the tag of the lower limb, while the centre conductor is soldered on to the tag of the upper limb.

The length of the horizontal aerial support arm should be at least a quarter wavelength in length, according to the channel being received.

The aerial can now be fitted to the wall of the house or on the chimney stack and it is left to the reader to achieve this in the best way possible for his type of house.

It will be noticed that aluminium construction has been stressed throughout, to prevent corrosion taking place between dissimilar metals when exposed to the weather. The co-axial cable should be taped to the bracket and cleated to the wall up to a point where it enters the house.

This type of aerial can be used as a loft aerial where it can take on the shape of an "L" type or as an "inverted V", and is useful up to a radius of about 25 miles from the transmitter.

Fig. 3 shows a method of fixing the finished aerial to the wall of the house. Lengths of tubing required are shown in Table I at the back of the book. A face plate, if not already bought with the junction box, can be made to fit over the open side of the box to prevent the weather from affecting the connections.

### THE "H" TYPE AERIAL

Should the reader be living in an area where the signal from the transmitter is rather weak, the "H" aerial may make marked improvement in the reception.

The construction is the same as for the dipole, but with a reflector added to make the aerial more directive, placed a quarter wavelength behind the dipole. This is made from a duralumin rod a little over eleven feet in length.

For convenience the tubing can be cut in half, and screwed into another junction box, in the same manner as the lower limb of the dipole, but neither of the sections need be insulated from each other.

The dipole and the reflector are mounted at each end of a cross-bar of approximately 4 ft. 6 inches in length; with the mast coupled to the centre of the cross-bar.

To prevent the reflector from "whipping" too much in the wind, a small supporting bracket may be used, above and below the crossbar, similar to that used on the dipole.

The cross-bar and the mast are sometimes made of a hardwood such as pitch pine. More often the cross-bar is made of Duralumin tubing about 1 inch to 1.25 inches diameter while the mast can be between 1.5 inches and 2 inches diameter depending upon the height above the rooftop.

With a wooden cross-bar, and mast the construction is fairly simple and it can be taken that the reader has the "know-how". In the case of the metal construction, unless the necessary tools are at hand, it would be as well to get an electrician to thread the tubing. Then fit the cross-bar in two halves into a "T" piece together with the mast.

Fig.4 shows a suggested idea how this could be done.

With this type of aerial good reception up to about 50 miles from the transmitter can be obtained.

### "H" AERIALS AND DIRECTORS

This is a type of aerial which can be used at a still greater distance, up to 80 miles from the transmitter with reliable reception, and is usually a folded dipole. Similar construction is used as is shown for the Band III and F.M. dipoles. The overall construction is much the same as for the previous "H" aerial with an extension to the cross-bar of 0.1 of a wavelength for the director to be fitted in front of the dipole. For a single director the length of Duralumin tubing would vary between about 7 feet and 10 ft. 6 inches in length according to the frequency of the channel being received.

Fig.5 shows the aerial when constructed.

Two aerials with two directors spaced about six feet apart, and connected in parallel are quite useful where severe ghosting is prevalent. This then becomes rather bulky for one person to handle and can be quite a problem to erect, especially on a windy day.

Another director could be added if neces-

Showing the method for fixing Elements.

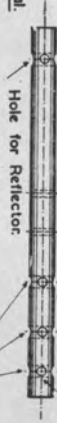
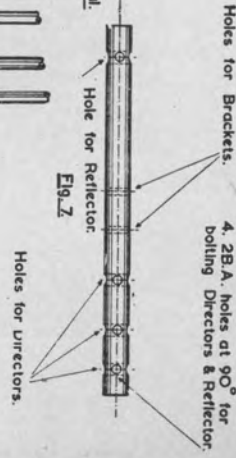


Fig. 7.

Showing completed Aerial.

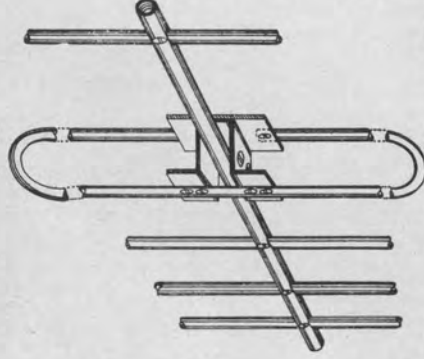


Fig. 6.

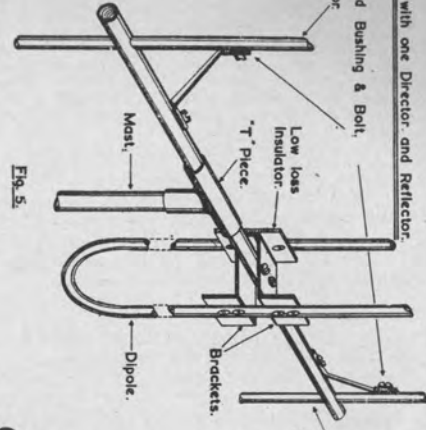
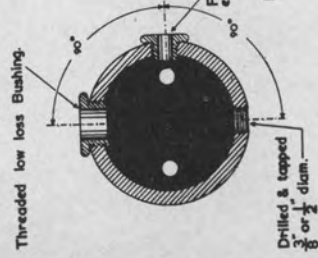


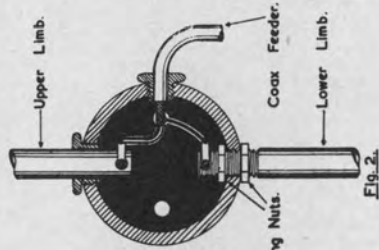
Fig. 5.

Dipole with one Director and Reflector.

Fig. 1.

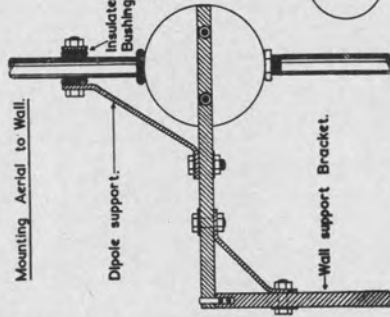


Drilling and tapping Junction Box.



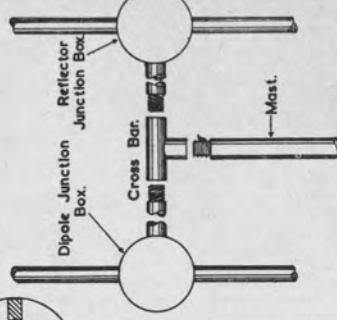
Fitting the Dipole.

Fig. 3.



Mounting Aerial to Wall.

Fig. 4.



H Aerial using threaded Tubing.

sary making the aerial still more sensitive, the length of Duralumin tubing varying between 6 ft. 6 inches and 10 feet, spaced again 0.1 in front of the existing director.

### BAND III

Many viewers will want to receive the alternative T/V programmes, but unless a fairly powerful transmitter is near, it will be of no use trying to receive the signals in a haphazard fashion by "stringing up" a piece of wire in a convenient corner.

To receive the signals, whether near or distant to the transmitter, it is far better to "go about" the job in a sensible manner and have a respectable aerial capable of giving good results.

Band III frequencies are such, that a compact, light and neat aerial can be made, but the constructor must keep as near as possible to the given dimensions, than in the case of Band I.

The constructional details which follow, are to act as guide to the constructor, and it is left to his own ingenuity to make a good finished article.

All aluminium construction is recommended again, because of lightness and ease of handling.

### CONSTRUCTION

Aluminium or Duralumin tubing of 1 inch diameter is required for the support to the aerial, cut to length to build the array desired. For the dipole, reflector and directors 3/8 inch or 1/2 inch diameter aluminium tubing is cut to the lengths required for the frequency of the local transmitter.

The diagram (Fig. 6), shows a five element array, having three directors, a folded dipole and reflector.

Preparing the aluminium crossbar for drilling is the first working. Mark off along the centre length of the tube (Fig. 7) the

positions for the holes necessary for holding the reflector and one, two or three directors, including the holes above and below for fixing the dipole bracket.

The holes for the reflector and directors should be made a fraction larger than the outside diameter of the rod used, so that the rods can slip through but not be "sloppy". Make sure that when drilling the holes are absolutely diametrically opposite. The holes for holding the dipole bracket need be 2BA clearing size, as two long bolts hold the bracket in position.

At right angles to each of the large holes, drill other holes 2BA clearing to hold the rods in position.

Cut off lengths required for the reflector and directors from the 3/8" or 1/2" rod, and drill 2BA clearing holes in the centre of each length.

The dipole support brackets are made from two pieces of heavy gauge aluminium (16 S.W.G.). Mark out, drill the holes and bend to shape (Fig. 8), allowing for, on the one which is to be fixed to the lower side of the support arm, the thickness of the metal used as the two flanges overlap.

Fit these two brackets. To the small flange bolt a piece of low loss insulating material for clamping the open ends of the dipole. Making the dipole is a fairly simple matter, if care is taken.

The remaining piece of aluminium tubing is cut to length. Mark the centre of the rod and at 12 inches either side two other marks. These are where the bending starts for making the dipole.

Bending radius is about 1 1/2 inches, measuring inside the bend. It is left to the discretion of the constructor how best to achieve this as a piece of 3 1/2 inch diameter iron is not always available.

(A piece of standard rainwater piping could

be used). When bending is completed at the appropriate points, two 4BA holes are drilled to correspond with those on the supporting bracket, also a 4BA hole in each of the free ends, 1/2 inch in from the ends.

The dipole can now be fitted and clamped rigidly to the bracket.

Two fly nuts are screwed on the bolts retaining the open ends of the dipole for attaching the "lead in" cable.

The down lead is kept away from metallic guttering and wall by "stand off" support posts to a convenient point where the cable enters the house. Recommended lengths for the tubing required are shown in Table II.

### AN AERIAL FOR F.M. RECEPTION

Unless a powerful transmitter is near for the reception of F.M., to make full use of the quality transmission, a good aerial must be used.

An aerial such as the one shown (Fig. 9) will give good results at long distances from the transmitter.

Again all aluminium construction is suggested, and can be made with tubing of 1/2 inch outside diameter, the lengths of the director and reflector cut so that when fitted into "T" junctions the measurements overall are correct.

The junctions should have inside diameters of 1/2 inch and be threaded. By threading the ends of the tubes to fit these a rigid construction is made. A supporting mast of the same material can be made to screw into the lower limb of the "T".

The dipole itself can be made in a similar manner as that described for Band III and mounted in a similar fashion. Remembering that the completed aerial should be mounted horizontal instead of vertical.

Recommended lengths are shown in Table 3.

### THE "X" AERIAL

An aerial such as this is extremely efficient and has good electrical characteristics.

As this type is of a patented design the actual constructional details cannot be given.

The following details will most likely be of use to the constructor who would like to build an aerial such as this.

Aluminium rod or tubing is used for the elements, as in the case of the previous aeriels, and a wooden structure is made to carry the aerial. The dimensions for each element are given later in the book.

For the construction a block of hardwood such as a piece of oak 6" x 6" x 1 1/2" is needed to carry the elements. Eight "U" clamps made from a strip of 16 S.W.G. aluminium 1/2 inch wide for clamping the tubing or rod to the block, and a connecting strip of the same gauge aluminium for joining the ends of the director.

At approximately a 1/2 inch from the ends of the elements to be clamped to the block a 4BA tapping size hole is drilled in each element to carry the connecting strip and the co-axial feeder.

Tap the 4BA holes, and then fix the elements to the wooden block by the clamps using 1/2 inch No. 6 wood screws. The elements to be at 90° to each other. Join the ends of one pair with the connecting strip and on the other pair bolt two 4BA solder tags for connecting the feeder cable.

A wooden or aluminium mast can now be screwed on to the reverse side of the block. This must be about 1 1/2 inches to 2 inches in diameter, and its length sufficient to raise the aerial clear of the roof or chimney stack to which it is to be rigged.

With this type of aerial good signal strength is received up to 50 miles from the transmitter, with the director elements facing the transmitting station.

Fig. 10 shows the suggested construction.

### THE CONICAL AERIAL

This is perhaps one of the most difficult aeriels to construct, but it has the advantage





that it has a broad frequency response and possesses characteristics similar to those of the dipole.

A wooden framework must be made to support the aerial and two loops of wire to the diameter of the frequency to be received.

The upright ends of the framework have two circles of holes drilled, one inner and one outer, each hole equidistant from its neighbour. Somewhat like the figures on a clockface.

Twenty-four pieces of 18 S.W.G. copper enamelled wire are cut to a length of a few inches over 0.2 of a wavelength of the frequency required. One end of each is cleaned and then six are taken and the clean ends soldered together in a neat pack so that all six are lying side by side. Do the same with the remaining wires, so that there are four packs of six. The soldered ends of these packs are then bent at right angles to the wire and passed through slots made in a piece of Polythene  $3" \times 1" \times \frac{1}{4}"$ , six either side at each end, these are then carefully soldered together to make twelve wires at each end.

The wire loops are clamped with staples to each of the uprights of the wooden frame and the enamel cleaned off. The wire ends are then threaded through the lower set of holes and bent back through the corresponding holes above to make soldered contact with the loops. These wires must be pulled taut to prevent sagging.

A co-axial feeder can be fitted to the centre of the cones, and the whole then mounted on a mast.

The length of the copper wires from the insulator to the loop should be approximately 0.2 of a wavelength for the frequency to be received.

The overall length of the aerial can be found from the formula below at mid frequencies.

$$\text{Length (ft.)} = \frac{936 \times 0.73}{\text{frequency (mc/s)}}$$

while the diameter of the wire loops can be calculated from:

$$\text{Diameter (ft.)} = \frac{114}{\text{frequency (mc/s)}}$$

Diagrams 11 and 12 give details of the construction.

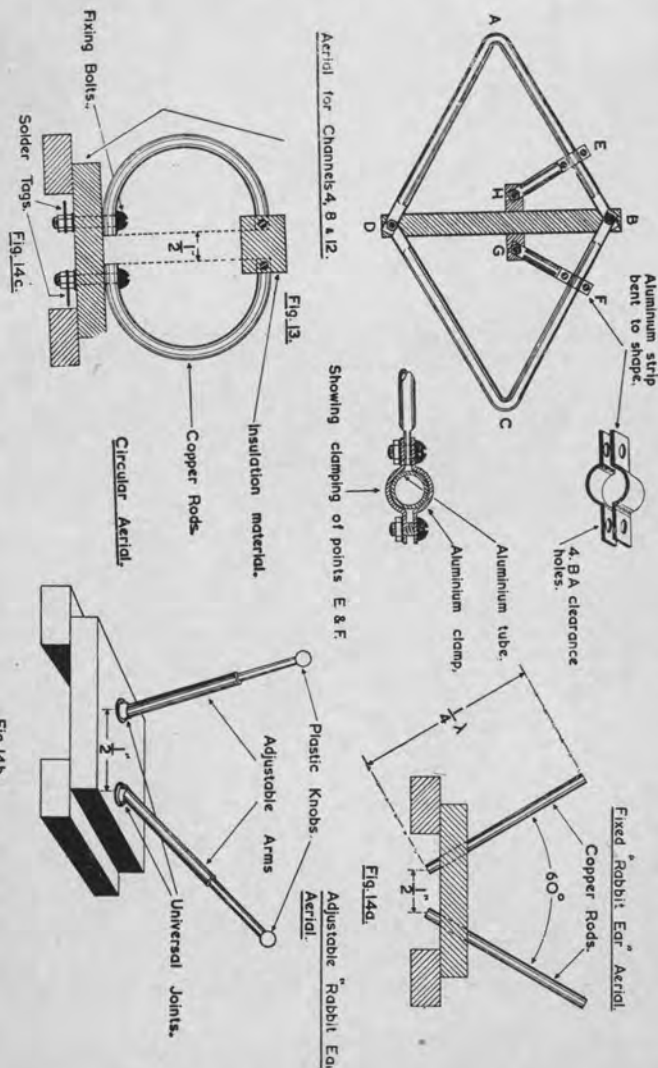
#### SIMPLE F.M. or T/V AERIAL COVERING CHANNELS 4-8-12

Here is a type of aerial which is not often seen, it would appear at first sight to be a rhombic, but looking closer shows two expanded dipoles.

The elements AB, BC, CD, DA, are three-quarters of a wavelength for channel 12, and together equal one wavelength for channel 4, while EB, BF, FG, and HE, are one quarter wavelength for channel 8. A 300Ω feeder cable is used and together gives a good coverage over a wide band.

The aerial is all aluminium construction and the dimensions of sides AB, BC, CD, DA, and EB, BF, FG, and HE, can be calculated from the formula below, also the boom length from B to D. The spacing between GH, is approximately 3 inches. This aerial can be mounted in a loft for indoor use and can be made of stout gauge wire. For use outdoors 3/8 inch aluminium tubing is used.

The elements DA, and AB, as well as BC, and CD, can be made in one length bent at points A and C. B and D are bolted directly on to this cross boom, which also carries a strip of Polythene for bolting elements HE, and FG. A cross boom of wood will be quite suitable and points B and D are flattened, also points EF, and HG, to make bolting easier. Aluminium clamps, made from strip aluminium and bent to shape, to hold HE, and FG, in position on the longer sides, H.G. are bolted to the insulator. A simple mast can be made to carry the aerial from a piece of wood or aluminium tubing. Fig. 13 shows the constructional method. Excellent F.M. reception can be obtained from this type of



aerial with sides AB. and CD. 28½ inches long and a cross boom of 23½ inches.

To obtain the element lengths for any given frequency the formula

$$\frac{1}{2} \text{ wavelength (in inches)} = \frac{2,770}{f \text{ (in Mc/s)}}$$

is used.

The length of the cross boom is equal to 0.825 times one element length.

### AERIALS FOR INDOOR USE ON BAND III

Though not always capable of producing superb results, the indoor aerial has its uses. The signal developed in them is rather poor, and any interference caused by house-wiring is much more likely to be picked up.

These aerials should be placed as far away from the receiver as possible, preferably in a loft, but where the case demands in a room away from the receiver. This again may not be possible, and here it should be mounted fairly high in the room so that any person walking about causes least possible effect on the aerial.

Two types of aerials can be mentioned here, one is the "Rabbit's Ear" and the other "The Circular".

The "Rabbit's Ear" can be made from a block of wood either square or circular, mounted on runners to raise the block. Two pieces of copper rod are fitted into holes drilled at an angle of about 30° from the vertical, so that the copper rods when fitted make an angle of 60° to each other, their ends when protruding through the wood base are half an inch apart. These copper rods should be a quarter wavelength long.

The co-axial cable can be fitted to the short stubs protruding through the wood and taken to the receiver.

As quite a number of T/V chassis are now "live", it is advantageous to isolate the aerial from the set by a small capacitor in each lead, say about 50 pf - 75 pf each.

Fig. 14a shows the "Rabbit's Ear" aerial.

Perhaps the "Rabbit's Ear" aerial could be made somewhat more versatile by an enthusiastic constructor, in so far as fitting the rods into universal joints and making the

aerial rods capable of being lengthened or shortened at will (Fig. 14b).

Quite often a "Rabbit's Ear" will give a better result than an outdoor type of aerial, and by placing the elements at various angles "ghosting" can often be overcome rather more easily, although it must be remembered that the signal pick-up is considerably less.

The constructor can, when the aerial is connected to the receiver, experiment to find the best positions by rotating the aerial, adjusting the length of the elements and by placing them at various angles. Maybe the final result will not look anything like it should do, but if good results are obtained that is all that matters.

These refinements can be made by purchasing two small universal joints, such as are used for mounting cameras at any angle for the elements. Copper tubing of two different diameters comprise the aerial. The narrower gauge being rubbed down with emery cloth to make a snug fit into the larger for length adjustment purposes. One end of each of the smaller gauge copper rods can be threaded to take a knob, cut from a very large plastic knitting needle for ease of handling when adjustments are made. This can be drilled and tapped to match the rod.

The two sections can then be mounted on to a wooden block. On completion, the co-axial cable can be connected.

A Circular Aerial (Fig. 14c) has an advantage over the "Rabbit's Ear" in the fact that it does possess a directive property and can be rotated to obtain best results.

The construction of such an aerial is very similar to the one previously described.

A block of wood is mounted on runners to carry the rods of ½ inch or ⅜ inch copper. The rods are bent in a semi-circle, and fitted to the block by either small "U" shaped clamps or perhaps better still by bolts, sufficiently long to pass through the rods and the block to allow the co-axial cable to be connected below the block.

Small holes are drilled in each end of the rods, the lower pair fix the aerial to the base and the upper pair are bolted to a piece of

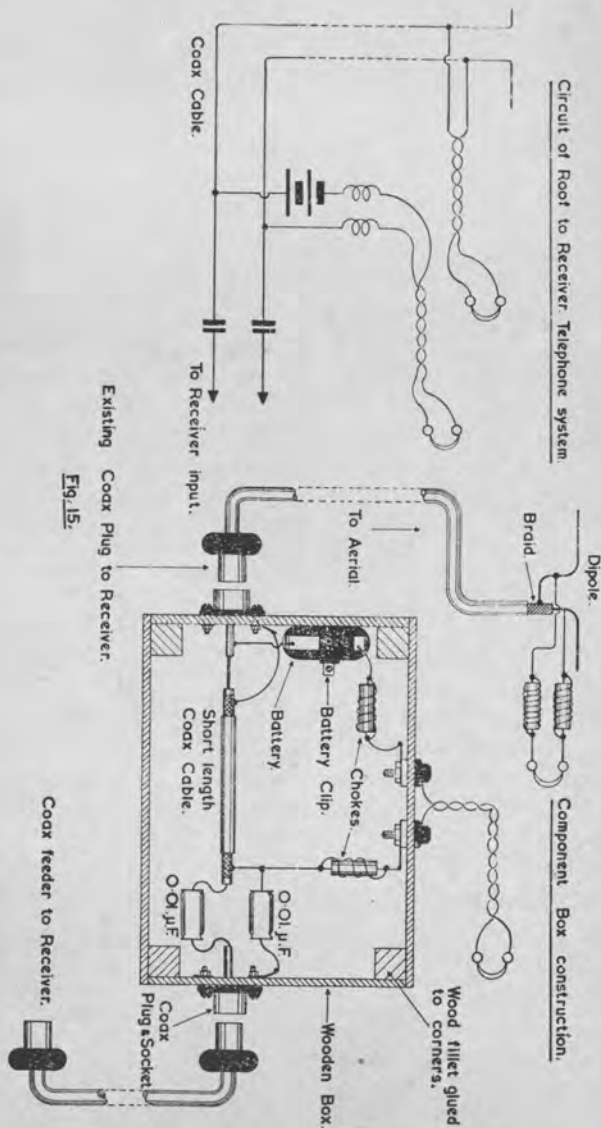


Fig. 15.

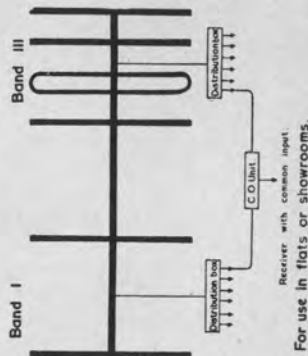


Fig. 18b.

Combined.

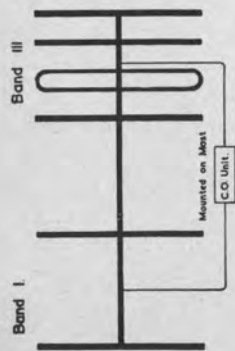


Combined Aerial when the receiver has separate Band I and Band III input sockets.

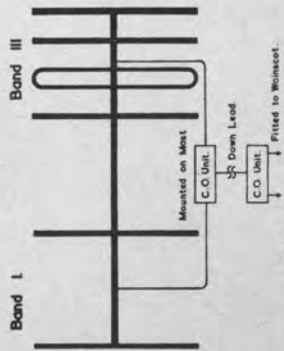


For use in flats or showrooms.

Fig. 16.



Two separate Band I and Band III Aerials matched to 70-80 ohms input socket.



Overcoming use of two very long downleads.

are operating at one time.

#### SUGGESTED METHOD FOR LASHING TO CHIMNEY

Here, perhaps, a word on Chimney Lashings will not be out of place. The chimney stack of a house is a very convenient place to site an aerial, as at least there is something upright to give a useful start.

Two sets of lashings will be needed to give the mast full support.

The metal brackets for carrying the mast are made of mild steel and should be 1 inch wide by  $\frac{1}{4}$  inch thick. "U" bolts hold the mast in position when lashed to the chimney. The pieces of mild steel for making the main part of the bracket are made red hot and bent to shape as in the diagram. The overall measurements are left to the constructor to suit particular requirements although suggested lengths are shown in Fig. 17a.

To lash the masting "J" bolts are used with strong galvanised iron cable of seven

strand 20 S.W.G. Corner pieces are made from sheet iron so that the cable does not cut into the brickwork.

Fig. 17b indicates the shape of the main brackets and the suggested positioning of holes, while Fig. 17c shows in plan view the mast in the "U" bolt clamping.

For ease of slipping the galvanised cable over the "J" bolts a thimble can be used to terminate the ends. The cable is stranded back a short distance, say six or seven inches, and the thimble is then placed in position, so that the frayed ends of the cable are available to bind round the main cable. Each of the strands are then wrapped round the main cable to give a neat strong finish as shown in Fig. 18a.

Fig. 18b shows a plan view of the completed construction.

TABLE 1

#### FREQUENCIES ALLOTTED TO BAND I CHANNELS

| Channel | Vision Mc/s | Sound Mc/s |
|---------|-------------|------------|
| 1       | 45.0        | 41.5       |
| 2       | 51.75       | 48.25      |
| 3       | 56.75       | 53.25      |
| 4       | 61.75       | 58.25      |
| 5       | 66.75       | 63.25      |

#### Lengths of Tubing for Channel

|   |                      |
|---|----------------------|
| 1 | 10' 10"              |
| 2 | 9' 4"                |
| 3 | 8' 6"                |
| 4 | 7' 9"                |
| 5 | 7' 2 $\frac{1}{2}$ " |

#### Dipole

|   |                      |
|---|----------------------|
| 1 | 10' 10"              |
| 2 | 9' 4"                |
| 3 | 8' 6"                |
| 4 | 7' 9"                |
| 5 | 7' 2 $\frac{1}{2}$ " |

#### Reflector

|   |                       |
|---|-----------------------|
| 1 | 11' 2"                |
| 2 | 9' 8 $\frac{1}{2}$ "  |
| 3 | 8' 10 $\frac{1}{2}$ " |
| 4 | 8' 0"                 |
| 5 | 7' 5 $\frac{1}{2}$ "  |

#### Directors

| 1.                    | 2.                   |
|-----------------------|----------------------|
| 10' 5"                | 10' 0"               |
| 9' 0"                 | 8' 8"                |
| 8' 2"                 | 7' 11"               |
| 7' 5 $\frac{1}{2}$ "  | 7' 2 $\frac{1}{2}$ " |
| 6' 11 $\frac{1}{2}$ " | 6' 9"                |

#### SPACING BETWEEN DIRECTORS AND DIPOLE

|         |                      |
|---------|----------------------|
| Channel |                      |
| 1       | 2' 2 $\frac{1}{2}$ " |
| 2       | 1' 11"               |
| 3       | 1' 9"                |
| 4       | 1' 7"                |
| 5       | 1' 5"                |

Reflector  $\frac{1}{4}$  wavelength behind Dipole

| "H" AERIAL MEASUREMENTS |           |           |  |
|-------------------------|-----------|-----------|--|
| Channel                 | Reflector | Cross Bar |  |
| 1                       | 11' 2"    | 4' 6"     |  |
| 2                       | 9' 8"     | 4' 6"     |  |
| 3                       | 8' 10"    | 4' 6"     |  |
| 4                       | 8' 0"     | 4' 1"     |  |
| 5                       | 7' 5 1/2" | 3' 9"     |  |

TABLE 2  
FREQUENCIES ALLOTTED TO BAND III CHANNELS

| Channel | Vision Mc/s | Sound Mc/s |
|---------|-------------|------------|
| 6       | 179.75      | 176.25     |
| 7       | 184.75      | 181.25     |
| 8       | 189.75      | 186.25     |
| 9       | 194.75      | 191.25     |
| 10      | 199.75      | 196.25     |
| 11      | 204.75      | 201.25     |
| 12      | 209.75      | 206.25     |
| 13      | 214.75      | 211.25     |

TUBING LENGTHS FOR ELEMENTS

| Channel | Dipole | Directors |            |           | Reflector | Spacing between Directors and Reflector |            |
|---------|--------|-----------|------------|-----------|-----------|---|------------|
|         |        | 1.        | 2.         | 3.        |           | Dipole                                  | Dipole     |
| 6       | 5' 4"  | 2' 6"     | 2' 5"      | 2' 4"     | 2' 9"     | 1' 1"                                   | 1' 1 1/2"  |
| 7       | 5' 2"  | 2' 5"     | 2' 4"      | 2' 2 1/2" | 2' 8"     | 1' 0"                                   | 1' 1 1/2"  |
| 8       | 5' 0"  | 2' 4 1/2" | 2' 3"      | 2' 1 1/2" | 2' 7 1/2" | 0' 11 1/2"                              | 1' 1"      |
| 9       | 4' 10" | 2' 3 1/2" | 2' 2 1/2"  | 2' 1"     | 2' 6 1/2" | 0' 11 1/2"                              | 1' 0 1/2"  |
| 10      | 4' 9"  | 2' 3"     | 2' 2"      | 2' 0 1/2" | 2' 5 1/2" | 0' 11"                                  | 1' 0 1/2"  |
| 11      | 4' 7"  | 2' 2 1/2" | 2' 1"      | 2' 0"     | 2' 5"     | 0' 10 1/2"                              | 1' 0 1/2"  |
| 12      | 4' 6"  | 2' 1 1/2" | 2' 0"      | 1' 11"    | 2' 4 1/2" | 0' 10 1/2"                              | 1' 0"      |
| 13      | 4' 5"  | 2' 0 1/2" | 1' 11 1/2" | 1' 10"    | 2' 3 1/2" | 0' 10 1/2"                              | 0' 11 1/2" |

TABLE 3  
DIMENSION FOR F.M. AERIALS

|                   | Reflector | Dipole | Director   | Spacing             |                    |
|-------------------|-----------|--------|------------|---------------------|--------------------|
|                   |           |        |            | Reflector to Dipole | Dipole to Director |
| Wrotham           | 5' 6"     | 10' 3" | 4' 10 1/2" | 2' 1"               | 1' 0 1/2"          |
| North Hessary Tor | 5' 4 1/2" | 10' 2" | 4' 10 1/2" | 2' 1 1/2"           | 1' 1"              |
| Sutton Coldfield  | 5' 4 1/2" | 10' 1" | 4' 10 1/2" | 2' 1 1/2"           | 1' 1"              |
| Pontop Pike       | 5' 4 1/2" | 10' 1" | 4' 10 1/2" | 2' 1 1/2"           | 1' 1"              |
| Meldrum           | 5' 4 1/2" | 10' 1" | 4' 10 1/2" | 2' 1 1/2"           | 1' 1"              |
| Blaen Plwy        | 5' 4 1/2" | 10' 1" | 4' 10 1/2" | 2' 1 1/2"           | 1' 1"              |
| Holme Moss        | 5' 6"     | 10' 1" | 4' 10 1/2" | 2' 1"               | 1' 0 1/2"          |
| Tacolneston       | 5' 5"     | 10' 1" | 4' 10 1/2" | 2' 1"               | 1' 0 1/2"          |
| Wenvoe            | 5' 3"     | 9' 10" | 4' 9 1/2"  | 2' 1"               | 1' 0 1/2"          |
| Divis             | 5' 3"     | 9' 10" | 4' 9 1/2"  | 2' 1"               | 1' 0 1/2"          |

TABLE 4

"X" AERIAL DIMENSION

Two pieces each of the following lengths are required.

| Channel | Director  | Dipole    |
|---------|-----------|-----------|
| 1       | 5' 2 1/2" | 5' 11"    |
| 2       | 4' 5"     | 5' 2"     |
| 3       | 4' 1 1/2" | 4' 6 1/2" |
| 4       | 3' 7 1/2" | 4' 0"     |
| 5       | 3' 4"     | 3' 6"     |

TABLE 5

Recommended dimensions for the "Rabbit's Ear" and Circular Aerials.  
Two lengths of each required.

| Channel | Length  |
|---------|---------|
| 6       | 16"     |
| 7       | 15 1/4" |
| 8       | 15"     |
| 9       | 14 1/4" |
| 10      | 14 1/2" |
| 11      | 13 3/4" |
| 12      | 13 1/4" |
| 13      | 13 1/2" |

BANDS

|   |                 |                           |
|---|-----------------|---------------------------|
| 1 | 41. - 68 Mc/s.  | } V.H.F. 30 - 300 Mc/s.   |
| 2 | 87.5-100 Mc/s.  |                           |
| 3 | 174. -216 Mc/s. |                           |
| 4 | 470. -585 Mc/s. | } U.H.F. 300 - 3000 Mc/s. |
| 5 | 610. -960 Mc/s. |                           |

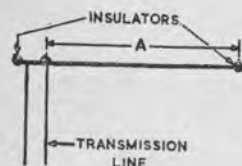
TELEVISION TRANSMITTERS  
BRITISH BROADCASTING ASSOCIATION

| Stations          | ch | kW   | Pol | Stations      | ch | kW   | Pol. |
|-------------------|----|------|-----|---------------|----|------|------|
| Crystal Palace    | 1  | 200  | V   | Sandale       | 4  | 30*  | H    |
| Ashkirk           | 1  | 18*  | V   | Melvaig       | 4  | 25*  | V    |
| Divis             | 1  | 35*  | V   | Meldrum       | 4  | 17*  | H    |
| Redruth           | 1  | 10*  | H   | Manningtree   | 4  | 5*   | H    |
| Thrumster         | 1  | 7*   | V   | Haverfordwest | 4  | 10*  | H    |
| Llanddona         | 1  | 6*   | V   | Les Platons   | 4  | 1    | H    |
| Llandrindod Wells | 1  | 1.5  | H   | Oban          | 4  | 3*   | V    |
| Redruth           | 1  | 10*  | H   | Wenvoe        | 5  | 100  | V    |
| Holme Moss        | 2  | 100  | V   | Orkney        | 5  | 15*  | V    |
| Rosemarkie        | 2  | 20*  | H   | Pontop Pike   | 5  | 17   | H    |
| No. Hessary Tor   | 2  | 15*  | V   | Forfar        | 5  | 5*   | V    |
| Swingate          | 2  | 1.5* | V   | Br. Mountain  | 5  | 7*   | V    |
| Londonderry       | 2  | 1.5* | H   | Douglas       | 5  | 3*   | V    |
| Kirk o'Shotts     | 3  | 100  | V   | Fort William  | 5  | 1.5  | H    |
| Rowridge          | 3  | 100* | V   | Peterborough  | 5  | 1    | H    |
| Tacolneston       | 3  | 45*  | H   | Moel-y-parc   | 6  | 20*  | V    |
| Skriaig           | 3  | 12*  | H   | Sandale       | 6  | 70*  | H    |
| Bressay           | 3  | 6*   | V   | Bedford       | 10 | 3*   | H    |
| Morecambe Bay     | 3  | 5*   | H   | Winter Hill   | 12 | 125* | V    |
| Blaen-plwyf       | 3  | 3*   | H   | Belmont       | 13 | 20   | V    |
| Sutton Coldfield  | 4  | 100  | V   | Wenvoe        | 13 | 200* | V    |

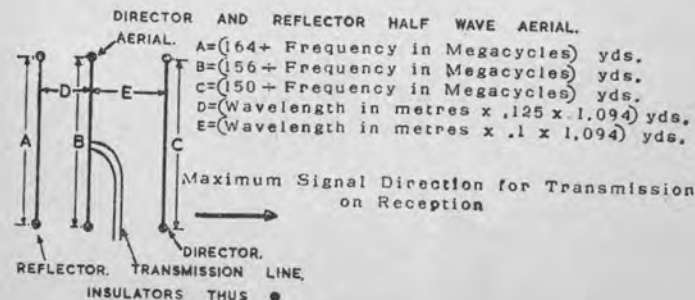
| Stations          | ch | kW  | Pol | Stations        | ch | kW  | Pol. |
|-------------------|----|-----|-----|-----------------|----|-----|------|
| Ridge Hill        | 6  | 10  | V   | Winter Hill     | 9  | 100 | V    |
| Sandy Heath       | 6  | 30  | H   | Arfon           | 10 | 10  | H    |
| Scarborough       | 6  | 1   | H   | Aviemore        | 10 | 1   | H    |
| Sheffield         | 6  | 0.1 | H   | Black Hill      | 10 | 475 | V    |
| Newhaven          | 6  | 1   | V   | Dover           | 10 | 100 | V    |
| Bala              | 7  | 0.1 | V   | Emley Moor      | 10 | 200 | V    |
| Belmont           | 7  | 20  | V   | St. Hilary      | 10 | 200 | V    |
| St. Hilary (W)    | 7  | 100 | V   | Abergavenny     | 11 | 0.1 | H    |
| Whitehaven        | 7  | 0.1 | V   | Angus           | 11 | 50  | V    |
| Bath              | 8  | 0.5 | H   | Caldbeck        | 11 | 100 | H    |
| Burnhope          | 8  | 100 | H   | Chillerton Down | 11 | 100 | V    |
| Lichfield         | 8  | 400 | V   | Huntshaw X      | 11 | 0.5 | H    |
| Presely           | 8  | 100 | H   | Llandovery      | 11 | 0.1 | H    |
| Richmond Hill     | 8  | 10  | H   | Mendlesham      | 11 | 200 | H    |
| Rothsay           | 8  | 1   | V   | Moel-y-parc     | 11 | 25  | V    |
| Rumster Fst       | 8  | 30  | V   | Caradon Hill    | 12 | 200 | V    |
| Strabane          | 8  | 100 | V   | Lethanhill      | 12 | 3   | V    |
| Brecon            | 8  | 0.1 | H   | Membury         | 12 | 30  | H    |
| Black Mtn         | 9  | 100 | H   | Mounteagle      | 12 | 50  | H    |
| Croydon           | 9  | 350 | V   | Ballycastle     | 13 | 0.1 | H    |
| Durris            | 9  | 400 | H   | Rosneath        | 13 | 0.1 | V    |
| Fremont Pt.       | 9  | 10  | H   | Selkirk         | 13 | 25  | V    |
| Llandrindod Wells | 9  | 3   | H   | Ffestinlog      | 13 | 0.1 | V    |
| Stockland Hill    | 9  | 100 | V   |                 |    |     |      |

# FORMULAS FOR AERIALS CUT TO RESONATE AT ANY DESIRED FREQUENCY.

LONG WIRE MULTIBAND ZEPPELIN AERIAL.



$A = [164 \text{ (Number of Half Waves on the Aerial Required, Minus .05)} \div \text{(Frequency in Megacycles of most used brand)}] \text{ yds.}$



## BRITISH LOCAL RADIO STATIONS

| Town           | Station                    |     | BAND |      |            |
|----------------|----------------------------|-----|------|------|------------|
|                |                            |     | MW   | VHF  |            |
|                |                            |     | m    | kHz  | MHz        |
| Birmingham     | Radio Birmingham           | BBC | 206  | 1456 | 95.6       |
| Birmingham     | Sound Broadcasting         | IBA | 261  | 1151 | 94.8       |
| Blackburn      | Radio Blackburn            | BBC | 351  | 854  | 96.4       |
| Brighton       | Radio Brighton             | BBC | 202  | 1485 | 95.3       |
| Bristol        | Radio Bristol              | BBC | 194  | 1546 | 95.5       |
| Carlisle       | Radio Carlisle             | BBC | 397  | 755  | 95.6       |
| Carlisle       | Radio Carlisle             | BBC | 206  | 1456 | -          |
| Chatham        | Radio Medway               | BBC | 202  | 1485 | 95.8       |
| Derby          | Radio Derby                | BBC | 269  | 1151 | 96.5 Main  |
| Derby          | Radio Derby                | BBC | -    | -    | 94.2 Relay |
| Edinburgh*     | Radio Forth                | IBA | 194  | 1546 | 96.8       |
| Glasgow        | Clyde Radio                | IBA | 261  | 1151 | 95.1       |
| Hull           | Radio Humberside           | BBC | 202  | 1485 | 96.9       |
| Leeds          | Radio Leeds                | BBC | 271  | 1107 | 92.4       |
| Leicester      | Radio Leicester            | BBC | 188  | 1596 | 95.1       |
| Liverpool      | Radio Merseyside           | BBC | 202  | 1485 | 95.8       |
| Liverpool*     | Sound of Mersey            | IBA | 194  | 1546 | 96.7       |
| London         | Radio London               | BBC | 206  | 1456 | 94.9       |
| London         | London Broadcasting        | IBA | 417  | 719  | 97.3 Now   |
| London         | London Broadcasting        | IBA | 261  | 1151 | 97.3 Later |
| London         | Capitol Radio              | IBA | 539  | 557  | 95.8 Now   |
| London         | Capital Radio              | IBA | 194  | 1546 | 95.8 Later |
| Manchester     | Radio Manchester           | BBC | 206  | 1456 | 95.1       |
| Manchester     | Piccadilly Radio           | IBA | 261  | 1151 | 97.0       |
| Newcastle/T    | Radio Newcastle            | BBC | 206  | 1456 | 95.4       |
| Newcastle/T*   | Metropolitan Broad-casting | IBA | 261  | 1151 | 97.0       |
| Nottingham     | Radio Nottingham           | BBC | 197  | 1523 | 95.4       |
| Oxford         | Radio Oxford               | BBC | 202  | 1485 | 95.2       |
| Plymouth*      | -                          | IBA | 261  | 1151 | 96.0       |
| Sheffield      | Radio Sheffield            | BBC | 290  | 1034 | 97.4 Main  |
| Sheffield      | Radio Sheffield            | BBC | -    | -    | 88.6 Relay |
| Sheffield*     | -                          | IBA | 194  | 1546 | 95.2 Main  |
| Sheffield*     | -                          | IBA | -    | -    | 95.9 Relay |
| Southampton    | Radio Solent               | BBC | 301  | 997  | 96.1 Main  |
| Southampton    | Radio Solent               | BBC | 188  | 1596 | - Relay    |
| Stoke on Trent | Radio Stoke                | BBC | 200  | 1500 | 96.1       |
| Swansea*       | Swansea Sound              | IBA | 287  | 1167 | 95.1       |

\* Not Yet Open

The following IBA stations will follow in due course : Belfast / Blackburn / Bournemouth / Bradford / Brighton / Bristol / Cardiff / Coventry / Huddersfield / Ipswich / Leeds / Nottingham / Portsmouth / Reading / Teesside / Wolverhampton.

BBC = British Broadcasting Corporation  
IBA = Independent Broadcasting Authority

TELEVISION STATIONS OF EUROPE CAPABLE OF BEING RECEIVED  
IN GREAT BRITAIN UNDER SUITABLE CONDITIONS

| T.V. STATION  | CHANNEL         | KW   |
|---------------|-----------------|------|
| Aalter        | Belgium E2      | 100  |
| Anlier        | Belgium E11     | 10   |
| Froidmont     | Belgium E7      | 20   |
| Genk          | Belgium E44     | 200  |
| Oostvleteren  | Belgium E49     | 20   |
| Ougree        | Belgium E3      | 100  |
| Riviere       | Belgium E52     | 200  |
| Wavre         | Belgium E8      | 100  |
| Wavre         | Belgium E10     | 100  |
| Esbjerg       | Denmark E9      | 50   |
| Kolding       | Denmark E9      | 100  |
| Abbeville     | France E57      | 10   |
| Amiens        | France E47      | 20   |
| Brest         | France E21      | 50   |
| Caen          | France E25      | 50   |
| Le Havre      | France E43      | 10   |
| Le Mans       | France E27      | 50   |
| Lille         | France E21      | 50   |
| Paris         | France E22      | 25   |
| Reims         | France E46      | 50   |
| Rennes        | France E45      | 50   |
| Rouen         | France E33      | 20   |
| Carlow        | Ireland 1F      | 100  |
| Clare         | Ireland 1B      | 80   |
| Cork          | Ireland 1D      | 100  |
| Dublin        | Ireland 1H      | 100  |
| Dublin*       | Ireland B7      | 100  |
| Sligo         | Ireland 1J      | 100  |
| Sligo*        | Ireland B11     | 100  |
| Arnhem        | Netherlands E50 | 30   |
| Goes          | Netherlands E7  | 10   |
| Goes          | Netherlands E29 | 125  |
| Goes          | Netherlands E32 | 125  |
| Lopik         | Netherlands E4  | 100  |
| Lopik         | Netherlands E27 | 1000 |
| Markelo       | Netherlands E7  | 30   |
| Markelo       | Netherlands E54 | 300  |
| Roermond      | Netherlands E5  | 50   |
| Roermond      | Netherlands E31 | 500  |
| Smilde        | Netherlands E6  | 50   |
| Smilde        | Netherlands E47 | 1000 |
| Wieringermeer | Netherlands E39 | 300  |
| Wieringermeer | Netherlands E45 | 300  |

All above Transmitters operate on 625 lines system except those with \*  
which operate on 405 lines system.

WORLD TV TRANSMISSION CHARACTERISTICS

| STANDARD                   | A      | B      | C      | D      | E      |
|----------------------------|--------|--------|--------|--------|--------|
| Lines                      | 405    | 625    | 625    | 625    | 819    |
| Channel Width MHz          | 5      | 7      | 7      | 8      | 14     |
| Modulation Sound           | AM     | FM     | AM     | FM     | AM     |
| Modulation Video           | +      | -      | +      | -      | +      |
| Band Width Video MHz       | 3      | 5      | 5      | 6      | 10     |
| Separation Video-Sound MHz | -3.5   | +5.5   | +5.5   | +6.5   | +11.15 |
| Picture Frequency Hz       | 25     | 25     | 25     | 25     | 25     |
| Sideband Vestigal MHz      | 0.75   | 0.75   | 0.75   | 0.75   | 2.00   |
| Field Frequency Hz         | 50     | 50     | 50     | 50     | 50     |
| Line Frequency kHz         | 10.125 | 15.625 | 15.625 | 15.625 | 20.475 |

| STANDARD                   | G      | H      | I      | K      | L      | M      |
|----------------------------|--------|--------|--------|--------|--------|--------|
| Lines                      | 625    | 625    | 625    | 625    | 625    | 525    |
| Channel Width MHz          | 8      | 8      | 8      | 8      | 8      | 6      |
| Modulation Sound           | FM     | FM     | FM     | FM     | AM     | FM     |
| Modulation Video           | -      | -      | -      | -      | +      | -      |
| Band Width Video MHz       | 5      | 5      | 5.5    | 6      | 6      | 42     |
| Separation Video-Sound MHz | +5.5   | +5.5   | +6     | +6.5   | +6.5   | +4.5   |
| Picture Frequency Hz       | 25     | 25     | 25     | 25     | 25     | 30     |
| Sideband Vestigal MHz      | 0.75   | 1.25   | 1.25   | 0.75   | 1.25   | 0.75   |
| Field Frequency Hz         | 50     | 50     | 50     | 50     | 50     | 60     |
| Line Frequency kHz         | 15.625 | 15.625 | 15.625 | 15.625 | 15.625 | 15.750 |

AM = Amplitude Modulated + = Positive  
FM = Frequency Modulated - = Negative

|        |  |
|--------|--|
| TYPE A | Ireland, U.K.  |
| TYPE B | Austria, Australia, West Germany, Denmark, Finland, AFN (American Forces Network - Germany), East Germany, Gibraltar, Greece, Netherlands, Iceland, Italy, Malta, Norway, Portugal, Spain, Sweden, Switzerland, Yugoslavia, Algeria, Canary Isles, Egypt, Ethiopia, Ghana, Kenya, Liberia, Libya, Madeira, Mauritius, Morocco, Nigeria, Rhodesia, Spanish Sahara, Senegal, Sierra Leone, Somalia, Sudan, Tunisia, Uganda, Zaire, Zambia, India, Indonesia, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Malaysia, Pakistan, Qatar, Sabah, Saudi Arabia, Singapore, Syria, Thailand, Turkey, United Arab Emirates, Yemen, New Zealand |
| TYPE C | Belgium, Luxembourg  |
| TYPE D | Albania, Bulgaria, Czechoslovakia, Hungary, Poland, Romania, U.S.S.R., Congo, Upper Volta, China, Mongolia   |
| TYPE E | France, Monaco   |
| TYPE G | Austria, Denmark, Finland, West Germany, AFN (American Forces Network - Germany), East Germany, Netherlands, Italy, Norway, Portugal, Spain, Sweden, Switzerland.  |
| TYPE H | Belgium  |
| TYPE I | Ireland, U.K.  |
| TYPE K | Afars & Issas, Gabon, Ivory Coast, Malagasy, Reunion, New Caledonia, Tahiti, St Pierre & Miquelon, Guadeloupe, Martinique, French Guiana   |
| TYPE L | France, Luxembourg   |
| TYPE M | Azores (American Forces Network), U.S.A., Taiwan, Japan, Khmer Republic, Korea (Republic), Philippines, Vietnam, Guam, Hawaii, Johnston Island, Midway Island, Samoa, Pacific Trust Territories, Bermuda, Canada, Greenland, Antigua, Barbados, Costa Rica, Cuba, Dominican Republic, El Salvador, Guatemala, Haite, Honduras, Jamaica, Mexico, Netherlands, Antilles, Micaragua, Panama, Puerto Rico, St. Kitts, Trinidad & Tobago, Virgin Isles, Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Surinam, Uruguay, Venezuela   |



# DIMENSIONS

A = dipole  
B = reflector  
C = 1st. director  
D = 2nd. director  
E = separation between directors and dipole  
F = separation between reflector and dipole.

| CHANNEL | A         | B         | C          | D          | E         | F         |
|---------|-----------|-----------|------------|------------|-----------|-----------|
| 1       | 10' 10"   | 11' 2"    | 10' 5"     | 10' 0"     | 2' 2 1/2" | 4' 5"     |
| 2       | 9' 4"     | 9' 8 1/2" | 9' 0"      | 8' 8"      | 1' 11"    | 3' 10"    |
| 3       | 8' 6"     | 8' 10"    | 8' 2"      | 7' 11"     | 1' 9"     | 3' 6"     |
| 4       | 7' 9"     | 8' 0"     | 7' 5 1/2"  | 7' 2 1/2"  | 1' 7"     | 3' 2"     |
| 5       | 7' 2 1/2" | 7' 5 1/2" | 6' 11 1/2" | 6' 9"      | 1' 5"     | 2' 10"    |
| 6       | 2' 8"     | 2' 9"     | 2' 6"      | 2' 5"      | 1' 1"     | 1' 1 1/2" |
| 7       | 2' 7"     | 2' 8"     | 2' 5"      | 2' 4"      | 1' 0"     | 1' 1 1/2" |
| 8       | 2' 6"     | 2' 7 1/2" | 2' 4 1/2"  | 2' 3"      | 11 1/2"   | 1' 1"     |
| 9       | 2' 5"     | 2' 6 1/2" | 2' 3 1/2"  | 2' 2 1/2"  | 11 1/2"   | 1' 1/2"   |
| 10      | 2' 4 1/2" | 2' 5 1/2" | 2' 3"      | 2' 2"      | 11"       | 1' 1/2"   |
| 11      | 2' 3 1/2" | 2' 5"     | 2' 2 1/2"  | 2' 1"      | 10 1/2"   | 1' 1/2"   |
| 12      | 2' 3"     | 2' 4 1/2" | 2' 1 1/2"  | 2' 0"      | 10 1/2"   | 1' 0"     |
| 13      | 2' 2 1/2" | 2' 3 1/2" | 2' 1/2"    | 1' 11 1/2" | 10 1/2"   | 11 1/2"   |

| STATION           | FM        |           | AERIALS    |       |           |  |
|-------------------|-----------|-----------|------------|-------|-----------|--|
|                   | A         | B         | C          | E     | F         |  |
| Wrotham           | 5' 1 1/2" | 5' 6"     | 4' 10 1/2" | 1' 3" | 2' 1"     |  |
| North Hessery Tor | 5' 1"     | 5' 4 1/2" | 4' 10 1/2" | 1' 1" | 2' 1 1/2" |  |
| Sutton Coldfield  | 5' 1"     | 5' 4 1/2" | 4' 10 1/2" | 1' 1" | 2' 1 1/2" |  |
| Pontop Pike       | 5' 1"     | 5' 4 1/2" | 4' 10 1/2" | 1' 1" | 2' 1 1/2" |  |
| Meldrum           | 5' 1"     | 5' 4 1/2" | 4' 10 1/2" | 1' 1" | 2' 1 1/2" |  |
| Blaen Plwyf       | 5' 1"     | 5' 4 1/2" | 4' 10 1/2" | 1' 1" | 2' 1 1/2" |  |
| Holme Moss        | 5' 1 1/2" | 5' 6"     | 4' 10"     | 1' 3" | 2' 1"     |  |
| Wenvoe            | 4' 11"    | 5' 3"     | 4' 9 1/2"  | 1' 3" | 2' 1"     |  |
| Divis             | 4' 11"    | 5' 3"     | 4' 9 1/2"  | 1' 3" | 2' 1"     |  |
| Norwich           | 4' 11"    | 5' 3"     | 4' 9 1/2"  | 1' 3" | 2' 1"     |  |
| Rowbridge         | 5' 1 1/2" | 5' 4 1/2" | 4' 10 1/2" | 1' 1" | 2' 1 1/2" |  |
| Kirk O'Shotts     | 4' 11"    | 5' 3"     | 4' 9 1/2"  | 1' 3" | 2' 1"     |  |
| Sandale           | 4' 11"    | 5' 3"     | 4' 9 1/2"  | 1' 3" | 2' 1"     |  |
| Rosemarie         | 5' 1 1/2" | 5' 6"     | 4' 10"     | 1' 3" | 2' 1"     |  |
| Llanddona         | 5' 1 1/2" | 5' 6"     | 4' 10"     | 1' 3" | 2' 1"     |  |
| Llangollen        | 5' 1 1/2" | 5' 6"     | 4' 10"     | 1' 3" | 2' 1"     |  |



# BERNARDS & BABANI PRESS RADIO AND ELECTRONICS BOOKS

|      |   |     |
|------|---|-----|
| BP1  | First Book of Transistor Equivalents and Substitutes  | 40p |
| BP   | Handbook of Radio, TV, Ind & Transmitting Tube & Valve Equivalents                                  | 60p |
| BP3  | Handbook of Tested Transistor Circuits  | 40p |
| BP4  | World's Short, Medium & Long Wave, FM & TV Broadcasting<br>Stations Listing (International Edition) | 60p |
| BP5  | Handbook of Simple Transistor Circuits  | 35p |
| BP6  | Engineers and Machinists Reference Tables   | 20p |
| BP7  | Radio and Electronic Colour Codes and Data Chart  | 15p |
| BP8  | Sound and Loudspeaker Manual  | 50p |
| BP9  | 38 Practical Tested Diode Circuits for the Home Constructor   | 35p |
| BP10 | Modern Crystal and Transistor Set Circuits for Beginners  | 35p |
| BP11 | Practical Transistor Novelty Circuits   | 40p |
| BP12 | Hi-Fi, P.A., Guitar & Discotheque Amplifier Design H/book   | 75p |
| BP13 | Electronic Novelties for the Motorist   | 50p |
| BP14 | Second Book of Transistor Equivalents   | 95p |
| BP15 | Constructors Manual of Electronic Circuits for the Home   | 50p |
| BP16 | Handbook of Electronic Circuits for the Amateur Photographer  | 60p |
| BP17 | Radio Receiver Construction Handbook using IC's and Transistors                                     | 60p |
| BP18 | Boys & Beginners Book of Practical Radio & Electronics  | 60p |
| BP19 | Second Constructors Manual, Electronic Circuits for the Home  | 75p |
| BP20 | Ham's Handbook of Radio and Electronic Circuits   | 75p |
| BP21 | Practical Circuits for Solid State Receivers  | 75p |
| BP22 | 79 Electronic Novelty Circuits  | 75p |
| BP23 | First Book of Practical Electronic Projects   | 75p |
| 100  | A Comprehensive Radio Valve Guide - Book 1  | 40p |
| 121  | A Comprehensive Radio Valve Guide - Book 2  | 40p |
| 126  | Boys Book of Crystal Sets   | 25p |
| 129  | Universal Gram-Motor Speed Indicator  | 10p |
| 138  | How to make FM and TV Aerials - Bands 1/2/3   | 25p |
| 143  | A Comprehensive Radio Valve Guide - Book 3  | 40p |
| 150  | Practical Radio Inside Out  | 40p |
| 157  | A Comprehensive Radio Valve Guide - Book 4  | 40p |
| 160  | Coil Design and Construction Manual   | 50p |
| 161  | Radio, TV and Electronics Data Book   | 60p |
| 170  | Transistor Circuits for Radio Controlled Models   | 40p |
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