

OFFICIAL NEWSLETTER FOR THE WEST AUSTRALIAN VHF GROUP(INC)  
P.O. BOX 189, APPLECROSS WA 6153.

MEETINGS ON THE FOURTH MONDAY OF EACH MONTH AT WIRELESS HILL  
TELECOMMUNICATIONS MUSEUM, ALMONDBURY RD, ARDROSS

**VK6WH**

**VK6WH**

PATRON MR. F.W. DAWSON

|            |               |                  |              |                |                   |
|------------|---------------|------------------|--------------|----------------|-------------------|
| PRESIDENT  | BOB BLINCO    | VK6KRC H277 7049 | SECRETARY    | BOB PINE       | VK6ZFY H 339 3273 |
| VICE PRES  | PETER TAIT    | VK6ZPT           | TREASURER    | BERT MEUWISSEN | VK6ME H 457 3892  |
| COUNCILLOR | TERRY LEITCH  | VK6ZLT H332 7008 | BULLETIN ED. | JACK BORTHEN   | VK6KDX H 447 5933 |
| COUNCILLOR | BRUCE DOUGLAS | VK6BMD           | MUSEUM REP.  | BOB PINE       | VK6ZFY            |
| COUNCILLOR | FRITZ BERRER  | VK6UZ            | MUSEUM REP.  | TOM BERG       | VK6ZAF            |
| ACTIVITIES | TERRY LEITCH  | VK6ZLT           | PUBLICITY    | JACK BORTHEN   | VK6KDX            |
| MATERIALS  | COLIN MURRAY  | VK6ZCR           | LIBRARIAN    | ILMAR BELTS    | VK6AIB            |

CALENDAR

|     |    |                   |     |    |                   |
|-----|----|-------------------|-----|----|-------------------|
| May | 17 | COMMITTEE MEETING | Jun | 21 | Group Dinner      |
|     | 22 | FOXHUNT           |     | 26 | FOXHUNT           |
|     | 24 | GENERAL MEETING   |     | 28 | GENERAL MEETING   |
| Jul | 19 | COMMITTEE MEETING | Aug | 16 | COMMITTEE MEETING |
|     | 24 | FOXHUNT           |     | 21 | FOXHUNT           |
|     | 26 | GENERAL MEETING   |     | 23 | GENERAL MEETING   |

**MAY 93**

|           |  |
|-----------|--|
| March     | Two Way Radio Testing                      |
| April     | Gigahertz Focus on Equipment and Operation |
| May       | Annual Junk Sale                           |
| June      | Antennas for All Reasons & Dinner          |
| July      | Construction Techniques                    |
| August    | Printed Circuits in Microwave Design       |
| September | To be announced                            |
| October   | Annual General Meeting                     |
| November  | The Hunt for the Elusive VHF and SHF DX    |
| December  | XMAS Function                              |

## GROUP DINNER

Terry has organised a meal at the Fremantle TAFE Student Restaurant.

It has been arranged for June 21 1993 with pre-dinner drinks at 5:30 pm and the meal at 7:30 pm.

It will cost \$15.00 per head for the meal with the drinks being PYFO (i.e. pay for your own).

Your XYLs and YLs are, of course, invited.

Please let Terry know as soon as possible, but no later than June 14, whether you will be attending. Telephone 332 7008.

Go on, be a devil, give the trouble and strife a break and come along.

## MONTHLY MEETINGS

The next meeting is a Junk Sale. However instead of bringing junk, how about digging out some of those useful bits you will never use but hate to part with. You know, things like varactor diodes, waveguide fittings, uhf mixers, cable connectors etc etc , Put them back in circulation. Maybe the next bloke will use them.

## Some Frequencies of Interest From the BBS

|                              |                  |
|------------------------------|------------------|
| SALYUT-7                     | 19.995           |
| SOYUZ                        | 20.008           |
| RS-10/11                     | 29.357 TO 29.510 |
| SOYUZ-TM/3 AND SOYUZ-TM/4    | 121.750          |
| SOYUZ-T/11                   | 142.423          |
| MIR                          | 143.625          |
| MET-1/30                     | 136.995          |
| SOMETIMES USED BY METEORSATS | 137.200          |
| BHASKARA-I                   | 137.230          |
| MET-2/14, MET-2/17, MET-2/18 | 137.300          |
| BHASKARA-II                  | 137.380          |
| MET-2/12, MET-2/16           | 137.400          |
| NOAA-10                      | 137.500          |
| NOAA-9                       | 137.620          |
| NOAA-9, NOAA-10              | 137.770          |
| MET-2/14, MET-3/2            | 137.850          |
| MET-2/15                     | 137.860          |
| BADR-1 FM AND 1200 BPS FSK   | 144.028          |
| MIR                          | 145.550          |
| AO-10 General Beacon         | 145.810          |
| AO-13 General Beacon         | 145.812          |

|                                   |                        |
|-----------------------------------|------------------------|
| UO-11, BADR-1                     | 145.825                |
| AO-21 CW Beacon                   | 145.948                |
| AO-13 Engineering Beacon          | 145.985                |
| AO-10 Engineering Beacon, AO-21   | 145.987                |
| DO-17 TELEMETRY                   | 146.825                |
| TRANSIT / COSNAV CHANNEL 1        | 149.910                |
| = = = 2                           | 149.940                |
| = = = 3                           | 149.970                |
| HILAT                             | 149.988                |
| TRANSIT / COSNAV CHANNEL 4        | 150.000                |
| = = = 5                           | 150.030                |
| = = = 1                           | 399.762                |
| = = = 2                           | 399.842                |
| = = = 3                           | 399.922                |
| GEOSAT                            | 400.000                |
| TRANSIT / COSNAV CHANNEL 5        | 400.200                |
| = = = 5                           | 400.082                |
| 1980-052C                         | 432.881                |
| UO-22                             | 435.120                |
| UO-11                             | 435.025                |
| WO-18 PRIMARY - BPSK              | 435.075                |
| WO-18 SECONDARY - BPSK            | 435.100                |
| KITSAT-A                          | 435.175                |
| AO-13 General Beacon              | 435.651                |
| FO-20                             | 435.795                |
| HILAT                             | 435.974                |
| POLAR BEAR                        | 435.9744               |
| AO10, AO13, FO12 ETC.             | 435.675 TO 437.000     |
| AO-16                             | 437.025 OR 437.050     |
| WO-18                             | 437.075 OR 437.100     |
| SOMETIMES USED BY METEORSATS      | 461.500                |
| = = = =                           | 464.000                |
| = = = =                           | 466.500                |
| = = = =                           | 468.500                |
| GOES                              | 468.825 TO 468.8375    |
| SOMETIMES USED BY METEORSATS      | 1000.000               |
| NAVSTAR                           | 1227.600               |
| GLONASS                           | 1250.000               |
| META SKY SEARCH ( E T LIFE )      | 1420.000               |
| NAVSTAR                           | 1575.420               |
| GLONASS                           | 1603.500               |
| GOES                              | 1691.000               |
| METEORSAT                         | 1694.000               |
| NOAA HRPT DATA STREAM (SEE NOTE ) | 1700.000               |
| ( 0100-0300 = 1300-1500 Z )       |                        |
| SPOT                              | 2206.000               |
| AO-13 General Beacon              | 2400.325               |
| UO-11                             | 2401.500               |
| AO13 ( S )                        | 2400.640 TO 2400.725   |
| GEOSTAR RO1 / SPACENET            | 470.000 TO 2508.000    |
| META SKY SEARCH ( E T LIFE )      | 2840.000               |
| TV = C = BAND                     | 3700.000 TO 4200.000   |
| GEOSTAR RO1/SPACENET              | 5109.000 TO 5141.000   |
| TV = KU = BAND                    | 10700.000 TO 18000.000 |
| LUCH SATELLITES                   | 10975.000 TO 11675.000 |
| SDRN FREQUENCIES                  | 13520.000 TO 15005.000 |
| TV = KA = BAND                    | 20000.000 TO 30000.000 |
| SDRN TO GROUND ( ????? )          | 108020.000             |

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## "VK6KZ PORTABLE"

### HINTS FOR VHF/UHF PORTABLE OPERATION

By Walter J Howse VK6KZ

When I was first licensed in 1954 I lived in Fremantle, and was shielded from active VHF stations in Perth by Monument Hill. In addition, my antenna was very close to the State Energy Commission high voltage switching station. This encouraged me to go into the field and I have had, consequently, a long experience of portable operation. The following provides advice and a description of how I have approached portable operation on VHF/UHF.

#### DON'T LEAVE ANYTHING HOME

Firstly, make sure you leave no part of your gear at home. For example, it is very difficult to operate without a microphone, a connecting power cable or the coax!

I have reduced the chances of this by building the home station transceivers for 50, 144 and 432 Mhz into a steel frame or rack along with a beacon keyer and control panel. A single 12 volt supply cable goes to a distribution point within the frame. To go portable, the supply cable and antennas are disconnected and the rack carried out to the vehicle. (Microphones are not disconnected!)

In the field it is then a simple matter to connect the rack to the 12 volt socket (wired in the vehicle for that purpose) and connecting the portable antennas.

Since the home station equipment is the portable equipment and no changes are made in the interconnections within the frame, hopefully any faults that develop will arise at home rather than in the field. This arrangement also saves money.

#### THINK OF SAFETY

For many years, I operated from a car. More recently I am able to operate from a campervan. The following comments apply to the car but the general principle is the same.

For reasons of safety and security, the portable equipment was carried in the boot of the car. This had a major disadvantage in terms of operating comfort as one was in the open air, but this was

not found to be a major disadvantage until it rained. Obviously I wore very warm clothing for night operation particularly on the south coast of Western Australia where the winds are usually strong from the ocean.

From a security point of view, equipment which is out of sight is safer than where it is to be visible to the casual passer-by. The mounting of the gear in the boot also provided the added comfort of knowing that, if a vehicle accident were to occur, it was unlikely that there would be pieces of equipment acting as missiles within the car itself.

In the campervan, the equipment remains in its steel frame and this is placed inside one of the cupboards and then bolted down. The cupboard door opens to enable the gear to be operated from the bed - handy for late night and early morning DX!

#### MOUNT ANTENNAE ON THE VEHICLE

It is unlikely that the point chosen for portable operation will provide the necessary poles or other means of support for the antenna or its mast.

I arranged a framework for the car which took the form of a roof-rack with three sockets about 100mm high made from 25mm waterpipe. Aluminium tubing was then plugged into those sockets to form the mast for the antennas. Each piece of aluminium tubing was about one meter long and had a notch made in each end. A small joiner piece about 200 mm long, of slightly larger diameter, with two self tapping screws in about its centre was used to join two lengths of the tubing. The notches and screws keep the whole length rigid when rotating the antennas. A bolt was tapped through the side wall of the socket so that the mast can be prevented from turning.

No longer is there the need for one tall son who in 1976 held the 432 Mhz antenna for the first VK6KZ to VK5MK contact across the Great Australian Bight!!

The current arrangement on the campervan follows the same system. Appropriate sockets are mounted on the roof bar, on the tow bar and the rear-end protection pipe has a socket welded on both the left and right hand ends.

#### DON'T FORGET THE SPARES

Carry a number of either back-up components or alternatively design some redundancy into the components which are being used!

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For example, my coaxial cables to the antennae can be interchanged so that if one cable fails then operation can continue using the cable from the second antenna. I carry spare fuses, some tools and a multimeter. Had it not been for a 12 volt soldering iron plugged into the cigarette lighter socket of the car, the world record for 1296 Mhz between VK6KZ portable at Walpole and VK5MC at Hatherleigh in 1978 would not have been possible.

### STUDY MAPS

VHF and UHF operations benefit from high locations or from those with clear take-offs. Enormous effort can be saved by studying contour maps prior to setting out to go portable. Contour maps on 1/100 000 scale may appear costly but remember they can save petrol, time and wear and tear on the driver. They also can provide the much needed information about the latitude and longitude of your portable location.

I obtain my maps from the Western Australian Department of Lands Administration - although not all portions of Western Australia are covered by maps carrying contours.

Since the maps are not always up-to-date, some new roads may provide access to high spots and hence it is worth searching for good operating sites in daylight hours rather than at night.

### LIGHT THE EQUIPMENT

Operating at night requires some form of lighting. I have a 12 volt globe built into the equipment frame so that I can make entries in the station log and look up data that I might need. This avoids the need for a "third hand" to hold the torch or to avoid shadows if the interior or boot light are not in the best location. The light can be switched off to save the battery.

### BE SELF SUFFICIENT

The unpredictability of propagation means that a portable operator cannot always judge when the openings will either occur or when they will cease, and hence it is highly desirable to be as self contained as possible.

I take food and water so that it is not necessary to leave the site for a meal break. I have a rubbish container so that I can leave a clean site. I try to keep the car fuel tank topped up to retain mobility

outside of the normal opening hours of country service stations.

### CONSERVE ELECTRICAL ENERGY

Portable operation from a car battery requires careful monitoring of its condition - especially if you have automatic transmission and cannot do a roll-start! I monitor the battery condition with a voltmeter with an expanded scale covering 10-15 volts built into the steel framework containing the transceivers.

Switch off unnecessary equipment. Use low power when transmitting if conditions allow this. Remember that with the short coax runs associated with this type of portable operation, feeder loss may mean that your antenna gets as much power as it might do from the linear at the home station with its longer coax run.

A second 12 volt battery is highly recommended. Remember that a lead acid battery can become a dangerous missile in an accident because of its mass and acid content. Never carry such a battery loose in the vehicle! Bolt it down!

An added reason for a second battery is that the most favourable locations for portable operation are isolated and it is not likely that another traveller will visit the spot to assist one to jump-start an automatic transmission car. However such spots are usually high and favourable for a downhill rolling start!

### PRACTICE

Finally, practise portable operation. It is only by experience that you will find out weaknesses in your set-up. Improvements can then be made resulting in lots of fun.

See you portable!

## JUNK SALE

**May 24 1993**

**Dont Forget**



## AM\FM FAX DECODER

VK6 JAZ

Facsimile transmissions over the radio are extremely interesting and informative. Until recently high quality facsimile pictures were out of the reach of many enthusiasts. Recent developments with the IBM PC's and software have enabled these facsimile transmissions to be displayed with incredible resolution. Facsimile pictures can be received from HF transmissions or from Weather Satellite's and from anyone with a suitable facsimile encoder(transmitter).

They are of two main types AM and FM (not to be confused with the radio receiver used to acquire them). The picture information (greyscale) is contained in either the signal amplitude variations for AM or the signal frequency deviation for FM fax. For example HF radio Fax uses the FM system, this is due to the fact that information carried in frequency changes is relatively unaffected by the amplitude of the signal (which occurs with fading and interference), much like RTTY,AMTOR and AX25 PACKET RADIO.

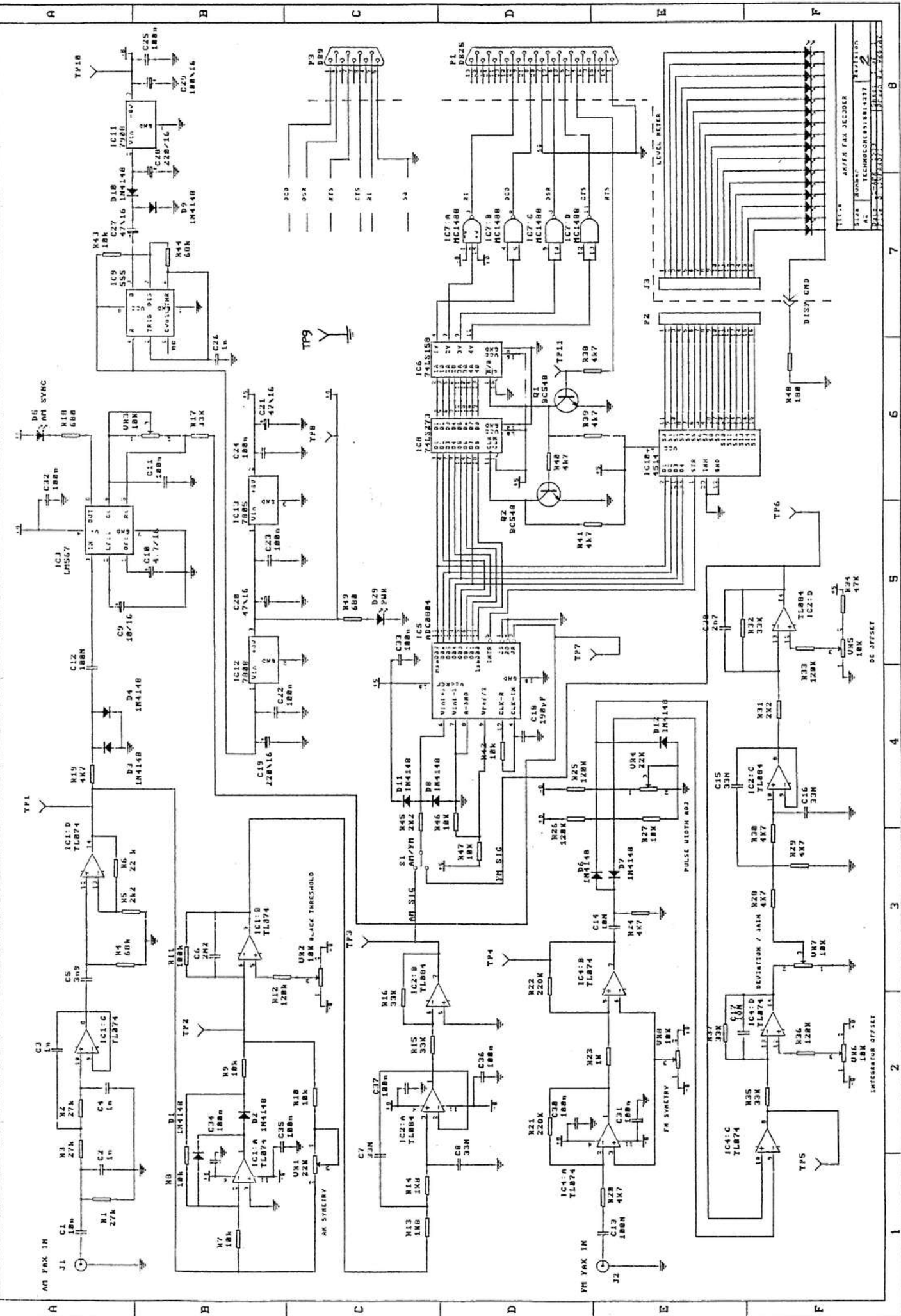
To decode these signals a frequency to voltage converter is needed for FM FAX and direct sampling of the AM FAX amplitude can be done to recover the modulation or greyscale information that will be used to make up the picture at the receiving end. The Fax picture information is AM or FM which implies that it is a type of modulation. This modulation refers to the video signal applied to a subcarrier normally 2400 Hz (AM FAX) and 1900 HZ (FM FAX). This subcarrier is then used to modulate an RF carrier.

The TECHNOCOM AM/FM decoder described performs these decoding functions and provides interfacing to an IBM PC and software produces the final image. Once built you will be able to decode signals received via a wide band VHF receiver or a HF radio or any other source of AM/FM type fax signals.

The Satellite signals found in the 137-138 MHz band will provide striking picture resolution and some very interesting viewing. The signals will comprise of Infra-Red(IR) and visible light scans of the earth's surface directly under the satellites. The satellites are placed into orbit by the National Oceanic and Atmospheric Administration (N.O.A.A) and Soviet Authorities. The NOAA satellites provide interesting viewing with two images side by side usually Visible light and Infra Red (daytime). At night time two Infra Red pictures sensitive to different IR spectrums.

The most graphical images seem to come from the Russian Meteor 3/X series of which only Met 3/3 can currently be heard (5/93). These satellites seem to have higher performance sensing apparatus on board and return pictures with resolution down to 4 kilometres. Even the IR images of the nighttime shows excellent contrast. HF transmissions vary from weather charts to high altitude satellite imagery retransmissions, and from time to time text(ASCII) printouts from various sources can be found on the bands.

VHF Satellite signals can be received on a receiver with a bandwidth of 50 kHz. and a sensitivity of around (0.5 micro Volt/20dB SINAD). TECHNOCOM manufactures PCB's or complete Receivers and Pre-amps to receive these signals.



IC1:G AM/FM PAL DECODER  
 TLB74  
 IC1:A, B, C, D TLB74  
 IC2:A, B TLB84  
 IC4:A, B, C, D TLB74  
 IC5 TLB84  
 IC6 74LS158  
 IC7:A, B, C, D MC1488  
 IC8 BCS48  
 IC9 LMS567  
 IC10 TL074  
 IC11 TL074  
 IC12 TL074  
 IC13 7095  
 IC14 TL074  
 IC15 TL074  
 IC16 TL074  
 IC17 TL074  
 IC18 TL074  
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 IC98 TL074  
 IC99 TL074  
 IC100 TL074

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 F  
 E  
 D  
 C  
 B  
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# ORDER FORM KITS/PCB'S

- AM/FM FAX DECODER PCB .....\$29-00
- W/B VHF RECEIVER PCB .....\$19-00
- NFP-25B PACKET MODEM PCB .....\$14-00

## COMPLETE KITS

- AM/FM FAX DECODER  
SHORT FORM .....\$ 89-00
- EXT FORM .....\$108-00
- W/B VHF RECEIVER .....\$ 78-00
- NFP-25B PACKET MODEM .....\$ 55-00

FULLY BUILT UNITS- P.O.A

tick box or enter qty if more than one item reqd

IF GOODS ARE TO BE SENT VIA AUST POST INCL  
\$4-00 FOR POSTAGE AND PACKAGING.

NAME .....

ADDRESS .....

TOWN CITY .....

POST CODE ..... DATE .....

ENCLOSED IS A CHEQUE FOR .....

TECHNOCOM (09) 5814297

THE WEST AUSTRALIAN V.H.F. GROUP BULLETIN

MAY

1993

The West Australian V.H.F Group (INC)  
P.O. BOX 189 APPLECROSS W.A. 6163