THE PROPAGATOR

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY
PO BOX 1838 WOLLONGONG NSW 2500

VOLUME 84, NUMBER 7 JULY 1984
Registered by Australia Post Publication No. NBH1491

MEETINGS ARE HELD ON THE SECOND TUESDAY OF EACH MONTH (EXCEPT JANUARY) AT 7.30 P.M. AT THE STATE EMERGENCY SERVICES BUILDING, MONTAGUE STREET, NORTH WOLLONGONG. VISITORS ARE WELCOME TO ATTEND MEETINGS.

Last Month's Meeting.

The dream of a permanent home became a reality on June 12 th last with the holding of our monthly meeting in the new SES Headquarters in Montague Street. Congratulations to Pres. Dave VK2DFL and the Boys whose liaison with the SES over the years has resulted in this permanency.

Denis VK2DMR introduced the members to the more detailed workings of the SES by way of two video films on the 1976 floods in North-West NSW and the Dapto floods in February of this year. The films were followed up with a talk by Denis and during supper, a guided tour around the building.

The following new and upgraded callsigns were announced: Gerhard Mueller VK2XGA; Bill Jut VK2KWJ; Harry VK2JHW, was VVZ; Andrew McEwan VK2XGC; Dave VK2NH, was PRA; and Robert (awaiting allocation).

This Month's Meeting.

- will be held TUESDAY, 10th July again, at the SES Headquarters. On the night, Gary Crapp from Dick Smith Enterprises will present the trophies for the UHF Kilometer Kontest so ably run by Dave VK2EZY. Would entrants please bring their latest results for calculation on the night.. This will enable Dave to carry out final assessments before presentation. Gil McPherson will also be present to give an update on the newly released VHF Kit.

Asst. Editor Ken VK2DOI should be returning soon to the front page position. It's good to hear you have passed your fitness test Ken and good to hear you up on our 80m Net.

73's Murray VK2MY.....

REPEATER REPORT

AFTER 2 MONTHS OF TROUBLE FREE OPERATION OF ALL 4 REPEATERS, THREE MINOR FAULTS DEVELOPED WITHIN A FEW DAYS OF EACH OTHER.

HILL 60 CHANNEL 8225

SLIGHT DRIFT IN MUTE SETTING, PROBABLY DUE TO THE ONSET OF THE COLD WEATHER.

DE-RUSTING AND PAINTING WORK WAS CARRIED OUT ON THE AERIAL MAST AND SOME STAINLESS STEEL SCREWS STILL HAVE TO BE OBTAINED TO REPLACE THE RUSTED GALVANIZED ONES.

SUBLIME POINT CHANNEL 7275

AT THE TIME OF WRITING THIS, 7275 HAS NO MORSE IDENTIFICATION. IT APPEARS TO HAVE STOPPED IDENTIFYING SINCE A THUNDERSTORM AND IS PROBABLY THE RESULT OF A LIGHTNING STRIKE (FORTUNATELY NOT AS CLOSE AS THE LAST TIME). THE FAULT WILL BE RECTIFIED SOON.

GOOD PROGRESS IS BEING MADE WITH THE MICROPROCESSOR CONTROLLER FOR 7275.

MOUNT MURRAY CHANNEL 6850

6850 HAS BEEN SUFFERING WITH RECEIVER MUTE BEING HELD OPEN FOR LONG PERIODS CAUSING THE REPEATER TO TIME ITSELF OUT. THE PROBLEM FIRST OCCURED DURING A THUNDERSTORM BUT IT DID NOT GO AWAY WHEN THE STORM DID. TO AVOID UNNECESSARY DRAINING OF THE BATTERY THE REPEATER WAS SWITCHED OFF FOR 2 DAYS FROM 19TH TO 21ST WHEN THE SYMPTON WAS CLEARED BY SLIGHT RE-SETTING OF THE MUTE. ALSO AT THIS TIME THE GUY WIRES WERE TIGHTENED, BATTERY AND CHARGING SYSTEM CHECKED AND SENSITIVITY AND OUTPUT CHECKS DONE CONFIRMING ALL TO BE NORMAL. HOWEVER, SOME CRACKLING NOISES ARE STILL EVIDENT ON WEAK SIGNALS INTO THE REPEATER INDICATING A HARDWARE PROBLEM SOMEWHERE IN THE AERIAL SYSTEM. THIS IS STILL TO BE INVESTIGATED.

R E M E M B E R T H E P I T C H O F T H E I D E N T

T O N E I N D I C A T E S T H E S T A T E O F

C H A R G E I N T H E B A T T E R Y .

HAS ANYONE NOTICED THE AUDIO QUALITY OF THE W.I.A. SUNDAY BROADCASTS RELAYED THROUGH 6850?

OUR AUTOMATIC RELAY LINK AND CONTROL SYSTEM ARE WORKING VERY WELL. THE QUALITY OF AUDIO CAN ONLY BE AS GOOD AS THAT FROM THE ORIGINATING STATION, AND IN THAT REGARD, THE W.I.A. IS TO BE COMPLIMENTED ON THE EXCELLENT SIGNAL THAT IT PROVIDES ON THE 145.6MHZ LINK FREQUENCY FROM DURAL. THE ODD BREAKDOWN OR FAULT HAS OCCURED TO THE W.I.A. LINK TRANSMITTER OVER THE YEARS, AND WHEN THIS HAS HAPPENED THE LISTENER COULD WELL HAVE BEEN EXCUSED FOR SUSPECTING A FAULT IN OUR REPEATER. HOWEVER, THESE FAULTS HAVE USUALLY BEEN REPORTED DURING THE BROADCAST IN THE FORM OF AN ANNOUNCEMENT OR AN APOLOGY. THIS SPEAKS WELL FOR THE EFFICIENCY OF THE W.I.A.'S MONITORING AND MAINTENANCE PROCEDURES. THIS SORT OF PROFESSIONALISM DOES NOT PASS UNNOTICED.

DUPLEXERS

I AM PLEASED TO REPORT THAT AFTER MORE THAN 8 YEARS SINCE MT. MURRAY REPEATER WAS COMMISSIONED, WE HAVE MADE A START ON THE DUPLEXER, WHICH IS THE FINAL STAGE OF THE UPGRADING PROGRAM. WE HAVE MOST OF THE MATERIAL FOR THE DUPLEXERS FOR BOTH 2 METRE REPEATERS, AND THE MACHINING AND FABRICATION OF THE CAVITY RESONATORS IS BEING DONE AT THE WOLLONGONG UNIVERSITY WORKSHOP BY MEMBERS OF THE UNIVERSITY AMATEUR RADIO CLUB.

WE ARE VERY GRATEFUL FOR THEIR GENEROUS OFFER OF ASSISTANCE.

GRAEME VK2CAG

Moonbounce Report - July 1984.

A scheduled EME test was carried out on Sunday 24/6/84 under ideal weather conditions, with the moon visible throughout the test period. VK2AMV was scheduled for three half-hour test periods between 0200Z and 0330Z with SM6CKU, HB9M and F6EZA, but neither SM6CKU or F6EZA was heard. HB9M was heard calling at approx. 0330Z just as the moon was setting, too low for a possible contact. Our echoes were heard but not much above noise level, after some delay while the transmitter 144MHz frequency source control problems were sorted out.

VK2's ALU,EXN and EMV were involved in the test, with VK2's BYY (from Sydney), QY(from Campelltown), KAJ, XGC, BOZ, JRC, DVB, DYU, Peter Woods and Dominic Cuiuri arriving at different times as visitors. The barbeque was fired up for the first time and Geoff 2BYY seemed to enjoy his sausages. VK2ALU gave a rundown on the project and equipment etc. for the benifit of the visitors. The microcomputer and its interface setup was given a demonstration run to show how it will be used to assist the dish to accurately track the moon in the hour angle direction.

Lyle VK2ALU.
(Project Coordinator).

P.S. I would be interested to hear from any of our Propagator readers who have had recent success in working through the OSCAR 10 satellite with regard to antennas used and results obtained.

UHF KILOMETRE KONTEST.

RESULTS FOR MAY ARE AS FOLLOWS....

REG. VK2EMI.	POINTS ..	4	TOTAL...	23
IAN VK2EXN .	"	3	"	18
GRAEME VK2CAG	"	2	"	11
MORRY VK2EMV.	"	1	"	6
LYLE VK2ALU.	"	0	"	3
ROY VK2KO.	"	0	"	4

PLEAS E ENSURE THAT YOU BRING YOU FINAL RESULTS TO THE NEXT MEETING SO THAT THE FINAL SCORE CAN BE CALCULATED AND THE PRIZES GIVEN OUT TO THE RECIPIENTS.

DE. DAVE VK2EZY.....

FOR SALE. FOR SALE. FOR SALE.

1 ONLY 30 FT. FREE STANDING TOWER IN EXC. CONDITION. INLUDES CENTRE PIPE AND TOP AND BOTTOM BEARINGS.. $95.00..

1 ONLY 'ARCHER ANT. ROTATOR' MED. DUTY. $85.00.. ONO —

contact Rex, VK2VVI QTHR. Phone. 83 1040 A/H.

NOISE AND NOISE BRIDGES

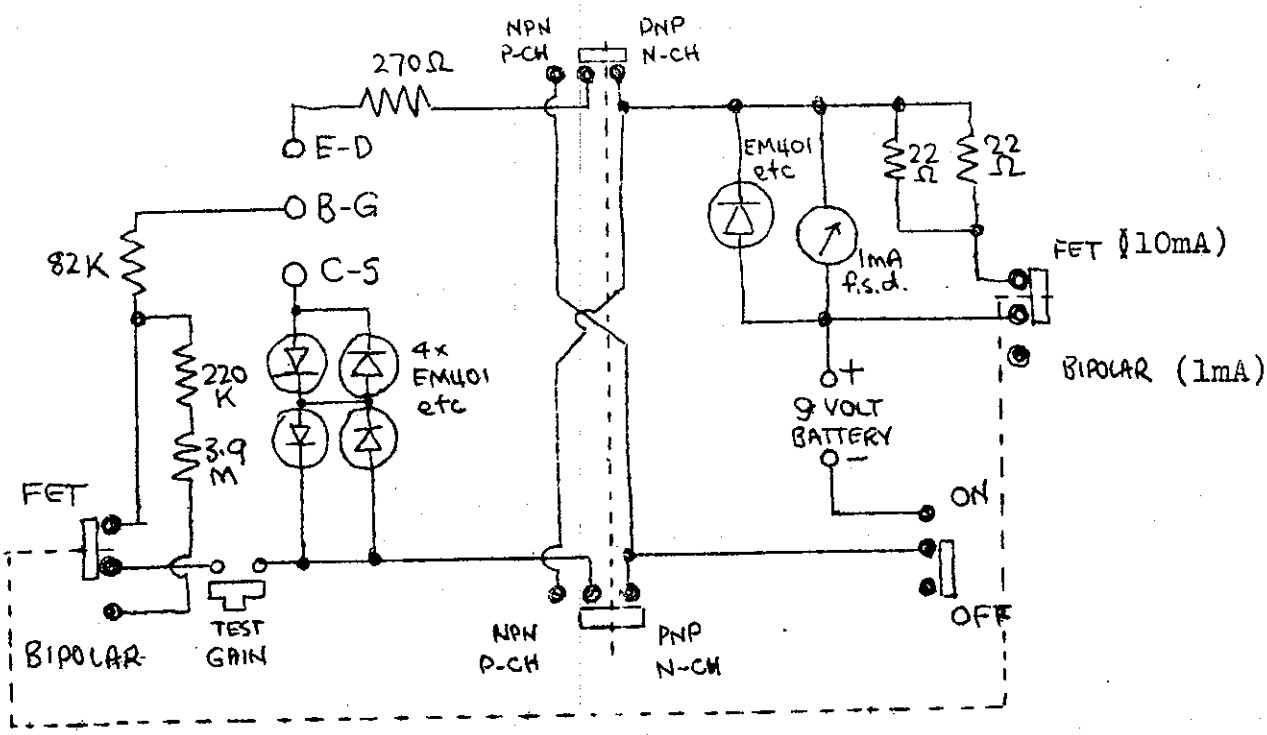
de Ken, VK2DOI

It is common knowledge that 'white light' consists of all colours of the rainbow, or more exactly, white light has a uniform distribution of energy across the visible spectrum, from the longest wavelengths of red light to the shortest wavelengths of violet. The term 'white noise' is derived in a similar manner and describes a band where all frequencies of the band appear simulanteously and with the same energy density. A common source of white noise is thermal noise in a current-carrying component caused by the rendom motion of thermally agitated free electrons in the resistance of the component.

The following noise bridges all use a zener diode as a noise generator, amplification of the noise being achieved by 3 or 4 single transistor stages. The amplified noise is applied to one winding of a broadband ferrite or air-cored transformer forming the input to a bridge, which allows an unknown resistance or impedance to be compared to known ones. An externally connected receiver tuned to the desired test frequency indicates the minimum noise or 'null' when the bridge is balanced, and the values of the unknown R or X can then be read off from the dial settings.

My interest in noise bridges was sparked by an on-air request for information about a noise bridge circuit, and by coincidence an interstate friend wrote to tell me of the antenna measurements he had been doing using a KB Noise Bridge. I assembled what references I had and found that Practical Wireless and Ham Radio magazines had both run construction articles, and Amateur Radio Action had done reviews on the Palomar Engineers, KB and Emtron Noise Bridges. I decided to make my own version using the Practical Wireless p.c. board with its series l.e.d. 'Power On' indicator. Otherwise I followed the Ham Radio article, using a simple 4 twisted wire transformer, as according to the article this does away with "puzzling anomalies" caused by use of a ferrite toroid. The Practical Wireless Noise Bridge has only one variable control, a 100 ohm pot to measure impedance, but I preferred the more usual separate R and X controls. The table below compares the various models I have information on. I used a 350 ohm linear carbon pot and a 2-gang broadcast band variable capacitor with provision for switching in one or both gangs but this facility has proved of little advantage in practice. To allow measurements to be made at as high a frequency as possible I used BF 173 transistors (from the Club Store), which are TV i.f. amplifier transistors with a transition frequency of 550MHz, which in theory should give a range surpassing the 'greater than 146MHz' claimed for the Practical Wireless design. For reasons beyond my control I have not been able to test my version very thoroughly but it appears to do all that I expected of it.

MODEL	'R' RANGE	'C' RANGE	TRANSFORMER	AMP. STAGES	CLAIMED RANGE
Practical Wireless	100 ohm	none	4-wire ferrite	3 (BF196)	<1MHz to >146MHz
Ham Radio	250 ohm	± 180pF	4-wire air	3 (2N2222)	to 100MHz
Palomar Engineers	250 ohm	± 70pF	4-wire toroid	?	to 100MHz
KB	100 ohm	± 50pF (undefined)	3-wire no toroid	4	> 100MHz
Emtron	250 ohm	± 150pF	3-wire toroid	2N2222A	?
VK2DOI	350 ohm	+ 500 pF - 135 pF	4-wire no toroid	3 (BF173)	> 146MHz



For full details, see "Electronics Australia Projects and Circuits, " page 68.

To test a bipolar transistor:

Connect collector to "C", base to "B", and emitter to "E".

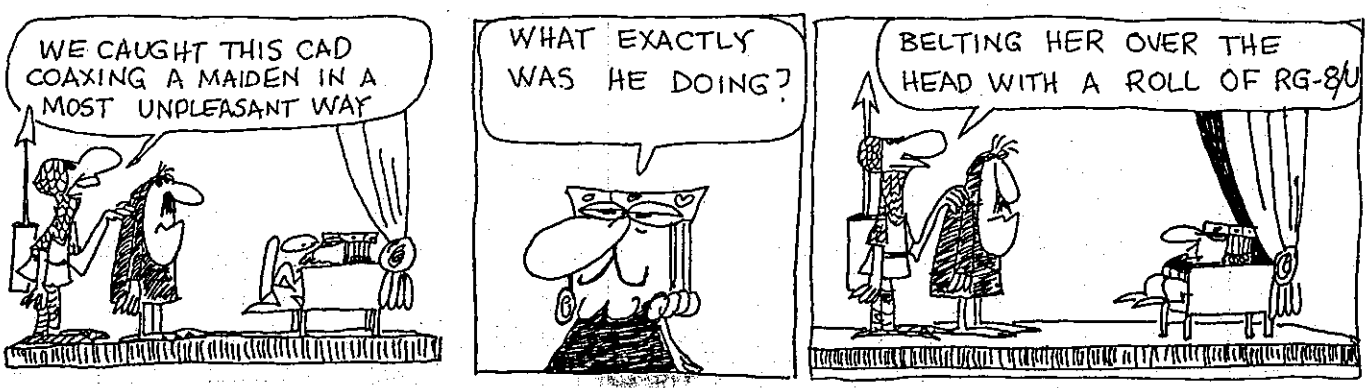
When the "gain test" button is pressed, the base of the device will be connected to the collector supply rail via a resistance producing either 2 microamps or 100 microamps of base current, depending on the postion of the "FET-Bipolar" switch. The meter therefore indicates the normal DC beta (or gain) of the device on an effective scale of either 0-500 or 0-100.

To test a Field Effect Transistor:

Connect the drain to "D", the source to "S", and the gate to "G".

When a FET is connected into the circuit, it initially draws its zero-bias current which may be read on either the 10mA meter range or the 1 mA range as appropriate. Pressing the "gain test" button connects the gate to a reverse biased voltage of 1.2 volts.

All resistors are ½ or ¼ watt. The switches are DPDT slider switches. The meter is a 1mA movement.



Beware the Compressor!

- - some pitfalls to avoid

Robert B. Lunsford, Jr. WB5QGI
1405 Stephen
Killeen TX 76541

Speech compressors really work! Using one on 10 meters with a friend about 8 miles away, I found that the average level nearly equaled the average level obtained when switching on and off a 1200 Watt amplifier. The objection is that a) The background noise may be excessive unless some care is exercised in adjustment; b) Enough distortion is introduced from the compressor that it may even be objectionable or unpleasant to delicate or sensitive ears (again, careful adjustment may be the answer); and c) The problem of congestion on the bands is not addressed with a compressor, in fact, it is sometimes made worse by signals being too wide – again an adjustment problem, usually.

The third reason given above is probably the best known by amateurs in general. There is also a small amount of interference noticed by some, that of detecting a portion of the unwanted sideband when using an SSB station. The problem here is usually at the transmitter, but the point is that it exists!

Another form of interference to the SSB operator is that of another station moving into about 2 kHz of your frequency, which is referred to as "Alligator Teeth." Not only is it distracting, you sometimes find yourself attempting to copy both the station you are in contact with and the adjacent station.

Herein I will outline an idea and a concept which the reader and experimenter should be aware of and, perhaps in the not too distant future, the concept will be put into action by some of the more adventurous and innovative amateurs. I will be using it myself, but I believe that when the concept is understood, not only will it be used by amateurs, but also by the military and by commercial communications systems.

In order to understand the idea of band compression, some background preparation is in order. No doubt there are some readers with insight and experience who could proceed at once to the block diagrams and read the conclusion. Others could probably say they thought about something similar in the past and may have surpassed me in the initial design. This is encouraged. In fact, I hope and expect to see specific diagrams and schematics in the future that will enable anyone to duplicate the circuitry.

Unless the reader has had some experience with linguistics, foreign language, or has had extensive English study, the vital parts of communication must now be covered.

In the English language, as well as many others, the S and Z sounds (voiced and unvoiced hissing sounds) contribute the most to the *understandability* of verbal communications. These sounds lie in the frequency range above 1 kHz, and below 1 kHz are the explosive sounds such as B, T, D, M, N, L, K, G, F, and P. There exist languages in the world that are made up of the explosive sounds alone, and the frequencies above about 1 kHz are not vital to verbal communications. Granted, the upper frequencies are necessary for providing depth and naturalness to the human voice, but as far as communications are concerned, we can get along without the upper frequencies. However, we must have some way of signaling to our ears when the high frequencies (the S and Z sounds) are part of the verbal communication.

Moving right along, a glance at Fig. 1 will now give the reader a preliminary understanding of the band compression concept. Following the signal from the antenna through the receiver, a frequency splitter using active filters will pass the frequencies from 300-1000 Hz, but will attenuate the frequencies above and below. However, the frequencies *above* 1 kHz (with a cutoff of about 2.5 kHz) will signal or gate a white noise generator. This white noise will be adjustable for naturalness and will signify the S and Z sounds by a hissing sound.

The combination of the white noise generator's output and the 300-1000 Hz frequencies are made in the mixer where the strength or relationship of the two signals is effected. The audio amplifier rounds out the receiver system.

By this time, the idea should be firming up. The transmitter block diagram is shown in Fig. 2 and is nothing but the reverse of the receiver's signal processing.

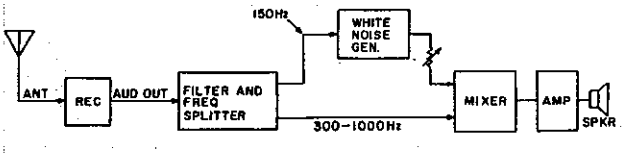


Fig. 1. Receiving block diagram.

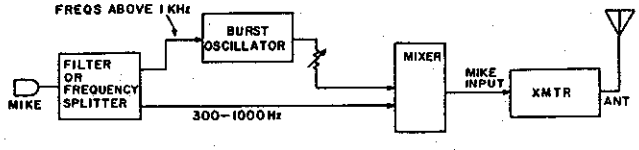
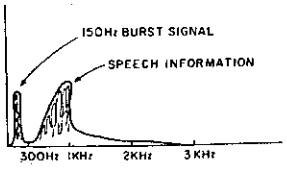


Fig. 2. Transmitter block diagram.

From '76' Magazine.

Fig. 3. Rough spectrum representation.

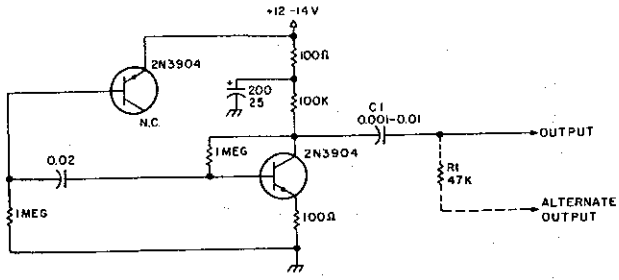


The frequency splitter passes those frequencies between 300 and 1000 Hz and senses those frequencies above 1 kHz (with a cutoff at about 2.5 kHz). The signal sensing frequencies above 1 kHz trigger or gate a burst oscillator which I've arbitrarily chosen to be set at 150 Hz. The mixer then combines the two frequencies and the microphone input will have a signal roughly conceived and shown in Fig. 3, with a 150 Hz triggering signal and those frequencies between 300 and 1000 Hz being transmitted.

Now, before you say this will give an effective bandwidth of 1 kHz, it must be noted that due to combining the two signals and the inherent mixing processes, the total effective bandwidth is closer to 1 kHz plus 150 Hz, or approximately 1.2 kHz, to be safe, could be considered the overall bandwidth. It should be understood that we would not be using pulse modulation, since those frequencies above 1 kHz have been merely attenuated and could be recovered by amplification of the upper frequencies. Also, since the usage of S and Z sounds is so entirely random in natural conversation, band compression would not detract excessively from the usually less than ideal conditions on the bands using single sideband.

My reason for not being specific with schematics, printed circuit board layouts, parts list, etc., is that not only am I plowed under with projects, but I also believe that there are many fertile minds in amateur radio that not only could conceive the project, but also could breadboard and build it. I have included a white noise generator circuit which is known to work; however, the gating and level setting circuitry will have to be designed. All experimentation could even be done by using two tape recorders, but it must be remembered that this will not be high fidelity. If high fidelity is desired, go to 2 meters (where, coincidentally, I've noticed some use of speech compressors, much to the detriment of the inherent quality of voice communications).

Fig. 4. Noise generator circuit. Note: Values of output components will be selected during breadboarding (C1 and R1).



Conclusion

In the history of radio communications, there have been repeated cycles of refinement and improvement. First, we had spark or "noise generators," which were replaced by vacuum tube oscillators and tuned circuits, making them cover a smaller frequency spectrum. Then came voice communications. Amplitude modulation was, and still is to some extent, a good means of communication. With congestion beginning to build up, other means of communication were sought, however, and with wire communication pioneering, double and single sideband transmission were studied as an alternative. The state of the art was refined as oscillators became more stable, materials became available, and construction methods were standardized. The military demand for the best available communications equipment produced unequaled models for others to follow, when considering the period in which they were designed.

The world of communications is again at a turning point. Amateurs are able to "make do" by using maximum usable frequency techniques and by selective listening, but this only serves to refine one's operating. With the congestion apparent at the lower frequencies, an approach allowing less adjacent frequency interference and therefore more effective usage of the amateur bands would seem to be very desirable.

We as amateur radio operators are concerned with "getting the message through." By using band compression, we would not be bothered by adjacent channel interference. However, in the future, another problem will surely consume us if we do not move with the times, and this is super-saturation. More compactness in our frequency bands will be necessary and this is why I use the term "band compression." The challenge is before us and amateurs could find themselves the pioneers once again.

I would like to express my thanks to Ken Frank WB5AKI for his understanding and encouragement in the band compression project. We have intentions of building and testing the concept and may later be able to provide more data, schematics, etc. You would then see them in *73 Magazine*, unless some other fellow amateur beats us to it! ■

Harry J. Miller
991 42nd St.
Sarasota FL 33580

Matching Output Transformers

When installing multi-tapped output transformers, it is often confusing to try to follow charts and, in some cases, an incorrect match is made due to not knowing voice coil impedance. To avoid this, and obtain a perfect match, connect one terminal of the transformer to one side of the voice coil. Connect an output meter across the voice coil. Introduce a 400 cycle audio signal to the detector with enough attenuation to show a low reading on output meter with probe on any lug. Then, with a probe clipped to open side of voice coil, touch each lug on secondary of transformer in turn with the probe, noting change in meter reading.

The combination of lugs giving highest reading is the nearest match and will give maximum efficiency. This can be done with any multi-tapped audio transformer and applies to either primary or secondary. ■

DT600 MANUAL REVIEW.

ANARTS for some time has been coping a battering on its documentation of kits. Some will say there is to much while others will say there is not enough, it is academic and is a real problem that is starting to be looked at. In retrospect some buyers of kits would have a limited knowledge of RTTY and even more the kits and how they operate. With the larger majority buying kits to get into RTTY a review of kit manuals has been undertaken by ANARTS to alleviate this problem.

The first kit to get the 'going over' is the DT600 kit. The kit now supports a 29 page manual which can be bought both with the kit or separately. It would be in the interest of a prospective buyer to invest in a manual to enable him to review the kit and see that it fits his needs and to read up on its construction so as to be prepared when the kit arrives.

The manual is in 10 sections and covers such topics as the DT600's Specifications, a simplified description of the DT600's operation covering the band pass filter, the limiter stage, the low pass filter, the automatic threshold detector, the keyer stage and the auto-start facility of the DT600.

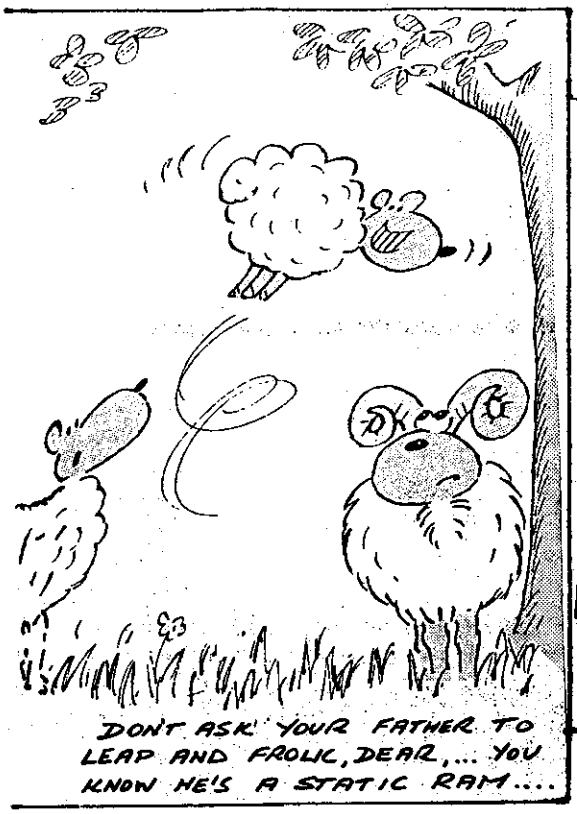
Section three covers the constructional aspects of the kit going into such detail as the winding of the coils and tuning the band pass and discriminator tuned circuits. Section four covers checking out and alignment of the completed DT600 and if troubles are encounted the Test Procedure and Trouble Shooting section details the expected voltage outputs of each op-amp and transistor device making trouble shooting a breeze if any problems as encounted.

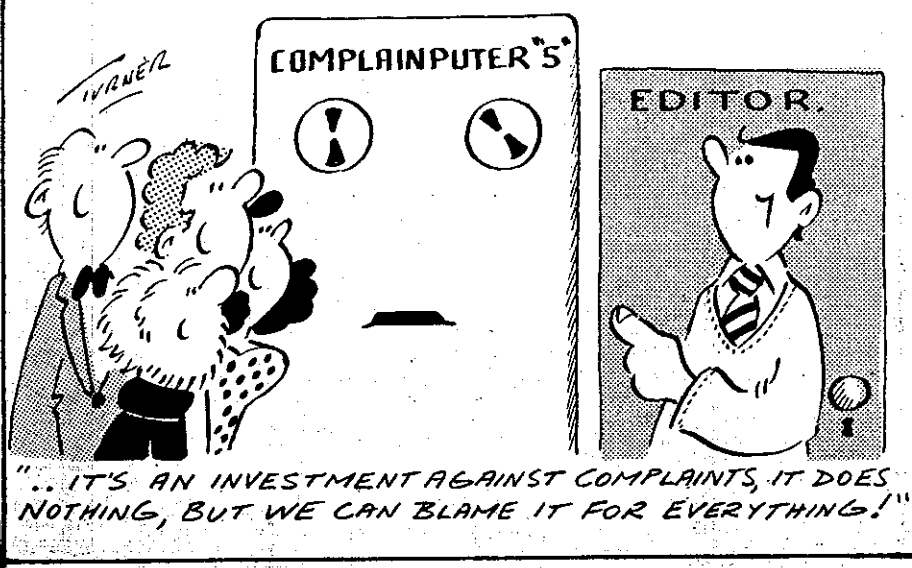
Section 7 gives front and back panel requirements and an additional parts list. The front panel information details the required switches, meters and LED's to get the DT600 up and running. The back panel information details the input jacks and there usage for audio input, PTT line etc. Power supply requirements are included in this section along with other miscellaneous bits and pieces.

The last section deals with operation of the DT600 on air. An Addendum has been included which gives the constructor information on modifications that can be done to the DT600 to enhance its operation. Circuits have been included at the back of the manual and a parts layout.

This manual will assist the constructor and the present owner in the construction line-up and trouble shooting of any faults that may develop in the DT600 RTTY terminal unit.

Ian Eddy VK2IE





SOLID STATE CRO

DE. BRUCE VK2RT.

- or more accurately known as a LED mark/space display.

Its operation can be best described as a 'CENTRE-OFF DUAL BARGRAPH' having a typical linearity of 0.5%. The fast response time of the LED's provide a true indication of signal condition. Weak or low signal to noise ratio signals are easier to tune in since the display does not have the 'ball of nose' or retrace lines as normally seen on a CRT screen.

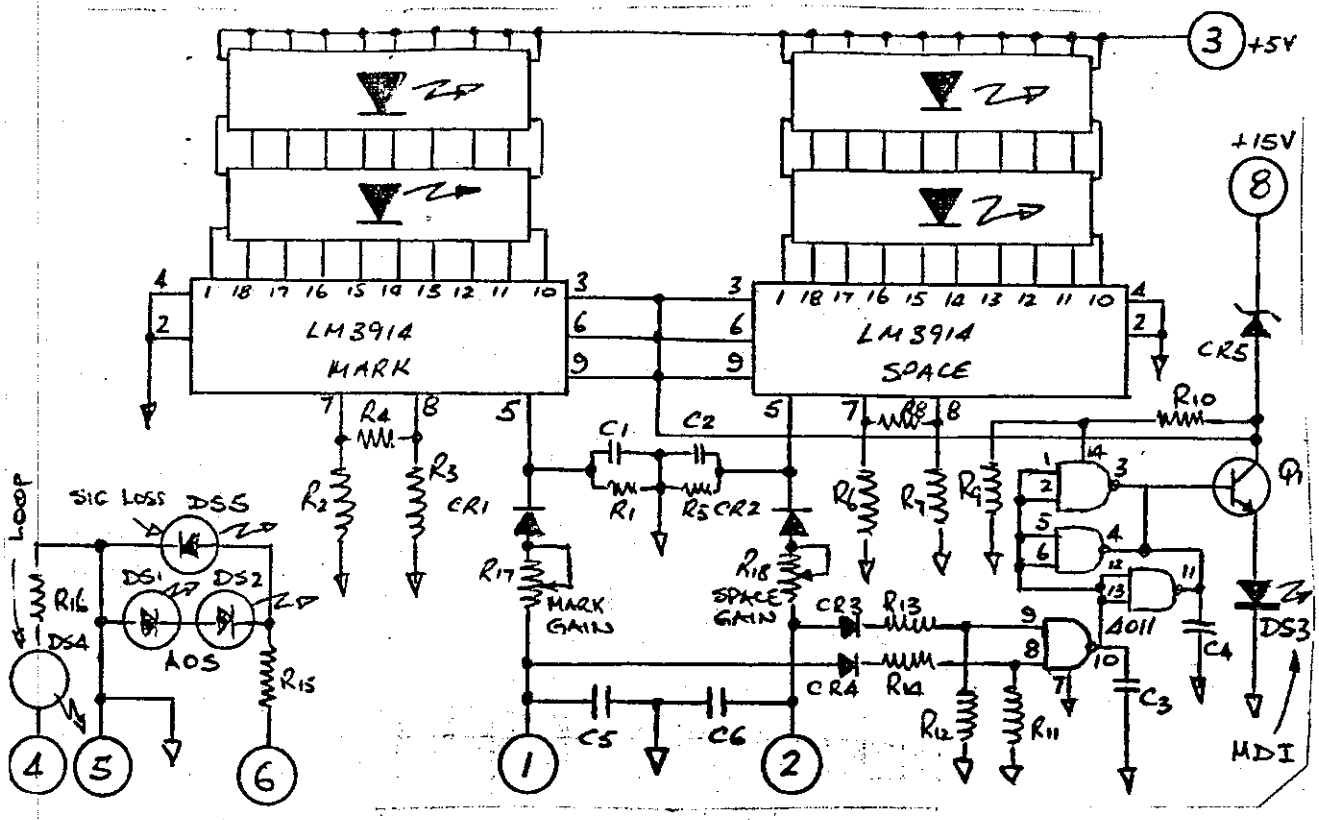
The display was designed to interface with a terminal unit incorporating solid state filters, for this reason it will be necessary to drive it via two 741 band pass filters if using a DT600, one in the mark channel and one in the space channel.

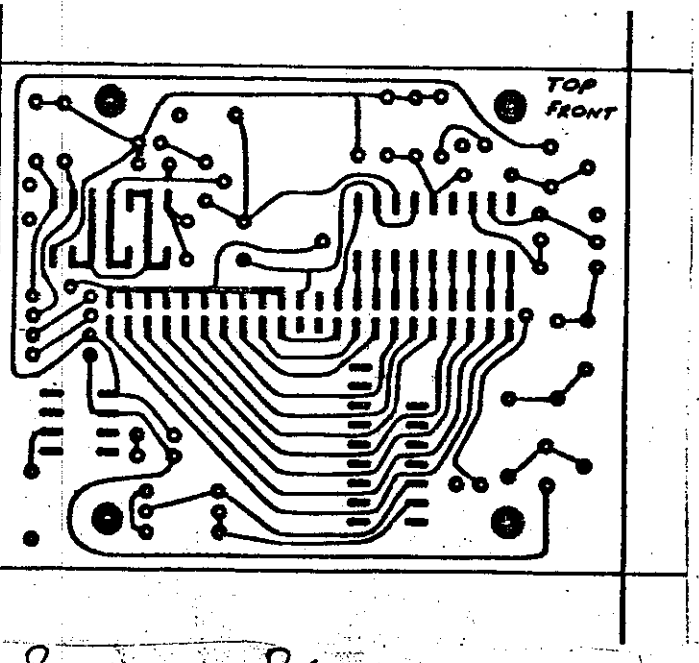
At the LED bar cross point there is two green LED's which display acquisition of signal and at three of the corners of the board there are LED's which display, multipath distortion, loop status, and loss of signal. The LED's in the cross are the rectangular type and red, except for each outer LED which is yellow to show point of maximum tuning. The common LM3914 bar graph LED drivers are used and all parts are commonly available.

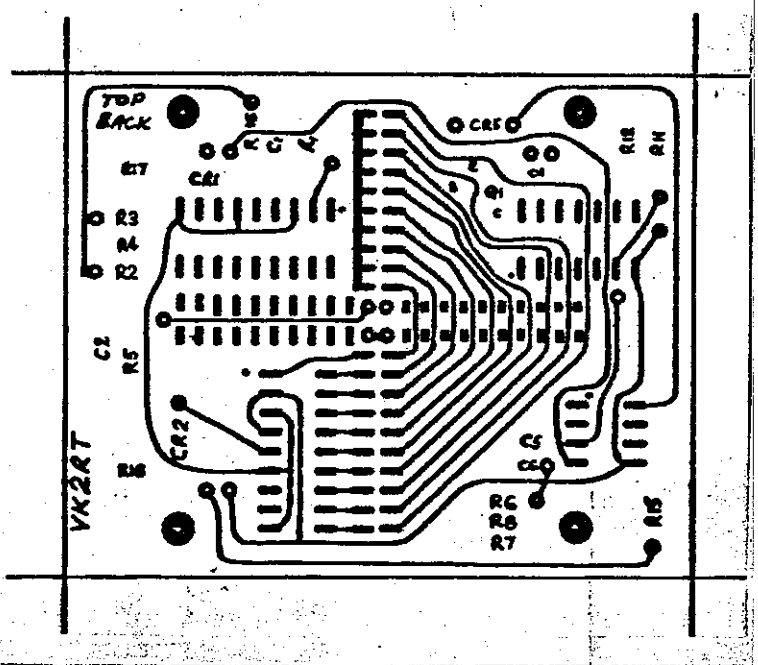
The printed circuit board is double sided with components on one side and the LED cross on the other side. Boards only or wired and tested units are available from Bruce VK2RT QTHR or Ph (02) 520 7838.

PTO FOR CIRCUIT DESC.

LED MARK / SPACE DISPLAY VK2RT.







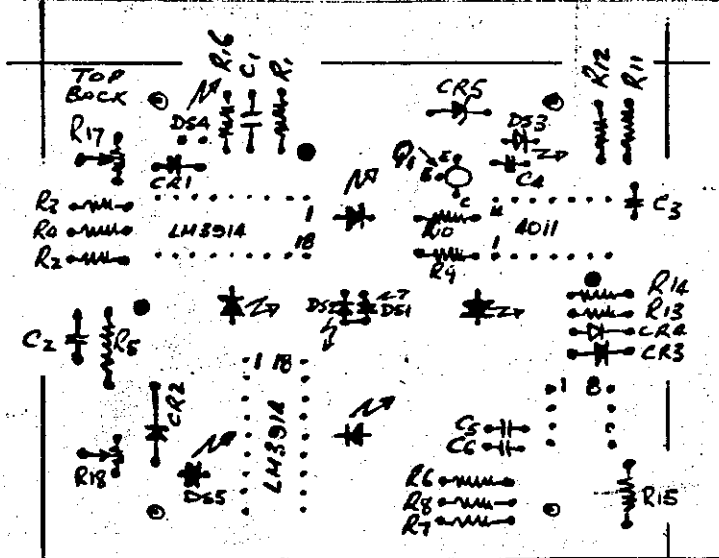
R_1 – 1MΩ
R_2 – 2·7KΩ
R_3 – 7·5KΩ
R_4 – 1KΩ
R_5 – 1MΩ
R_6 – 2·7KΩ
R_7 – 7·5KΩ
R_8 – 1KΩ
R_9 – 1KΩ
R_{10} – 1KΩ
R_{11} – 20KΩ
R_{12} – 20KΩ
R_{13} – 30KΩ
R_{14} – 30KΩ
R_{15} – 15Ω
R_{16} – 15Ω
R_{17} – 500KΩ
R_{18} – 500KΩ

C_1 – ·056
C_2 – ·056
C_3 – ·01
C_4 – ·01
C_5 – 270pf
C_6 – 270pf

CR1→4 – 1N914

CR5 – 5·1 VOLT ZENER.

Q1 – 2N2222



CB freaks turn on, tune in and blow themselves up

Thousands of users of citizens' band radios in Britain may this week attempt to swindle petrol stations by using high-powered transmitters to confuse electronic pumps and to drive off with cheap petrol. But the dodge, revealed in the British press last weekend, is, quite literally, lethal.

Amateur radio "hams", who often despise CB freaks for their clumsy use of the airwaves, have long been aware that a high-power radio transmitter can upset the electronics in a petrol pump. But they also know that it could trigger an explosion. This is why drivers with high-power transmitters in their cars switch them off when they are on the forecourt of a garage. High-energy radio waves can create a spark in metal objects that triggers an explosion. Explosive experts are well aware of the phenomenon, and the army even exploits it in Northern Ireland.

Licensed radio "hams" can legally install 100-watt FM amplifiers in their cars for long-distance two-way communication on the move. CB enthusiasts are legally limited to a few watts. But they often install equally powerful amplifiers or "after burners" to boost their transmitted signal. This way they can blot out others trying to use the same frequency. The situation is now so bad in Britain that in most major cities sensible CB communication is impossible.

Any high-power radio transmitter can upset electronic equipment, especially if it includes integrated-circuit chips and microprocessors. The radiation causes logic gates to open when they should close and makes synchronising circuits run at the wrong speed.

Professional electronic equipment has built-in shielding to block unwanted radiation. But domestic equipment, and until now petrol pumps, has not been shielded. So high-power radiation from a nearby transmitter can easily make the electronics go haywire. Whether the petrol meter runs fast or slow may be a matter of chance however.

In the US, CB freaks have found that they can upset electronic breathalysers. The only problem is that they cannot be sure that they will score an artificially low reading. Conjurers use a similar technique to upset watches without touching them.

The biggest risk for pump fiddlers is an explosion. Any metal rod which has a length that is a simple fraction of the transmitted wavelength can act as an aerial and generate an electronic signal. If the transmitter power is high and the range short, the signal may be strong enough to cause a spark. This can ignite petrol or detonate an explosive.

When contractors had to blast in Central Park in New York recently, they put up notices warning everyone to switch off their CB transmitters. But the explosive handlers were worried in case this merely encouraged some people to transmit at full strength and listen for bangs.

The British army in Belfast has for many years driven trucks with high-power, wide-band transmitters, broadcasting random frequencies at full blast. Anyone mixing an unstable home-made bomb, or planting it, is likely to disappear in a puff of smoke. This is why the IBA is moving one of its medium-wave commercial radio transmitters away from an oil refinery in the north of Scotland. The sound of pop music could have set the oil on fire.

New Scientist, 3 November 1983

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DON'T FORGET! NEW MEETING PLACE. S.E.S. HQ MONTAGUE ST. NTH. W'GONG.

SECOND "TUESDAY" OF EACH MONTH. 7:30 PM. (OR THEREABOUTS.)

BRING ALONG SOME FRIENDS. HEAR THE 'HOUNOURABLE' MEMBER FOR 'MT. MURRAY' SPEAK. AND THE 'MEMBER FOR MOONBOUNCE' BOUNCE HIM OUT.....

THE ILLAWARRA AMATEUR RADIO SOCIETY - P. O. BOX 1838 WOLLONGONG 2500

Meetings: Second Tuesday of every month except January at 7.30 p.m. in the S.E.S. Headquarters, Montague Street, North Wollongong. Committee Meeting - 3rd Tuesday of each month.

Repeaters: VK2RAW - 6850 VHF Mount Murray. VK2RIL - 7275 VHF Sublime Point.
VK2RUW - 8225 UHF Hill 60 Port Kembla. VK2RIL - 8725 UHF Sublime point.

Broadcasts: On Sunday night prior to Club Meeting - 7.00 p.m. - RTTY on 6850 and 7275 VHF Repeaters; 7.15 p.m., Voice on 6850 VHF, 7275 VHF and by relay on 3.562 Mhz. Call backs the WIA relay at 7.30 p.m.

W. I. A. Relay: On 6850 VHF at 11.00 a.m. and 7.30 p.m. weekly on Sunday.

Club Nets: 3562 MHZ SSB on Sunday at 8.00 p.m. and slow morse net on 28.440 Mhz on Tuesday at 8.00 p.m.

Newsletter: "The Propagator", published monthly to reach financial members in week prior to meeting. All articles, ads etc. to the editor, Dave Myers VK2DFL at 30 Highlands Pde. Bulli 2516. Telephone 84.9404. Copy deadline 3rd Tuesday each month.

Membership: The Secretary, I.A.R.S. P.O. Box 1838, Wollongong 2500. Full membership is $10.00 per annum; students and pensioner concessional members $5.00 per annum.

Awards: The award of the I.A.R.S. is "The Lawrence Hargrave" award. VK stations require 10 contacts with I.A.R.S. members; overseas stations require 5 contacts with I.A.R.S. members or contact with the Club station VK2AMW is sufficient in itself for the award. Band details - time, day, date, frequency, station worked + $2.00 or 4 I.R.C.'s to Award Manager, I.A.R.S., P. O. Box 1838, Wollongong 2500. No QSL cards required.

Store: The Club store operates at each Club meeting.

Committee: President - Dave Myers VK2DFL, 30 Highlands Pde., Bulli.
Vice President - Keith Curle VK2OB, 24 Beach Drive, Woonona.
Secretary - Murray McConnell VK2MY, 62 Ramah Avenue, Mt. Pleasant.
Treasurers - Geoff Cuthbert VK2ZHU, 2 Nioka Avenue, Mt. Keiraville.
- Andrew McEwan, 7 Nioka Avenue, Keiraville.

General Committee: Mike Keech VK2DFK, Ian Callcott VK2EXN, Ray Ball VK2XCC, Morry Van De Vorstenbosch VK2EMV, Jim Mead VK2EJM, Gerard Meuller, Roy Parton VK2KO, Jim Hayes VK2JIM.

Repeater Chairman: Graeme Dowse VK2CAG.

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EME Co-ordinator: Lyle Patison VK2ALU.

Broadcast Officer: Dave Colless VK2EZY

QSL's IN: Mike Keech VK2DFK and OUT: Ian Callcott VK2EXN.

Propagator Editor & Staff: Dave Myers, Editor VK2DFL, Ken Frost VK2DOI, Cartoonist Brian Wade VK2AXI.

Store: Ray Ball VK2PHD/XCC

Publicity Officer: Nora Fisher, 17 Elizabeth Street, Mangerton, 2500.

Awards Manager: Jim Hayes VK2JIM

Life members: Graeme Dowse VK2CAG , Keith Curle VK2OB