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CQ TV

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TELEVISION CLUB.

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THE BRITISH AMATEUR TELEVISION CLUB

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C Q - T V is published quarterly by the British Amateur Television Club and is posted free to all members. Single copies are available from the Editor at 25p each; back numbers are also available to members at reduced prices.

Overseas members may have their copy of C Q - T V sent by air-mail, for a surcharge depending on their country. Details are available from the Treasurer.

Members wishing to have material published in C Q - T V should send the manuscript and drawings to the Editor; articles are invited on all subjects of interest to amateurs and should be of about 1500 words; larger articles should be divided into convenient parts for publication in consecutive issues of the journal.

THE EDITOR
Andrew Hughes, 93 Fleetside, West Molesey, Surrey. KT8 0NQ Tel. 01-979 9983

SOME NOTES ON THE SMOBUO SLOW SCAN TV MONITOR.

by E.Bennett G3ZJO

The SMØBUO monitor (Radio Communication February 1971) still represents a first class up to date unit with results as good as the expensive commercial ones. It seems few have been built in Great Britain due to the cost and component availability.

The following suggests a source of, or substitute for, all parts, and reduces the overall cost from £100 plus to around £20.

All the changes to the original circuit are listed stage by stage, starting with the limiter.

LIMITER

The TAA350 has been replaced by the TAA350A. The difference is in pinning only. (Fig. 1).

DETECTOR

The monostable demodulators FCK101 are difficult to obtain and expensive (£4.80 each). TTL monostables SN74121 have been successfully substituted (Fig. 2) and cost only 25p each. The 6.8v zener on the supply line to the limiter and demodulators should be changed to 5.1v and the 39Ω increased to 100Ω if the TTL's are used.

FILTER

The low pass filter uses Phillips cores H20. These can be obtained from Mullard distributors as LA1302 at around £1 each.

Unfortunately it may still prove difficult to obtain three only. A slightly lossy substitute was wound on three LA1 cores which are easy to get, using very fine enammelled copper wire (guage unknown) filling the formers fully. These were later tuned in circuit using an audio generator and scope to 900Hz, 2KHz and 3KHz by removing turns. When these were replaced by LA1302's wound with 24swg. only a slight improvement was found in reduced attenuation of the wanted signal.

C.R.T.

The original c.r.t. M17-140gm was quoted at £60; a surplus 5" round type 5FP7 or 5FP7A can be used (Fig. 3) and gives similar picture size for £1.50. This c.r.t. is magnetically focussed, but a suitable unit can be ontained from an old T.V. receiver which will also provide suitable deflection coils and an EHT transformer.

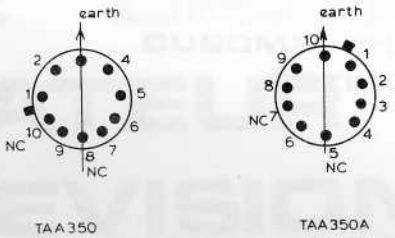


Fig. 1. Layout of the TAA350A is merely rotated clockwise 3 pins

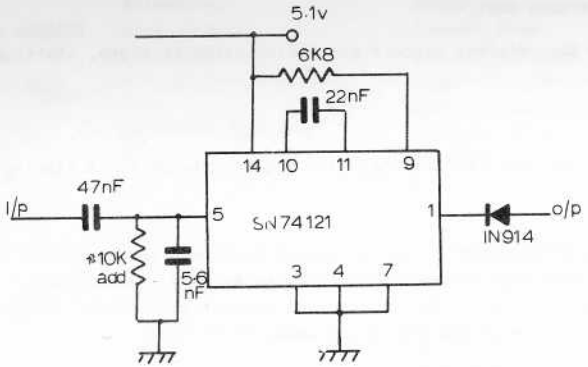


Fig. 2. Circuit for replacing FCK101 with a TTL

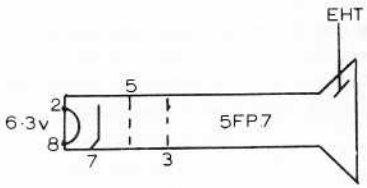


Fig. 3. CRT connections, grids 3 and 4 in the original circuit are ignored and no 400v supply is needed

SYNC FILTER

The capacitor values in the sync filter are available in the Mullard ceramic range, 16.4nf and 11.2nf being obtained by parallel combination.

TR9

The sync integrating stage TR9 is drawn as a PNP and labelled BC109. This should in fact be a BC179 PNP.

TIMEBASES

The 1.3volt VDR in the base of TR14 and TR24 can be difficult to obtain. A successful substitute is two silicon diodes (BA100) in series, forward biased for each.

The second hand deflection coils if used should have their windings series or parallel connected as necessary to give the nearest resistance to those quoted in the article.

E.H.T.

A simplified valve type line circuit is shown in Fig. 4 to use an old TV output transformer. This type of E.H.T. goenerator is cheaper and more reliable than a transistor type. EL81's may be obtained for 25p. A suitable transistor may cost £4.50 and "blow up" the first time power is applied.

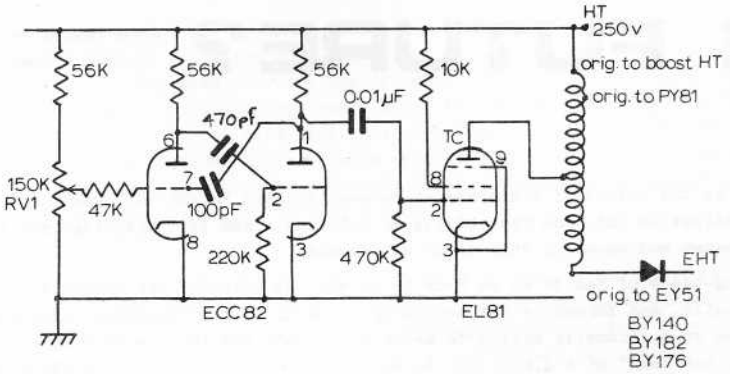


Fig. 4. EHT generator circuit RV1 may be replaced by fixed resistors after initial setting

MECHANICAL DESIGN

The +10v - 10v 250v and 6.3v plus the E.H.T. supplies are better built on a separate chassis due to the effect on the crt due to the fields from the transformers.

The timebases and the limiter video circuitry were built on separate boards as in the original design, although printed circuit boards were used in preference to matrix boards. These P.C. boards complete with crt assembly and controls fit easily into a cabinet 10½" wide x 7" high x 12" deep.

RESULTS

Very good pictures have been received from all over the world using a monitor as described. An interesting point in favour of the limiter, and noise immunity, on this design, being the fact that Q5 written material has been copied on SSTV when the SSB from the same station has been Q2 due to QRM and noise. Good pictures have been copied from an S1 signal on a reasonable QRM free channel.

A PROGRAMME FOR THE FUTURE?

John Ingham ex VK5ZDZ/T
ex VE6AZN

What follows is the result of a discussion between Richard VE6AAR and myself which started out to be an investigation into the feasability of building a Ham tv transmitter for transmission of training programmes and ended in this train of thought:

One of the bug-bears of Ham tv as we know it is the low power of the transmitters that most hams are able to build, and therefore the necessity of using quite directional antennae. The problem becomes one of continually having to swing as antenna and this is particularly frustrating if one is "reading the mail" of a q.s.o. not to mention the pitifully low strength signal available off the side on back of the two stations taking part!

The thought therefore occured to us that these problems could be solved by the use of a wide band repeater operating (say) from 1250MHz on receive to 440MHz on transmit. Then once you get a good picture from the repeater you need never turn your beam again, even to "read the mail". If another station is copyable, you'll copy him! Similarly, once you've got a decent picture to

the repeater you will be assured that all who receive the repeater will also get a decent picture.

Of course, seeing as it only has to be done once, some effort can go into making the repeater transmitter powerful so as to allow the use of an omnidirectional antenna. Similarly, the problem of building a 1250MHz receiver need only be solved once for the repeater. All this means that as a bonus, everyone will be able to monitor himself coming back from the repeater at all times; this would make alignment of transmitters, modulators etc. a lot simpler.

The more Richard and I kicked this idea around the better it seemed to look. This is the stream our thoughts took. To avoid a burst of noise between transmissions the station whose turn is next could "arm" his transmitter so that upon loss of sync or picture on a vert. internal pulse from the repeater his transmitter would automatically put itself on the air; there would be scarecely more than a line of loss of picture.

But what if someone was videotaping the session? On playback there would be loss of tracking. This could be prevented if both stations were synchronous. A few minutes thought convinced us that this could be done quite easily and being with it some quite decided advantages.

Not many ham tv operators that I know of go to the trouble of building a broadcast type sync pulse generator; some in fact use completely free-running H and V oscillators. We suggest however that the repeater be provided with a broadcast sync pulse generator and add sync to all incoming non-complimentary signals.

Each station would generate lock H and V to the signal coming from the repeater. Of course an H timing control would be required to ensure the signal reached the repeater in the proper H time for addition of sync. V mistuning could be ignored for ham work as it would never be more than a line or two out.

This means that sync need not be transmitted on the "up link" to the repeater (as it will be added there) and so better use can be made of the dynamic range to transmit picture information. It could be arranged that if a station does transmit a composite signal the repeater does not add its own sync. This would make possible the relaying of a non-synchronous or colour signal. Such a sync-adding synchronous arrangement would allow two stations to produce a "split screen" effect with station A utilising the left-hand side of the screen and station B on the right-hand side. The effect could be obtained by the simple expedient of a H triggered multivibrator at each station with a variable duty cycle producing pulses to blank out (or white out in a negative modulation sense) the appropriate part of each line.

Perhaps even more fascinating the multivibrator could be set to trigger on every alternate line. At the receiver at each end a blanking pulse could be used to blank out each alternate line plus one, so that each station could see the other simultaneously! Such an arrangement would halve the available V resolution, but with free-running systems this is all you get anyway. I'm sure even the sound could be chopped in this manner as well so each station would hear the other with no feed-back. A simple low-pass filter at the repeater would cut out any 7.75KHz whistle this would cause. A blanking phase inversion toggle switch on the receiver at each end would enable one to monitor oneself coming back from the repeater.

Of course both signals must be of the same strength reaching the repeater; but once again, this would be easy to arrange. If the A.G.C. of the repeaters receiver was set to clip at a certain level representing an average good level (anything stronger would clip) then all stations

would naturally strive to get their signals up to, but not over, this level.

This too would have secondary advantages - break-ins would always be recognised, and each station would always have a good idea how he was getting out (by increasing his power until he clips).

All of this would make it simple to set up an O.B. If you get a good picture of yourself coming back from the repeater then all regular viewers of the repeater will also get a good picture.

Finally, the one repeater transmitter can be built crystal controlled, vestigial sideband etc. with the tightest specifications you like, whereas the link up transmitters with almost 100MHz to "roam" in around 1250MHz need only modulated oscillators.

Coming back to the original thought that started this, young would-be hams could be lent a converter so that they could watch weekly "open university" type classes by which they could (as a class project) build their own converters and then go onto becoming fully-fledged hams.

Anyone interested in building the first one?

atv contest news

N A T I O N A L A M A T E U R T E L E V I S I O N C O N T E S T

Organised by the British Amateur Television Club (B.A.T.C.)

WHEN 1900 - 2300 gmt April 27th (1st session)
1000 - 1400 gmt April 28th (2nd session)

All amateurs licensed to transmit or receive amateur tv. All entrants must operate within the terms of their licences.

There will be three sections:

A FIXED OR /A STATIONS

B PORTABLE

C LICENCED STATIONS (other than /T licences) who can transmit sound only and receive video.

Frequencies & Modes: Sound on 144, 432 or 1296MHz A3, F3, or A3J or A3H
Vision on 432 or 1296MHz A5.

Contest Exchange shall consist of

i) Call sign
ii) Vision signal report based on the B.A.T.C. vision reporting chart of 0 - 5
iii) Serial No. which shall start at 001 and increase by one per contact throughout the entire contest.
iv) QTH (QRA) locator
v) QTH
vi) A code group of FOUR non-consecutive numbers (eg 9724) which must be sent by vision only. The code group must change for each session of the contest.

Scoring Stations entering Section A or B = 2 points per Km
Stations entering Section C = 1 point per Km

A multiplier of 6 should be applied to all contacts on the 1296MHz band.

Incomplete or one way contacts should be claimed and will be allowed at the adjudicators discretion.

All logs on the B.A.T.C. contest sheets if possible should be sent to The Adjudicator, 10 Pilgrim Road., Droitwich, Worcs. WR9 8QA, postmarked not later than 19th May 1974.

B.A.T.C. Contest log sheets are obtainable from the above address accompanied by a large s.a.e.

Results of International Amateur Television Contest 1973

Section A

Position	Points	Station
1	1970	ON4HV/T
2	1720	G6ACR/T
3	1432	G6AHJ/T
4	1368	G6KQJ/T
5	1248	DC6LCA
6	1230	ON4UB/T
7	1216	G6AHT/T
8	1168	DK1AQ
9	1034	DC6VY
10	944	DK1VF
11	749	DJ6PC
12	703	DL2DW
13	679	ON5CX/T
14	618	DK3QG
15	548	DL3DK
16	457	G6AFK/T
17	420	G6AEC/T
18	366	DC2FF
19	132	DJ6PI
20	112	DJ6TA
21	48	G6RDZ/T
22	36	DK6TE
23	20	DC8BF

Section B

1	3880	GW6AHR/T
2	1739	DJ6PI/P
3	1407	DJ7RI/P
4	1112	DJ9PF/P
5	910	DL2DW/P

Section C

1	1171	DJ3TQ
2	358	G8DXD/A
3	342	DL2JT
4	209	ON500

5	203	ON4VT
6	202	ON4ZZ
7	194	G8DJM
8	174	DC4QN
9	54	DF1QX
10	46	DJ7RZ

Section D

1	168	DJ1YI
2	152	DC6VD
3	76	DB1PX

Certificates are awarded to leading G stations in each section.

RESULTS OF NATIONAL AMATEUR TELEVISION CONTEST 1973

Section A

Station	No. of Contacts	Score	County	Best Dx	Km	Pwr. Input	HT asl	ANT
1. G6ACR/T	23	1720	WK	GW6AHR/T	115	*8	450	18PB
2. G6AHJ/T	15	1432	WK	GW6AHR/T	133	16	400	18PB
3. G6KQJ/T	22	1368	Staffs	GW6AHR/T	88	*55	550	2x46MB
4. G6AHT/T	12	1216	WK	GW6AHR/T	145	25	300	8/8
5. G6AFK/T	23	457	BD	G6AEX/T	16	80	-	18PB
6. G6AEC/T	4	420	HD	G6KQJ/T	75	30	-	18PB
7. G6RZD/T	2	48	SX	G6AIY/T	12	40	0	8/8

Section B

1. GW6AHR/T	25	3880	BRM	G4CNJ	175	10	2300	2x18PB

Section C

1. G8DXD/A	6	358	WR	GW6AHR/T	72	-	200	46MB
2. G8DJM	4	194	WR	GW6AHR/T	85	-	300	18PB

Section D

No entries

* indicates power output

FOURTH WORLDWIDE SSTV CONTEST

Sponsored by CQ Elettronica Magazine

The Italian Magazine C Q Elettronica have pleasure in announcing the 4th Worldwide Slow Scan Television Contest. The purpose of this contest is to promote increased interest in the SSTV mode of operation as used by Radio Amateurs.

RULES

1) PERIOD OF CONTEST
Part 1 15.00 - 22.00 GMT on February 9th 1974
Part 2 07.00 - 14.00 GMT on February 10th 1974.

2) BANDS
All authorised frequencies within the 3.5 - 7.0 - 14.0 - 21.0 & 28.0 MHz bands.

3) MESSAGES
Messages will consist of: Exchange of pictures and also included are a) the call sign b) report (RST); c) serial number.
The serial number must start at 001 and is increased by one for each successive contact during the period of the Contest and the serial number is irrespective of the Band(s) used. Exchange must be made exclusively with the SSTV mode. For the "W" are accepted the FCC Rules.

4) EXCHANGE POINTS AND MULTIPLIER
a) Contact score 1 point per contact on the 3.5, 7.0, 14.0 28.0 MHz Bands. 2 points per contact on the 28.0 MHz Band.

b) A multiplier of 5 points for each Continent (Max 30 points) and 2 points for each Country (ARRL List) worked can be utilised on each band. In addition the the ARRL List will be considered as separate Countries and the W call areas WØ to W9 and VE Call areas from V0 to VE7.
The same continents and Country is only valid once on each Band. The same station can only be worked once on each Band (Max 5 contacts) during Contest period.

5) SCORING
Total exchange points multiplied by the multiplier total.

6) SECTIONS
a) Entrants transmitting and receiving video.
b) Entrants receiving video only. For this purpose the same general rules apply and the same station is valid once only on each Band.
A separate results table will be made for each of these two classes of entry.

7) LOGS

Logs should contain: Date, Time of contact (GMT), Band in use, Call sign, Report (RST) sent and received. Serial numbers sent and received, points, multipliers and final score. Although not essential, it would be appreciated if entrants could enclose a cover sheet with a short description of the Station (With photo if possible) together with any comments on the Contest.

All entrants are kindly requested to report on any serious Contest irregularities e.g. Exchanges in other modes. For entrants in the b. Classification it is only necessary to record the message of the station heard.

All Logs must be received by not later than March 20th 1974 in order to qualify.

Send them to: Prof. Franco Fanti
Via A. Dallolio n. 19
40139 Bologna ITALY.

8) PRIZES

1st A free 12 month's subscription to cq elettronica Magazine

2nd A free 6 month's subscription to cq elettronica Magazine

3rd A free 6 month's subscription to cq elettronica Magazine

9) RULES OF BEHAVIOUR AND PENALISATION

The Logs must be compiled in accordance with the Rules listed in (7). The contacts must be made by means of the SSTV mode and it is not permitted to use other mode of transmission either before, during or after the exchange of message by Slow Scan Television.

During the Contest it is expected that Amateurs will observe the fundamental rules of courtesy and good operating during contacts.

Failure to observe any of the Rules will result in the exclusion of the entry from the final results and any such Logs received will be considered as check Logs.

All Logs received become the property of the Edition CD and will not be returned.

The decision of the organising Committee in any dispute will be final and any subsequent controversy cannot be referred to the Civil Court.

We regret that due to pressure of work on the author, his article "Integrated Circuits" has been deferred to the next issue of this magazine.

We also regret that the expected article on an amateur pan-tilt-head has had to be delayed, and will appear in print later this year.

CIRCUIT NOTEBOOK No16

J. Lawrence GW6JGA'T

GREY SCALE AND COLOUR BAR GENERATOR (Suitable for fast and slow scan television)

The generator consists of an oscillator circuit using a Schmidt Trigger gate, (one half of a 7413), a 7490 counter and a three input gate, (one half of a 7413 suitably connected).

The oscillator frequency is determined by RV1, R1 and C1. Assume that pins 9, 10 and 12 of the 7413 are at logic 1, there will be an inversion of logic level from pin 13 to pin 8. If pin 13 is at logic 0, pin 8 will be at logic 1, C1 will now charge towards logic 1 until the upper switching threshold is reached. At this time pin 8 will flip to logic 0 and C1 will be discharged to the lower threshold level to complete the cycle. A squarewave output appears at pin 8.

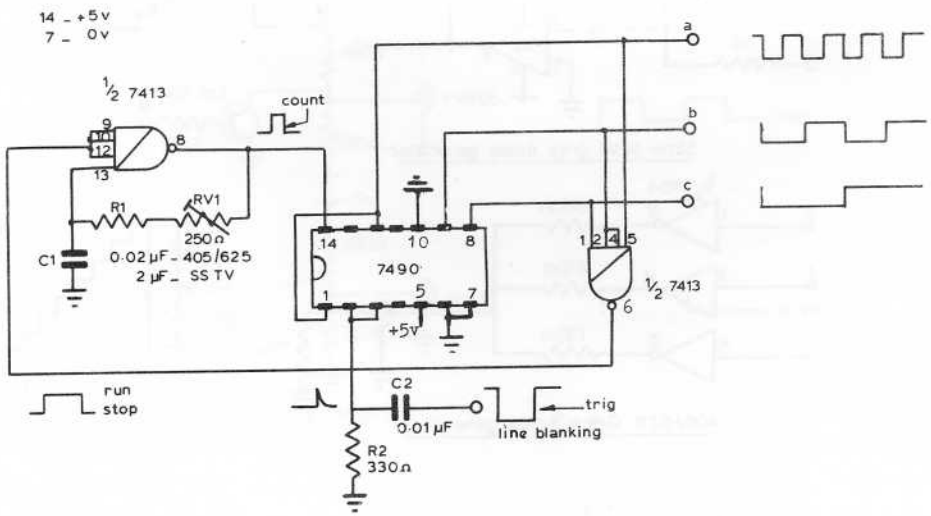


Fig 1. Triggered oscillator

The oscillator can be gated by the input to pins 9, 10, and 12. Logic 1 allows the oscillator to run, logic 0 disables the oscillator with the output at logic 1.

Assume that the 7490 decade counter has just been reset to zero by the positive edge of a negative going line blanking signal. Outputs a, b and c will be at logic 0 and pin 6 of the 7413 will be at logic 1. The oscillator will now run, driving the 7490 counter, the count being made on each negative edge of the input from the oscillator.

When the counter has counted to 7 (logic 111), outputs a, b and c will all be at logic 1 and pin 6 of the 7413 will be at logic 0 thus disabling the oscillator. The output waveforms at a, b and c shown in Fig. 1. The oscillator will not restart until the counter is reset to zero by the line blanking signal.

For SSTV purposes, the voltage waveforms from a, b and c can be fed through suitable resistors to a current summing junction using a 741 operational amplifier as shown in Fig. 2. This produces an 8 level grey scale signal with peak white at the left and black at the right. The signal output is approximately 1v p-p but this may be increased by increasing the feedback resistor.

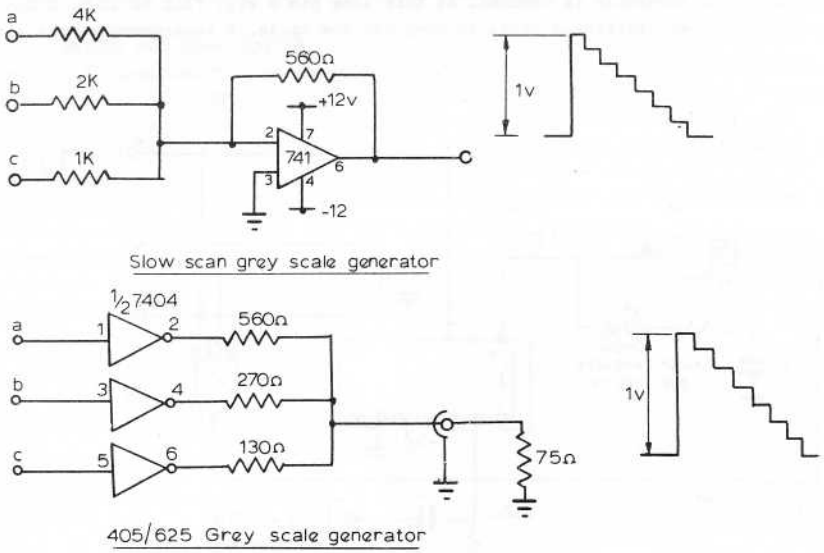


Fig. 2

The 741 is unsuitable for fast scan TV and here it is more convenient to invert all three signals using part of a 7404 inverter and to sum the outputs directly as shown.

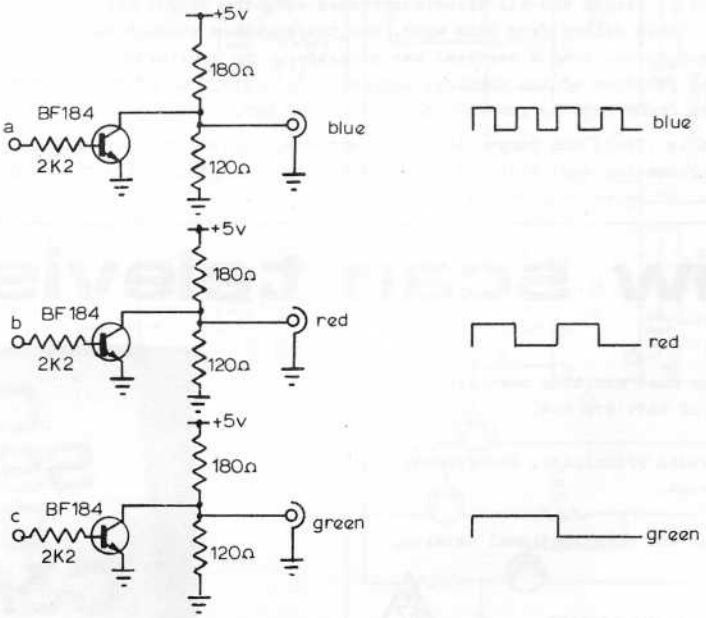
For Colour, each output can be made available individually to form the R.G.B. signals required to produce a standard colour bar pattern. The signals could be fed directly to an R.G.B. monitor or encoded in the usual way.

Two values of C1 are shown, one for 405/625 line TV and the other for SSTV. RV1 is adjusted so that the grey scale or colour bars occupy one active line period of the standard being used.

REFERENCES

Texas Application Report B81 (or CA152) Characteristics and applications of the SN7413N dual Schmitt Trigger.

Texas Application Report B102 TTL counters and registers.



R.G.B. outputs

Fig. 3

a cruciform generator.

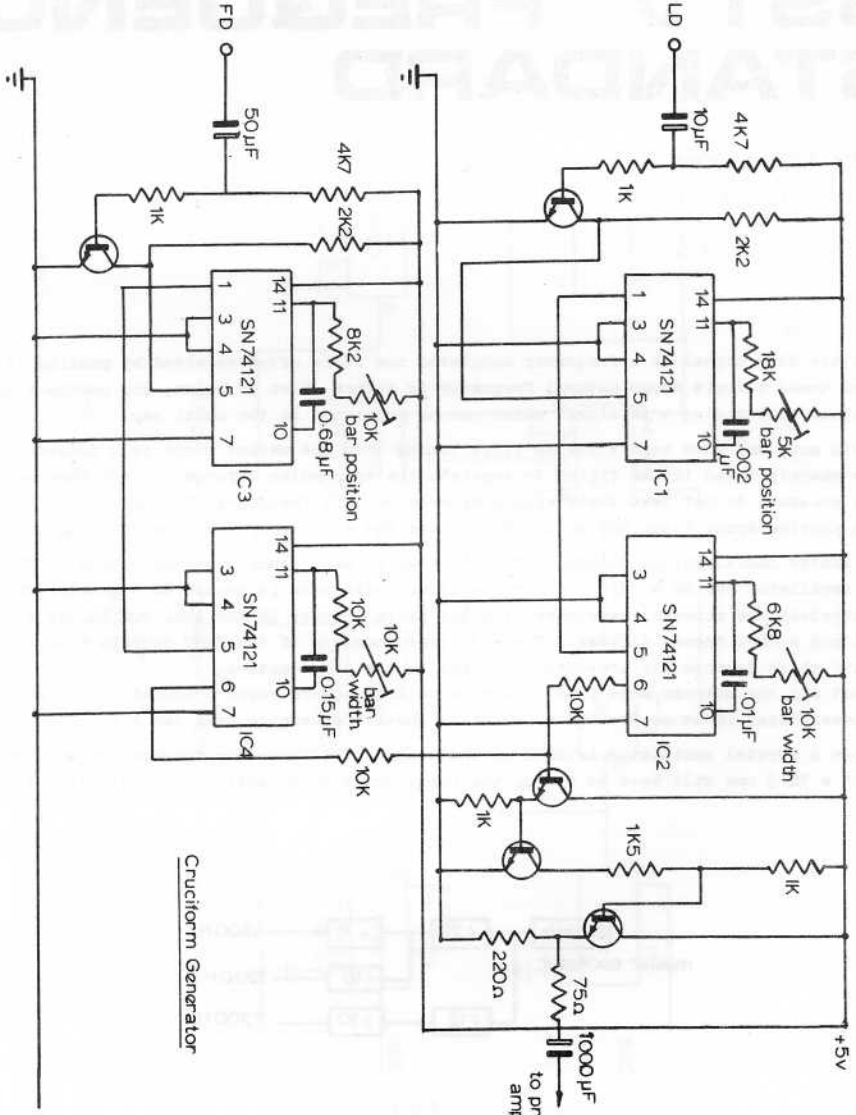
T. Brown G6AGM/T

This cruciform generator was primarily constructed as a simple way of increasing the number of test waveforms in the station whilst experimenting with vision mixers and special effects generators. I apologise for its simplicity, but I am not a professional design engineer, only a dedicated ham.

The waveform is very useful for showing up LF distortion i.e. tilt etc., in the station, and it also proves useful for over the air tests. Path lengths between the home QTH and other stations tend to be long, as other amateurs are far and few and the cruciform can be easily distinguished even on the noisiest paths.

The circuit is simple and all transistors used were the 2N3704 series, or equivalent. I.C. No. 1 is a monostable driven from line sync, and the negative edge at the end of its unstable period triggers I.C. No. 2 on a vertical bar generator. By varying the time constants of the monostables, the position of the vertical bar, and its width, can be varied; the excercise is then repeated at frame rate to generate the horizontal bar.

The output is .7volt non composite video, and now requires processing with syncs and blanking. Several processing amplifier designs have been published in C Q - T V, and that printed in C Q - T V No. 68 works very well with this generator.


LD
10µF
4K7
1K
2K2
18K
5K
bar position
.002µF
14 11
SN74121
1 3 4 5 7
10
IC1
6K8
.01µF
10K
bar width
IC2
10K
1K
1K5
220Ω
75Ω
1000µF
+5V
to proc. amp.
FD
50µF
4K7
2K2
8K2
10K
bar position
.68µF
IC3
10K
10K
bar width
.15µF
IC4
10K
Cruciform Generator

SSTV FREQUENCY STANDARD

by Grant Dixon

As the SSTV signal is a frequency modulated one it is often received by passing it through a damped tuned circuit whose natural frequency is either above or below, the passband of the SSTV signal thus giving a AM signal which can be processed in the usual way.

With more and more sophisticated I.C.s coming onto the market there is a tendency towards using a sharply tuned 1200Hz filter to separate the sync pulse information and here we find that several amateurs do not have their sync precisely on this frequency. The unit described was designed to provide sync, black and white frequencies for setting up SSTV transmitting gear.

A master oscillator on 276KHz is divided down in accordance with the scheme in Fig. 1. This master oscillator can be ½ 7413 but for really accurate work it should be a crystal on 276KHz. As LF crystals are somewhat expensive it might prove cheaper in the long run to use a 2.76MHz crystal and a 7490 decade divider. The ÷23 stage consists of two 7490 decades with connections to a 7410 which detects the presence of 23 and resets the counters.
NOTE that all the outputs come from ÷2 stages so that square waves produced may be passed through a low pass filter if it is decided to transmit these frequencies over the air.

When a crystal oscillator is used as the master oscillator the frequencies will be "spot on", but with a 7413 one will have to set up the frequencies by adjusting the small preset potentio-

continued on page 20.

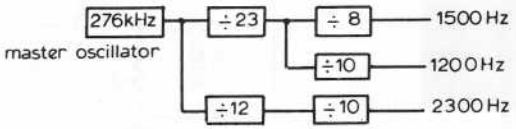
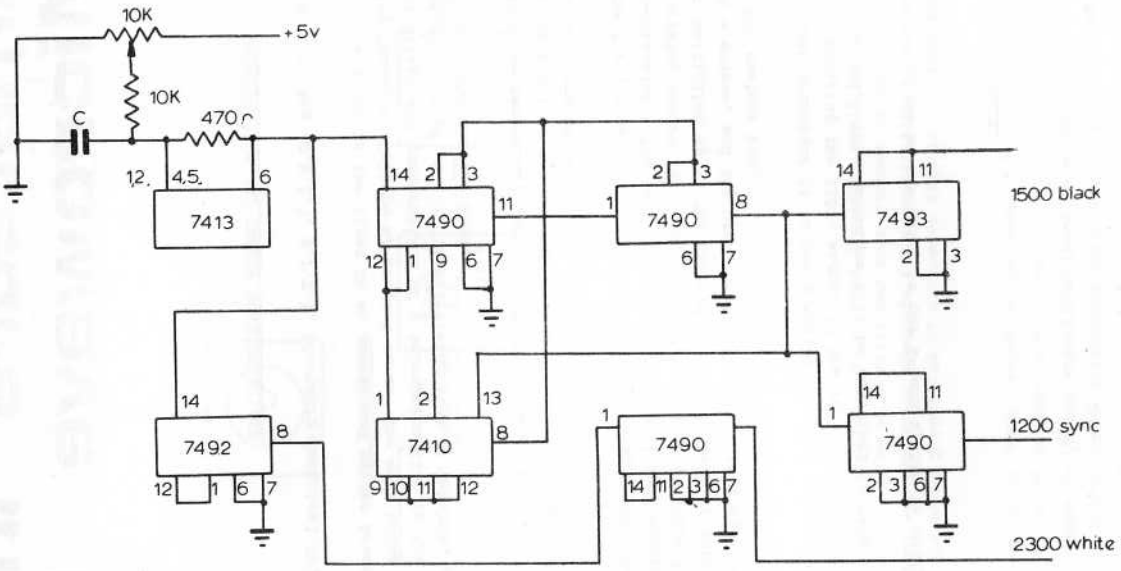


Fig.1



All pin connections shown except for power supplies

	0v	+5v
7410, 7413	pin 7	pin 14
7490, 7492, 7493	pin 10	pin 5

For C use two disc capacitors in parallel to total 6300 pF

Fig. 2.

Amateurs in the Microwave Bands.

PART 1 INTRODUCTION AND DESIGN CONSIDERATIONS

By J. Witt T. Eng (C.E.I.), M.I.T.E. (Coventry Technical College)

This article is the first in an occasional series describing the work done by students at Coventry Technical College as project work. The work being done consists of two main projects (i) the design and construction of a television link in the (10 - 10.5)GHz amateur band, (ii) the modification of an old PYE television link in the 7GHz private users band for use in the (5.65 - 5.85)GHz amateur band.

Of these two bands, the (10 - 10.5)GHz band (also refered to as X-band or 3cm) is probably of most interest to the average amateur, since the components are relatively cheap and obtainable on the surplus market.

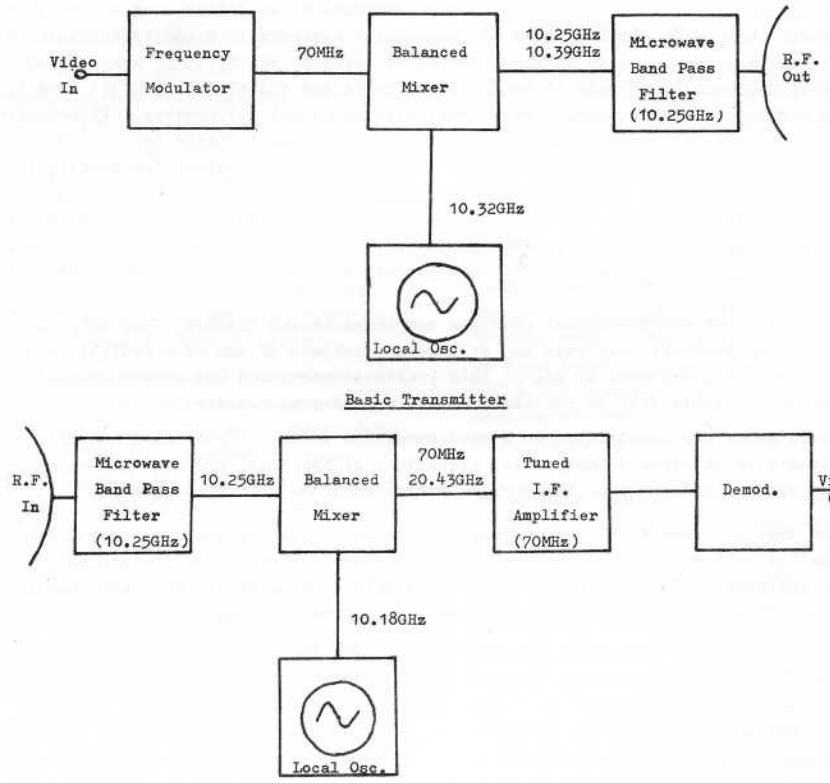
The first consideration is the choice of a suitable source of microwave energy for the local oscillator. The best technique, as used in most commercial systems, is to provide a high power crystal controlled local oscillator working at about 100MHz. This fundamental frequency is then multiplied up to the desired band by a chain of varactor diode multipliers. The cost of such a source, and the need for sophisticated test equipment would almost rule out this method for amateur use.

Another technique is to use a reflex klystron oscillator operating at the required frequency. By applying the video signal to the repeller electrode, a frequency modulated r.f. output is obtained. This technique will be described in detail in a future article.

The technique we are using in our X-band system is outlined in the diagram on the following page.

Basic Receiver

The actual choice of local oscillator would, of course, be influenced by what is available. We are using a Gunn diode oscillator which is a solid state device providing about 30mW of r.f. energy at X-band from a 10 volt d.c. supply. If this device is too costly for



amateur use, a surplus reflex klystron operating at a fixed frequency would be equally suitable. Although output r.f. powers of a few milliwatts may seem strange to anyone used to working at lower frequencies, they are perfectly adequate for communication at microwave frequencies up to about 30 miles (the usual properties of microwave signals), mainly due to the high antennae gains.

The I.F. frequency was chosen to be 70MHz. which is the usual I.F. frequency for commercial systems. However, the similarity between this system and a commercial system is only superficial. For example, such items as isolators and circulators cannot be used since their cost would be prohibitive (of the order of £100 a time!)

Most of the system is being constructed by students at as little cost as possible. However, certain items were obtained from old commercial equipment. These items would be almost impossible for most amateurs to obtain, but can be designed and built by many amateurs using components and knowledge already at hand. These units are all at I.F. (70MHz), and are (a) frequency modulator (b) frequency demodulator (discriminator) (c) receive I.F. amplifier with a gain of 80dB (approx). and giving enough drive for the discriminator (about 0.5volts in our case). When the system is finally completed it may also be neccessary to provide a transmit I.F. amplifier as well. I hope to publish to final details when the system is completed and tested. This article is intended to outline some of the possibilities and to show the development of a system from idea to finished product. Any major problems and their solutions can then be passed on to other amateurs in order to help them and even save unneccessary expense.

Two of the major constructional problems are antennae and filters. The antennae were built and tested by two students last year and will be the subject of the next article in this series. The filters are being designed by two of this year's students and the constructional details and outline design procedure will be published after they have been tested.

All r.f. paths are constructed in X-band waveguide which, if purchased in 10ft. lengths without flanges is relatively inexpensive (less than £1 per foot) and can then be cut to size and flanged as required. Again, the surplus market would be a cheaper source.

I hope that this series will encourage amateurs to use these uncrowded bands and obtain picture quality that would be almost impossible at lower frequencies. If interested amateurs would like assistance with any problems concerned with working in the microwave bands, I am sure that the editor would be pleased to forward any letters to me.

" SSTV Frequency Standard "

continued from page 16

meter. If you have access to a digital frequency meter this is no problem, but for those people not blessed with this amenity I would like to suggest a possible alternative - a well tuned piano.

The frequency of middle C is 261.6Hz and as the frequency doubles for each octave we should find 1200Hz in the range TWO octaves above middle C. Actually D" comes out to be 1175 and D sharp comes out to be 1244 - so feed the 1200 (nominal) output to a pair of phones and tune it between D" and D sharp. Once this frequency is tuned the 1500 and 2300 will also be correct.

For those amateurs who are transmitting SSTV to the U.S.A. and who wish to operate their equipment on the U.S.A. 15Hz line frequency, this is easily obtained by a +8 and +10 from the 1200Hz. This would mean that the sync pulse start was locked to the sync frequency, thus giving cleaner syncs.

THE WIRELESS PRESERVATION SOCIETY

The recently inaugurated Wireless Preservation Society is exclusively devoted to the collection, preservation and restoration of wireless and electronic equipment (including sound reproduction, gramophone and television gear) for purely cultural, educational and historical purposes.

An entirely non profit organisation, all its officers are honorary, and entry to its Wireless Museum is free of charge.

The Wireless Museum has been established containing many receivers dating back to the first days of broadcasting in Great Britain in November 1922. Several of these very old sets have been completely refurbished by radio amateurs and short wave listeners and brought back into working order.

It is understood that this is the only museum in the world where the exhibits may actually be taken down and handled by the visitors.- a particularly valuable feature for research workers.

Viewing is entirely free of charge, and at any mutually convenient time; please ring the Curator for details, at Gosberton 485 (STD 077 - 584 - 485).

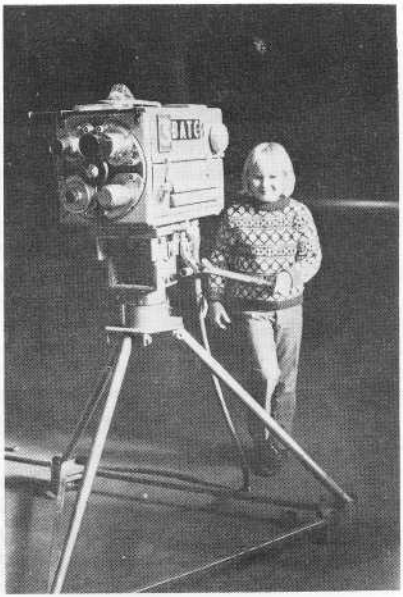
The Wireless Preservation Society would be grateful for the donation of additional items, and would also appreciate any old wireless books, magazines or catalogues; these help in dating and classifying the various exhibits. Readers of C Q - T V may also be able to help by supplying information and equipment from early television experiments, especially to do with stereo tv. Please write to the Curator, Douglas Byrne G3KPO whose address is Homa House, Quadring Watergate, Spalding, Lincolnshire.

POSTBAG

Anthony Neumann in NewYork, U.S.A. is a member of long standing whose professional work will be of much interest to members of B.A.T.C. He is working on the development of all solid state television cameras using CCDs - Charge Coupled Devices - as the image sensor. These he thinks will eventually displace most types of live pick up devices such as the vidicon and plumbicon we know today. Present sensors have only 100 x 100 elements, but high resolution devices are not far off - a most exciting field to be working in.

Richard Thurlow G3WW in Wimblington, Cambridge continues his slow scan work. On 2m he has worked G3YQC in Rugby, G3ZJO in Northampton and G2BAR im Bristol; "no one else to work 2m SSTV, is there?" he says! So amny say that they are building monitors etc., but none transmit. However he reports he has received G5CP (with Robot gear) on 7040, GW3DZJ (of colour SSTV fame) recently spoke to 2 ON4s on 80m SSTV net, but had to say G's could no longer transmit SSTV on 80, and that quite a number of people are writing to him about 40m skeds etc. G3GRJ has a pattern generator with about 15 different waveforms.

batc at Leicester



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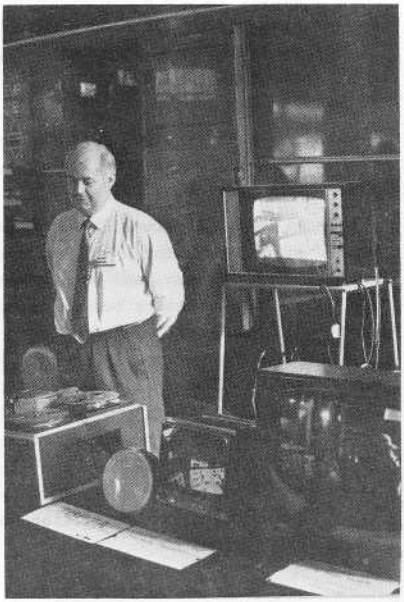

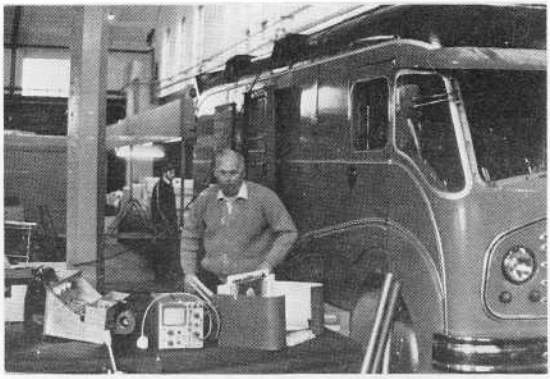

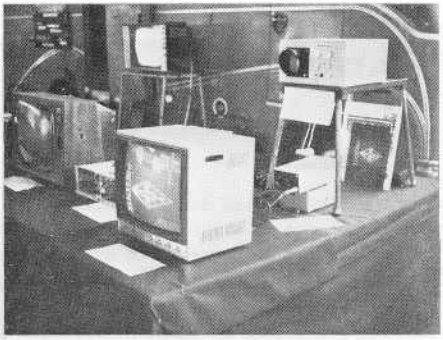

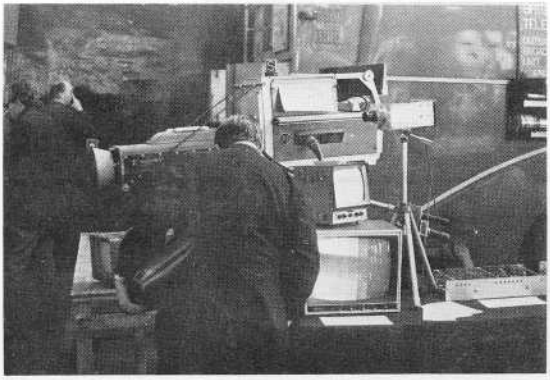

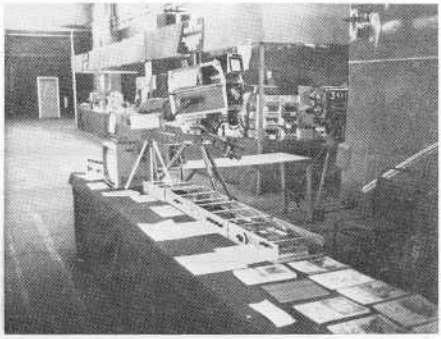

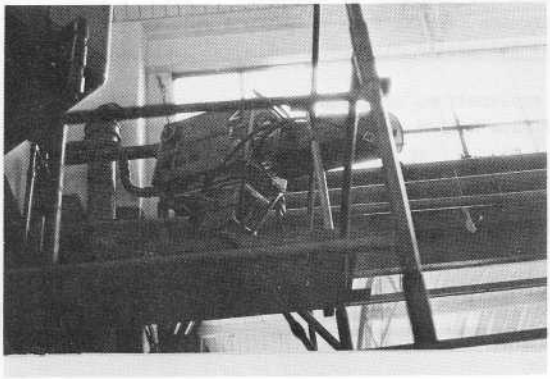

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