
THE PROPAGATOR

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY

PO BOX 1838 WOLLONGONG NSW 2500

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AUGUST
1982

MEETINGS ARE HELD ON THE SECOND MONDAY OF EACH MONTH (EXCEPT JANUARY) AT 7.30 P.M. IN THE CONGREGATIONAL HALL, CORNER OF COOMBE AND MARKET STREETS, WOLLONGONG. VISITORS ARE WELCOME TO ATTEND MEETINGS.

LAST MONTH'S MEETING

The raffle last month was for 2 prizes - 4 way power boards. After a large amount of confusion because two hooks were sold with the same numbers, a close scrutiny of the colours of the tickets gave the prizes to Ian VK2 EXN and Geoff VK2 ZHU. The talk was by Lyle VK2 ALU on Moonbounce.

Lyle covered the early days of moonbounce at Dapto and has asked for people who may be interested in becoming involved in the new setup being constructed at present.

DX-pedition:

If you want to see Dave VK2 VAV/YKQ then you had better do it at the next meeting. Dave will be flying out to spend 6 months as an exchange student at Virginia Commonwealth University in Richmond, USA, and he leaves on the 18 August 1982.

(No his is not going by submarine!)

RED-LINE ISSUE:

Is there a red line under the postcode on your address label this month? If so, your annual club subscription is terminally ill, and the only remedy is to immediately forward \$7 to the treasurer at P.O.Box 1838 Wollongong, or at the August meeting. Without this immediate cash injection, your monthly posting of the Propagator will decrease with this issue.

SILENT KEY

Ron Jackson VK2 NXK passed away while on holidays overseas. Some of you will remember Ron who attended the Tech class a few years back and obtained his novice licence prior to his retirement from his business in Wollongong. I would like to convey condolences to Mary and the family from the Club and Committee.

Keith VK2 OB

REPEATER REPORT BY GRAEME VK2CAG (Reprinted from last month's Propagator)

MOUNT MURRAY

REPAIRS TO THE MAST WHICH WAS BLOWN DOWN ON 25TH APRIL ARE ALMOST COMPLETE. A STRONGER BOTTOM SECTION HAS BEEN WELDED ON AND GUY WIRES FITTED AT THE HALF WAY POINT. MORE GUY WIRE IS BEING PURCHASED FOR THE TOP. GUY ANCHOR POINTS ARE WELL SECURED IN CONCRETE.

A TEMPORARY PIPE MAST PUT UP BY PAT VK2KEY KEPT THE REPEATER ON AIR UNTIL ANOTHER GUYED TELESCOPIC MAST WAS ERECTED FAR ENOUGH AWAY TO ALLOW THE REPEATER TO REMAIN ON AIR DURING THE REPAIR PROGRAM.

WE ARE EXPECTING DELIVERY FROM LANTEX OF A ROBUST 6DB GAIN OMNI-DIRECTIONAL AERIAL. THIS IS TO BE MOUNTED ON THE REPAIRED MAST. EXPERIMENTS WILL THEN TAKE PLACE WITH THE TRANSMITTER CO-SITED WITH THE RECEIVER AND USING THE NEW AERIAL FOR THE TRANSMITTER AND EXISTING TEMPORARY AERIAL FOR THE RECEIVER. THE LANDLINE WHICH WAS PREVIOUSLY USED IN LINDING THE TRANSMITTER TO THE RECEIVER WILL BE USED TO CARRY LOW VOLTAGE AC FOR CHARGING THE BATTERY. LOWER TRANSMIT POWER - ALL SOLID STATE - WILL BE USED. THE TEST PERIOD WILL SHOW IF THE HIGH AERIAL GAIN AND GREATER ELEVATION WILL OFFSET THE REDUCTION IN POWER. THE REPEATER'S FINAL OUTPUT POWER WILL BE DETERMINED BY THE BEST COMPROMISE BETWEEN COVERAGE AND THE ABILITY OF THE LANDLINE TO CARRY THE NECESSARY SUPPLY.

WE ARE NOW WELL ON OUR WAY TO OUR FINAL GOAL OF HAVING A FULLY SOLID STATE DIPLEXED REPEATER WITH ONE AERIAL.

THE INTERFERENCE PROBLEMS DETAILED IN THE PROPAGATOR IN APRIL HAVE BEEN RESOLVED.

HILL 60

THE UHF REPEATER CHANNEL 8225 WAS MOVED FROM ITS TEMPORARY LOCATION AT THE QTH OF MARK VK2KFI TO ITS PERMANENT HOME IN THE COASTGUARD BUILDING ON HILL 60. IT WAS TAKEN OFF AIR ON FRIDAY 25TH JUNE AND GIVEN A TUNE-UP AND MODIFICATIONS DONE TO THE IDENT. TO GIVE A MORE CONSTANT LOWER LEVEL.

THE AERIALS WERE RE-MOUNTED ON A NEW ALUMINIUM MAST WITH STAINLESS STEEL FITTINGS. THE AERIAL SYSTEM IS MADE TO WITHSTAND THE CORROSIVE ATMOSPHERE TO BE EXPECTED AT THE QTH. THE COST OF ALL THE HARDWARE AND FITTINGS WAS BORNE BY A LOCAL BUSINESS IN EXCHANGE FOR OUR SERVICES IN PROVIDING THE LABOUR NECESSARY TO INSTALL HIS VHF BASE STATION AT THE SAME SITE.

ASSISTANCE AND CO-OPERATION GIVEN BY OUR MEMBERS TO THE VOLUNTEER COASTGUARD ASSOCIATION IN THE PAST HAS RESULTED IN THE AVAILABILITY TO US OF THIS PRIME UHF SITE WITH THE ADDED BENEFITS OF FREE POWER AND EXCELLENT SECURITY. MANY HOURS OF WORK DONE BY MANY OF OUR MEMBERS, MUCH OF IT BEHIND THE SCENES, HAVE RESULTED IN KEEPING THE COST OF THIS PROJECT DOWN TO ZERO DOLLARS.

THANKS, FELLERS.

TESTS SO FAR SHOW AN IMPROVEMENT OF 2 S-POINTS OR SO IN ALL AREAS. IT APPEARS TO BE WORKABLE ALMOST ANYWHERE BETWEEN KIAMA AND AUSTINMER WITH A 300 MILLIWATT HAND-HELD UNIT.

OUR SPECIAL THANKS MUST GO TO

THE ROYAL AUSTRALIAN COASTGUARD ASSOCIATION
MR. BOB BARNETT OF BARNETTS COASTAL COURIERS
MARK RYAN VK2KFI AND FAMILY.

T7, T8, T9, T3, T1, T2, T7, T8, T9. Flick to A.M. and adjust T10 and T13. Go back to U.S.B. and adjust T12, T3, T1, T2, T7, T8, T9.

Now turn the following trimpots to the positions told. RV3 fully clock-wise, RV2 fully clockwise, RV6 about 10 o'clock, RV7 about 11 o'clock, and RV11 fully clockwise. Once this has been done reduce the output of the signal generator and do the receiver tune up again.

To tune the transmitter connect up a dummy load, go to A.M. and tune the following coils to give maximum power output.

T4, T5, T6, L7, L11, T11, T4, T5, and now turn the big white wire wound ceramic pot. Flick up U.S.B. and adjust the following to give maximum power while a constant tone is being transmitted.

T6, L7, L11, L13, T11, T4, T5.

All tuning procedures have now been done and you are ready to go on 15m. The only problem is that it will take a while for you to get used to the switches other than that I am sure that you will have many great reports.

Table For Frequency Reference. (using an 8.500MHz crystal)

<u>CHANNEL</u>	<u>SWITCHES</u>	<u>FREQUENCY PLUS OR MINUS V.F.O.</u>
1	4 open	21.125
2	4 open	21.135
3	4 open	21.145
4	4 open 6 closed	21.155
4	4 open	21.165
5	4 open	21.175
5	1 and 4 open	21.185
6	4 open	21.195
7	4 open	21.205

By R. Buono VK2PEL

FOR SALE

YAESU FT301 TRANSCEIVER WITH FP301 POWER SUPPLY \$680

TONO MODEL 350 COMMUNICATIONS COMPUTER \$550

(RTTY, CW etc)

SANYO VIDEO COLOUR MONITOR \$200

ALL ITEMS HAVE BOXES AND BOOKS

DAVE VK2PGV TELEPHONE (042) 28 0637

FOR SALE

CUSHCRAFT ARX-2, 2m Vertical Antenna,
Brand new, still in Box. \$40 o.n.o.

SBE, 10m converted CB.

28.340 Mhz to 28.630 Mhz usb/lsw/cw
\$70 o.n.o.

Phone Jim VK2UPS/YYB on 322844
(if unanswered leave message on
answering machine)



"I need a replacement part.
Call 471-3481 in Hong Kong."

You and Your Paper

The MELBOURNE AGE is read by the people who run the country.

The CANBERRA TIMES is read by the people who think they run the country.

The SYDNEY MORNING HERALD is read by the people who think they ought to run the country.

The MELBOURNE HERALD is read by the wives of the people who run the country.

The FINANCIAL REVIEW is read by the people who own the country.

The WEST AUSTRALIAN is read by the people who think the Eastern States run the country.

The HOBART MERCURY is read by people who think the country ought to be run the way it used to be run.

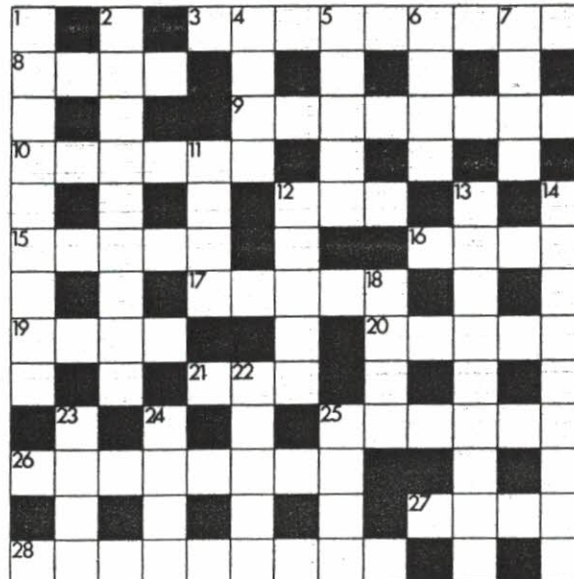
The ADELAIDE ADVERTISER is read by people who think it still is.

The SYDNEY DAILY MIRROR is read by people who don't care who runs the country as long as they've got big bosoms.

The CLUB NEWS of our Club is read by the members who have an interest in the welfare of the organisation.

I.M.B.C.

PUZZLE



ACROSS

- 3 A brief farewell to this band? (5, 4)
- 8 Plans to correct Pam's distortion? (4)
- 9 Disc-jockeys in bowlers? (8)
- 10 Has no longer got it taped? (6)
- 12 Group receiver fixed (3)
- 15 Bewilder with a complicated circuit? (5)
- 16 The spiral of electricity charges (4)
- 17 Beams over the television? (5)
- 19 Much of a rectifier from a friend? (4)
- 20 Marine ultrasonics, like Richard said (5)
- 21 Often an extreme state of modulation (Abbrev.)
- 25 One in the eye for the TV screen? (6)
- 26 Manufacturer for BBC's American sound? (8)
- 27 Chief part of a main conductor? (4)
- 28 Singular example of personal reception (9)

DOWN

- 1 It seems to resist more after induction (9)
- 2 Is it a receiver or some other mechanism? (9)
- 4 Disapproval expressed of surface noise (4)
- 5 It has current for hi-network induction (5)
- 6 Bit of a blow to prepare for 16 Across? (4)
- 7 Love radio shows when she's in them? (4)
- 11 Woolly sound from their ramshackle designs! (4)
- 12 Extra volume instruction finishes employees (5)
- 13 Milkman in electricity storage business? (9)
- 14 Valve charges passed by this device? (9)
- 18 Glass shutter mechanism (4)
- 22 Intuition about hunting a switch? (5)
- 23 Large networks contain hereditary element (4)
- 24 Speed up for such jazz? (4)
- 25 An indication of call-up? (4)

Touchy transmitters?

An article on "antennas" by Bill Lowe, GB3UOS, to the north-west of Sheffield, letter of the Association of Sheffield Amateur Radio Clubs makes one reflect on the limitations that we have apparently come to accept in the design of modern amateur transmitters. For he firmly advises amateurs not to attempt to use voltage-fed systems such as the 136ft long-wire that I find a most convenient multiband system (since it uses some salvaged multi-core telephone cable and is slung over a tree it cost me precisely nothing to put up).

Bill Lowe states that "if you squirt your transmitter into a high impedance you wreck your power amplifier... even though it can be made to look like a low impedance by the use of an antenna tuner or "Z-match"... the slightest tweak on the controls sends the s.w.r. sky high and it is during the microsecond or so of high s.w.r. that the snap, crackle and pop takes place in the power amplifier... we concede that experienced operators are adept at the art of tuning up and get away with it but we cannot emphasise strongly enough that for the average chap, an inherently low impedance is essential."

Well, well. Certainly Bill Lowe, whose firm handles many of the popular transmitters using high-perveance and line-output valves in their output stages, should be in a good position to speak from experience, even if his "microseconds" are artistic licence. And one must accept that solid-state power amplifiers, unless protected, are vulnerable to high s.w.r. and that stages using line-output valves need to be tuned quickly since they are seldom intended to operate with a high duty cycle. But should we encourage designers to accept that we are never going to use voltage-fed systems or those with high s.w.r.?

The almost 20-year-old transmitter that feeds my long-wire aerial has an 813 p.a. that loafs along at 150-watts d.c. input and I suspect that if I wished I could spend all day twiddling the knobs of my a.t.u. without any snap, crackle and pop (except perhaps from the high-efficiency r.f. output). But that's progress!

W W

Transport

We are obliged to Truck and Bus magazine for drawing our attention to the following report from an official British Rail accident report:

A mini, a motorbike, a horse and cart, a mini-bus, a sedan and a Mercedes, in that order, were waiting at an automatic rail boom gate. As the train passed, the horse dribbled on the neck of the motorcyclist, who thought he was about to be bitten. The motorcyclist turned and hit the horse, let the clutch slip and fell off the cycle when it surged forward and crashed into the Mini. Having been hit, the horse reared and dumped the cart's load of scrap metal on to the mini-bus. The bus was pushed back into the sedan by the impact of the metal.

At the same time, a man who had been walking his dog ran to help the cyclist after looping the dog's leash on to the boom gate. Since the train had passed, the boom gate lifted and took the barking dog seven metres into the air. To save the dog, another pedestrian lowered the gate and dog. Unfortunately, the driver of the Mercedes had overtaken the whole mess and was hit by the lowering boom and dog.

(NB: If you think that sounds like the elephant sitting on the red Mini Minor, so does this column. But the editor of Truck and Bus says he's convinced but thinks the report may have been around a while.)

SMH

Is this a record?

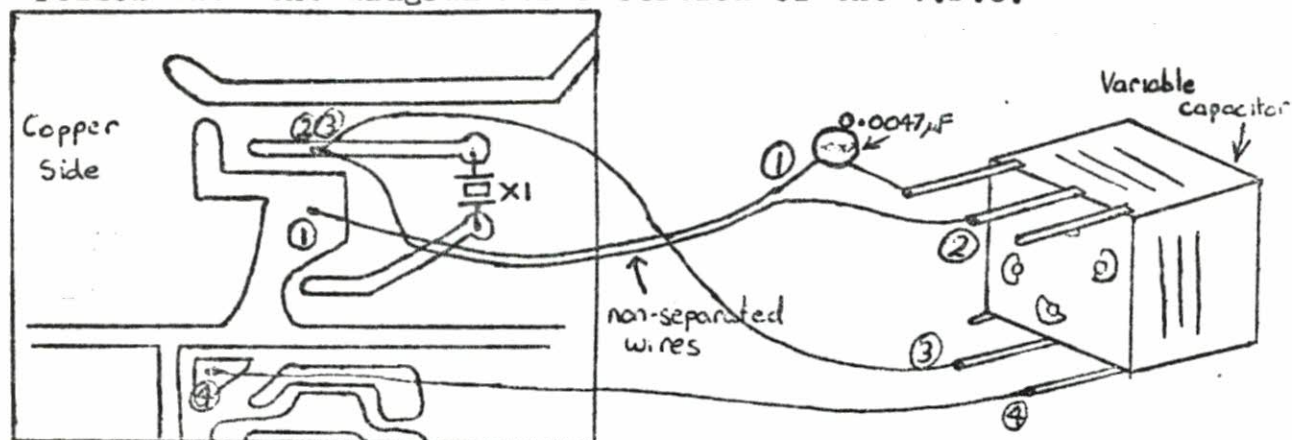
If you've just come down with a bad case of sunburn, this may explain. We've received a cable datelined Boulder, Colorado, which says: "A solar flare so huge that scientific instruments were useless to measure it shot from the Sun's surface yesterday, releasing more energy than the Earth uses in a year." The cable warns that the flare will disrupt communications — "short-wave radio signals fade as the waves of energy wash across space" — and there could be disruption in electrical power and cross-country computer networks.

SM

tracks which you cut. Then mount the switches somewhere easy to reach. NOTE: The tracks that were cut will only give a lift when the track is open. Therefore when the switch is open it will give a lift according to the table above. The tracks which were crossed work opposite to the lifts. Therefore when the switch is closed you get a drop, and when the switch is open it is as normal. So you must connect the switches up in the right manner, or you may have a drop or a lift on and think you are on your band while you are really off.

Ten kilohertz frequency jump is not much good, seeing that for a novice there is not much band space, so a slide V.F.O. must be installed. All that is needed is a dual gang mini variable capacitor out of an A.M.F.M. radio and some rainbow wire, about four lengths of 30cm but macking sure that two of the lengths have not been separated. Now a couple of parts have to be removed from the transceiver. These are CT-I and C20 located next to crystal one, the crystal you replaced.

Follow the next diagram for insertion of the V.F.O.



Make sure that the metal parts of the variable capacitor do not earth even the shaft.

Calibration of the V.F.O. is necessary after it has been mounted.

Now the V.F.O. is complete and it will give an average of 10 to 13 kilohertz slide. The frequency of the variable capacitor can be adjusted by turning the screws at the back, if it is necessary.

Once this has been completed vital component changes must be made so that the transmitter will run about 15 watts P.E.P. and receive properly. If the component changes were not made you would not achieve much power output and the receiver would be quite deaf.

The following must be done.

Change C42 to about 7 or 8 pF not critical. Now tune T4 and T5 to increase the power output. Change C43 to 0.01 μF, change C185 to 24 pF and C11 to 15 pF. Tune T4 and T5 to increase the power output.

This set up here using the 8.500 MHz crystal will give a range of 1.3 megahertz, from about 20.775 to about 22.035 full coverage. The novice band is found by having the transceiver on channel 5 on an 18 channel set with the 320 KHz switch open, this frequency is about 21.165. Now that you know what frequency you are on the final tune up may begin.

Connect up a dummy load, go to channel one with switches 6 and 7 closed. Now press the button and turn the slug in the V.C.O. until the rig starts to transmit, if it is necessary.

Now go to the highest frequency, channel 9 with switches 3, 4, 5 open macking sure that switches 6 and 7 were put into open position again. Press the mike and turn the V.C.O. slug until it starts to transmit, if it is necessary.

Now we can start to tune the receiver up. Flick to U.S.B. and do the following.

Turn RV3 to the point just before the receiver cuts out. Now get an R.F. signal generator and tune it to about the middle of the band. Turn the signal generator on and tune the following coils in the order given for maximum signal strength.

CONVERSION TO 15m FOR CYBERNET C.B. TRANSCEIVER by VK2PEL

This is an easy and economical way of getting started on 15m. It can be achieved by performing the following procedures.

Tune the transceiver for maximum performance on the lowest frequency (ie: channel one). Tuning is achieved by watching the increase of power on the meter by tuning the following slugs in the order given.

T1, T2, T3, T6, L7, L11, L13, T4, T5.

Now that tuning is achieved, turn the slug in the V.C.O. block so that the transceiver just oscillates on this frequency. (ie: turn the slug further into the can to the point just before the rig stops transmitting).

Now crystal one (X,1) must be changed from 10.0525 to 8.500, but if it is possible do not jump straight from 10.0525 to 8.500, but bring the crystal values down gradually (ie: from 10.0525 to 9.800 to 9.500 to 9.100 to 8.700 and so on) and perform the following after each crystal change. Put the transceiver on the highest frequency and turn the V.C.O. slug further into the can until the transceiver is transmitting, then do the tune up procedure as in step one.

If it is not possible to change the crystal values down in steps, then you can just plain jump down to 8.500 MHz, but it will be just a little more difficult to get it transmitting on 15m.

To get the transceiver to oscillate on 15m is not very difficult, but it is hard for us. The power is so minute that an indication on whether it is transmitting or not is not known. So the transceiver may be well operating on 15m but we cannot notice it. To achieve oscillating on 15m do the following.

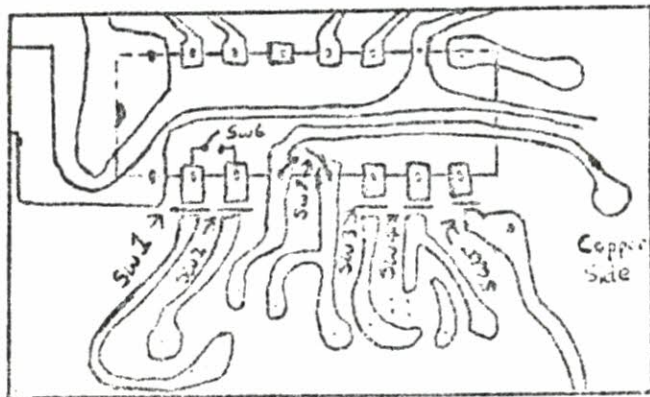
Get a multimeter and place it on its most sensitive D.C. amps scale and put the leads in the antenna socket, one to ground the other to the centre.

Put the transceiver on its highest frequency. Now press the button, the most probable result was that there was no reading on the meter, now keeping the transmit button pressed turn the slug further into the can of the V.C.O. until the slightest meter reading is achieved. If there is still no reading turn the slug in T4 to where it is about 3mm outside the flush position of the can, and turn T5 to where it is about 1mm inside the can. Now after this turn T4 and the V.C.O slug slightly and alternately until a reading on the meter is seen. If this still does not work get an R.F. signal generator and connect it up to the antenna socket, now tune it to a frequency known on the transceiver (table at the end of article) and turn the V.C.O. slug until you can hear the signal.

Now the transceiver is on 15m or somewhere around 21MHz. Keeping the multimeter on, follow the tune up procedure as in step one. Only keep tuning until a power indication is seen on the meter inside the transceiver then immediately cease the tune up. Connect up a dummy load and start the tune up procedure again.

Once this has been done the transceiver is putting out about 2watts on around 21MHz, depending on the crystal used.

To get around 1.3MHz coverage, and be able to use the amateur band as well as listen to some shortwave do the following.



Follow the diagram of the P.L.L. and cut the tracks shown. Also connect switches up across the tracks shown.

- 1=10 KHz lift
- 2=20 KHz lift
- 3=160 KHz lift
- 4=320 KHz lift
- 5=640 KHz lift
- 6=10 KHz drop
- 7=40 KHz drop

Then connect up switches via rainbow wire so you can open and close the

NEW VK3 RTTY REPEATER

We have from our friends at Emdarc who send us a weekly print out of their weekly news bulletin the following item:-

VK3RTY the new RTTY Repeater will be operating from a temporary suburban location under test conditions on some evenings during the next few weeks between 8.00pm and 10.00pm. The frequencies required to access the repeater are;

INPUT 147.950 MHZ OUTPUT 147.350 MHZ.

Note: A space character from the space bar must be sent to open the repeater. After this you may type normally.

USER COMMANDS

?=-W MENUE
 ?=-R RY TEST
 ?=-Q QUICK FOX TEST
 ?=-M MARK TONE(20 SECS)
 ?=-S SPACE TONE (20 SECS)

Time out occurs if:

1. Overs exceed 10 mins.
2. Character rate is less than 20/min.

The 'MENU' command produces this information printout.

WANTED More operators on 8225 (channel 9) UHF Repeater.

APPLY--- 433.225 IN 438.225 OUT

SATELLITE INFORMATION

<u>SATELLITE</u>	<u>UPLINK (MHZ)</u>	<u>DOWNLINK (MHZ)</u>	<u>BEACON (MHZ)</u>
A08/A	145.850-145.950	29.400-29.500	29.402
A08/J	145.900-146.000	435.20=-435.100	435.095
U09	NONE	NONE	145.825
U09	NONE	NONE	435.025
RS3	NONE	NONE	29.320
RS4	NONE	NONE	29.360
RS5	145.910-145.950	29.410-29.450	29.41/29.45
RS6	145.910-145.950	29.410-29.450	29.41/29.45
RS7	145.960-146.000	29.460-29.500	29.34/29.50
RS8	145.960-146.000	29.460-29.500	29.46/29.50
RK02	21.230-21.270	29.580-29.620	29.577

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