

3RD JULY 1959
P.O. BOX 2
GREEN BANK, WEST VIRGINIA

MR. LESLIE A. GALLOWAY
1713 EVERETT ST.
LAFAYETTE, INDIANA

DEAR MR. GALLOWAY:

THANK YOU FOR YOUR INTERESTING LETTER OF THE 29TH JUNE. ACCORDINGLY, I AM ENCLOSED MY CHECK FOR SUM OF \$120.00 MADE OUT TO MR. GORDON SMITH IN PAYMENT FOR THE THREE RECEIVERS MARKED #1, #2, #3. IF YOU CAN LOCATE SOME EXTRA UV199 TUBES PLEASE INCLUDE THEM WITH THE SET #2 SO THAT IT CAN BE MADE TO OPERATE READILY. UNFORTUNATELY, MY BANK ACCOUNT IS PRESENTLY IN A RATHER ANEMIC CONDITION SO I HAVE DATED THE CHECK FOR THE 15TH, AT WHICH TIME THE ACCOUNT WILL HAVE RECOVERED. THERE IS NO PARTICULAR RUSH, SO PACK THE SETS UP WELL, PARTICULARLY #1 SET WHICH HAS NO CABINET.

Ship the same as by you.
MY INTEREST IN OLD RADIOS IS RATHER ACADEMIC. I AM GRADUALLY ACQUIRING A VARIETY OF THESE SETS TO MAKE ELECTRICAL MEASUREMENTS THEREON. AS YOU KNOW, MOST OF THESE SETS WERE PUT TOGETHER BY RULE OF THUMB AS THERE WAS PRACTICALLY NO TEST EQUIPMENT TO BE HAD. EVENTUALLY, I SHOULD HAVE A SCIENTIFIC HISTORY OF THE DEVELOPMENT OF THE RADIO ART OF THAT DAY ALONG WITH A COLLECTION OF SPECIMENS. PERHAPS A CURIOUS HOBBY, BUT FUN FOR ME. I HAVE WANTED TO DO THIS FOR A LONG TIME BUT HAVE BEEN OUT OF THE COUNTRY UNTIL RECENTLY.

YES, I AM ASSOCIATED WITH THE RADIO ASTRONOMY INSTALLATION HERE AT GREEN BANK. IT IS A LARGE UNDERTAKING AND I HAVE A VERY SMALL PART OF IT. WE NOW HAVE ONE RADIO TELESCOPE WITH A DISH 85 FT DIAMETER OPERATING AND ANOTHER WITH A DISH 140 FT UNDER CONSTRUCTION. A VARIETY OF NEW BUILDINGS ARE ALSO BEGINNING TO APPEAR. A YEAR FROM NOW THIS SHOULD BE QUITE AN IMPRESSIVE INSTITUTION. PART OF THE LARGE PLAN EVENTUALLY CALLS FOR A MUSEUM. I INTEND TO DONATE MOST OF MY COLLECTION OF OLD RADIOS THERETO WHEN THE TIME COMES.

BEST REGARDS, *Grote Rorer*

GROTE RORER

P.S. Enclosed is a "want" which tells you things I could very well work out in Hawaii. Perhaps Wm. Baird may be interested. G.R.

11 July 59

Galloway sets #1, #2, #3 arrived on 10 July 59. No visible breakage. There are 1-UV199 (brass), 6-UV201A (brass), 3-CX301A (tall bakelite base), 6-CX301A (short bakelite base), 1-CX112. Condition unknown.

Set #1 is a superhit using Madison-Moore transformers, Hammarlund tuning condensers and General Radio audio transformers. The set does not have a cabinet. The panel is rather cut up and patched at right end, a filament voltmeter is missing from panel, also a few loose wires which appear to go to C batteries. Set very dirty, all I.F. & A.F. transformers are still continuous. The Sangamo bypass condensers show $90K\Omega$ & $200K\Omega$ respectively. The set does not appear to ever had a cabinet.

Set #2 is a superhit using Reuler^{I.F.} transformers, General Radio A.F. transformers and unknown tuning condensers. It appears to have a filament voltmeter missing from front panel (probably a Weston 301 for use with UV199 tubes). Maybe it was a multimeter in B. Must check circuit. Both audio transformers have open primaries, I.F. transformers OK. Both Dubilier bypass condensers show about $150K\Omega$. This set should be saved and rehabilitated.

Set #3 uses R-B type I.F. transformers,
American audio transformers. Both audio transformers
have open primaries. The I.F.s are O.K. This
set should be rehabilitated and saved. It and
the Remler (#2) are probably last sets built
by Mr. Baird. Dials are in bad condition.

Express receipt # 16 of 7/8/59 for \$10.85

.5 V output using Model 62V TVM

15 July 59

f in kc	trans no. 2	trans no. 1	trans no. 3	trans no. 4
50	137	←	132	142
60	124	194	121	131
70	96	133	97	106
80	80	110	80	86
85	74	103	76	81
90	72	95	73	78
95	68	88	70	76
100	64	78	67	72
110	57	62	60	65
120	50	47	52	53
130	44	36	47	51
140	40	30	42	46
150	36	30	40	41
160	38	35	41	40
170	40	41	46	44
180	54	52	66	64
190	78	66	104	104
200	114	82	167	162
210	168	101	—	—
220	—	122	—	—
240	—	175	—	180
260	—	—	170	154

R-B Transformers,
Individually Tested
201A tube.
 $E_p = 63V, I_p = 2.6ma.$
 $E_g = -1.5V$

Using the VTVM only as output, these transformers peak around 150 KC. The 3DB points are about 60 KC wide, so $Q = 2.5$ approx. When used with 201A tube on output the capacity will be higher and the transformers will probably peak around 120 KC.

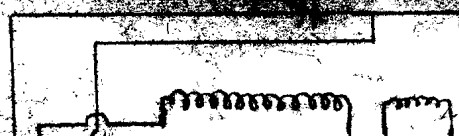
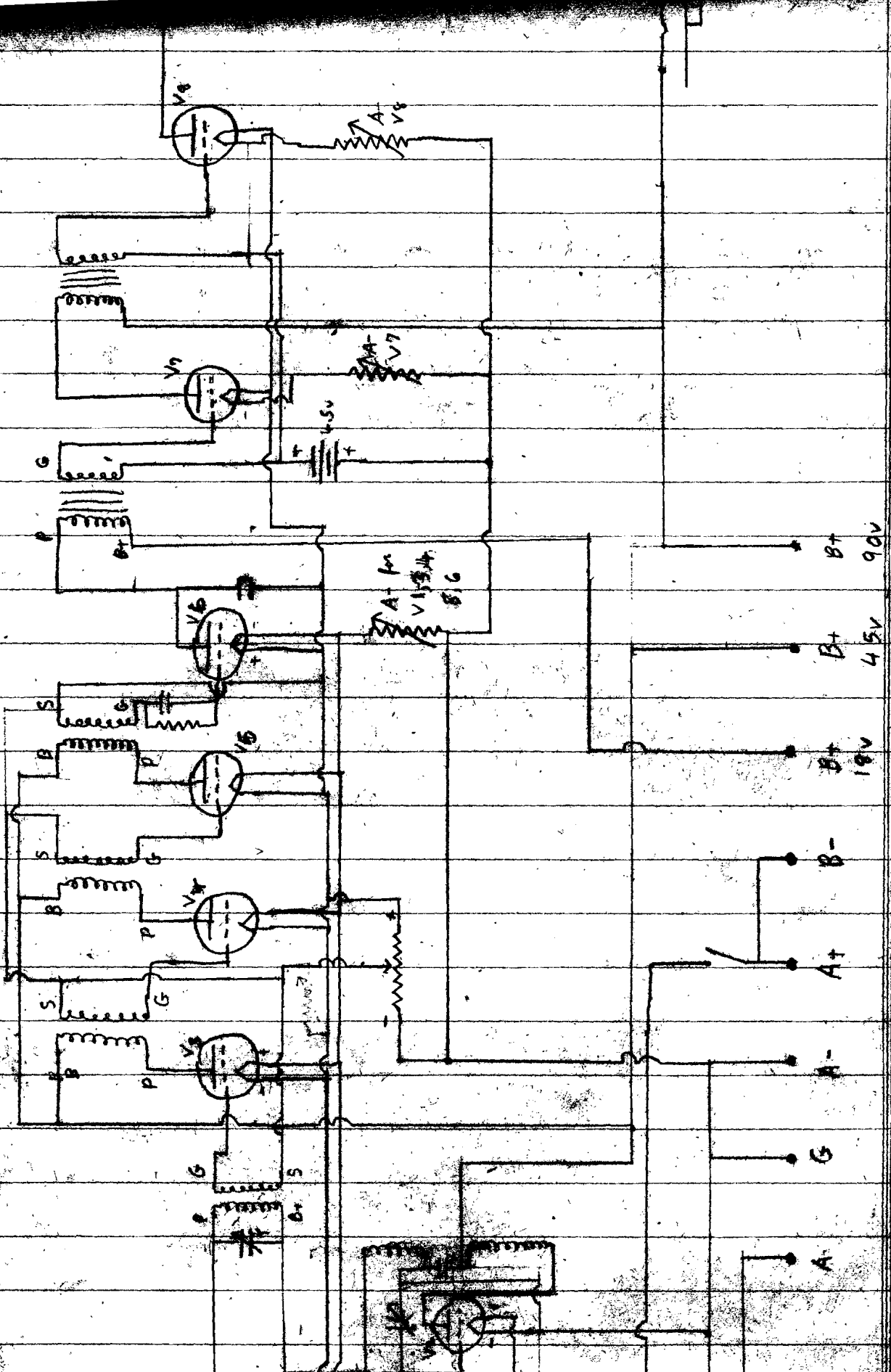
Gain quite good but selectivity very poor. It is just barely possible that these transformers were supposed to be tuned to 50 KC using condensers across secondaries.

no peak at 420 kc

(over)

To make this set operate properly will require a lot of work.

1. Shields between I.F. transformers.
2. O. Smpl Federal bypass condensers on Grid + plate returns of I.F. transformers. also possibly decoupling resistors between stages.
3. C battery of -6V between grid return and volume potentiometer. This will allow grid bias to vary from zero to -6 volts in respect to negative filament. With 45 volts on plates of tubes, good gain and volume control action should be had.
4. Install grid leak + condenser on oscillator and adjust so that plate current is about 2.5 ma with $E_p = 90V$. Wind on over the plate coil a third coil to inject oscillator volts into plate of mixer tube. Connect tertiary coil between plate of mixer tube and high side of I.F. transformer.
5. Put 45 volts on plate of mixer tube and connect grid return to same line as I.F. grid returns. This will assist the volume control action.
6. Adjust tertiary on oscillator so that a peak of about 45 volts R.F. is secured. This will cause instantaneous plate voltage on mixer to vary from zero to 90 volts. A maximum range of transconductance will be covered and the greatest effective conversion conductance achieved.
7. Perhaps it would be well to find four small matched fixed condensers of about 100 pf and place across the primary of each I.F. transformer and thereby tune down near 50 kc. The stability and selectivity will be much better.



Daily used in Triumph Tester on 150V AC scale. Approximate output about 50 millivolts
 6 to 1 audio transformer.
 Grid pot. set at 60 Filament rheostats at 86.

F m kc	Detector	3IF	2IF	1IF
50	33.5	7	8.2	2.1
60	28	4.8	5.4	1.16
70	24	3.3	3.6	0.65
80	21	2.2	2.4	0.39
90	18	1.7	1.79	0.28
95	16.8	1.57	1.67	0.25
100	16.0	1.57	1.68	0.24
105	15.0	1.64	1.78	0.24-
110	14.0	1.76	1.92	0.23
115	13.2	1.92	2.1	0.24-
120	12.6	2.0	2.2	0.24+
125	12.0	2.2	2.4	0.26
130	11.6	2.4	2.6	0.30
135	11.4	2.5	2.8	0.36
140	11.4	2.6	2.8+	0.42
145	11.7	2.8	3.0	0.52
150	12.3	3.1	3.2	0.64
155	13.4	3.4	3.5	0.84
160	14.8	4.2	4.4	1.20
165	16.2	5.1	5.2	1.76
170	18.6	6.8	7.2	2.7
175	23	9.8	10.0	4.3
180	26	14.2	14.6	6.3
190	40	30.0	32	21
200	57	64	64	51
210	76	112	112	126
220	78	144	145	Too high
240	60	80	79	148

Dec peaks also at: 380 kc 30mv
 910 kc 112mv

peaks also at: 360 kc 13.3mv
 910 kc 152mv

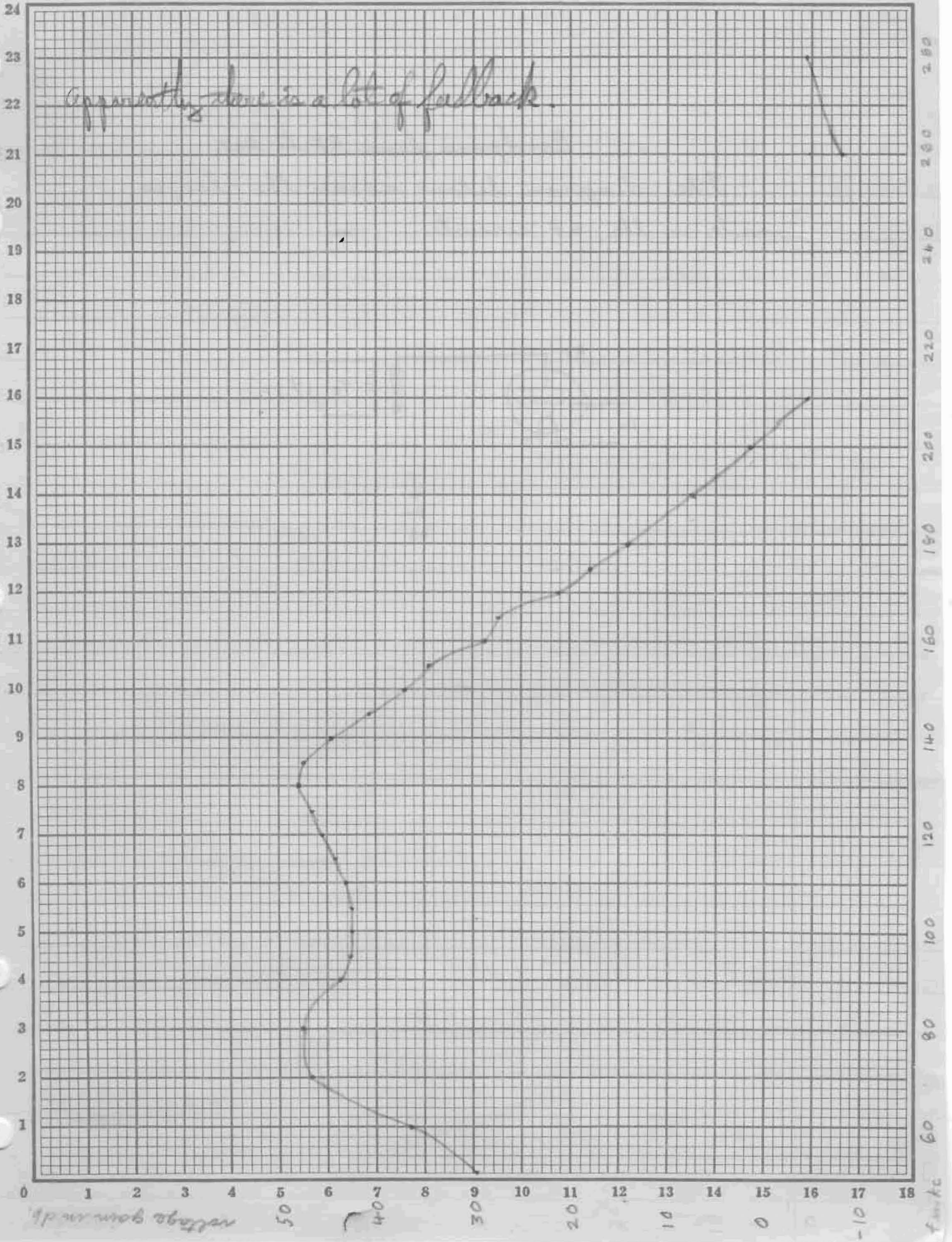
2IF peaks also at: 360 kc 13.7mv
 910 kc 158mv

1IF peaks also at: 375 kc 5.8mv
 900 kc Too high

freq. in KC	3IF to 1st	2IF to 3IF	1st to 2IF	Mixer to 1IF without 500 kHz	Mixer to 2IF	Total of
50	13.6	-1.04	11.82	5.60	21.12	24.00
60	15.2	-1.04	13.36	4.62	30.24	34.24
70	17.25	-0.76	14.5	14.18	46.86	45.17
80	19.6	-0.76	15.8	12.94	47.54	47.52
90	20.5	-0.4	15.2	7.58	43.74	43.74
95	20.6	-0.34	16.50	6.38	42.12	42.14
100	20.2	-0.60	16.90	6.18	42.64	42.68
105	19.2	-0.62	17.44	6.84	42.86	42.86
110	18.0	-0.76	18.44	7.42	43.10	43.10
115	16.8	-0.80	18.85	10.80	45.65	45.65
120	16.0	-0.82	19.24	10.84	45.26	45.26
125	14.2	-0.76	19.32	13.34	46.70	46.70
130	13.7	-0.7	18.38	16.28	47.66	47.66
135	13.2	-1.0	17.82	17.50	47.52	47.52
140	12.8	-0.66	16.50	15.96	44.60	44.60
145	12.4	-0.5	15.22	13.74	40.16	40.16
150	12.0	-0.28	13.98	11.22	37.02	37.02
155	11.9	-0.24	12.40	10.52	34.58	34.58
160	10.95	-0.42	11.28	7.16	28.97	28.97
165	10.2	-0.2	9.42	7.76	27.48	27.48
170	8.75	-0.5	8.56	4.37	21.13	21.13
175	7.4	-0.18	7.52	3.42	17.96	17.96
180	5.25	-0.24	7.30	1.68	13.99	13.99
190	2.5	-0.56	3.66	1.38	7.48	7.48
200	-3.38	0.00	1.0	0.12	-0.78	-0.78
210	-5.3	0.00	-1.02	-0.54	0.00	0.00
220	-5.32	-0.00	-	-	-	-
240	-2.48	+0.12	-4.45	-	-	-
260	0.80	0.00	-	-	-	-

Overall Measured, from Mixer To Det. (see other side)

Apparently there is a lot of feedback.



net gain in db

50

40

30

20

10

0

-10

freq

60

80

100

120

140

160

180

200

220

240

260

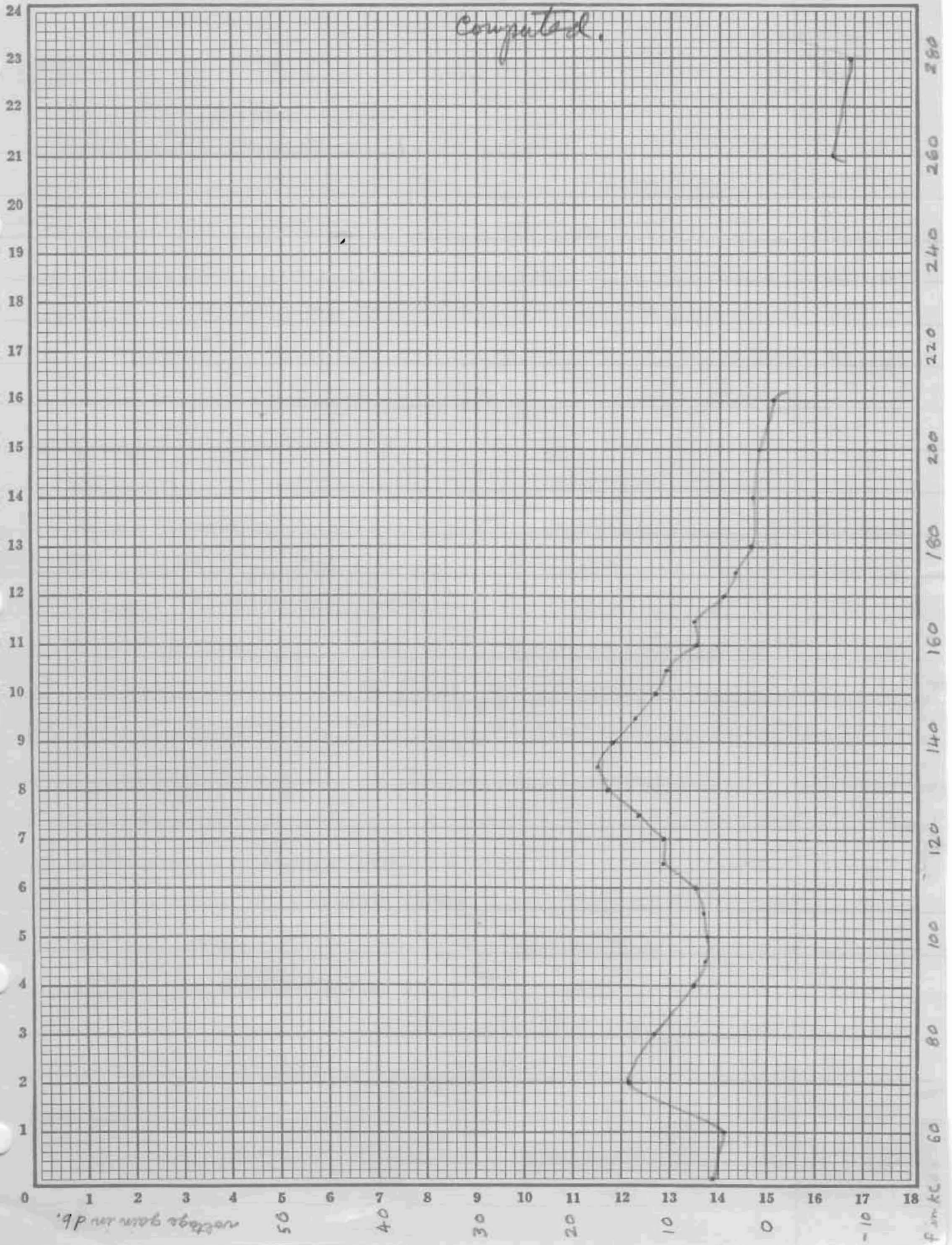
280

300

Bandpass from Mixer to 1st IF

(same circuit changes as for RF to Det)

Computed.



net gain in db

50

40

30

20

10

0

-10

f in kc

60

80

100

120

140

160

180

200

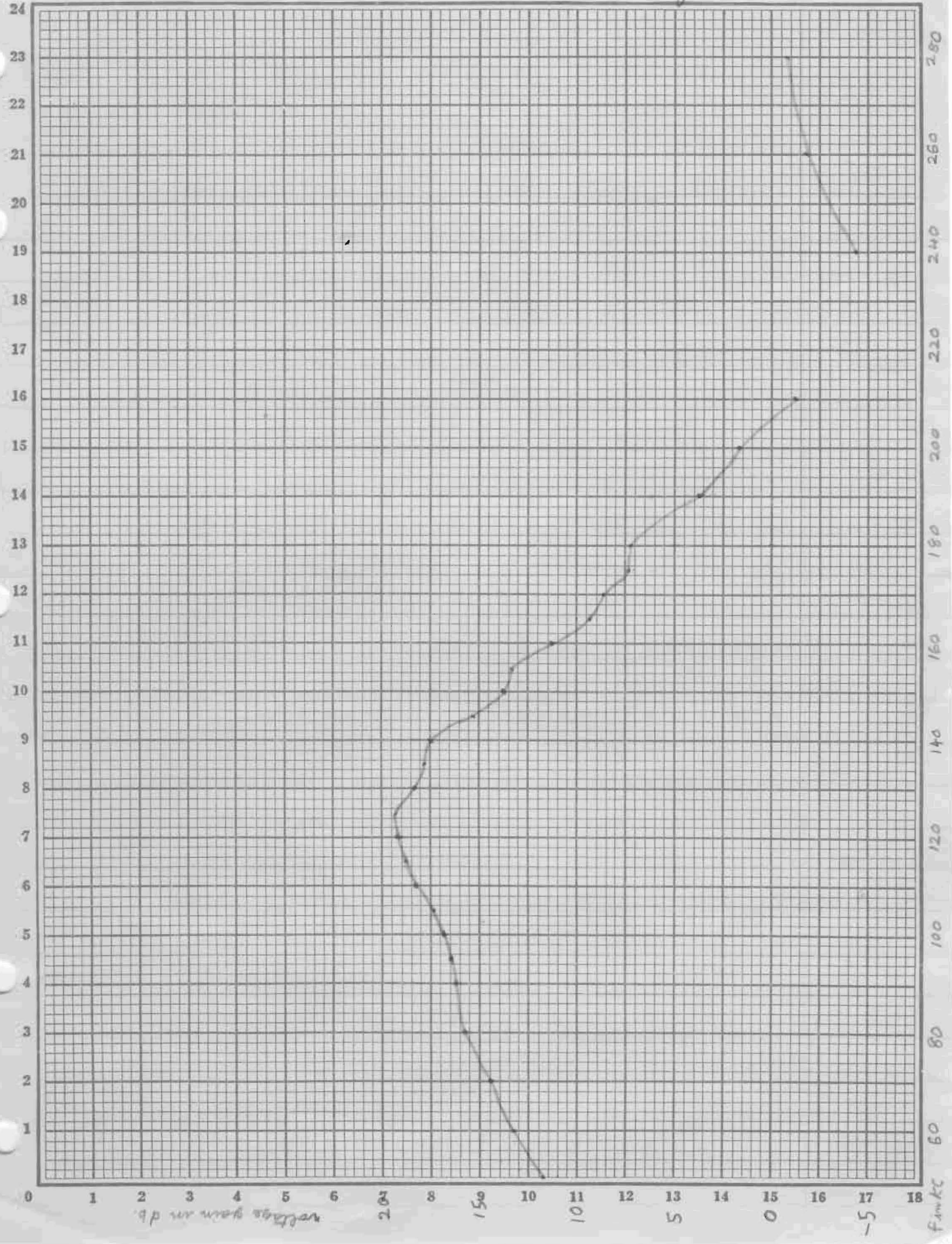
220

240

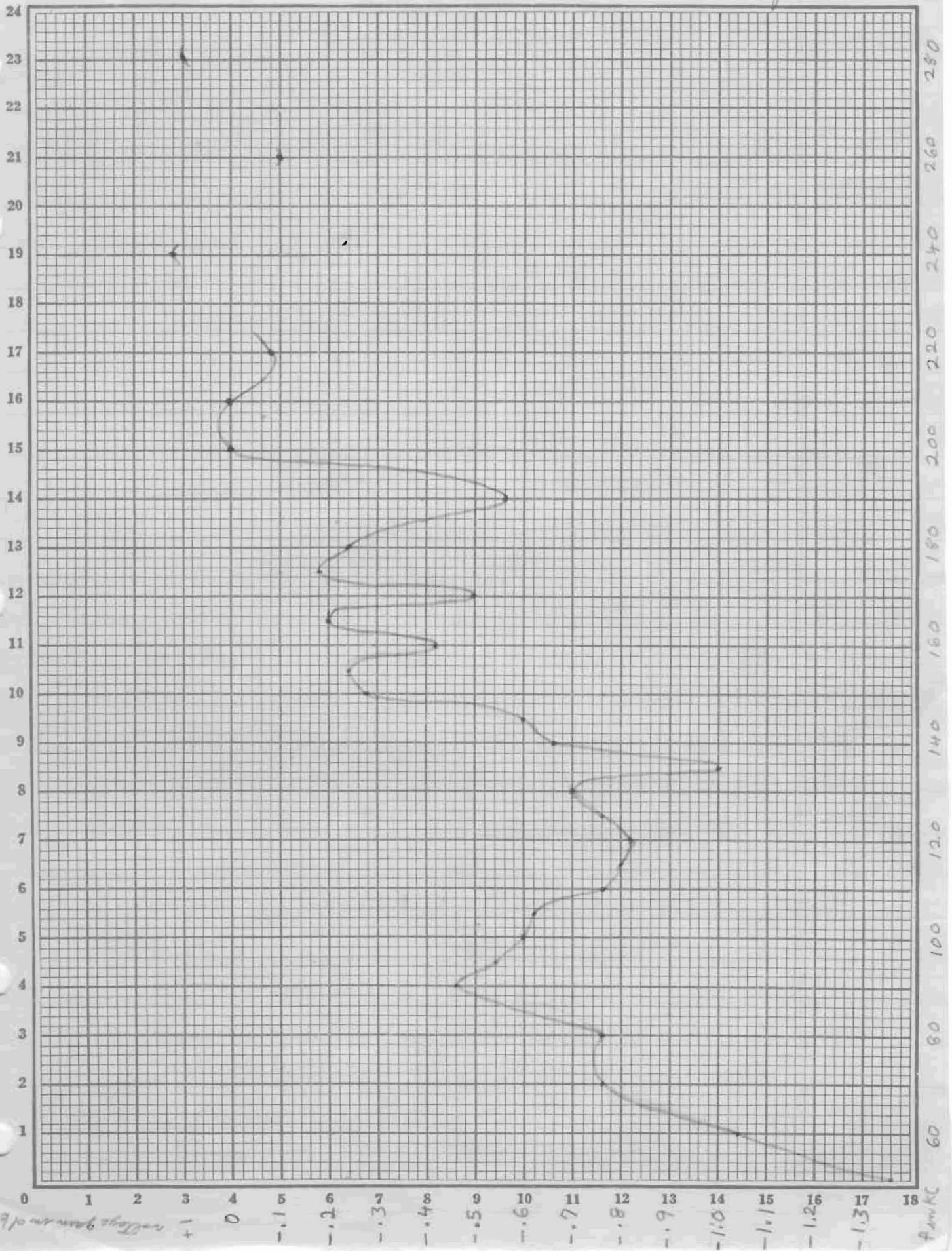
260

280

Band pass from 1st IF to 2nd IF Computed.



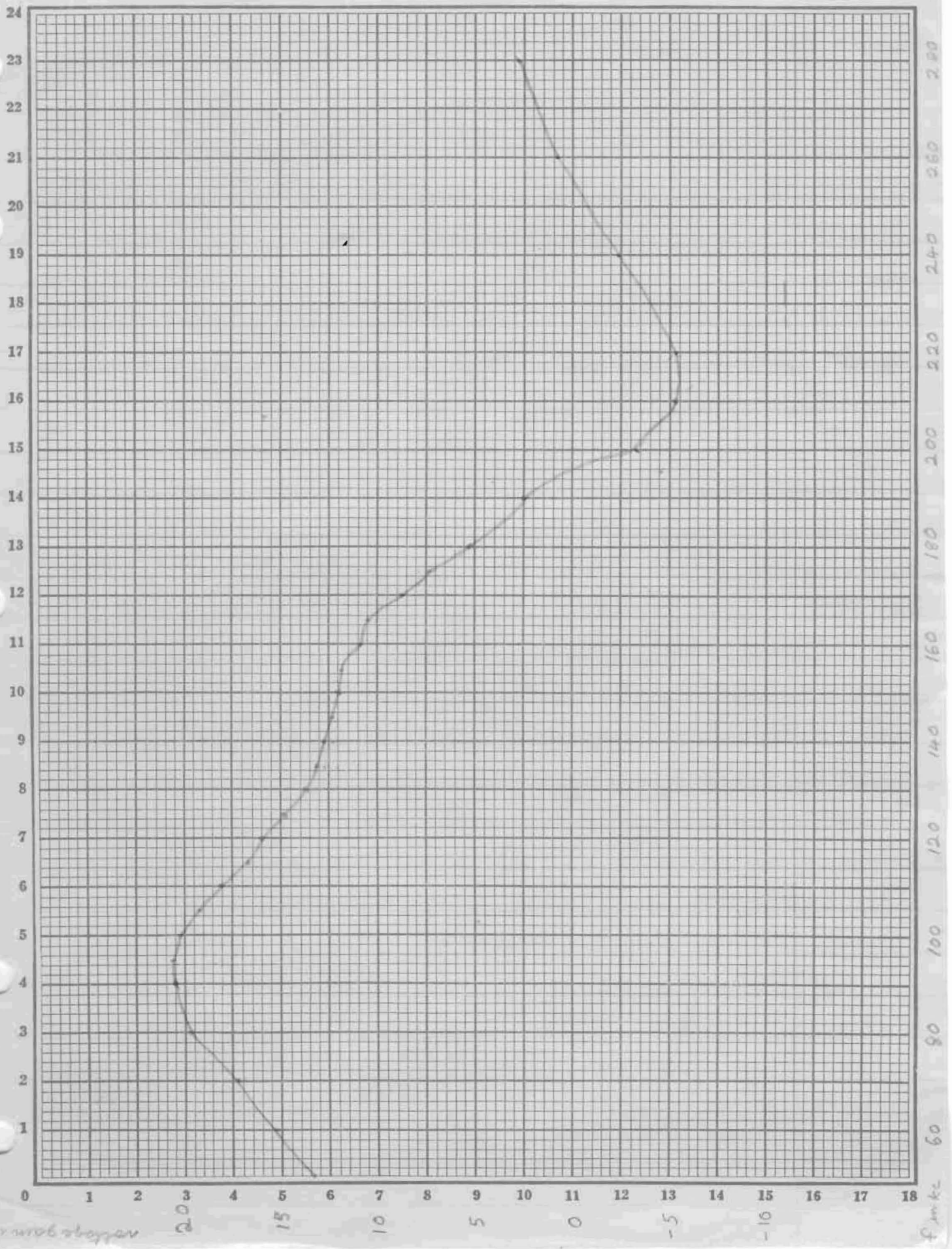
Bandpass from 2nd IF To 3rd IF Computed.



Voltage gain in db

F in KC

Bandpass from 3rd IF To Det. ~ Measured.



приращивание

20

15

10

5

0

-5

-10

f.m.k.

The $\frac{1}{2}$ mfd bypass are Federal. One still OK about 6 megs.
The .25 + 2 mfd bypass are Dubilier. One .25 mfd
still OK at about 2 megohms. All the rest show from
0.1 to 0.6 megohms. Very low leakage resistance.

Input is a Hammarlund tuner of about 1927

Several varieties of input tuners had been tried,
as front panel and chassis base both very badly
cut up on left hand end. The R.F. + A.F. parts
of set show no significant alterations.

The set probably functioned after a fashion because
the detector tube still had +6 volts on plate from
the A battery in respect to negative end of filament.

Two large holes in front panel had been plugged.
These are same size and relative position as the Ballantine
Variotransformers. Apparently, at one time, this set had
six stages of Variotransformers, at least 18 other small
holes have been plugged on left end of panel. Perhaps
the two extra switching positions on first filament
voltmeter were for two Variotransformer stages removed.
There are two more sets of holes of appropriate size
and placement for the missing filament rheostats.

