CASE REPORT - EB-07-LA-101

Run Date: 9/1/2009

Start 3/19/2007 Susp. 7/28/2007 Status: CLOSED HQ SolDate: Agent [redacted]

COMPLAINANT		SUBJECT	
Name:	[redacted]		FRED CAUGHELL
Company:			
Address:			[redacted]
City:	ST:	Bakersfield	ST: CA
Geo:	Zip:	[redacted]	Zip: [redacted]
Phone:	[redacted] Aux:	[redacted]	Aux:
Email:			
P_Address:			
Notes:			

CGeo:		Safety	Non-Safety	Kern	:SGeo	None	:Special
Freq:	406.0250	ComplIt	YES	406.0860	:Freq		:Local
Call:		IX	YES	WB6AKQ	:Call		:Master
Method:	LOC VIA EMAIL	Confide	NO	- 0	:FRN		:ASR
Entity:	Archived	Cong.	NO	Archived	:Entity		:Lat.
To:	Archived	InfoTrs	YES	Archived	:From		:Long
					:Utility		:XCityS

Signal on distress frequency band,

WORK EVENTS

EventDate	Agent	Event Type	WeUtility
3/19/2007	[redacted]	OPEN	ixg

Prob. Resolution: [redacted] Support Contractor for the USMCC, emails [redacted] and [redacted] re signal in Bakersfield on 406.08 and 406.09 MHz. Signal started March 9.

I called [redacted] Similar case years ago (see EB00LA405). Per [redacted] no signal on 121.5 or 243. He doesn't know signal strength. There are about 25 satellite passes per day, and only 16 hits have been detected since March 9. Thinks coordinates good for 4.8 km. Signal needs to be up about 4 minutes to register a hit. [redacted] suggest we wait a couple days so he could get a log.

Reviewed EB00LA405. Agents went out several days in 2000 and 2001, never heard signal.

3/21/2007 [redacted] UPDATE

Prob. Resolution: Received log via email from [redacted] Tel call with [redacted] Hits don't have pattern.

3/23/2007 [redacted] UPDATE

Prob. Resolution: Called [redacted] Number of hits are decreasing. Times are sporadic, but most consistent is at 9 pm local time. Thinks we should hold off till next week.

CASE REPORT - EB-07-LA-101

Run Date: 9/1/2009

3/28/2007	[redacted]	ON SCENE
Prob. Resolution:	Called [redacted] Last hit was yesterday morning. Traveled to Bakersfield. Monitored in afternnon and evening. No signal detected.	
3/29/2007	[redacted]	ON SCENE
Prob. Resolution:	Called [redacted] last hit was 5 am today. Monitored in area before heading back to office, no signal detected.	
3/30/2007	[redacted]	UPDATE
Prob. Resolution:	Call from [redacted] Got a couple of hits yesterday afternoon. Will send an update Monday.	
4/2/2007	[redacted]	UPDATE
Prob. Resolution:	Email from [redacted] Data shows 1-3 hits per day, for at least two weeks. Times were sporadic.	
4/3/2007	[redacted]	ON SCENE
Prob. Resolution:	Monitored, no signal detected.	
4/4/2007	[redacted]	UPDATE
Prob. Resolution:	Called [redacted] Thinks signal is weak because only satellites that are directly overhead (0-5 degrees) hear signal. Larger degree means more atmosphere, thus more attenuation. Will send me log re yesterday's activity. [redacted] stated that he would contact someone at Tyndall AFB, FL (formally Langley) about getting CAP to fly overhead (funding may not be approved if it is not an ELT). At this time, [redacted] doesn't feel it is worthwhile for us to go back.	
4/6/2007	[redacted]	UPDATE
Prob. Resolution:	Received email from [redacted] with log. Only hit on 4/3/07 (date I was on-scene) was at 10:07 am, local time.	
4/12/2007	[redacted]	UPDATE
Prob. Resolution:	Tel call with [redacted] Numbers of hits are going down.	
5/8/2007	[redacted]	UPDATE
Prob. Resolution:	Tel call from [redacted] Hits still sporadic, but averaging 2 per day.	
5/9/2007	[redacted]	UPDATE
Prob. Resolution:	Tel call from [redacted] Hits lately have been more active than ever. Gave me new coordinates.	
5/10/2007	[redacted]	IX RESOLVED
Prob. Resolution:	Dfed signal to residence. Signal emanating from a Hamtronics R901 receiver, built from a kit appr. ~10 years ago. Receiver was designed for 958.25 MHz, connected to an 8" rubber whip, and is on 24/7. Per my request, subject turned off receiver. He was knowledgeable of RF and promised to check it with a SA before using it again.	
5/11/2007	[redacted]	UPDATE
Prob. Resolution:	Called [redacted] last hit was at 2:32 pm yesterday. Called subject, Fred Caughell, informed him that his receiver was likely the source, since the satellite was no longer hearing the signal. FCC database shows valid amateur callsign, WB6AKQ for subject. Downloaded specs for receiver from Hamtronics website, www.hamtronics.com.	

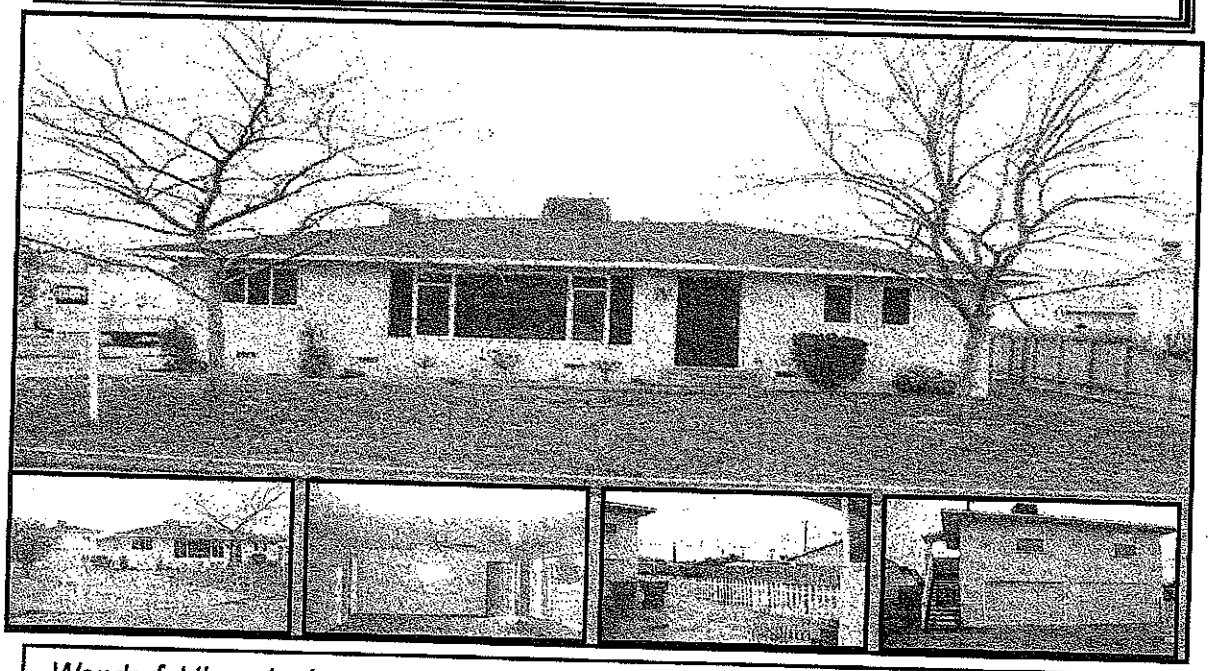
5/17/2007	[redacted]	UPDATE
Prob. Resolution:	Calculated field strength from SA reading. Write up Citation and emailed to [redacted] [redacted] sent Citation up chain of command. Citation should be released beginning of June 07.	
6/18/2007	[redacted]	ENF ACTION
Prob. Resolution:	Mailed out Citation via reg and cert mail.	
6/25/2007	[redacted]	UPDATE
Prob. Resolution:	Received return receipt card.	
6/29/2007	[redacted]	UPDATE
Prob. Resolution:	Waiting for reply to citation.	
7/2/2007	[redacted]	CLOSED Archived
Prob. Resolution:	Received letter from FC. Receiver has been rendered permanently inoperative. PDFed reply to [redacted] and [redacted].	

RULE VIOLATIONS

Neighbor's house

[redacted]

$279,950



Wonderful three bedroom one house bath built in 1953, and in move-in condition, this cheerful home sports brand new paint and flooring, really nice kitchen, automatic Sprinklers, fenced yard, inside laundry, and a garage!
Guest/second unit is also charming and well cared for—it has one bedroom, its own backyard, and a storage garage with its own laundry facilities.
Both units are cheerful and show pride of ownership! Call for your personal tour!

Please check out our featured listings on the Coldwell Banker TV show, Channels 13 & 5, seven days a week, twice daily. Sunday mornings at 9:30, Channel 23, Time Warner Cable.

THE TERRI Collins Team
Coldwell Banker, Preferred Realtors®

Direct Line (661) 664-0655
E-Mail terri@terricollins.com
www.bakersfieldhouses.com

Federal Communications Commission
Enforcement Bureau
18000 Studebaker Road Ste 660
Ceritos, California 90703

RE: File Number EB-07-LA-101
Citation Number C20073290032

To:Catherine Deaton
District Director, Los Angeles District Office
Western Region
Enforcement Division

I wish to resolve this issue by mail because i underwent vascular bypass surgery on June 4,2007 and, since I am still in the healing process, it would be very difficult for me to travel.

This is in response to the citation I received from your office on June 21,2007. This citation deals with accidental and inadvertent spurious emissions from a Hamtronics R901 900 MHz receiver. Since this receiver was sold commercially, I can only assume it was type-accepted by the F.C.C. It was operating on 958.250 MHz, and apparently a multiplier stage was radiating RF on 406.086 MHz.

I can assure you that this traumatic issue came as a complete surprise to me. Most prudent people would logically assume that a receiver is just that; a device for receiving RF, not transmitting it. You can imagine how surprised I was to be visited by your inspector, [redacted]!

During the visit with [redacted], we collectively located the culprit and turned it off forever. At that time, I offered to surrender the unit to him, but he declined. In the interim, this receiver has been rendered permanently inoperative and there is absolutely NO CHANCE it will ever be powered up again.

Since I have an innate sense of civic pride and a keen interest in Public Safety issues in general, you may imagine how devastating this unfortunate event is to me. I can positively guarantee that this will never happen again.

Fred Caughell

[redacted]

Bakersfield CA

[redacted]

[redacted]
[redacted]
Bakersfield Ca
[redacted]

CERTIFIED MAIL

7007 0220 0003 6050 2743

UNITED STATES POSTAL SERVICE

0000 90703

U.S. POSTAGE
PAID
BAKERSFIELD,CA
93380
JUN 25, '07
AMOUNT
$5.21
00032589-2

RETURN RECEIPT REQUESTED

Federal Communication Commission
Enforcement Bureau
18000 Studebaker Rd STE 660
Cerritos, Calif 90703

90703+2673

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Fred Caughell
[redacted]
Bakersfield, CA [redacted]

EB07LA101 PO

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [redacted] ☐ Agent ☑ Addressee

B. Received by (Printed Name) Fred Caughell
C. Date of Delivery 6-22-07

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

RECEIVED
JUN 25 2007
LOS ANGELES FIELD OFFICE
FEDERAL COMMUNICATIONS COMMISSION

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from) 7005 3110 0000 7613 8639

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	File No.: EB-07-LA-101
Fred Caughell	)	
	)	Citation No.: C20073290032
Bakersfield, CA 93308	)	

CITATION

Released: June 18, 2007

By the District Director, Los Angeles District Office, Western Region, Enforcement Bureau:

1. This is an Official Citation issued pursuant to Section 503(b)(5) of the Communications Act of 1934, as amended ("Act"),[1] to Fred Caughell for violation of Section 15.109(a) of the Commission's Rules ("Rules").[2]

2. In response to a complaint from the National Oceanic and Atmospheric Administration ("NOAA"), an investigation by the Enforcement Bureau's Los Angeles Office revealed that on May 10, 2007, Caughell operated a Hamtronics R901 receiver, from a single-family residence in Bakersfield, California. The receiver produced an emission on 406.086 MHz with a field strength greater than the limit allowed under Section 15.109(a).

3. Section 15.109(a) states "the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values..." For frequencies between 216-960 MHz, Section 15.109(a) provides a limit of 200 microvolts/meter. The measured field strength on 406.086 MHz, extrapolated to a distance of 3 meters, was 6200 microvolts/meter. This value exceeds the limit by approximately 31 times.

4. The radiated emission on 406.086 MHz is within the 406.000-406.100 MHz band, which is reserved for use by low power satellite emergency position-indicating radiabeacons ("EPIRBs"). NOAA, which operates the Search & Rescue Satellite Aided Tracking System, had complained to this office that the 406.086 MHz emission in Bakersfield could potentially cause interference to their system.

5. Violations of the Act or the Commission's Rules may subject the violator to substantial monetary forfeitures,[3] seizure of equipment through *in rem* forfeiture action, and criminal sanctions, including imprisonment.[4]

---

[1] 47 U.S.C. § 503(b)(5).

[2] 47 C.F.R. § 15.109(a).

[3] 47 C.F.R. § 1.80(b)(3).

[4] 47 U.S.C. §§ 401, 501, 503, 510.

6. Caughell may request an interview at the closest FCC Office, which is Federal Communications Commission, 18000 Studebaker Road, Suite 660, Cerritos, California, 90703.[5] You may contact this office by telephone, (562) 865-0598, to schedule this interview, which must take place within 14 days of this Citation. Caughell may also submit a written statement to the above address within 14 days of the date of this Citation. Any written statements should specify what actions have been taken to correct the violation outlined above. Please reference file number EB-07-LA-101 when corresponding with the Commission.

7. Any statement or information provided by you may be used by the Commission to determine if further enforcement action is required.[6] Any knowingly or willfully false statement made in reply to this Citation is punishable by fine or imprisonment.[7]

8. **IT IS ORDERED** that copies of this Citation shall be sent by First Class U.S. Mail and Certified Mail, Return Receipt Requested to Fred Caughell at his address of record.

FEDERAL COMMUNICATIONS COMMISSION

Catherine Deaton
District Director, Los Angeles District Office
Western Region
Enforcement Bureau

[5] 47 U.S.C. § 503(b)(5).

[6] *See* Privacy Act of 1974, 5 U.S.C. § 552a(e)(3).

[7] *See* 18 U.S.C. § 1001 *et seq.*

A Los Angeles Office agent employed the MDDF in Bakersfield, CA to locate an emission on 406.086 MHz. The signal was emanating from a Part 15 unintentional radiator (Hamtronics R901 receiver) inside a single-family residence. NOAA stated that the signal had the potential to cause interference to their Search & Rescue Satellite Aided Tracking System (SARSAT). Sanctions are pending.

5-17-07

Field Strength Calculation for 406.086 MHz.
2 measurements taken. At the time, location of radiator not known. 44 yards & 26 yards referenced to a point on the house. After inspection, radiator is estimated to be approximately 6 yards closer. Thus distances are 38 & 22 yards, with -77 dBm & -72 dBm respectively.

Antenna factor for dipole at 400 MHz is 21.1 dB/m.
Cable Loss ~ 3.2 dB

dBm at antenna would be:
$-77 + 3.2 + 21.1 = -52.7$ dBm = 518 uV

$-72 + 3.2 + 21.1 = -47.7 =$ 920 uV

Extrapolate to 3 meters:
38 yards = 41.6 meters, 22 yards = 20.1 meters
FS = $518(41.6/3) =$ 7183 uV

$= 920(20.1/3) =$ 6164 uV

∴ FS exceeds 200 uV/m limit by:

$7183/200 = 35.9$
$6164/200 = 30.8$

A.H. Systems Inc.

9710 Cozycroft Ave. Chatsworth, CA 91311

Phone (818) 998-0223 Fax (818) 998-6892

E-mail: sales@AHSystems.com

Web site: http://www.AHSystems.com

Calibration, 10 Meter RG-58 N-N cable

Model: SAC-213-10 Serial Number: Date: 31-Aug-04

Frequency (MHz)	Cable Loss (dB)
10	0.5
20	0.7
30	0.8
40	0.9
50	1.1
60	1.2
70	1.3
80	1.4
90	1.5
100	1.5
200	2.2
500	3.6
700	4.6
1000	5.7
1300	6.8
1500	7.4
1700	8.2
1800	8.6
2000	9.2
3000	12.7
4000	16.7
5000	19.1

A.H. Systems Inc.

9710 Cozycroft Ave. Chatsworth, CA 91311

Phone (818) 998-0223 Fax (818) 998-6892

E-mail: sales@AHSystems.com

Web site: http://www.AHSystems.com

Horizontal Polarization

10 Meter Calibration, Tunable Dipole Antenna, Balun #4

Model: FCC-4 Serial Number: 325 Date: 31-Aug-04

Frequency (MHz)	Element Length (L/2-in.)	Antenna Factor (dB/m)	Gain (dBi)
325	8 1/8	19.8	0.64
350	7 3/4	20.6	0.55
375	7 1/2	20.8	0.97
400	7 1/8	21.1	1.15
425	6 9/16	21.2	1.57
450	6 1/8	21.8	1.56
475	5 5/8	22.3	1.44
500	5 1/4	22.8	1.41
525	4 15/16	23.8	0.86
550	4 3/4	24.1	0.94
575	4 1/2	24.7	0.78
600	4 3/8	24.8	1.00
625	4 1/8	25.3	0.83
650	4	25.4	1.07
675	3 13/16	25.5	1.29
700	3 11/16	25.8	1.35
725	3 7/16	25.9	1.58
750	3 1/4	26.2	1.56
775	3 1/8	26.0	2.07
800	3	26.5	1.83
825	2 15/16	26.8	1.82
850	2 7/8	26.9	1.89
875	2 11/16	27.1	1.96
900	2 5/8	27.4	1.91
925	2 5/8	27.7	1.90
950	2 5/8	28.5	1.34
975	2 5/8	29.2	0.83
1000	2 5/8	29.9	0.34

Add antenna factor plus cable loss to receiver reading in dBuV to convert to field intensity in dBuV/meter. Calibration per SAE ARP-958 and/or ANSI C63.5 and/or IEEE 291

A.H. Systems Inc.

9710 Cozycroft Ave. Chatsworth, CA 91311

Phone (818) 998-0223 Fax (818) 998-6892

E-mail: sales@AHSystems.com

Web site: http://www.AHSystems.com

Horizontal Polarization

3 Meter Calibration, Tunable Dipole Antenna, Balun #4

Model: FCC-4 Serial Number: 325 Date: 31-Aug-04

Frequency (MHz)	Element Length (L/2-in.)	Antenna Factor (dB/m)	Gain (dBi)
325	8 1/8	19.2	1.30
350	7 3/4	20.2	0.93
375	7 1/2	21.0	0.77
400	7 1/8	21.1	1.14
425	6 9/16	22.2	0.65
450	6 1/8	22.1	1.20
475	5 5/8	23.1	0.72
500	5 1/4	23.2	1.02
525	4 15/16	23.1	1.54
550	4 3/4	23.6	1.42
575	4 1/2	24.3	1.14
600	4 3/8	24.8	1.04
625	4 1/8	25.0	1.15
650	4	25.1	1.37
675	3 13/16	25.4	1.40
700	3 11/16	26.0	1.10
725	3 7/16	25.9	1.53
750	3 1/4	26.2	1.54
775	3 1/8	26.7	1.35
800	3	26.8	1.46
825	2 15/16	27.3	1.29
850	2 7/8	27.7	1.16
875	2 11/16	27.7	1.41
900	2 5/8	27.9	1.43
925	2 5/8	28.4	1.19
950	2 5/8	28.6	1.21
975	2 5/8	29.1	0.89
1000	2 5/8	29.2	1.02

Add antenna factor plus cable loss to receiver reading in dBuV to convert to field intensity in dBuV/meter. Calibration per SAE ARP-958 and/or ANSI C63.5 and/or IEEE 291

A.H. Systems Inc.

9710 Cozycroft Ave. Chatsworth, CA 91311

Phone (818) 998-0223 Fax (818) 998-6892

E-mail: sales@AHSystems.com

Web site: http://www.AHSystems.com

Horizontal Polarization

1 Meter Calibration, Tunable Dipole Antenna, Balun #4

Model: FCC-4 Serial Number: 325 Date: 31-Aug-04

Frequency (MHz)	Element Length (L/2-in.)	Antenna Factor (dB/m)	Gain (dBi)
325	8 1/8	19.6	0.89
350	7 3/4	20.5	0.64
375	7 1/2	21.3	0.45
400	7 1/8	21.8	0.51
425	6 9/16	22.5	0.33
450	6 1/8	22.0	1.31
475	5 5/8	23.0	0.77
500	5 1/4	23.4	0.79
525	4 15/16	23.9	0.78
550	4 3/4	23.6	1.44
575	4 1/2	24.1	1.30
600	4 3/8	24.6	1.22
625	4 1/8	25.4	0.78
650	4	25.3	1.20
675	3 13/16	25.8	1.08
700	3 11/16	26.0	1.16
725	3 7/16	26.7	0.76
750	3 1/4	26.6	1.11
775	3 1/8	27.3	0.78
800	3	26.8	1.49
825	2 15/16	27.3	1.24
850	2 7/8	28.3	0.50
875	2 11/16	28.2	0.92
900	2 5/8	28.5	0.78
925	2 5/8	28.9	0.71
950	2 5/8	28.8	1.01
975	2 5/8	29.4	0.63
1000	2 5/8	29.8	0.47

Add antenna factor plus cable loss to receiver reading in dBuV to convert to field intensity in dBuV/meter. Calibration per SAE ARP-958 and/or ANSI C63.5 and/or IEEE 291

hamtronics, inc.

Commercial and Amateur
VHF & UHF Radio Equipment
Providing innovative solutions for 45 years!

Contact Us

Hamtronics, Inc.

65 Moul Rd., Hilton, NY 14468-9535

Email: sales@hamtronics.com

Email is the preferred method of contacting us, rather than phoning.

We check our email often, sometimes even after hours or on weekends to give you quick replies. At times we are in another part of the building or out of the office, and using email allows us to respond as soon as possible.

If it is necessary to phone, call us at 585-392-9430. Normal office hours are 9-12 & 1-4 Eastern Time.

HOME PAGE

Questions? We'll be glad to help. First try to find the answer on the website. If you still need help, email us with specific questions.

HAMTRONICS® R901 FM RECEIVER
INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS

GENERAL INFORMATION.

The R901 is a commercial grade single-channel fm receiver for the 902-928 MHz amateur band and the 928-960 MHz commercial band. With modifications, we can also supply it for the 800-902 MHz band.

It features a sharp tuned-line front end, an 8-pole crystal filter plus a ceramic filter for superior if selectivity, hysteresis squelch circuit to lock onto fading signals, and automatic frequency control to compensate for off-frequency transmissions.

CRYSTALS.

The channel crystal plugs into sockets identified in component location diagram as Y1. We can order crystals for any frequency desired. If you order your own, be sure to supply these specs.

The receiver uses 32 pF parallel resonant crystals in HC-25/u holders. Crystals operate in the fundamental mode at a frequency of (F-10.7)/63. Frequency tolerance is .0005%. We recommend that crystals be ordered directly from us to be sure that they will perform properly over the -30 to +60°C range for which the unit was designed. This is especially true for commercial receivers with the TCXO option, since the crystal must be matched exactly to the compensation circuit in the receiver. If you use an OV-1 crystal oven, specify a crystal with a 60°C breakpoint.

If you use an OV-1 crystal oven, specify a crystal with a 60°C breakpoint. The crystal is inserted into sockets on the board. The oven is installed on the board over the crystal, observing polarity by matching the 3-lead pattern to the holes in the board (see component location diagram). Then, the pins of the oven are soldered to the board.

INSTALLATION.

Mounting.

Some form of support should be provided under the pc board, generally mounting the board with spacers to a chassis. 3/8 inch holes should be provided in a front panel for the bushings of the squelch and volume controls. After sliding bushings through panel, washers and nuts (not supplied) are installed on the outside of the panel. Be sure to provide support for the board; do not rely on the controls to support the board. For repeater applications, the receiver should be mounted in an rf tight box, such as our model a16.

Power Connections.

The receiver operates on +13.6Vdc at about 150 mA peak with full audio. Current drain with no audio is only about 40-50 mA. A crystal oven adds about 500 mA peak current drain when cold and only about 25 mA when warm. A well regulated power supply should be used. Positive and negative power leads should be connected to the transmitter at E3 and pc board ground plane, respectively. Observe polarity, and be certain that the power source does not carry high voltage or reverse polarity transients on the line, since semiconductors in the receiver can be damaged. If the pc board is not mounted to a grounded chassis, power supply ground must be connected to the pc board ground plane through a separate wire.

Speaker.

An 8-ohm loudspeaker should be connected to E2 with ground return to the pc board ground plane. Use of lower impedance speaker or shorting of speaker terminal can result in ic damage. The receiver can also drive higher impedances, like 1K to 10K input impedances of cor boards, etc. There is no need to load down the output to 8 ohms.

Antenna Connections.

The antenna connection should be made to the receiver with a short length of RG-174/u miniature coax as shown in the detail above the parts location diagram. Remove 3/8 inch of jacket from the cable, and separate the shield braid from the center conductor. Strip 1/8 inch at the end of the center conductor, and insert through hole from the bottom of the board at the center of L1. Pull the cable up tight against the bottom of the board. Wrap the center conductor around the center of L1, and tack solder to the coil. Then, tack solder the braid to the ground pad on the bottom of the board.

Caution: at these frequencies, it is necessary to keep the stripped part of cable just as short as possible to avoid losses.

The other end of the cable should be trimmed to the length required to reach a panel mounted connector, such as a type N, BNC, or SMA. Once the receiver board is mounted in the chassis or cabinet, the cable can be stripped (short leads again) and soldered to the chassis jack. This method of cable connection was chosen to allow the best possible low-loss connection to the input circuit of the board from presumably (at these frequencies) rather heavy cable running to the antenna system. Its success depends on your workmanship.

THEORY OF OPERATION.

Signal flow is quite obvious with one exception: the channel oscillator signal is the source of injection for not only the first mixer but the second mixer as well. A triple-conversion process is used for optimum image rejection.

The input signal is amplified by GaAsFET Q1 and applied to the first mixer, GaAsFET Q2, along with multiplied oscillator injection from L4/C27 at 54 times the oscillator frequency. Q2 converts the signal to a first i-f in the range of 123 to 146 MHz, depending on the channel frequency.

Because the same oscillator is used to derive both the first and second mixer injections in order to take advantage of the oven or TCXO when used, the first i-f varies in frequency: the higher the channel frequency, the higher the i-f. The second mixer, FET Q3, then uses an injection frequency of 9 times the

Ant.	Xtal Freq	2nd Mix Inj	1st I-F	1st Mixer Inj
800	12.52857	112.7571	123.4571	676.5429
850	13.32222	119.9000	130.6000	719.4000
902	14.14762	127.3286	138.0286	763.9714
928	14.56032	131.0428	141.7428	786.2571
960	15.06825	135.6143	146.3143	813.6857

 Revised: 8/31/05

oscillator to convert the signal to 10.7 MHz, where it is processed through 8-pole crystal filter FL1-FL4.

L16 and L17 trim the load impedance for the crystal filter for optimum passband ripple.

Following are examples of the frequency scheme at various channel frequencies to illustrate how they vary.

The 10.7 MHz signal is converted to 455 kHz within U2, using Y2 as the oscillator crystal. Ceramic filter FL5 provides further bandpass filtering, and L18 adjusts the center of the detector curve. C68 and C59 provide deemphasis.

A sample of the audio from detector output at U2 pin 10 is amplified in an op-amp active filter (U2 pins 12-13), selecting any noise in the area of 10 kHz. The amplified noise is detected by CR2, adding to a dc bias voltage from the squelch pot. This summed voltage at pin 14 operates several transistors in U2, which provides COS output at E4, drives hysteresis transistor Q4, and mutes the audio going to speaker driver U1. The channel oscillator, i-f ic, and FET's are operated on +8 Vdc from regulator U3. The FET's have a low breakdown voltage and are sensitive to voltage transients, so the regulator protects them from damage.

Note that the R901 design is adapted from our lower frequency receivers, which use AFC (automatic frequency control) to compensate for drift in the oscillator or error in the transmitter frequency. We have found that AFC is impractical in the 900 MHz band because a little bit of afc voltage can cause the oscillator to change frequency enough to go out of the passband; and once that happens, it will not capture a signal which should be heard. For this reason, AFC normally is not used in the R901 Receiver, and components for the AFC circuit are not installed.

ALIGNMENT.

Equipment needed for alignment is an fet voltmeter, a good uhf signal generator, a regulated 13.6Vdc power supply with a 0-200 mA meter internally or externally connected in the supply line.

The slug tuned coils in the transmitter should be adjusted with the proper .062" square tuning tool to avoid cracking the powdered iron slugs. Variable capacitors should be adjusted with a plastic tool with a small metal bit on the end.

The small variable capacitors should be set to the center of their range (turn them 90°) if they have not previously been aligned. The squelch pot should be set fully ccw.

Note: The values in the parts list are for the 902-928 MHz band. Some capacitor values may be different for the commercial bands.

a. Install channel crystal in socket Y1.

b. Connect speaker and 13.6 Vdc. You should hear white noise.

c. Connect dc voltmeter to TP1. Adjust first L8, then L7 and L8 alternately for maximum response. (Typical indication is +1 to 2 Vdc.)

d. Connect dc voltmeter to TP2. Adjust L9 and L10 alternately for maximum response. (Typical indication is +1 to 2 Vdc.)

e. Connect dc voltmeter to TP3. Adjust C22 and C23 alternately for maximum response. (Typical indication is +0.7 to 1.5 Vdc.)

f. Connect stable signal generator to gate-1 of Q3 (rear lead), using coax clip lead, and being careful not to short adjacent transistor leads. Connect coax shield to pcb ground. Set generator to exactly 10.7000 MHz. Use a frequency counter or synthesized signal generator. Set level just high enough for full quieting. (At 10 uV, you should notice some quieting, but you need something near full quieting for the test.

g. Adjust discriminator transformer L18 for +4Vdc with meter connected to AFC test point TP5 (top lead of R2). Note that the voltage changes very rapidly with tuning. Full AFC swing of about 1.5 to 8V occurs within a few kHz, and a little drift may be noticed. It is only necessary to be within about 0.3V of 4V.

Note: There are two methods of tuning the mixer and front end. One is to use an fet voltmeter with test point TP4, which is the rear lead of R30. The voltage is proportional to the noise detected in the squelch circuit; so it gives an indication of quieting. A *signal peak*, therefore, is read as *minimum* noise voltage.

The other method is to use a regular professional SINAD meter. In either case, a weak to moderate signal is required to observe any change in noise. If the signal is too strong, there will be no change in the reading as tuning progress; so keep the signal generator turned down as the sensitivity of the receiver increases during tuning. If you use TP4 with a voltmeter, the signal can be modulated or unmodulated. If you use a SINAD meter, the standard method is a 1000 Hz tone with ±3 kHz deviation.

h. Check that signal generator is still on 10.7000 MHz. With weak signal applied to Q3 as before, adjust L16 and L17 for a peak. (If a SINAD meter is used, adjust for best SINAD.) This step is critical to get lowest distortion in the crystal filter.

i. Reconnect signal generator to the rf input cable attached to L1. (If none is attached, refer to "Antenna Connections" section on page 1, and attach one before proceeding. Connect signal generator to stripped pig tails at open end of cable, not directly to L1.) Adjust generator to exact channel frequency, and turn output level up fairly high. Adjust frequency trimmer capacitor C3 to net the crystal to channel frequency, indicated by 4V at AFC test point TP5. If you can't find the signal at all, tune your signal generator up and down the band slightly. (Also check that oscillator is peaked as per step c.)

If your crystal has the wrong load correlation or is slightly out of tolerance, you may be able to compensate by changing the value of C2 so C3 can net the crystal on frequency.

j. Connect fet dc voltmeter to TP4 (top lead of R30). Set signal generator for relatively weak signal, one which shows a little change in the dc voltage indication. Alternately peak C26, C27, C38, C36, and C34 until no further improvement can be made.

k. Alternately adjust L13, L14, and L15 until no further improvement can be made. Note that L13 may peak at the input i-f frequency as well as the injection frequency. The proper peak is at the injection frequency, which is the lower of the two. This occurs with the tuning slug more toward the center of the coil. The false peak would occur with the slug near the top of the coil.

When properly tuned, the sensitivity of the receiver should be about 0.25 uV for 12 dB SINAD and about 0.3 uV for 20 dB quieting.

OPTIONS.

Squelch Circuit.

The squelch circuit has about 3 to 6 dB of hysteresis built in, so that

once the squelch opens, the signal must drop 3 to 6 db below the opening threshold before squelching again. This allows for some fading on mobile stations and prevents squelch pumping on heavy modulation. of course, this requires setting the threshold a little higher than if there was no hysteresis so that it will close with no signal. If you prefer the older type squelch, you can simply remove Q4 from the circuit. If you want more or less hysteresis, you can decrease or increase the value of R28, respectively.

Repeater Use.

E4 provides a "carrier operated switch" output which may be connected to a cor module to turn a transmitter on and off. The output level is about 7v unsquelched and 0v squelched. There is a resistor in series with the output to limit current. refer to COR module instructions for details.

Audio Muting.

If the receiver is used as a part of a transceiver, audio muting can be accomplished without switching the power or speaker lines. If the transmitter is keyed by applying B+ to the exciter, simply connect the keyed B+ through a 100k resistor and diode to the junction of R28, R29, and R30 on the receiver board. The dc level will be sufficient to trigger the squelch circuit in U2, regardless of the rf signal level coming into the receiver. Of course, some means of disconnecting the receiver from the antenna must be provided, and we recommend our TRR Coax Relay Module if the power level is under 25 watts. Otherwise, a larger coax relay will be required.

Discriminator Meter.

If you need a discriminator meter and you are handy in designing with op-amps, you can run a sample of the dc voltage at the junction of R26 and C59 to one input of an op-amp and tie the other input to a voltage divider pot set to provide a reference voltage of about 4 vdc. Values in the circuit depend on your meter and are beyond the scope of this discussion. (Sorry, we do not have a circuit to recommend.)

TROUBLESHOOTING.

The usual troubleshooting techniques of checking dc voltages and signal tracing work well in troubleshooting the receiver. A dc voltage chart and a list of typical audio levels are given to act as a guide to troubleshooting. Although voltages may vary widely from set to set and under various operating and measurement conditions, the indications may be helpful when used in a logical troubleshooting procedure.

The most common troubles in all kits are interchanged components, cold solder joints, and solder splashes. Another common trouble is blown transistors and ic's due to reverse polarity or power line transients. Remember if you encounter problems during initial testing that it is easy to install parts in the wrong place. Don't take anything for granted. Double check everything in the event of trouble.

If the receiver is completely dead, try a 10.700 MHz signal applied to Q3 gate-1 with a coax cable clip lead. You should be able to hear the quieting effect of a 100 uV carrier at 10.700 MHz. You can also connect the 10.700 MHz clip lead through a blocking capacitor to various sections of the crystal filter to see if there is a large loss of signal across one of the filter sect ions. Also, check the 10.245 MHz oscillator with a scope or by listening with an hf receiver or service monitor.

The next step is to inject a signal on the first i-f frequency into gate-1 of mixer Q3. Determine the first i-f by the formula (9 x osc freq) + 10.7 MHz.

A signal generator on the channel frequency can be injected at various points in the front end, for instance, gate-1 of mixer Q2 or rf amplifier Q1. If the mixer is more sensitive than the rf amplifier, the rf stage is suspect. Check the dc voltages looking for a damaged fet.

If audio is present at the volume control but not at the speaker, the audio ic may have been damaged by reverse polarity or a transient on the B+ line. If no audio is present on the volume control, the squelch circuit may not be operating properly. Check the dc voltages, and look for noise in the 10 kHz region, which should be applied to noise detector CR2 with no input signal. (Between pins 12 and 13 of U2 is an op-amp active filter tuned to 10 kHz.)

Typical Dc Voltages.

The following dc levels were measured with an 11 megohm fet vm on a sample unit with 13.6 vdc B+ applied. All voltages may vary considerably without necessarily indicating trouble. The chart should be used with a logical troubleshooting plan. All voltages are positive with respect to ground except as indicated. Voltages are measured with no signal applied but oscillator running properly and with squelch open unless otherwise specified.

Typical Audio Levels.

Following are rough measurements of audio circuits, using an 11 megohm fet vm. Measurements were taken with no input signal, just white noise so conditions can be reproduced easily.

U2 pin 10:	400 mV rms
U2 pin 13:	2V rms
Top of volume control:	70 mV rms
Across 8 ohm spkr term:	3 V rms

GaAs FET LEAD IDENTIFICATION.

If you find it necessary to replace the FET's, proper lead orientation is indicated by a long lead for the drain. Be careful to install FET with the lettering on the case up away from the board so you can read it with the transistor installed. If you accidentally flip it, the source and gate-2 leads will be reversed and it will not work.

IC SOCKETS.

Note that audio output ic U1 is designed to be heatsunk to the pc board through the many ground pins on the ic. When running moderately low audio levels as most applications require, it is no problem to use an ic socket; so we have provided one for your convenience. If you will be running high audio levels, you should not use the ic socket; instead, solder the LM-380 ic directly to the board for better heatsinking.

Also note that using a socket is not recommended for i-f amplifier U2 because of the extra inductance the socket would add to the high frequency circuits; therefore, a socket has not been supplied.

XSTR	SOURCE	GATE-1	GATE-2	DRAIN
Q1-Q3	1.5 to 2	0	4	8
	E	B	C	
Q4 Squelched	0	0	0.6	
Q4 Unsquelched	0	0.6	0.03	
Q5 Xtal Out	2.75	3.5	7.5	
Q5 Xtal In	3.5	2.75	7.5	
Q6	1.7*	0	13.6	
Q7	1.8*	-0.08*	13.6	
Q8	1.1*	0	13.6	

* Indicates drops to 0 with insufficient rf drive.

U1	1	6	8	14				
	7	0	7	13.6				
U2	1	2	3	4	5	6	7	8
	8	7.5	7.5	8	1.1	1.1	1.1	8
U2	9	10	11	12	13		14	
	4.5	4	4.5	2.5	2.7	0.7(SQ),0.09(UNSQ)		
U2		15				16	17	18
		0(SQ),7.2(UNSQ)				0	0	2.1

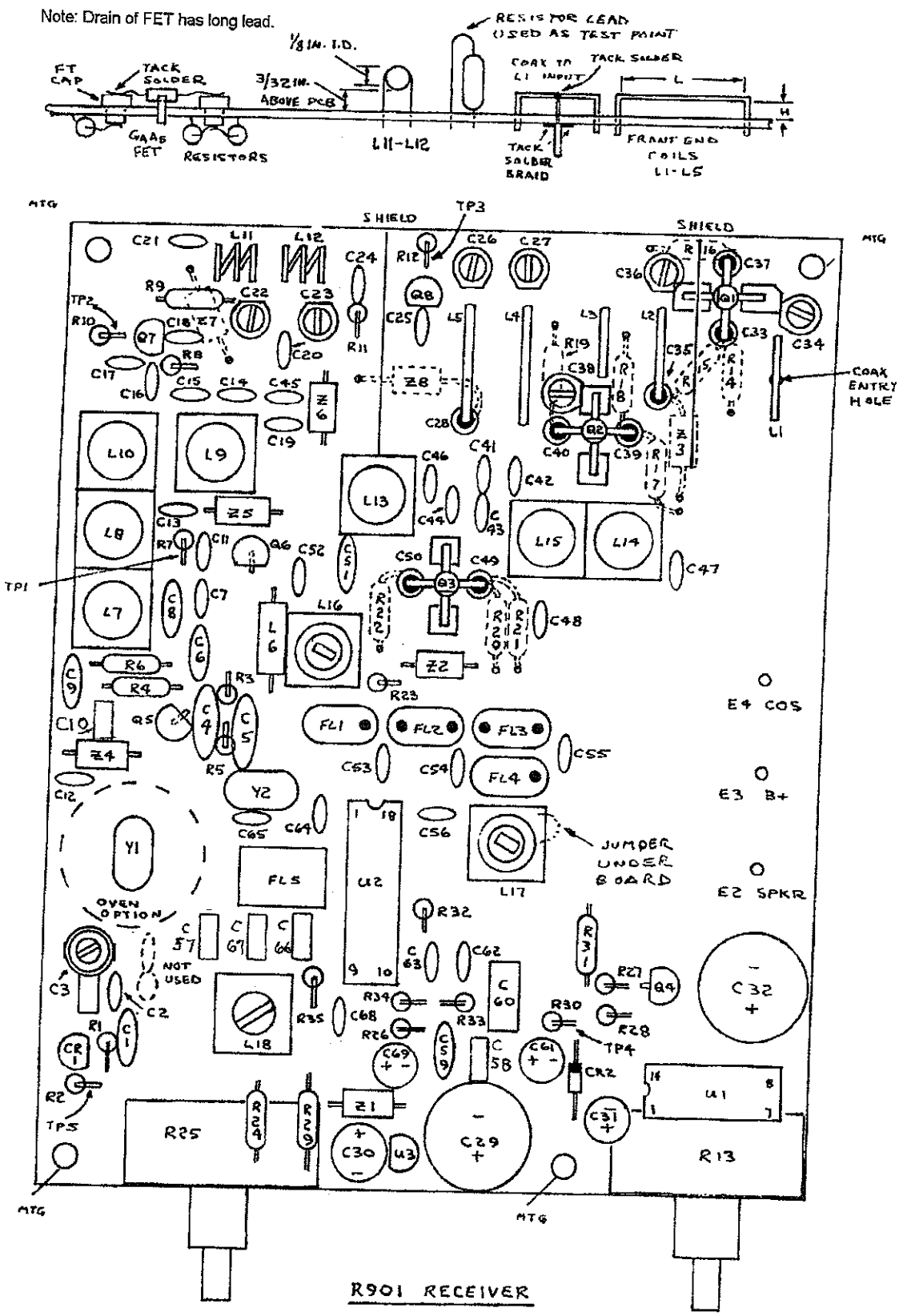
PARTS LIST FOR R901 RCVR.

Notes: Parts listed are for the 902-928 MHz band. Slightly different values (not supplied in kit) may be required for commercial bands above or below this range.

❶ indicates surface mount part under board

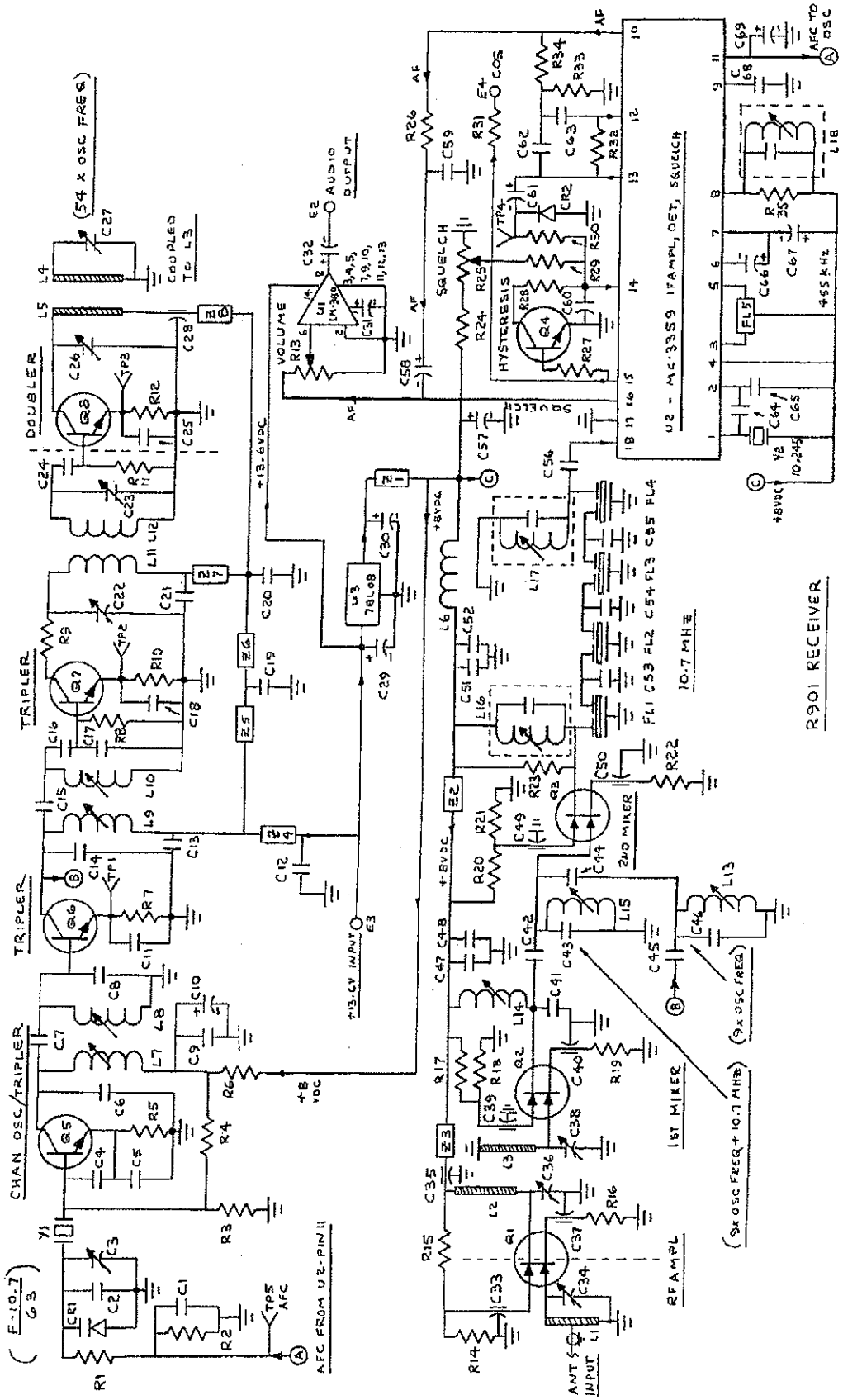
❷ Note that there is an error on the pc board which needs to be patched. The ground lug of the piston trimmer cap is isolated from the ground plane. Tack solder a short bus wire across to bridge between ground plane and lug of trimmer cap.

Ref #	Value ---------- (marking)
C1❶	.01 uf disc (103)
C2	39 pf
C3 ❷	10 pf piston trimmer
C4-C5❶	150 pf (151)
C6	82 pf
C7	1 pf
C8	82 pf
C9❶	.001 uf (102, 1nM, or 1nK)
C10	0.1 uf monolithic (104)
C11	220 pf (221)
C12❶	.001 uf (102, 1nM, or 1nK)
C13	220 pf (221)
C14	5 pf
C15❶	0.5 pf
C16	10 pf
C17	20 pf
C18	30 pf
C19-C20	220 pf (221)
C21	30 pf
C22-C23	4.5 pf ceramic trimmer
C24	4 pf
C25	30 pf
C26-C27	4.5 pf ceramic trimmer
C28	Feedthru cap
C29-C31	47 uF electrolytic
C32	220 uF electrolytic
C33	Feedthru cap
C34	4.5 pf ceramic trimmer
C35	Feedthru cap
C36	4.5 pf ceramic trimmer
C37	Feedthru cap
C38	4.5 pf ceramic trimmer
C39-C40	Feedthru cap
C41	18 pf
C42❶	0.5 pf
C43	18 pf
C44-C45❶	0.5 pf
C46	8 pf
C47	15 pf
C48	220 pf (221)
C49-C50	Feedthru cap
C51❶	.01 uF disc (103)
C52	220 pf (221)
C53	5 pf
C54	6 pf
C55	5 pf
C56❶	.001 uf (102, 1nM, or 1nK)
C57-C58	0.1 uf monolithic (104)
C59❶	.01 uF disc (103)
C60	0.15 uf mylar (red)
C61	0.47 uf electrolytic
C62-C63	680 pf (681)
C64	62 pf
C65	220 pf (221)
C66-C67	0.1 uf monolithic (104)
C68	220 pf (221)
C69	0.47 uf electrolytic
CR1	not used
CR2	1N4148 (may be unmarked)
E2-E4	Socket pins
FL1-FL4	Matched set crystal filters (see text)
FL5	Ceramic filter (blue)
L1-L5	Tuned lines, formed from #18 bus wire
L6	100 uH rf choke (sil-brn-blk-brn-sil)
L7-L10	6-1/2 turns (blue)
L11-L12	2-3/4 turns #22 bus wire, 1/8" I.D.
L13	6-1/2 turns (blue)
L14-L15	2-1/2 turns (red)
L16-L17	7A-691F IF transformer, 10.7 MHz
L18	YMC-15002 or 831-5 IF xfmr, 455 kHz
Q1-Q2	GaAs FET, NEC 3SK174 (25137) Static Sensitive!
Q3	MOS FET, NEC 3SK122 Static Sensitive!
Q4-Q5	2N3904 or 2N4124
Q6	2N5770
Q7-Q8	PN5179
R1	not used
R2	330K
R3-R4	15K
R5	2.2K
R6	100 ohms
R7❶	270 ohms
R8	1.2K
R9	27 ohms
R10❶	270 ohms
R11	1.2K
R12❶	270 ohms
R13	100K Pot
R14-R15	100K
R16	180 ohms
R17-R18	100K
R19	180 ohms
R20-R21	100K
R22	180 ohms
R23	4.7K
R24	2 meg
R25	100K Pot
R26	27K
R27	150K
R28	510K (do not confuse with 150K)
R29	68K
R30	150K
R31	27K
R32	330K
R33	1.2K
R34	4.7K
R35	47K
U1	LM-380N 2W Speaker Amplifier
U2	MC-3359P IF Ampl, Det, Squelch
U3	78L08 8Vdc Voltage Regulator
Y1	Channel Xtal (see text)
Y2	10.245 MHz xtal
Z1-Z8	Ferrite beads



R901 RECEIVER

 Revised: 8/31/05



 Revised: 8/31/05

ULS License

Amateur License - WB6AKQ - CAUGHELL, FRED R

Call Sign	WB6AKQ	Radio Service	HA - Amateur
Status	Active	Auth Type	Regular
Dates			
Grant	04/05/2005	Expiration	06/28/2015
Effective	04/05/2005	Cancellation	

Licensee Information

FRN	0002016681	Type	Individual

Licensee Name

CAUGHELL, FRED R

[redacted]

BAKERSFIELD, CA [redacted]

Amateur Data

Operator Class	General	Prev. Op. Class	Technician Plus
Group	D	Prev. Call Sign	
Eligibility Code			

Trustee/Custodian (for Non-Individuals Only)

Name	Call Sign

REFERENCE COPY

This is not an official FCC license. It is a record of public information contained in the FCC's licensing database on the date that this reference copy was generated. In cases where FCC rules require the presentation, posting, or display of an FCC license, this document may not be used in place of an official FCC license.

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

AMATEUR RADIO LICENSE

WB6AKQ

CAUGHELL, FRED R
[redacted]
BAKERSFIELD, CA [redacted]

Licensee: This is your radio authorization in sizes suitable for your wallet and for framing. Carefully cut the documents along the lines as indicated and sign immediately upon receipt. They are not valid until signed.

The Commission suggests that the wallet size version be laminated (or other protection process) after signing. The Commission has found, under certain circumstances, that laser print is subject to displacement.

FCC Registration Number (FRN) 0002016681

Special Conditions/Endorsements

Grant Date	Effective Date	Print Date	Expiration Date
04/05/2005	04/05/2005	05/11/2007	06/28/2015
File Number	**Operator Privileges**		**Station Privileges**
0002114648	General		PRIMARY

THIS LICENSE IS NOT TRANSFERABLE

Cut Along This Line

(Licensee's Signature)

FCC 660

APRIL 2002

Cut Along This Line

Call Sign/Number	Grant Date	Expiration Date	File Number	Print Date	Effective Date
WB6AKQ	04/05/2005	06/28/2015		05/11/2007	04/05/2005

Operator Privileges
General

Station Privileges
PRIMARY

THIS LICENSE IS NOT TRANSFERABLE

Special Conditions/Endorsements:

CAUGHELL, FRED R
[redacted]
BAKERSFIELD, CA [redacted]

FOLD HERE

Cut Along This Line

AMATEUR RADIO LICENSE

FCC Registration Number (FRN) 0002016681
FCC 660

APRIL 2002

(Licensee's Signature)
FEDERAL COMMUNICATIONS COMMISSION

Cut Along This Line

Conditions
Pursuant to Section 309(h) of the Communications Act of 1934, as amended, 47 U.S.C. Section 309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. Section 310(d). This license is subject in terms to the right of use or control conferred by Section 706 of the Communications Act of 1934, as amended. See 47 U.S.C. Section 606.

CLOSE WINDOW

Audio Division

(202)-418-2700

Distance, Bearing Between Two Sets of Coordinates

Find Distance and Azimuths Between 2 Sets of Coordinates -- Results

Distance between

N Latitude 35 25 12.00, W Longitude 119 4 48.00 (Point 1)

and N Latitude 35 25 1.00, W Longitude 119 4 8.00 (Point 2)

1.063 kilometers; 0.660 miles

Azimuth from point 1 to point 2 = 108.64°
Azimuth from point 2 to point 1 = 288.64°

Another Distance Computation?

Use Sprong to find the terminal or end coordinates, given a bearing and a distance.

This program is located at http://www.fcc.gov/fcc-bin/audio/distance.html

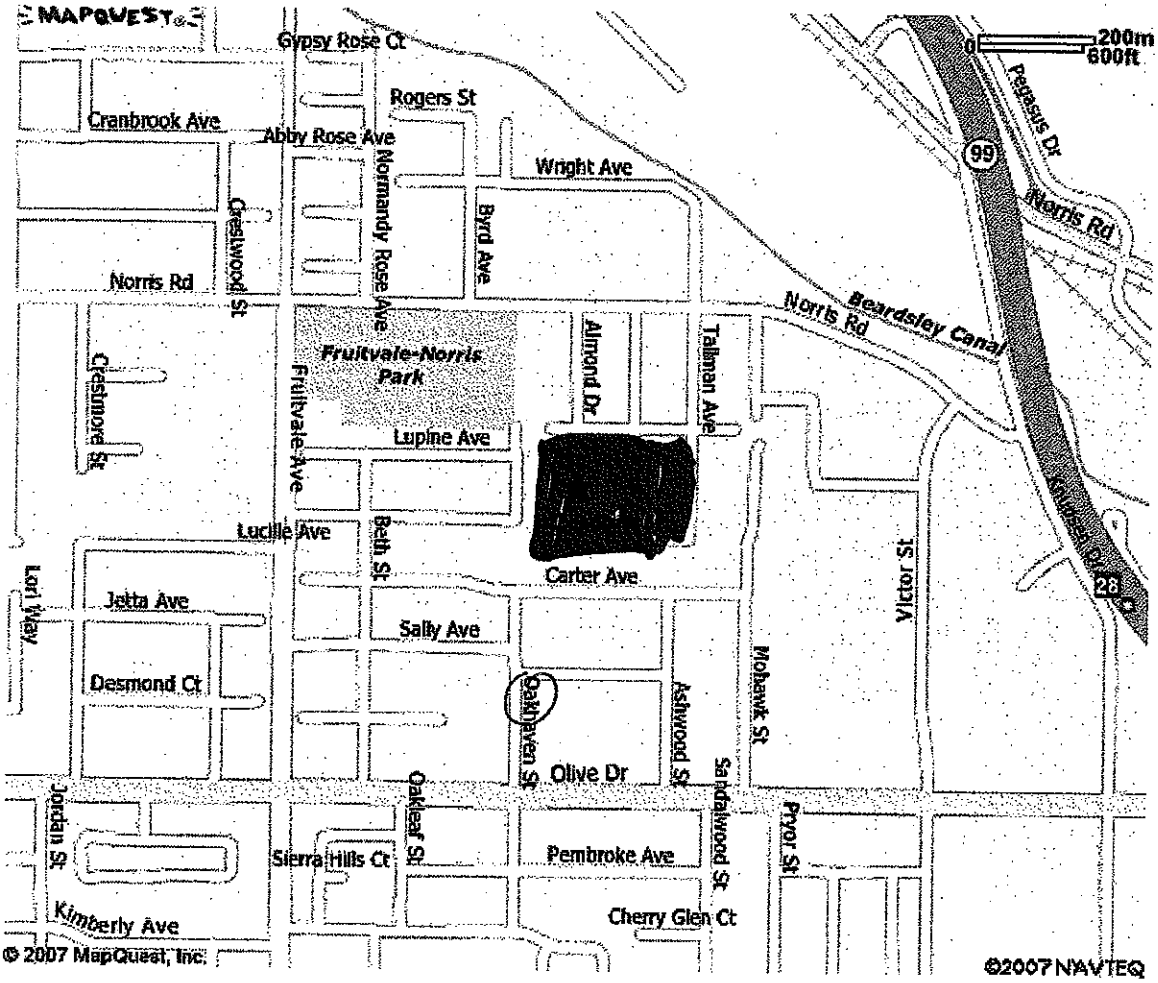
Federal Communications Commission
445 12th Street SW
Washington, DC 20554
More FCC Contact Information...

Phone: 1-888-CALL-FCC (1-888-225-5322)
TTY: 1-888-TELL-FCC (1-888-835-5322)
Fax: 1-866-418-0232
E-mail: fccinfo@fcc.gov

MAPQUEST

Latitude: [redacted]
Longitude: [redacted]

Notes:



5-11-07

Called [redacted]

21:32 last hit (2:32pm local time)

Told him I heard signal.

5-11-07

Called Fred

Told him NOAA not reporting any more hits.

Beam antenna ~60°

No FCC ID observed on back of circuit board.

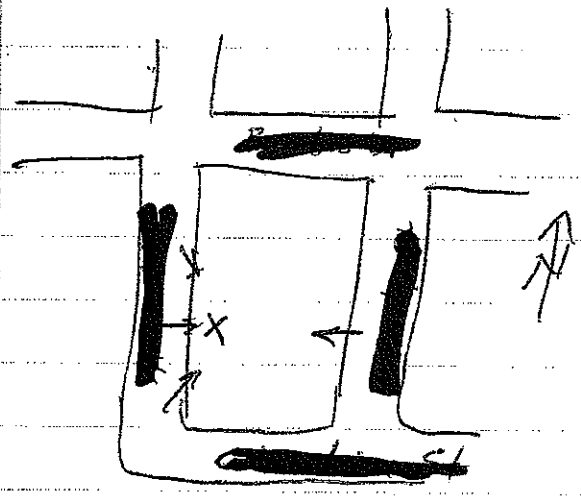
He call Hamtronics - no longer selling kit, ~~kit~~ only assembled.

5-10-07

DFel 406.0855 MHz

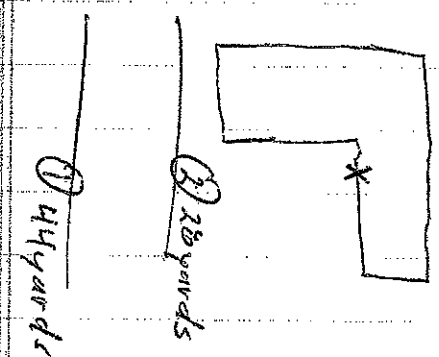
to [redacted]

[redacted]



Using AH Systems dipole set, FCC-4 (325-1000 MHz)
into Advantest U3641, RBW 3KHz, VBW 3KHz,
AH: 10dB, -77 dBm ① on sidewalk

-72 dBm ② on sidewalk



[redacted]

Fred Caughell VB6AKQ
[redacted]

Hamtronics, R901 Receiver
Suppose to receive on 958.25 MHz
Kit, built around 10 years ago, 24/7 on.

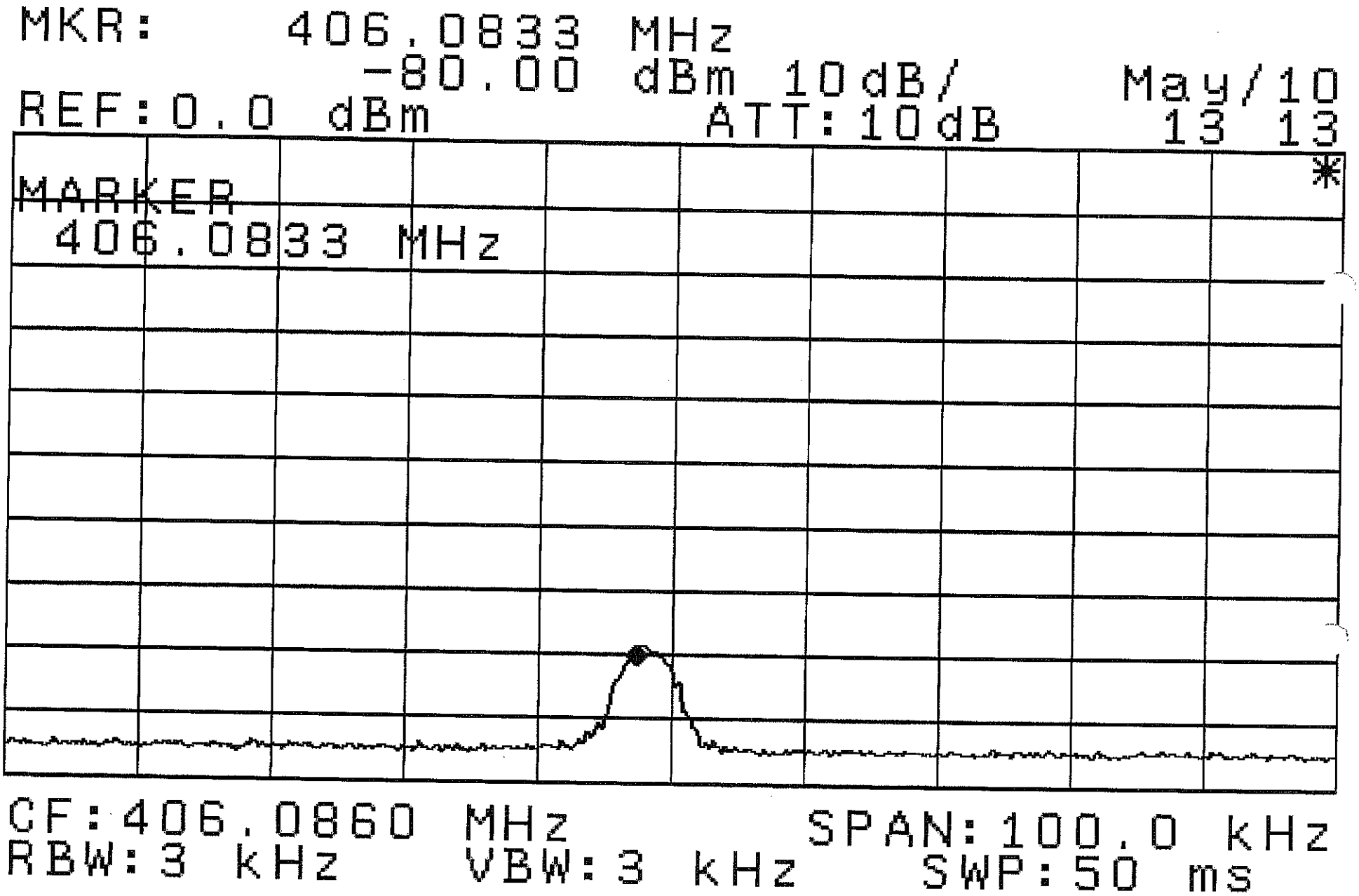
Antenna was a rubber whip 6"
2-3 weeks last hooked to extend antenna (beam)

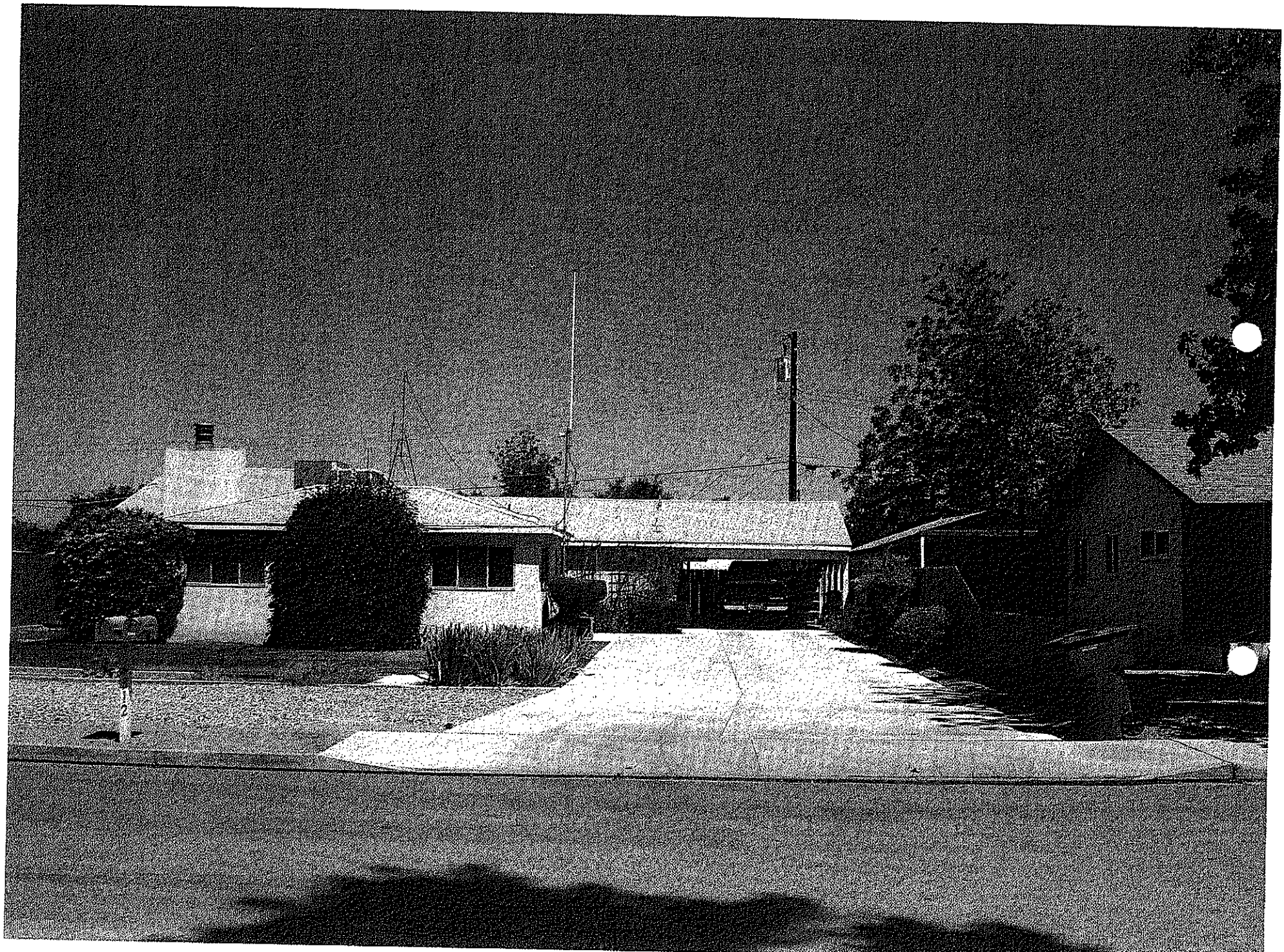
Has had problems with it.

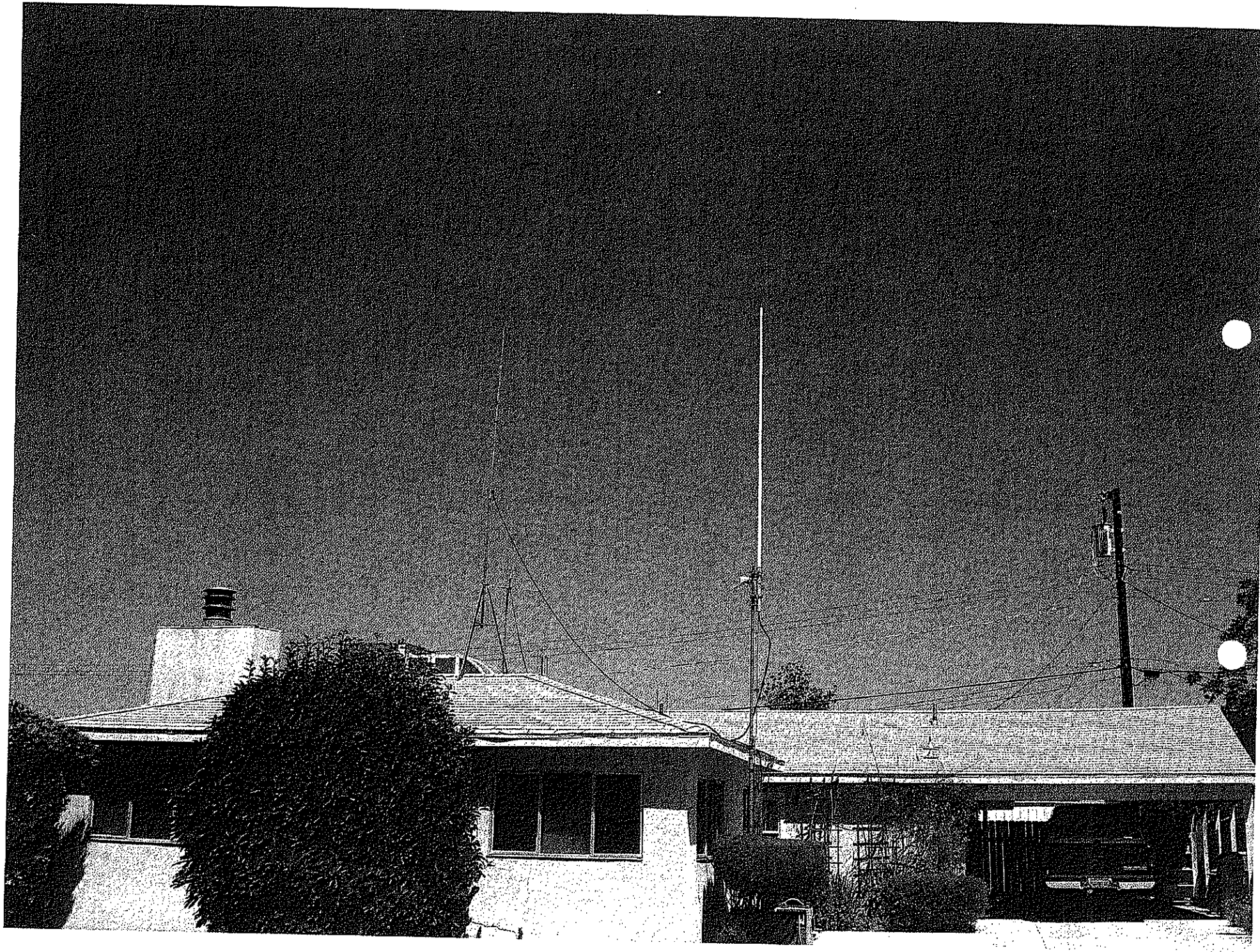
No signal seen on 958.25.

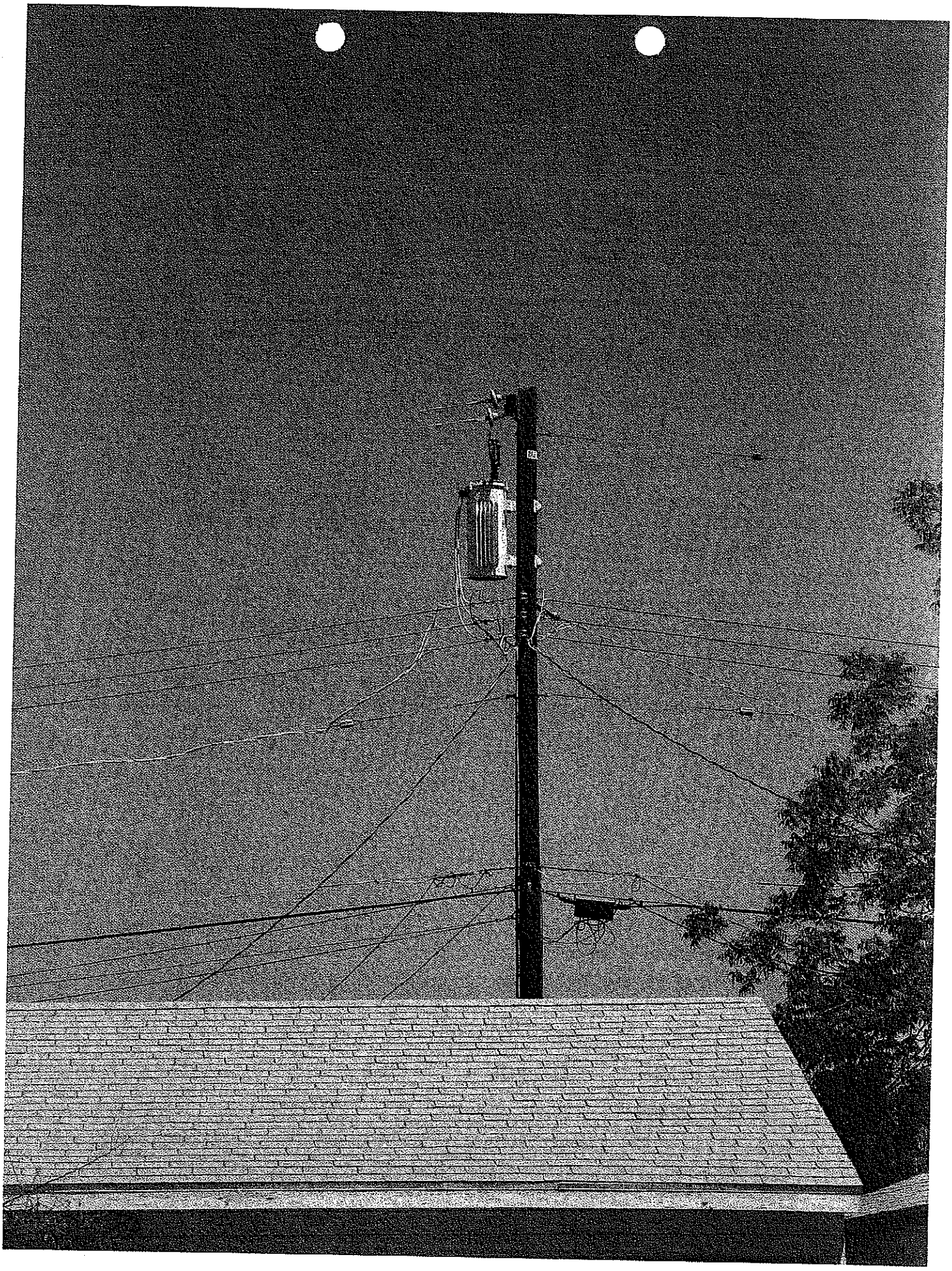
Signal dropped ~ 20 dB when whip ant removed.

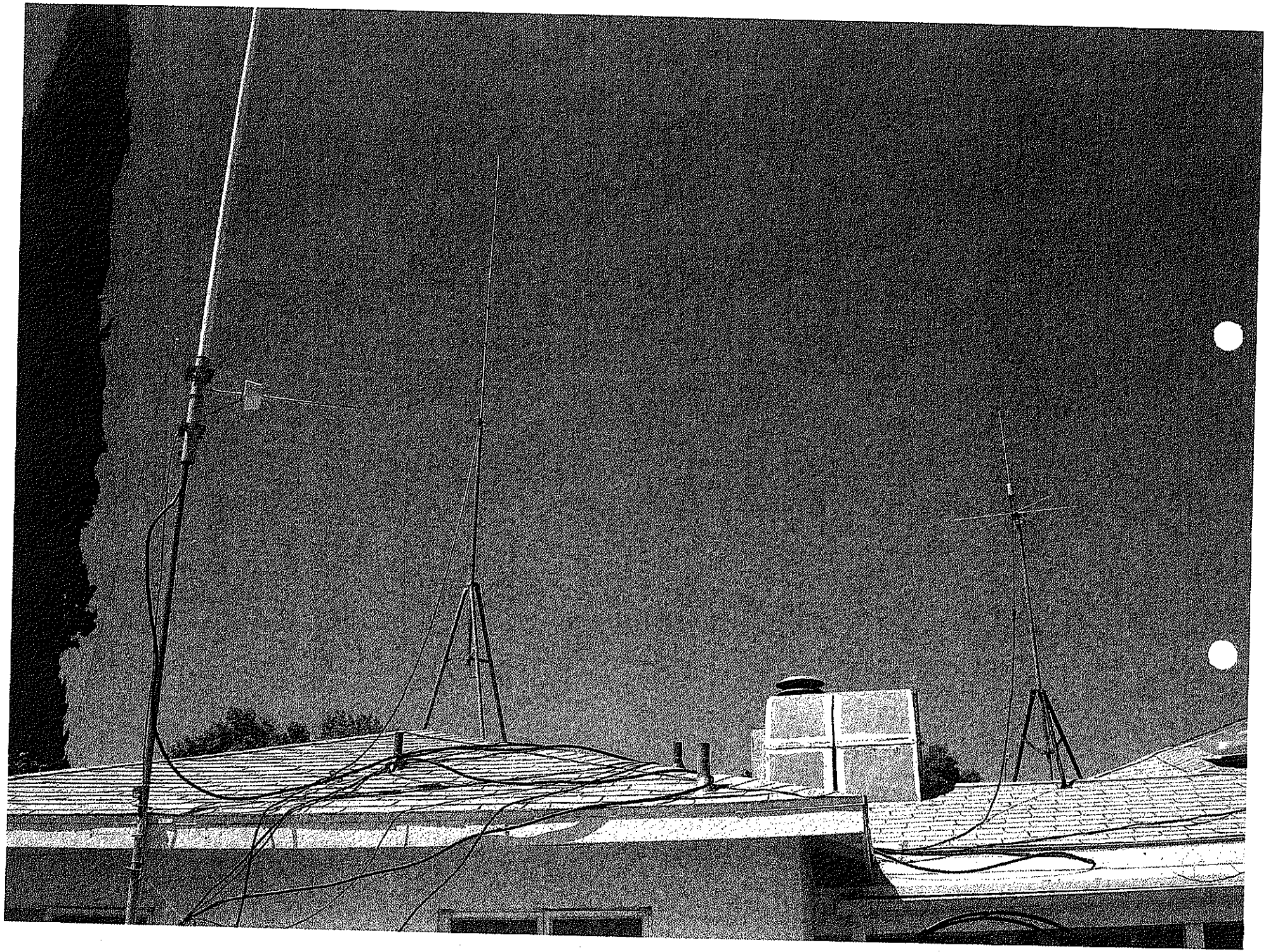
Left house ~ 3pm

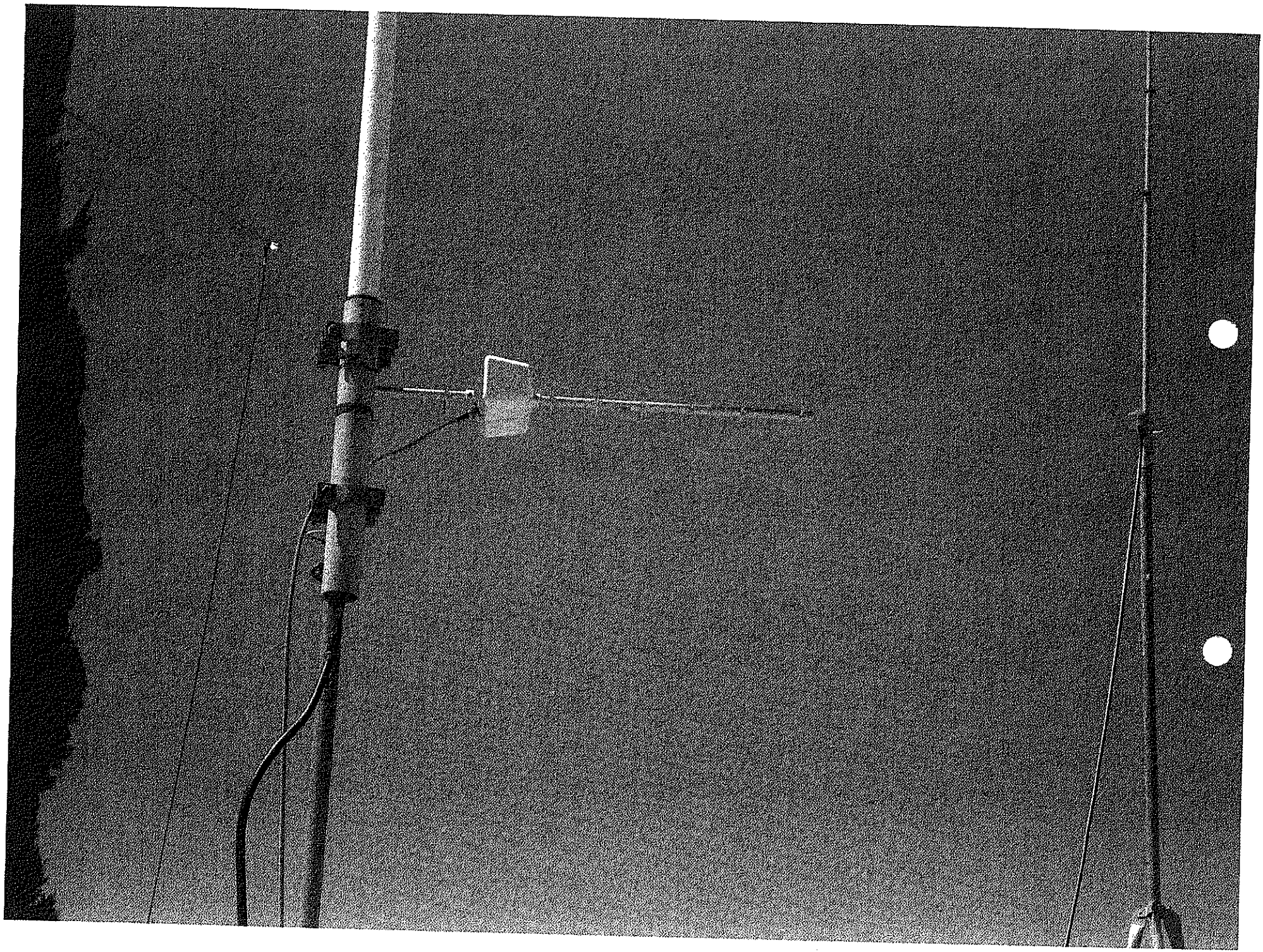

MKR: 406.0833 MHz
-80.00 dBm 10dB/
May/10
REF: 0.0 dBm
ATT: 10dB
13 13
MARKER
406.0833 MHz
CF: 406.0860 MHz
SPAN: 100.0 kHz
RBW: 3 kHz
VBW: 3 kHz
SWP: 50 ms

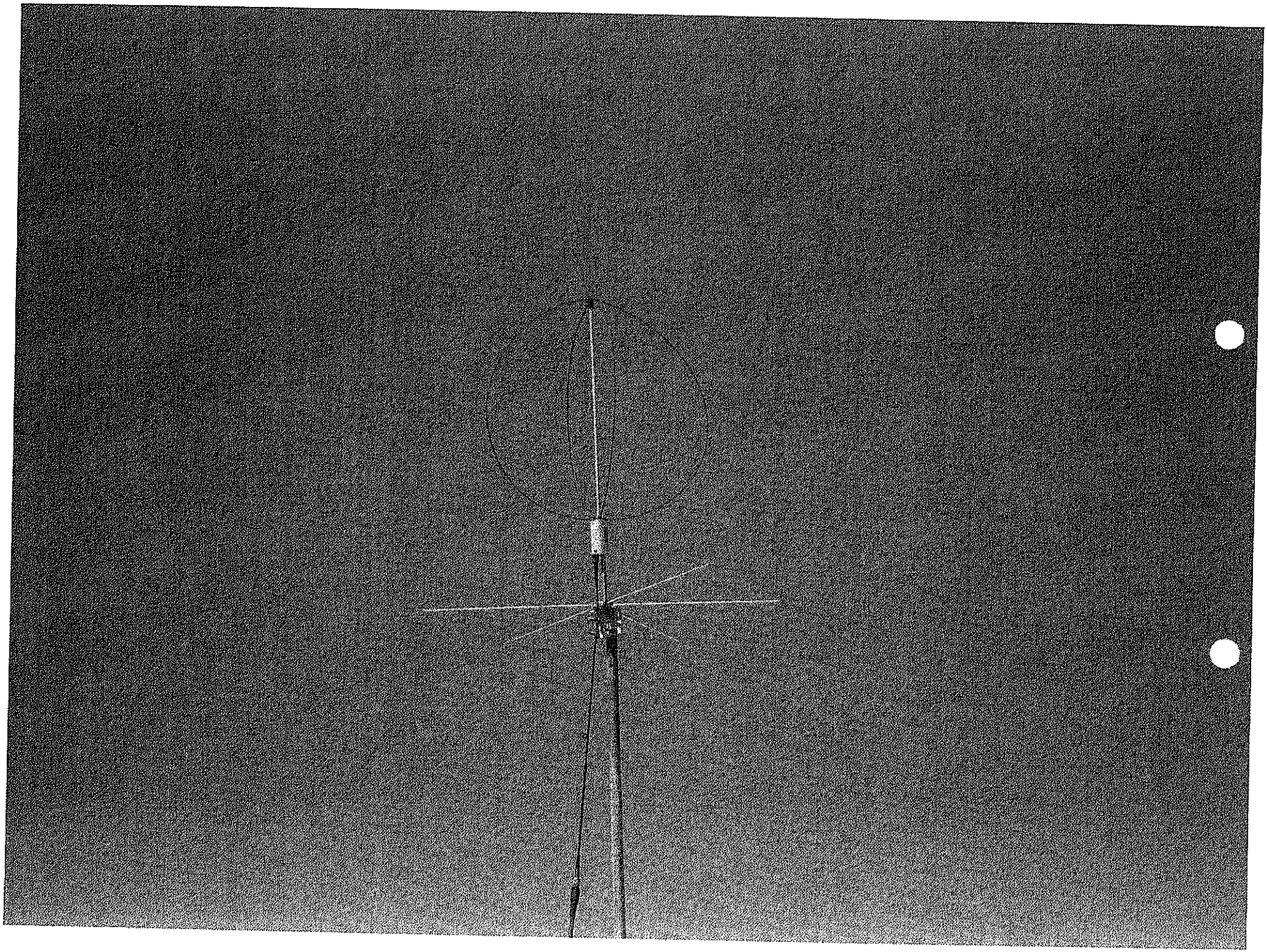


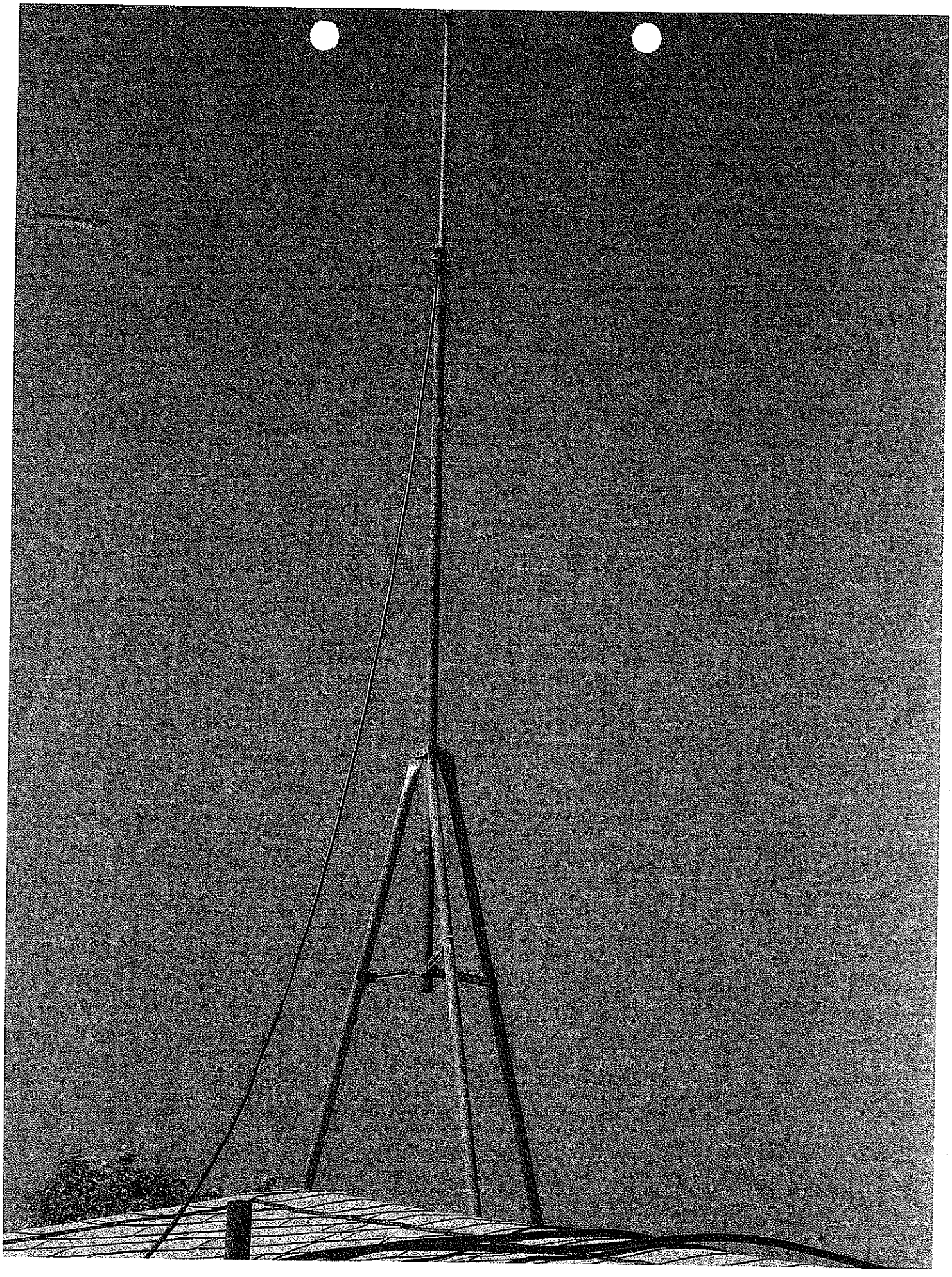


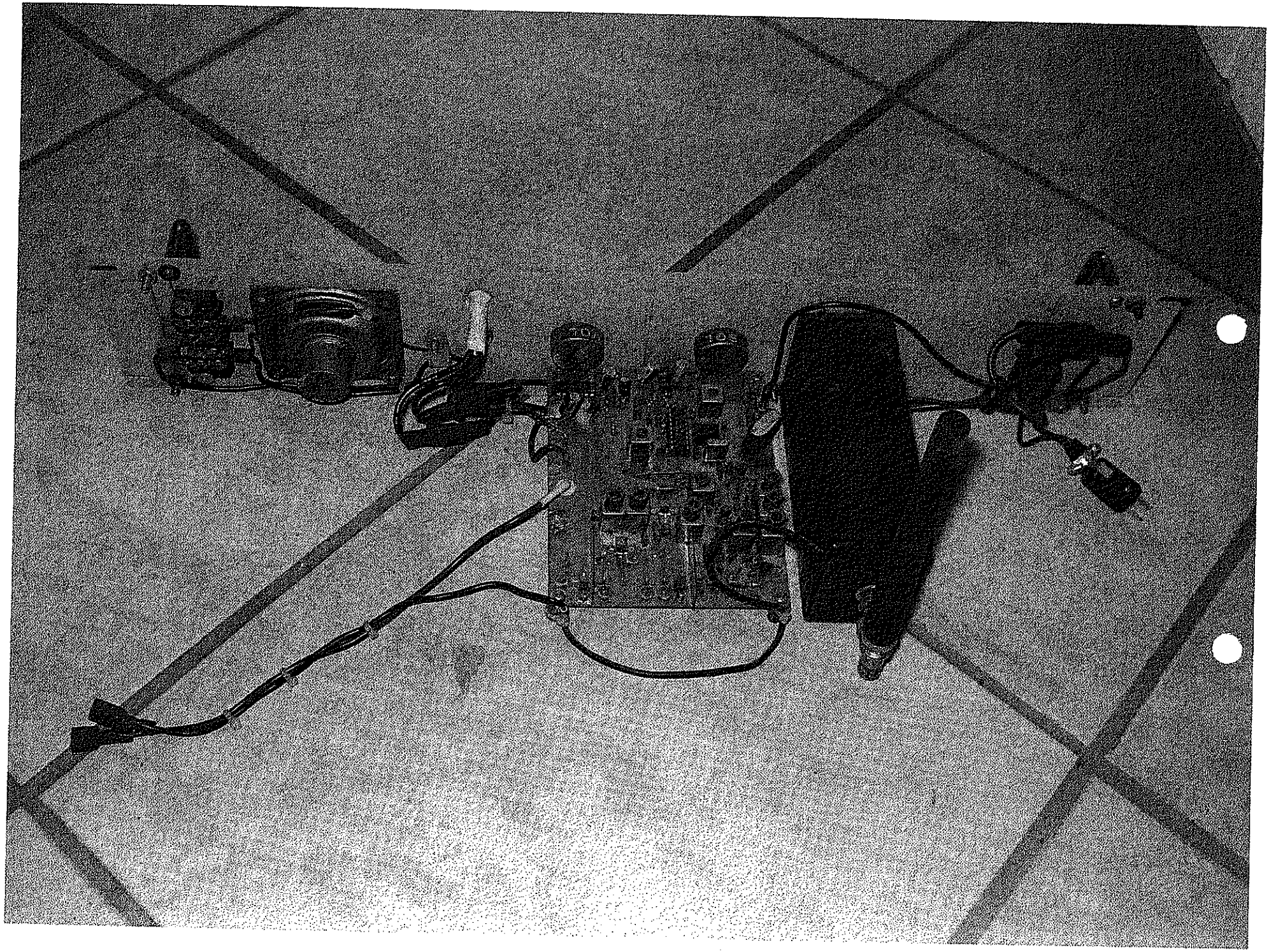


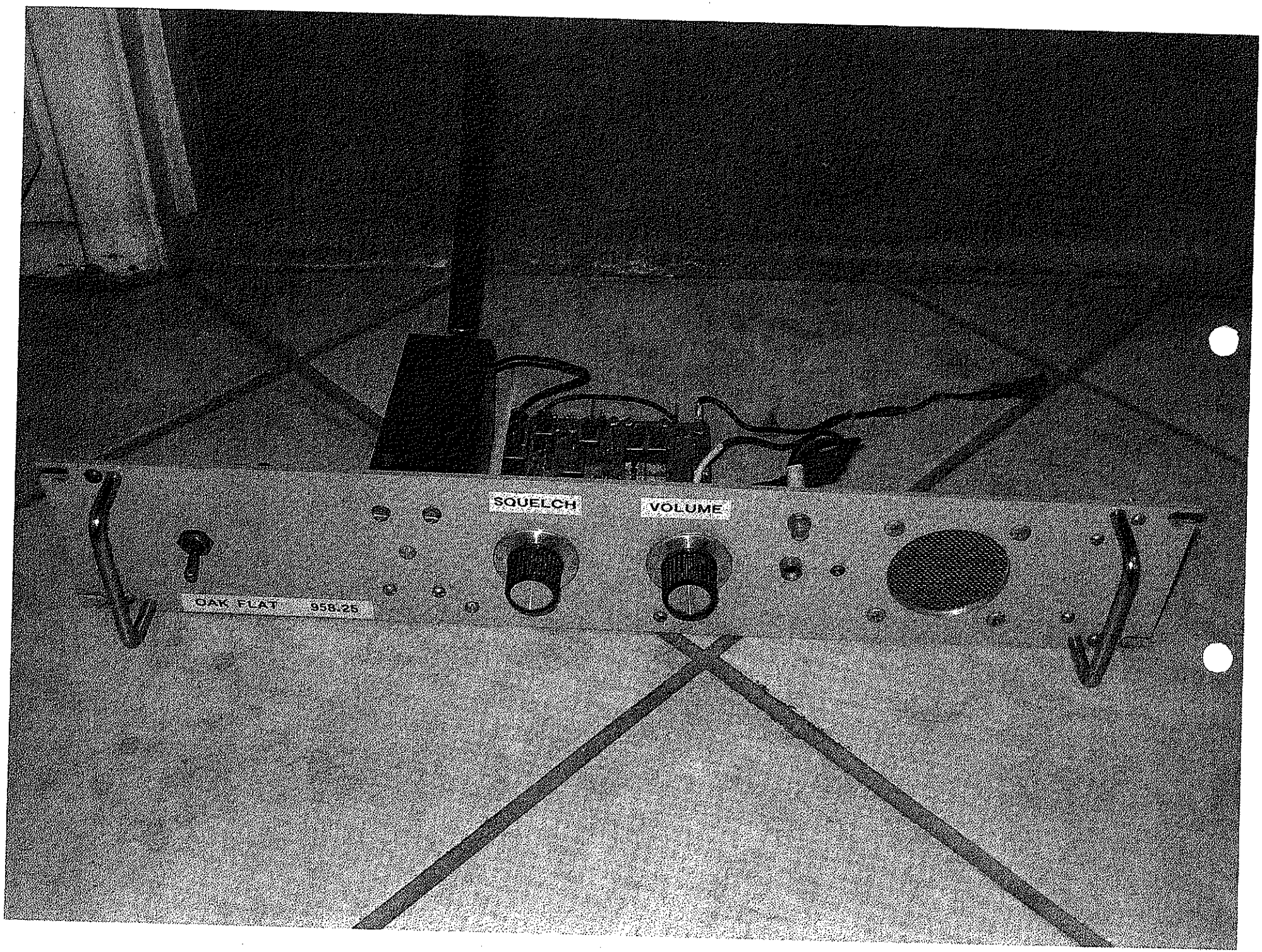


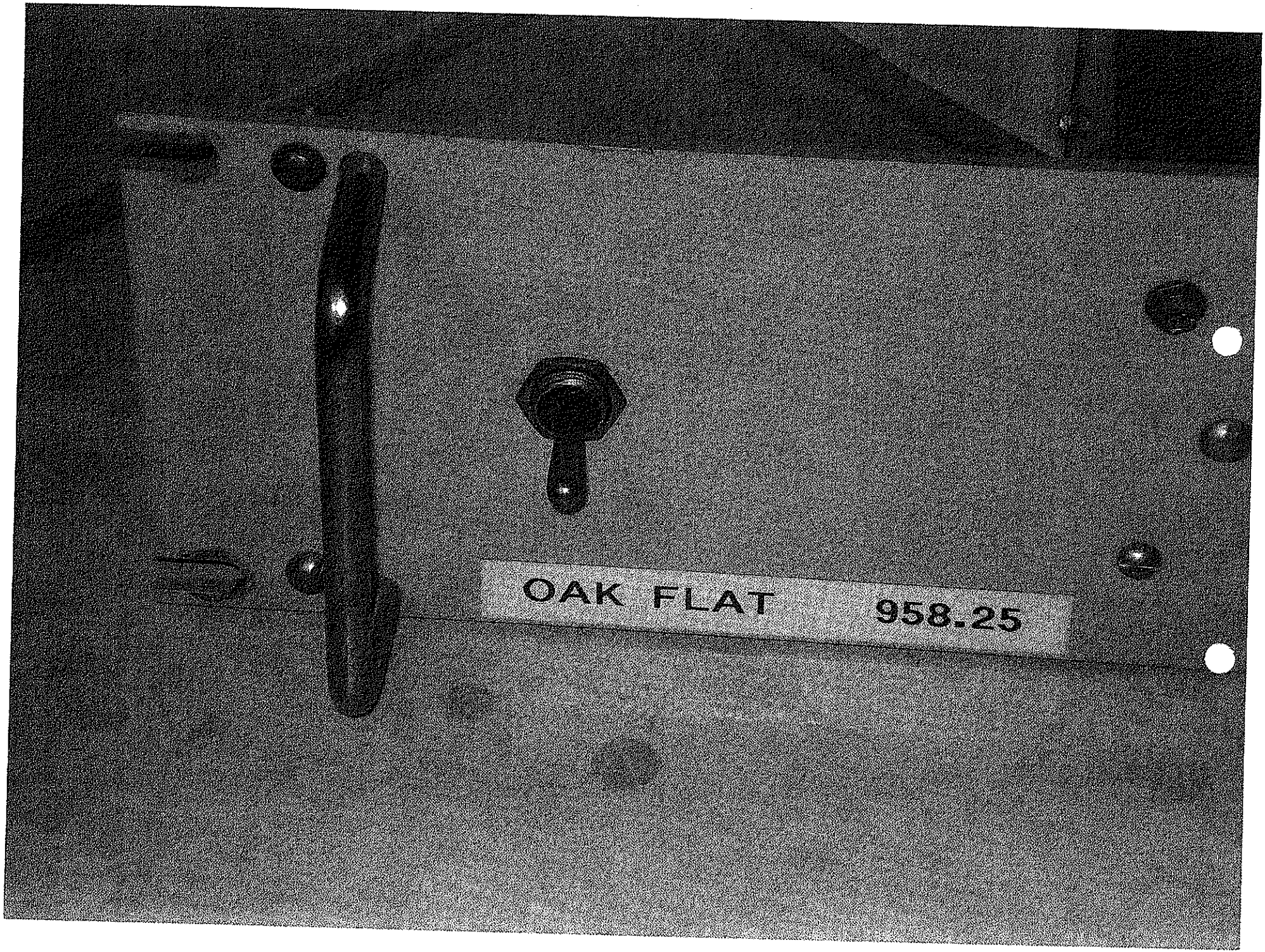


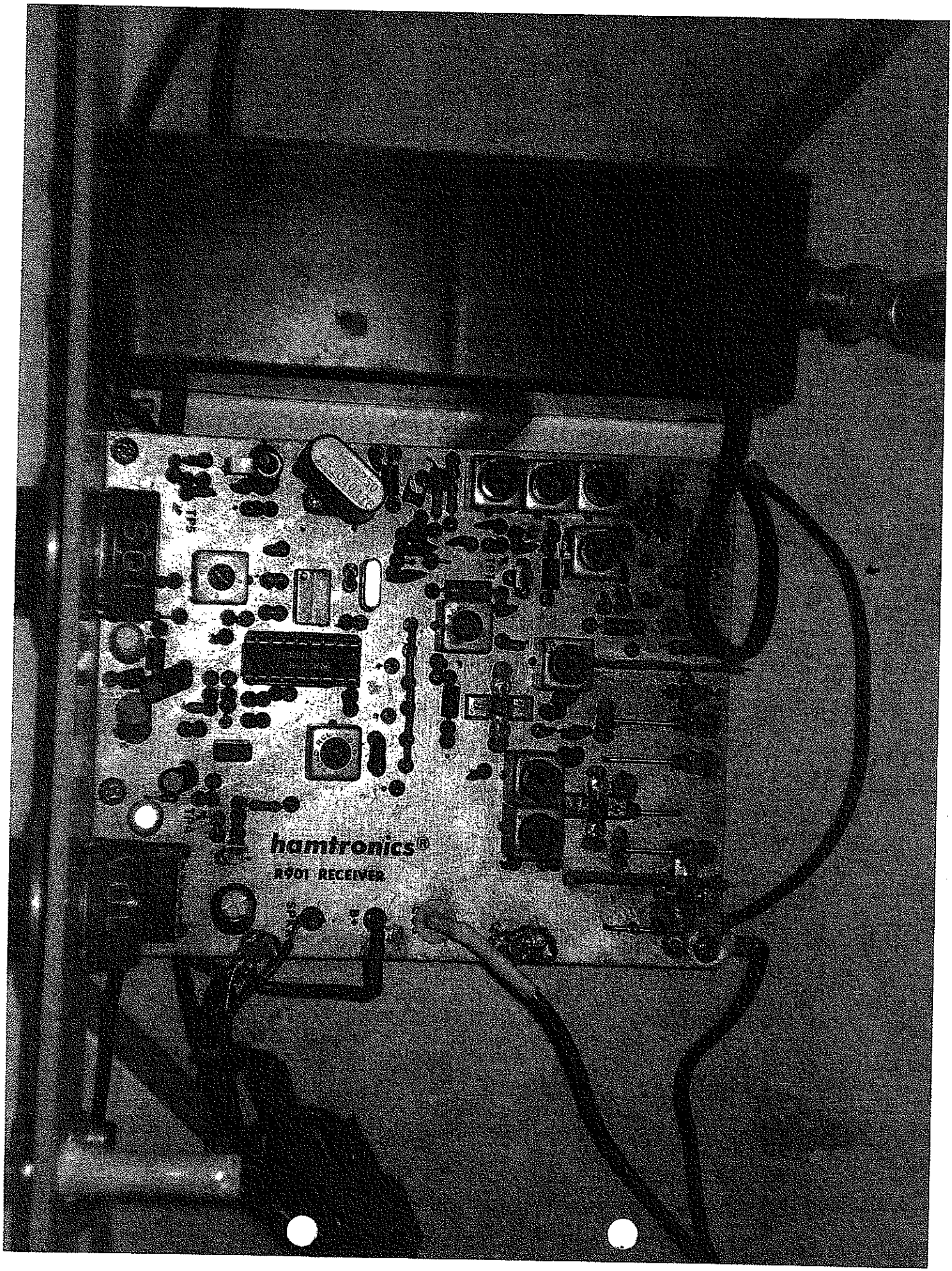







SQUELCH
VOLUME
OAK FLAT 958.25


OAK FLAT
958.25

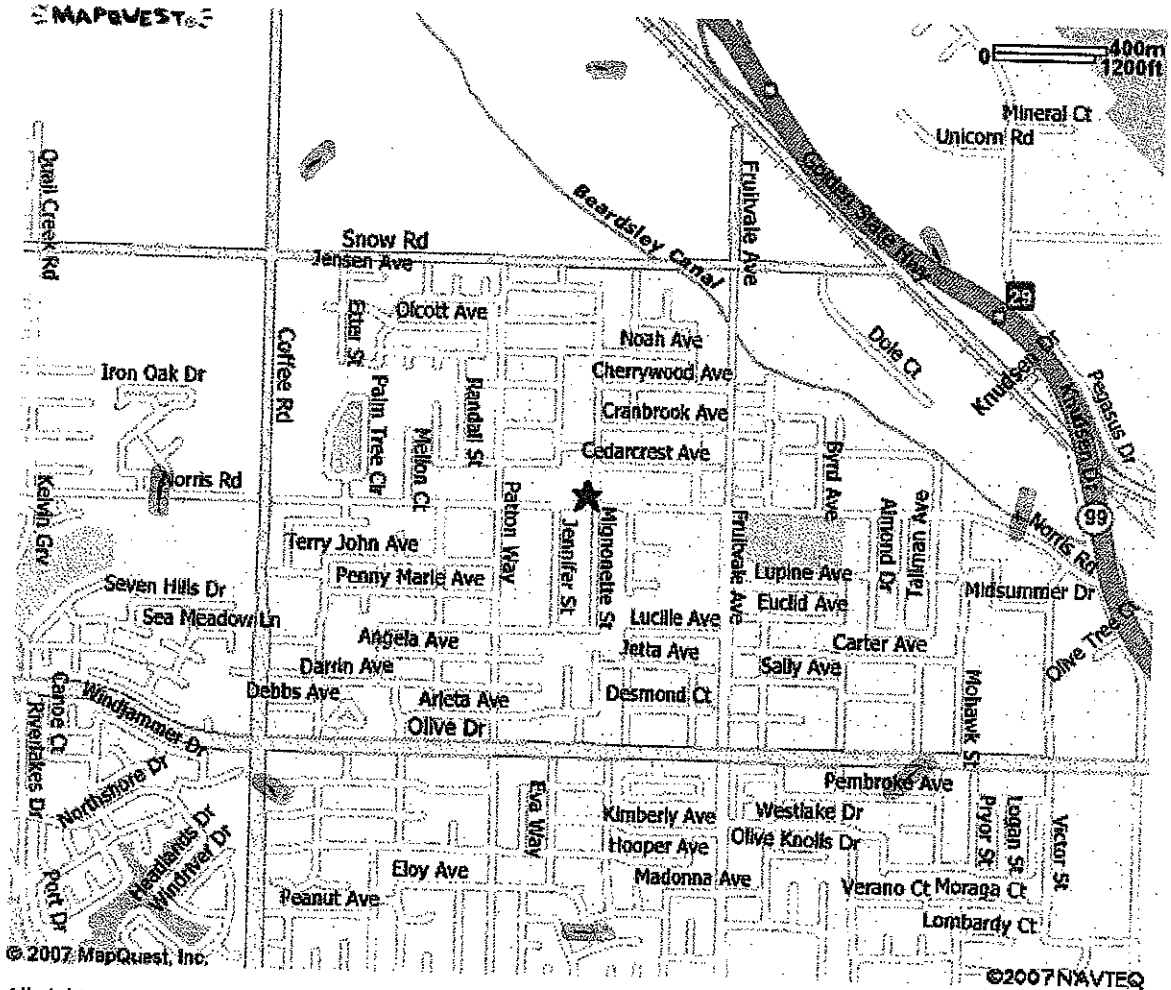

hamtronics®
R901 RECEIVER


ASTRON
SQUELCH
VOLUME
OAK FLAT
958.25

MAPQUEST

Latitude: 35° 25 Min. 12 Sec.
Longitude: -119° 4 Min. 48 Sec.

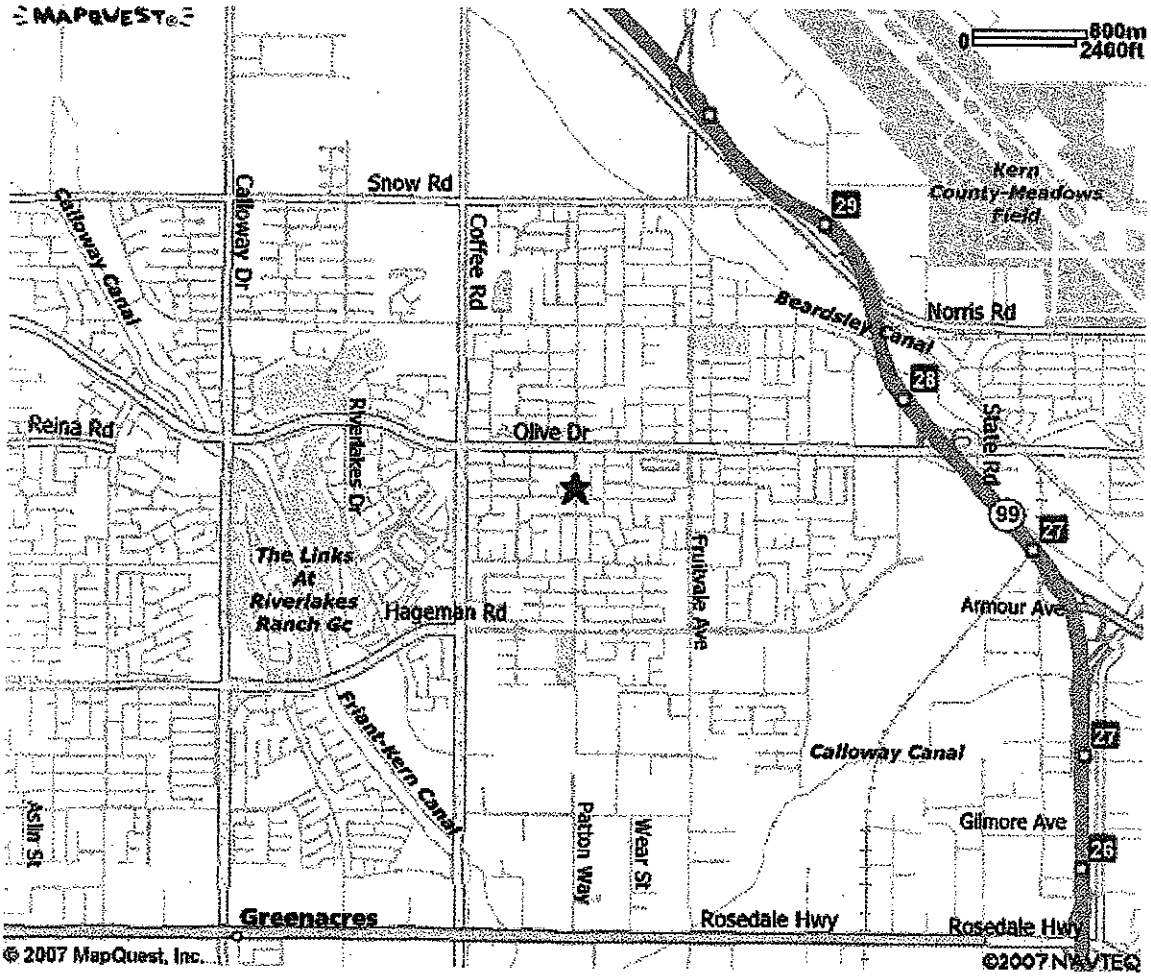
Notes:



MAPQUEST

Latitude: 35° 24 Min. 36 Sec.
Longitude: -119° 5 Min. 0 Sec.

Notes:



4-12-07

Tel call with [redacted] Freq of hits are going down.
Will send another log Friday.

5-8-07

Tel call with [redacted] Still on average
2 per day for last 60 days. Sporadic.

5-9-07

Call from [redacted]
More frequent hits lately.
1.5 Km radius
35.42
119.08

4-3-07

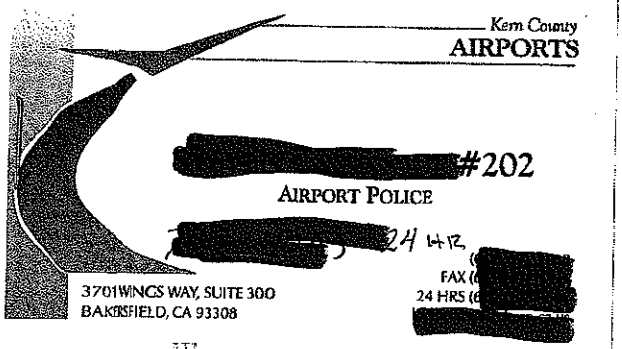
On scene in Bakersfield. ~2:30-7pm.
No signal 406.05-406.09 MHz.

Called [redacted] Thinks it's a weak signal. 4-4-07

40° 30"
X — Satellite has to be 0°-5° to hear.

~~Tyndall~~ Tyndall in Florida new location, instead of Langley for NCC, since ~1 month.

Will send no current log. He will also call Tyndall about sending CAP. May have funding problem if not an ELT.



3-23-07

Called [redacted] Hits are dying down. Likely hits lately, are 500 UTC (9pm local).

Called [redacted] 3-28-07

Last hit yesterday morning. Only 1 or 2 hits in the last 3 days.
Travel to Bakersfield.

Called [redacted]
10am yesterday. 3-29-07
~5am today last hit

Return from Bakersfield.

Call from [redacted] 3-30-07

Signal came up yesterday afternoon.
Will send another update on Monday.

3-19-07

Tel call with [redacted] [redacted].
First hit since last time (3 years ago?)
was March 9. No signal on 121.5 or 243 MHz.
Don't know how strong signal is. Signal needs to be on
4 minutes or more for a hit to register.
About 25 satellite passes per day, but only
10-15 are good ones. They have gotten 16
detects so far.
Location probably has 4.8km radius.
Will do more analyzing, and give me log in few days.

Call from [redacted] Thinks case may have started
March 2000 till Sep 2005.

Called [redacted] 3-21-07
Times on spreadsheet are UTC. Confident that it is
not an EPIRB, no ID. Fine with us going out
next week.

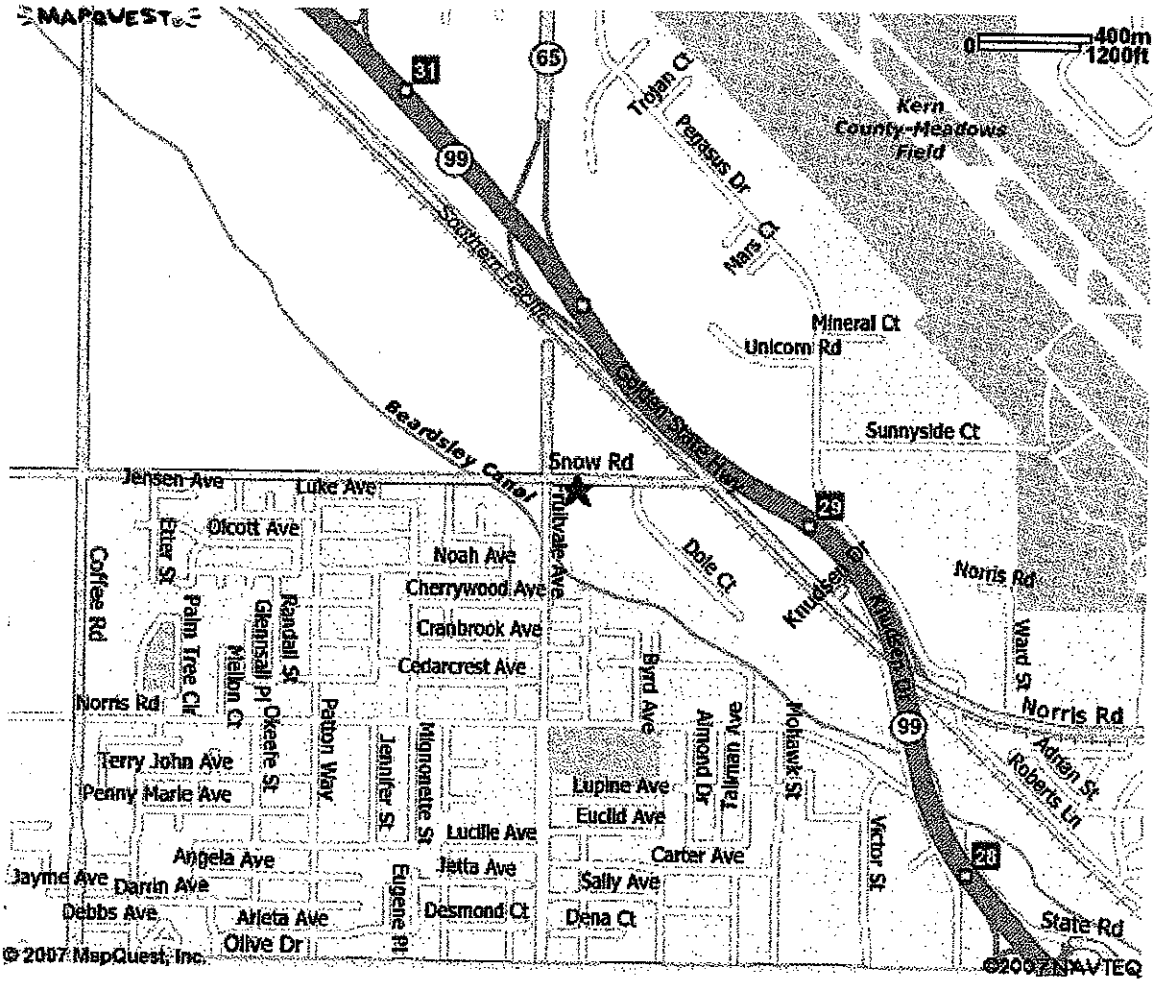
Called from [redacted] Only satellites to the west hear it.
Thus, something blocking signal toward the east.

Search 3/3/07 GMF 3-22-07
using 405-407 MHz, 10km radius
at 35.4, 119.1. Nothing found.

MAPQUEST

Latitude: 35° 25 Min. 36 Sec.
Longitude: -119° 4 Min. 24 Sec.

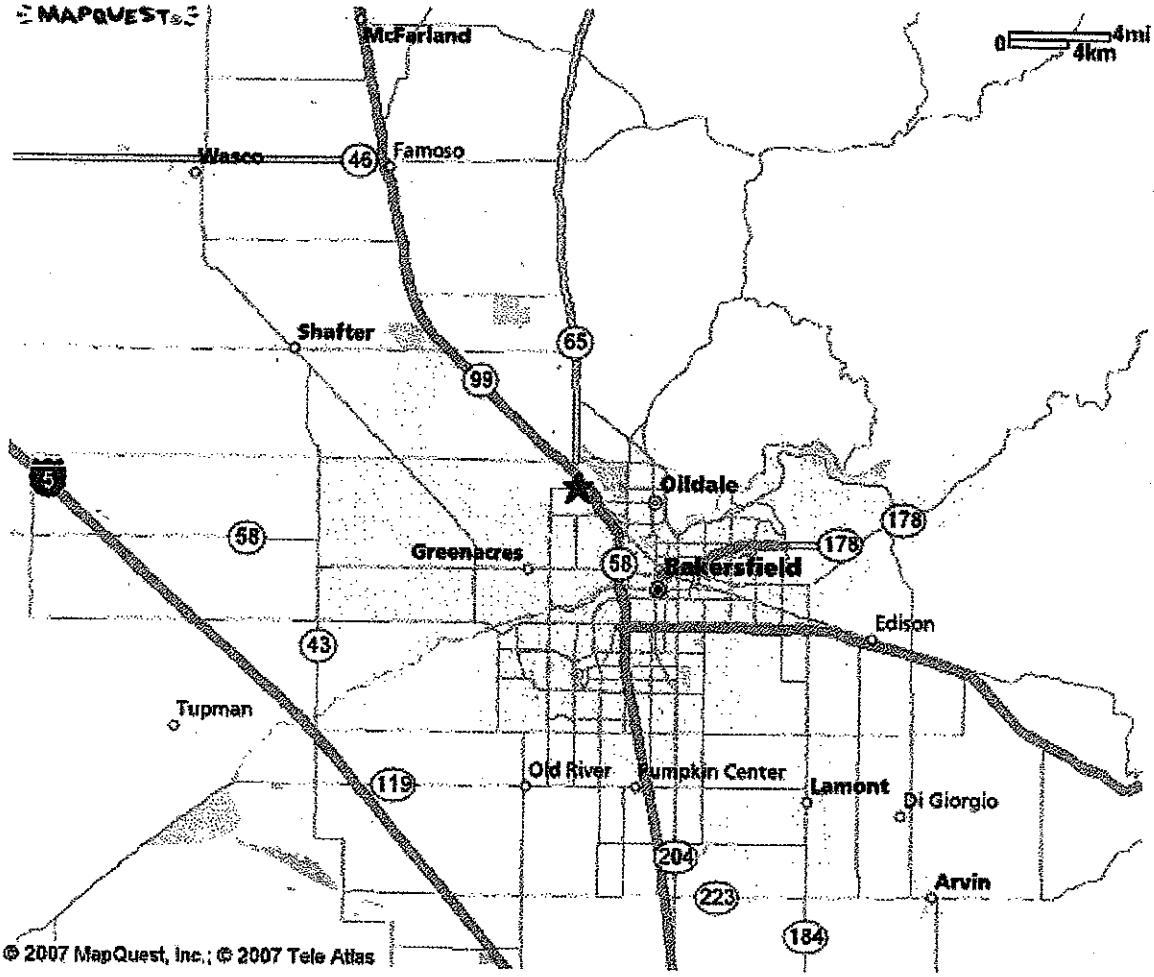
Notes:



MAPQUEST

Latitude: 35° 25 Min. 36 Sec.
Longitude: -119° 4 Min. 24 Sec.

Notes:



3/13/06

Bakersfield 406 mHz "Bakersfield"
Industrial Park
406 band

Rams search

[redacted]

remote monitoring Gary Soulsby

4 or 5 days - back

Sunday 3/5/06 1X started

N of Bakersfield near Bakersfield Airport! 2 miles mostly North of Bakersfield

406.08 mHz hits on this Freq Never heard it
FAA DF being gets info

406.025 mHz Freq - for distress freq
no ~~chang~~ change

121.5 243 Feb 2009 no longer processing those.

Maryland 1/2 mile boundary with DC
17 miles S. Columbia Lab
Fed complex Suitland Fed Center
Navy intelligence NOAA

Blair Boyd
Coast
NOAA example