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"We sleep safe in our beds because rough men stand ready in the night to visit violence on those who would do us harm." – George Orwell (1903–1950)

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DMS-100 TSTLCONT

TSTLCONT

Table Name : Test Line Control Table

Data Forms: No form

Functional Description of Table TSTLCONT

Table TSTLCONT lists the index (TSTNOIND) within the range of 000 to 255 assigned to each of the Test Line Number (TLNOS) subtables.

This table is not used when test calls are performed on Common Channel Interoffice Signaling (CCIS) trunks. However, even if the office is entirely CCIS, this table must be datafilled for Test Call software to function.

Datafill Sequence : Refer to table TSTLCONT.TLNOS

Table Size : Refer to table TSTLCONT.TLNOS

Field Descriptions : Refer to table TSTLCONT.TLNOS

Datafill Example

Refer to table TSTLCONT.TLNOS

Datafill Example for Table TSTLCONT

Example of a MAP display:

TSTNOIND	TLNOS
0	(27)
1	(0)
2	(0)
3	(0)

DMS-100 TSTLCONT.TLNOS

TSTLCONT.TLNOS

Table Name : Test Line Number Subtable

Data Forms: 2531A, B

Functional Description of Table TSTLCONT.TLNOS

Subtable TLNOS lists the test line names and their associated codes. Each subtable can be shared by one or more outgoing or two-way trunk groups.

This subtable is not used if test calls are performed on Common Channel Interoffice Signaling (CCIS) trunks. However, even if the office is entirely CCIS, this subtable must be datafilled in order for Test Call software to function.

Datafill one 2531A form for each TLNOS subtable.

Table 1 lists the test line names and their standard codes. The codes listed under Local can be different for different switching units.

Test Line Descriptions	Name	DMS-300 or Toll Test Line Code	Local Test Line Code
Balance Termination	T100	100	1191
Test Board Communication Line	T101	101	1005
Milliwatt Supply	T102	102	1111
Signal Supervisory	T103	103	-
Transmission Test & Noise Check	T104	104	xxxx
Transmission Test Line	T105	105	xxxx
Bit Error Rate Test	TB08	108	xxxx
Short Circuit	TCLC	-	1192
E&M Lead Test Line	TE_M	(notes)	(notes)
International Signal Supervisory Line	TISS	163	-
Loop-Around Port 1	TLPA	-	1194
Loop-Around Port 2	TLPB	-	1195
Non-Synchronous Test	TNSS	-	1120
Open Circuit	TOPC	-	1193

-continued-

Test Line Descriptions	Name	DMS-300 or Toll Test Line Code	Local Test Line Code
Repeat Two Long Delay	TR2L	(notes)	(notes)
Repeat Two Short Delay	TR2S	(notes)	(notes)
Synchronous Test	TSYN	-	1181
ATME-2 Type A Responder	TYP A	444	-
ATME-2 Type B Responder	TYP B	445	-
ATME-2 Type C (busy flash) Responder	TYP C	446	-

Note 1: xxxx = any four-digit number

Note 2: The E&M Lead Test and the Repeat Two tests terminate on the 103 test line in a toll office.

Note 3: The E&M Lead Test and the Repeat Two tests terminate on the non-synchronous or synchronous test line in a local office.

-End-

Table 2 shows the standard DMS test name and its subset test name(s). Only the standard DMS test name is entered in field TESTLINE in subtable TLNOS.

Table 2

Standard DMS Test Names

STD DMS Test Name	Subset Test Names
T100	N100, S100
T101	(not a test line, only a communication line)
T102	
T103	
T104	S104
T105	TL0N, TL0S, TL05, T164, TL6N, TL6S, TL65, TS05, TS65, T5AS, T5AT, T50L, T56N, T5LB, TSBS, TSBT, T5SB, T5BS, TERL, T5LH
TART	(Turkish loads)
TB08	TB18 (only used by Automatic Trunk Test)
TCLC	
TE_M	

-continued-

Table 2 (continued)
 Standard DMS Test Names

STD DMS Test Name	Subset Test Names
TISS	(International loads)
TLPA	
TLPB	
TNSS	
TOPC	
TR2L	
TR2S	
TSYN	
TYPA	TA01, TA02, TA03, TA04, TA05, TA07, TA08, TA09, TA10, TA11, TA14, TA15, TA16, TA17, TA18, TA20, TA21, TA22, TA23, TA24
TYPB	TA06, TA12, TA19, TA25
TYPC	TA13

 -End-

Test Lines for ISUP Trunks

ISDN User Part (ISUP) trunks use Common Channel Signaling 7 (CCS7) for all signaling requirements. The ISUP/CCS7 message-based protocol contains specific details on how to handle test line tests for ISUP trunks.

In the CLLIMITCE table record for ISUP trunks, the entry in field TSTNOIND is changed to agree with the entry in field TSTNOIND in table TSTLCONT, after the entry for ISUP trunks is added to table TSTLCONT and subtable TLNOS.

Fields TESTLINE, TLNUMBER, and TL_MFC_OG_SIG in subtable TLNOS must be datafilled as shown in *Table 3* to follow the ISUP protocol according to the T1X1 specification.

Table 3
 ISUP Protocol Datafill

TESTLINE	TLNUMBER	TC_MFC_OG_SIG
T100	100	N
T102	102	N
T101	101	N
T104	104	N

Test Lines for CCITT 7 ISUP Trunks in a DMS-300

The CCITT-recommended digits for the T100 test line are 64. To use the T100 test line on a CCITT trunk, the entry in field TSTNOIND (table CLLIMTCE) must point to subtable TSTLCONT.TLNOS, which translates the T100 test line code to 64. The required datafill for fields TESTLINE, TLNUMBER, and TL_MFC_OG_SIG are shown in *Table 4* below.

Table 4
CCITT 7 ISUP Protocol Datafill

TESTLINE	TLNUMBER	TC_MFC_OG_SIG
T100	64	N

Originating 105 Test Line

Each Transmission Test Unit (TTU) circuit consists of a control signal generator card and a digital filter. *Table 5* lists pairs of interconnected cards that can be provisioned together to form a TTU for the listed test procedure type.

Table 5
Transmission Test Unit Pairs

Control Signal Generator	Digital Filter	Test Procedure Type
NT2X47AA	NT2X56AA	ATME2 (rated MD)
NT2X47AB	NT2X56AA	ATME2 (DMS-300 switching units)
NT2X47AC	NT2X56AB	ATME2 (104 test line) and ATMS (105 test line)
NT2X47AD	NT2X56AB	ALT (Automatic Line Testing) and ATMS (105 test line)
NT2X47BA	NT2X56BA	International (A-law) ATME and ATMS

Originating 105 Test Line – New Tests Provided with NT2X47AD

Table 6 shows the new tests provided by the NT2X47AD card.

Table 6
New Tests for Originating 105 Test Line

Test	Description of Test
ERL	Echo Return Loss measurement with quiet termination
ERLSC	Echo Return Loss Self-Check with quiet termination

-continued-

Table 6 (continued)

New Tests for Originating 105 Test Line

Test	Description of Test
SRL	Low frequency Singing Return Loss measurement with quiet termination
SRLSC	Low frequency Singing Return Loss Self-Check with quiet termination
SHI	High frequency Singing Return Loss measurement with quiet termination
SHISC	High frequency Singing Return Loss Self-Check with quiet termination

Note : For additional information on DMS tests, see the *Trunks Maintenance Guide*, 297-1001-595, and the *Menu Commands Reference Manual*, 297-1001-821.

-End-

Datafill Sequence

There is no requirements to datafill other tables prior to table TSTLCONT.TLNOS.

Field Descriptions

Field names, subfield names, and valid data ranges for table TSTLCONT.TLNOS are described below.

Field Descriptions for Table TSTLCONT.TLNOS

Field or Subfield	Entry	Explanation
TESTLINE	alphanumeric (4 characters)	<i>Test Line Name</i> If the switching unit is other than a DMS-300, enter the digits of the test line number that are to be outpulsed (not including the prefix digits from table CLLIMTCE). If the switching unit is a DMS-300, with a signaling system other than CCIS7, enter KP (key-pulse), the digits of the test line number (maximum 12) that are to be outpulsed, and ST (signaling terminal). KP1 is represented by entry D; KP2 is represented by entry E; ST is represented by entry F.

The first digit position in the test line number following KP, for No. 6 signaling trunks, is the Calling Party's Category Indicator (CPCI) with the following values:

Entry	Decimal Value
1 to 9	1 to 9
0	10
B	11
C	12
D	13
E	14
F	15

-continued-

If the switching unit is a DMS-300, and CCITT7 signaling system, the recommended value for a T100 test line is 64.

```
-----
TL_MFC_OG_SIG      N      Test Line Multi-Frequency Compelled Signal
                    This field is used to test for Multi-Frequency
                    Compelled (MFC) trunks.  Enter N.
-----
```

-End-

Datafill Sequence

An example of datafill for subtable TSTLCONT.TLNOS is shown below.

Datafill Example for Table TSTLCONT

Example of a MAP display:

TESTLINE	TLNUMBER	TL_MFC_OG_SIG
T100	1191	N
T102	1111	N
TSYN	1181	N
TLPA	1194	N
TLPB	1195	N

The example specifies the following data:

- Test line names and test line codes for the trunk group are listed in subtable TLNOS #0 (see table CLLIMTCE, field TSTNOIND).
- *Table 7* shows the digits that are automatically outputpulsed for the specified test lines (see table CLLIMTCE, field PRFXDIGS, and subtable TSTLCONT.TLNOS, field TLNUMBER).

Table 7

Example Digits Description	TESTNAME	Digits Outputpulsed		
		PRFXDIGS	and	TLNUMBER
Balance Termination	T100	8	+	1191
Milliwatt Supply	T102	8	+	1111
Synchronous Test	TSYN	8	+	1181
Loop-Around Port 1	TLPA	8	+	1194
Loop-Around Port 2	TLPB	8	+	1195

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BELL SYSTEM PRACTICES
AT&TCo Standard

SECTION 506-101-400
Issue 2, May 1972

SERVICE SECURITY DEVICES

1. GENERAL

1.01 This section contains identification and installation information on security devices for coin collectors and coin telephone sets.

1.02 This section is reissued to:

- Revise information on coin relay antidrill guard assembly and dust cover
- Add information on 840360184 knob and shaft assembly

1.03 Security devices are added to standard equipment to discourage thievery, vandalism, and strong arm attack.

2. SECURITY DEVICES

2.01 Security devices include locks, studs, special backplates, covers, ring seals, armored cords, a switchhook kit, and special tools needed to handle them.



Locks and keys will be shipped only on orders that specify authorized recipients.

Upper Housing and Cover Assembly Locks

2.02 Two models of locks may be used for upper housings and cover assemblies: the 10-type and 29-type (Fig. 1). Both are lever tumbler-type locks requiring a corrugated key.

2.03 The 10-type lock has been used in upper housing assemblies of 190 and 200 series coin collectors.

2.04 The 29-type lock is used in cover assemblies of 1- and 2-type coin telephone sets and in 235- and 1235-type coin collectors.

KS-19277 Lock and Associated Parts

2.05 The KS-19277 lock and associated parts (Fig. 2) give additional security to the upper housing. They consist of a screw type lock and appropriate fasteners which secure an upper housing to either backplate or mounting surface.

2.06 The lock mounts in a specially provided hole in the lower right side of the upper housing (Fig. 3) and is held in place by a spring steel washer and heavy steel nut (Fig. 4). Use of a tubular key permits the back of the lock to rotate and screw onto the end of a security bolt or stud fastener.

2.07 The lock cannot be used on coin collectors equipped with 2-coil relays, those not having a lower right security stud hole, or panel coin phones.

2.08 The P-13A091 (BKX) terminal assembly (Fig. 5) must be replaced with a P-25E300 terminal assembly to provide clearance of fasteners (Fig. 6 and 7).

2.09 One of three different fasteners may be used with the KS-19277 lock (Fig. 2).

- (a) P-25E301 bolt fastener—short shoulder; for use with 3/16-inch thick backboards.
- (b) P-25E302 bolt fastener—long shoulder; for use with 5/16-inch thick backboards.
- (c) P-25E303 stud fastener—for use where security studs are not required.

2.10 Two methods can be used to determine if existing coin collector backboards are equipped with keyhole slots without removing the coin collector from its mounting:

- If a security stud is present in the lower right security stud hole of the backplate (Fig. 5), the appropriate bolt fastener (2.09)

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may be installed in place of the security stud.

- If there is no security stud in the lower right security stud hole of the backplate, place a small-bladed screwdriver in the hole (Fig. 8). If blade enters to a depth of at least 3/4-inch, a keyhole slot is present in the backboard (Fig. 9) and the appropriate bolt fastener can be used.

2.11 Use of bolt fasteners is limited by the surface (backboards, shelf, or booth) upon which the coin collector is mounted.



In vulnerable locations where prying of upper housing is likely, always use bolt fastener where possible.

2.12 The P-25E301 and P-25E302 bolt fasteners screw from the rear into the lower right security stud hole of the coin collector backplate (Fig. 7). The coin collector is installed in the same manner as any other coin collector equipped with security studs.

2.13 To install a bolt fastener at existing installations, disconnect and remove the coin collector from its mounting.

2.14 Use the P-25E303 stud fastener (Fig. 6) where a bolt fastener is not required, but where protection is desired against unauthorized use of the 10-type upper housing key.

2.15 The stud fastener can be installed without removing the backplate assembly from its mounting surface.

2.16 Use a P-25E351 insulator on either the bolt or stud fastener (Fig. 6 and 7) to prevent it from grounding against the lower lug of the housing contacts. To install, start at the BKX terminal and wind in "barber pole fashion" around the stud or bolt. Do not cover the threads on the exposed end of the stud or bolt. Redress wiring to upper housing contacts (Fig. 10).

2.17 After the bolt or stud fastener is properly installed, fasten upper housing as follows:

- (a) Insert the tubular key into the KS-19277 lock.

(b) Apply and maintain a slight forward pressure on the key while rotating it in a clockwise direction **until the key is hand tight**. Do not force the key beyond this point. To remove the key, maintain a forward pressure, turn counterclockwise to the first release position and pull the key away from the lock.



Do not use pliers or other unauthorized tools on the handle of the key. Do not file tab off end of key. Once the upper cover assembly has been drawn to the backplate assembly so that the upper cover assembly lock can be engaged, there is no need to further tighten the KS-19277 lock.

2.18 When an upper housing is equipped with a KS-19277 lock and is removed for maintenance apply a coating of KS-19094 antiseize compound to the threaded area of the bolt or stud fastener which engages the security lock to prevent binding or "freezing" of parts.

Security Studs

2.19 Security studs provide added strength to the mounting of a coin collector or coin telephone set on a backboard. Four versions are available as shown in Fig. 11.



Security studs can be used only if the backboard has key-hole slots which align with the coin collector security stud mounting holes.

2.20 The P-10E070 and P-12E798 studs are used with the 190, 200, and 1200 series coin collectors and panel coin phones. The P-40Y06 and P-40Y061 studs are used with the 1A- and 1C-type coin telephone sets.

2.21 Security studs with long shoulders are used with 5/16-inch thick backboards. Those with short shoulders are used with 3/16-inch thick backboards.

719A Tool

2.22 A 719A tool (Fig. 12) is required to release or engage the locking mechanism on both of the 1- and 2-type coin telephone sets and 235/1235-type coin collectors.

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1A Backplate

2.23 The 1A backplate made of sheet steel (Fig. 13), is intended for use on coin collectors equipped with aluminum backplates to reduce the possibility of breaking away the lower housing by means of a pry bar.

2.24 The 1A backplate is provided with clearance holes for security studs and mounting screws. It is fastened to the coin collector backplate by replacing the four lower housing assembly screws with one P-12E799 and three P-13E656 high-strength flathead steel screws (Fig. 14). Replacement screws must be ordered separately.

Note: The 1A backplate cannot be used with 139A backboards or 19-type shelves.

Armored Cords

2.25 All current coin collectors and coin telephone sets are equipped with armored handset cords (Fig. 15). Transmitter and receiver caps are cemented to the handset handle. Refer to Section 501-210-102 for complete information on handsets.♦

2.26 Use the following procedures to equip existing coin collectors in the field with G3-type, G13-type, or F1L handset.

- (1) Remove the upper housing from the coin collector.
- (2) Disconnect the handset cord conductors and cord fasteners. Before removing old cord from the cord entrance hole, attach a pull wire to the old cord. This will aid in pulling in the new cord.



Cover the coin relay, hopper, and return chute with a piece of plastic, cloth, or other suitable material to prevent metal drill shavings from falling into them.

- (3) Using a small center punch and hammer, mark hole to be drilled and tapped in the coin collector backplate. This hole is to be located in the cord entrance tube halfway between the outer beveled edge of the coin collector and the left edge of the cord chamber (Fig. 16).

- (4) Drill hole with a No. 7 drill (.201 inch).



When drilling aluminum backplates do not exert too much pressure on drill. This may cause drill to cut too fast, thus making hole oversized.

- (5) Tap the hole using a 1/4-20 tap with a Greenfield T-Handle tap wrench or equivalent.

Caution: The tap wrench should be long enough to permit the wrench handle to be turned without injury to the installer or possible damage to the coin relay.

- (6) Clean metal shavings from the cord entrance hole.
- (7) Using the pull-in wire placed in step 2, pull in the new cord.
- (8) Remove the pull wire from new cord and fasten a P-12A096 clamp over the cord (Fig. 17).

(9) A P-26E084 1/4-20 by 5/16-inch self-locking setscrew is used to secure the cord to the coin collector backplate (Fig. 17). A flat surface is located approximately 1/4-inch from the set end of the stainless steel flexible hose. Using a 1/8-inch Allen wrench, screw the socket setscrew into the hole drilled in step 4 until it just makes contact with the flat surface of the metal hose. Give the setscrew a minimum of 1/4 turn and a maximum of 1/2 turn. This should hold the cord firmly in the coin collector.

Caution: Screwing the socket setscrew down more than one turn against the steel flexible hose may damage the cord conductors.

- (10) Remove the protective covering placed during drilling and replace the upper housing.

Caution: Carefully brush out all metal shavings from the coin collector, and dispose of them so that they will not cause injury or damage equipment.

2.27 Refer to Fig. 18 for routing and securing handset cord in 1-type coin telephone sets.

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2.28 Refer to Fig. 19 for routing and securing handset cord in 2-type coin telephone sets.

2.29 Refer to Fig. 20 for routing and securing handset cord to 235/1235-type coin collectors.

D-180009 Switchhook Conversion Kit

2.30 The D-180009 switchhook conversion kit (Fig. 21) is designed to reduce switchhook blocking and permit a simple adjustment of switchhook travel. The conversion kit can be used for field conversion of 200-type and 1234-type coin collectors.

2.31 Two types of switchhooks *may be found* in the field: A one-piece switchhook with a long shaft and a two-piece switchhook with a short shaft and an adapter.

2.32 To remove a one-piece switchhook:

- (1) Remove and retain hex head machine screw, lockwashers, tension spring, switchhook arm assembly, and any spacing washer that may be present, from right end of shaft (Fig. 22).
- (2) Slide switchhook to the left and out of bearings.

2.33 If coin collector is mounted in a corner, a one-piece switchhook may be removed without removing the coin collector from backboard as follows:

- (1) Perform operations outlined in 2.32 (1).
- (2) Place the larger notch of a 710A bending tool on the switchhook hub as shown in Fig. 23, View A. Apply force on the tool as shown and move the switchhook out, bending it slightly.
- (3) Having partially bent the shaft, move the switchhook to the left. Place the smaller notch of the bending tool over the shaft as shown in Fig. 23, View B. Apply force on the tool as shown.
- (4) Continue moving the switchhook to the left and applying additional bends as needed to remove the switchhook.

2.34 To remove a two-piece switchhook:

- (1) Perform operations outlined in 2.32 (1).

(2) Loosen the flathead screw which secures P-12E828 adapter (Fig. 24) to the switchhook shaft.

(3) Slide switchhooks to left and out of bearing

(4) Slide adapter to left and out of bearing.

2.35 Remove wire guide clamp (Fig. 22).

2.36 To install new switchhook kit:

(1) Install P-20F161 wire guide clamp (Fig. 25) on backplate. Ensure that wiring is routed as shown.

(2) Select correct bushing (Fig. 21) and slide over shaft of switchhook.

(3) Secure bushing on shaft with a cotter pin (Fig. 26).

(4) Slide the P-20F155 adapter assembly into right bearing (Fig. 26).

(5) Slide switchhook assembly with bushing installed through left bearing to mate with adapter assembly.

(6) Secure adapter to shaft with hex socket head cap screw (Fig. 27) which is furnished with kit.

(7) Install P-297872 spring washers as required to reduce excessive end play. End play of switchhook shaft shall not exceed 1/32-inch.

(8) Place switchhook arm assembly (Fig. 28) retained in 2.32 over switchhook shaft and secure to end of adapter shaft with lockwasher and hex head machine screw. Install tension spring.

2.37 Adjust switchhook travel with the two adjusting screws (Fig. 28) to meet contact spring pile up requirements and check switchhook operation per Section 506-310-100.

2.38 Ensure that all wires are clear of adapter travel and adjusting screws.

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Coin Relay Guard Assembly

2.39 A special case-hardened steel antidrill guard assembly (KS-20892) is available to prevent fraudulent operation of coin relay in single slot coin telephone sets (Fig. 29). The guard assembly must be ordered separately.

2.40 When the antidrill guard assembly is used, the existing coin relay plastic dust cover must be trimmed to fit around the guard assembly. Trim the dust cover per Fig. 30 using electrician scissors or side cutters.

Note: Currently manufactured dust covers are provided with guide lines to follow when cutting. When these lines are provided, disregard Fig. 30.

2.41 Secure the antidrill guard assembly to the set using the existing return chute assembly mounting screw (Fig. 29).

840360184 Knob and Shaft Assembly

2.42 The 840360184 knob and shaft assembly (Fig. 31) is designed as a replacement for the lever-type coin release handle and shaft assembly on single slot coin telephone sets in areas where a high rate of vandalism has resulted in serious damage to internal linkage and other chute actuating components.

2.43 A built-in clutch arrangement ensures that the chute actuating components are neither damaged nor destroyed if the knob is forcibly turned beyond its normal rotational limit.

2.44 Notches and indentations on the sloped turning surface minimize slippage of the fingers.

2.45 To replace the lever-type coin release with the knob-type (Fig. 32):

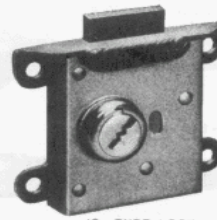
- (1) Remove cover unit assembly (1-type set) or open door and faceplate assembly (2-type set).
- (2) Remove and retain RM-651418 screw which secures link and lever assembly to coin release lever shaft. Remove lever and shaft assembly.

(3) Insert knob and shaft assembly and ensure that arrow on knob is oriented as shown.

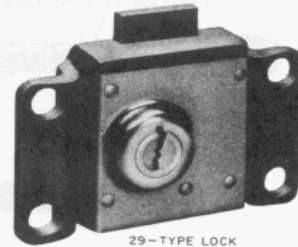
(4) On a panel coin telephone set, the steel spacer must be used.

Note: Do not use spacer on a 1-type set.

(5) Place link and lever assembly over rear of shaft and secure with the RM-651418 screw retained in (2).



10-TYPE LOCK



29-TYPE LOCK

Fig. 1—Upper Housing and Cover Assembly Locks

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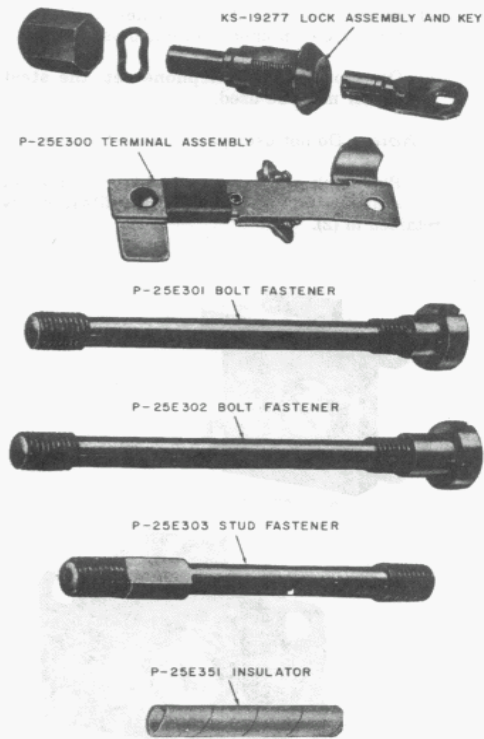


Fig. 2—KS-19277 Lock and Associated Parts



Fig. 3—Coin Collector Equipped With KS-19277 Lock

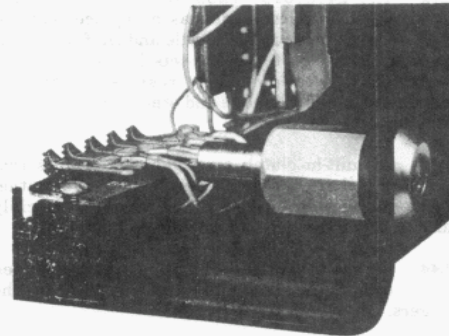


Fig. 4—KS-19277 Lock Installed in Upper Housing

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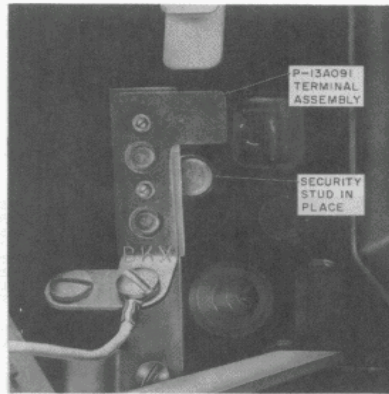


Fig. 5—P-13A091 Terminal Assembly with Security Stud Installed

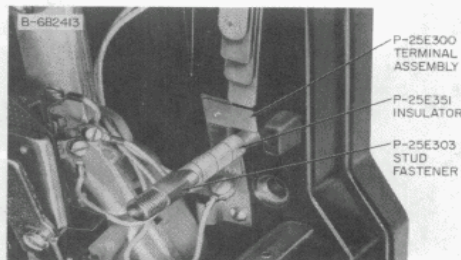


Fig. 6—Terminal Assembly, Insulator, and Stud Fastener

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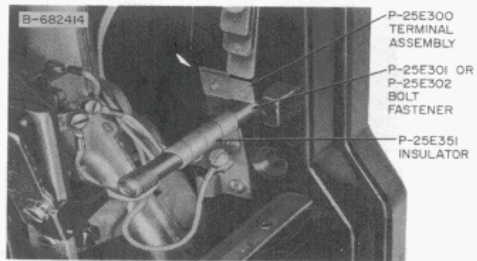


Fig. 7—Terminal Assembly, Insulator, and Bolt Fastener

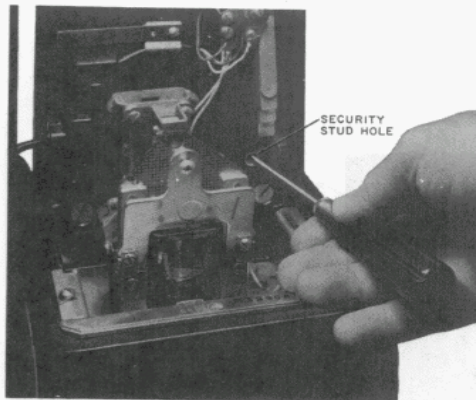


Fig. 8—Determining Presence of Keyhole Slots

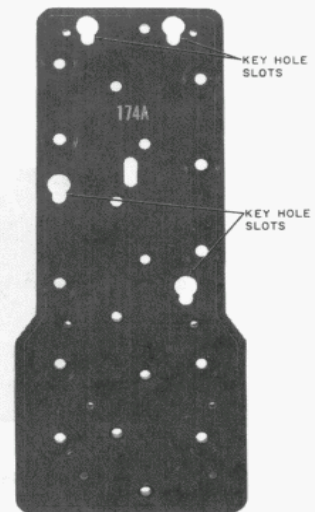


Fig. 9—174A Backboard with Keyhole Slots for Security Studs and Bolt Fastener

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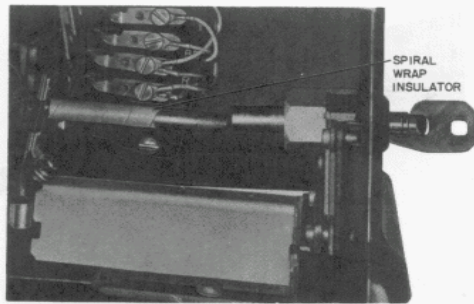


Fig. 10—Cutaway Section of Upper Housing Showing Mating of Bolt Fastener and KS-19277 Lock

NOTE:
ALL DIMENSIONS SHOWN ARE IN INCHES.

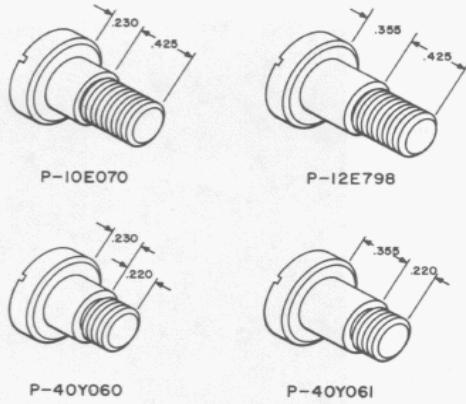


Fig. 11—Security Studs

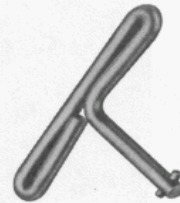


Fig. 12—719A Tool

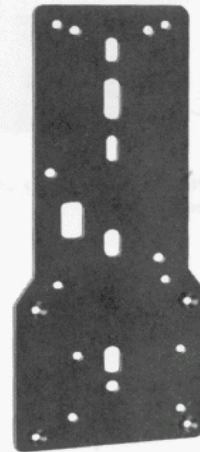


Fig. 13—1A Backplate

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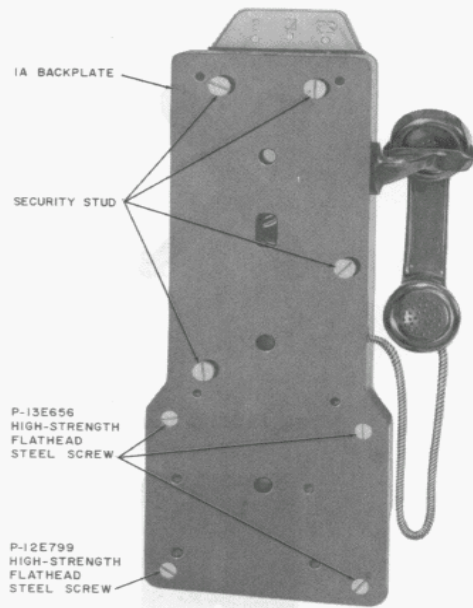


Fig. 14—Rear View of Coin Collector with 1A Backplate Attached

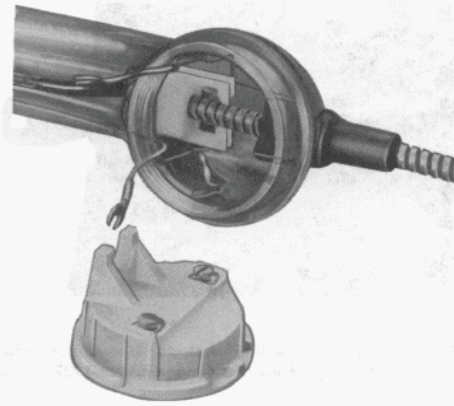


Fig. 15—Handset with Armored Cable

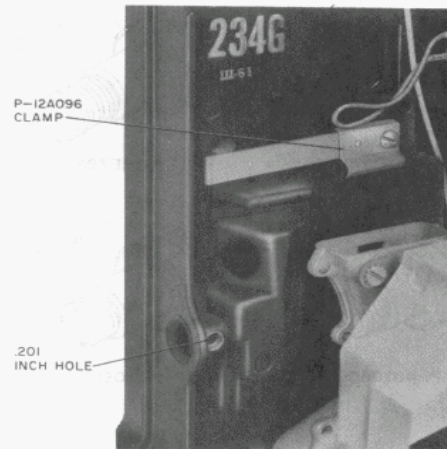


Fig. 16—Location of .201 Inch Hole

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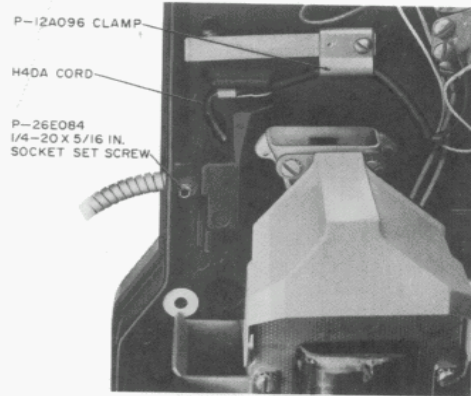


Fig. 17—Installation of Armored Cord

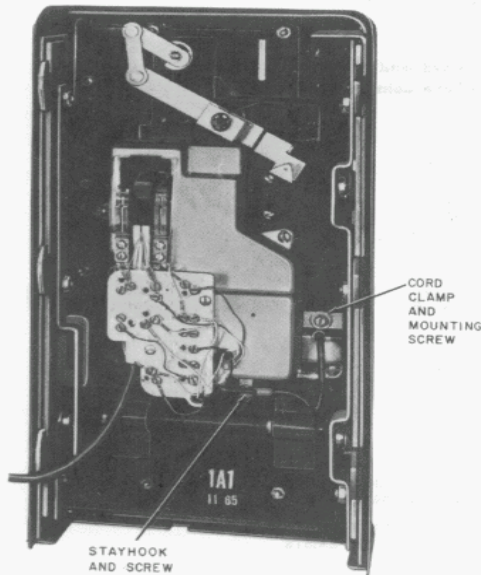


Fig. 18—Location of Armored Cord Mounting Hardware in 1A/1C-Type Coin Telephone Set

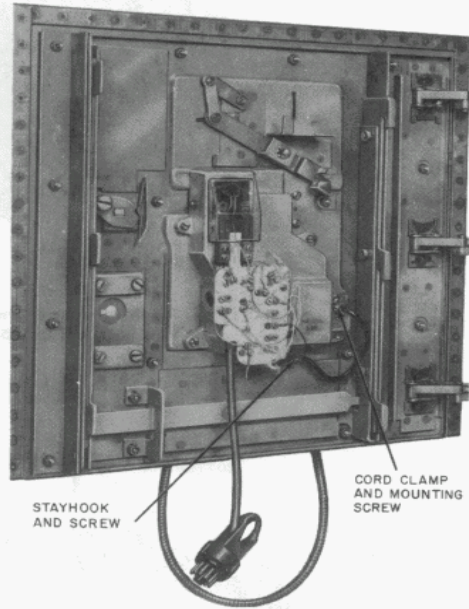


Fig. 19—Location of Armored Cord and Mounting Hardware in 2A/2C-Type Coin Telephone Set

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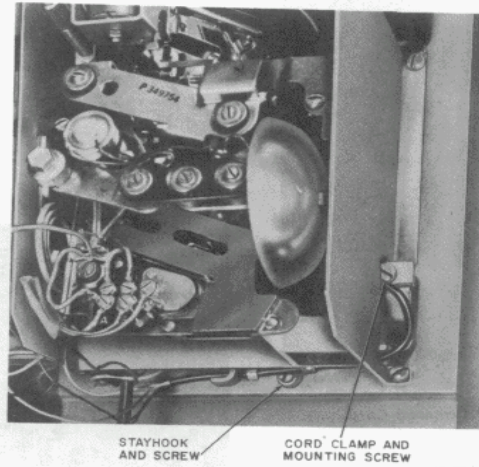


Fig. 20—Location of Armored Cord and Mounting Hardware in 235/1235-Type Coin Collector

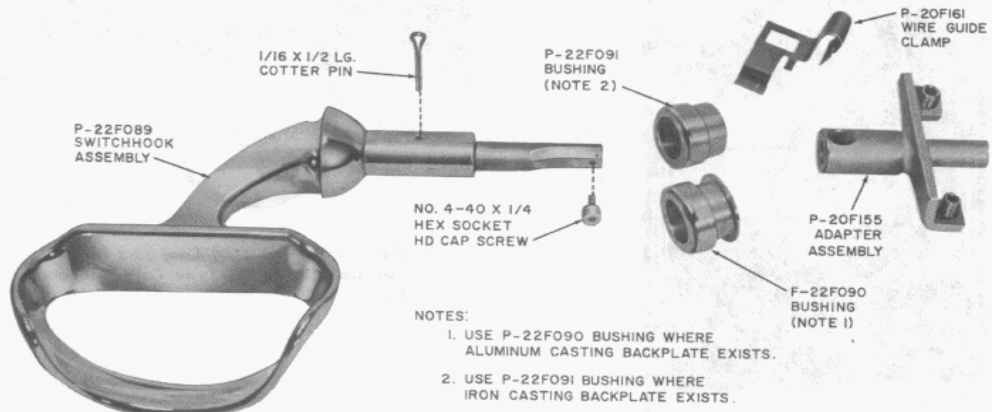


Fig. 21—D-180009 Switchhook Kit

Coin Telephone Security Devices (1972)

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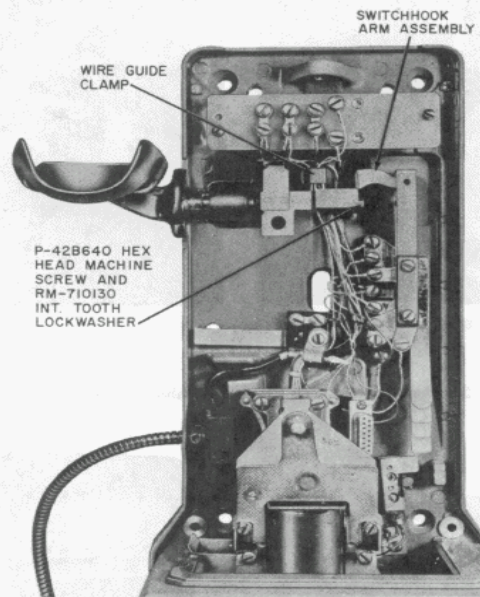


Fig. 22— Switchhook Installed

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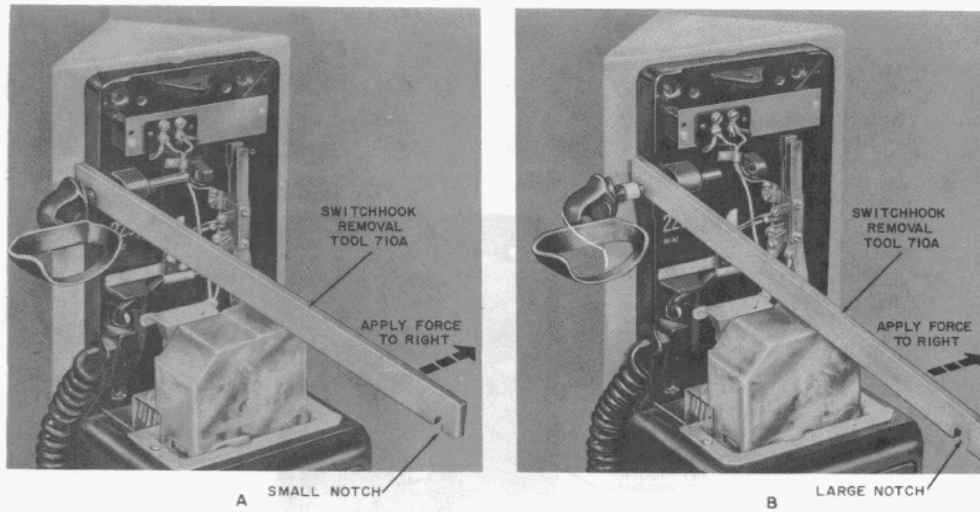


Fig. 23—Removal of One-Piece Switchhook Located in Corner

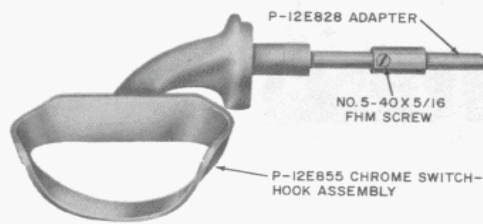


Fig. 24—Two-Piece Switchhook

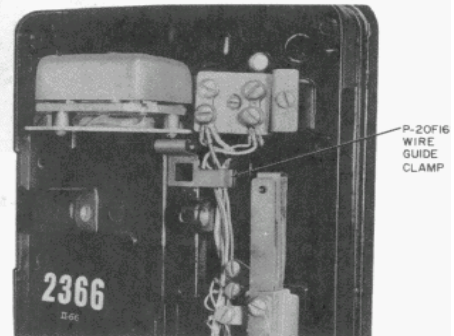


Fig. 25—Installation of Wire Guide Clamp

Coin Telephone Security Devices (1972)

ISS 2, SECTION 506-101-400

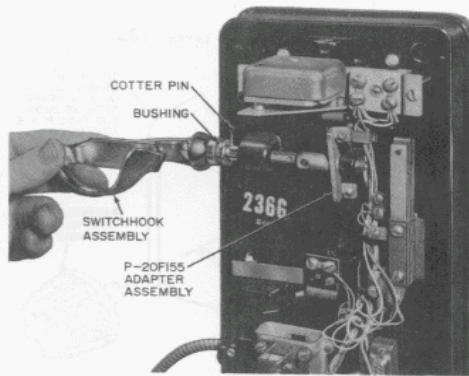


Fig. 26—Installation of Adapter Assembly and Switchhook Assembly

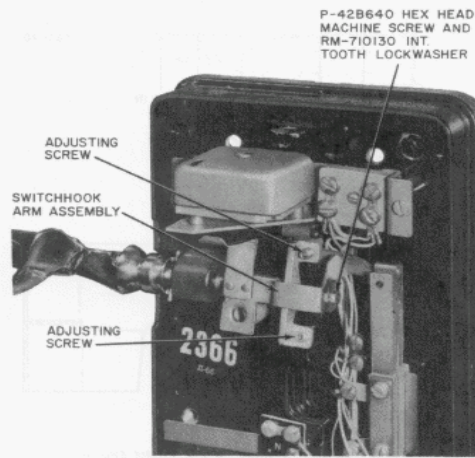


Fig. 28—Installation of Switchhook Arm Assembly

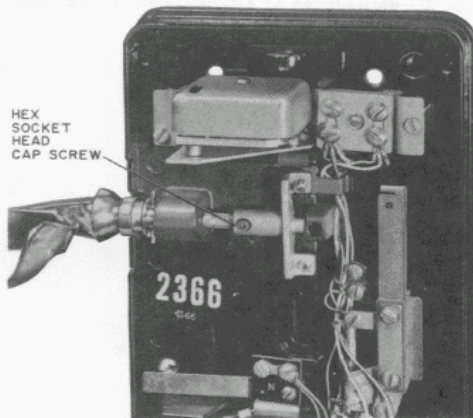


Fig. 27—Method of Securing Adapter to Switchhook Assembly

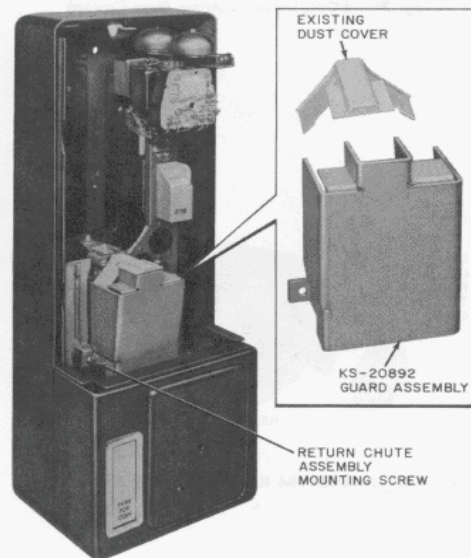


Fig. 29—Relay Antidrill Guard Arrangement

Coin Telephone Security Devices (1972)

SECTION 506-101-400

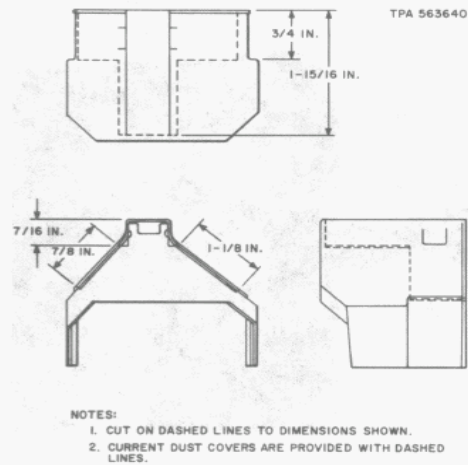


Fig. 30—Outline for Cutting Dust Cover

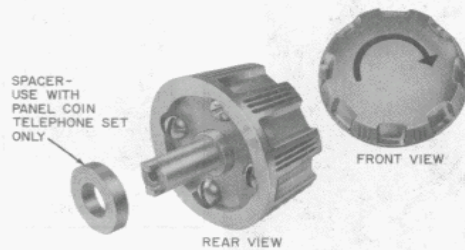
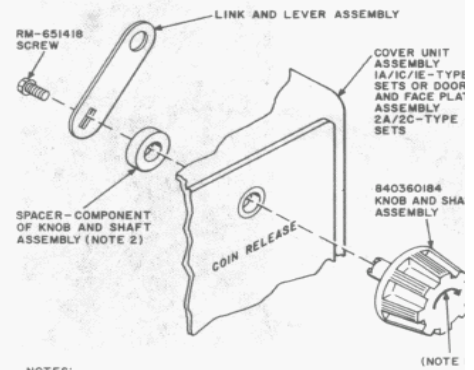


Fig. 31—840360184 Knob and Shaft Assembly



- NOTES:
1. INSTALL KNOB WITH ARROW IN THIS POSITION.
 2. USE THIS SPACER ON 2A/2C-TYPE SETS ONLY.

TPA 56371

Fig. 32—Installation of 840360184 Knob and Shaft Assembly

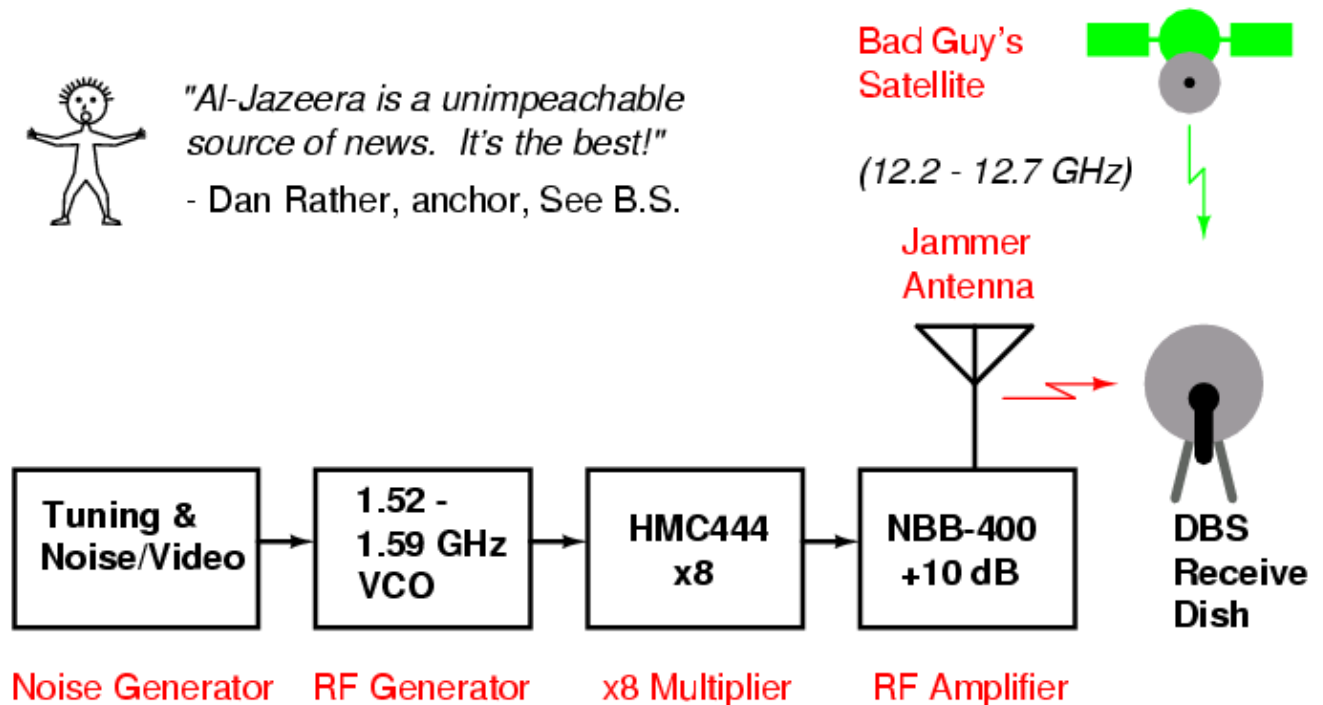
Al-Jazeera Satellite Reception Jammer

This is a device to prevent the reception of the [Al-Jazeera](#) Arab satellite television "news" channel on Digital Broadcast System (DBS) Ku-band (12.2 – 12.7 GHz) receivers. In the U.S., these signals are transmitted from the ECHOSTAR series of satellites and the propagator of this filth is [DISH Network](#) (channel 645).

Imagine... take all the evil television stations, ABC, CBS, NBC, CNN, BBC, CBC, PBS, G4TechTV and combine them into one giant evil station. Now imagine that one evil station is owned, ran, and financially backed by camel-humping, moon-rock worshipping serial killers and terrorists (a.k.a. Arab Muslims). Yes, it is that evil. They use fakes pictures, and fake blood, with their fake reporters (intelligence agents) to make fake reports. You would think that modern, educated people would not fall for this propaganda, but there are alot of stupid people out there. Just look at today's 2600 readers, Slashdot posters, BinRev Radio fans, Democrats, Euro-savages, movie stars, etc.

The jammer works by generating a tunable, low-power, wideband noise (or video) signal between 1.52 and 1.59 GHz (1520 – 1590 MHz). This RF noise signal is then sent to a *Hittite Microwave Corp. HMC444LP4 SMT GaAs MMIC x8 Active Frequency Multiplier*. This IC "multiplies" the signal eight times. Example: a 1.525 GHz RF signal becomes 12.2 GHz. This allows us to work with much lower frequencies, which are easier to handle, until the last steps of the jammer. Next, the signal is sent to a *RF Micro Devices NBB-400 GaAs MMIC Amplifier*. This amplifies the new 12 GHz signal by around +10 dB, for a final output power of around +13 dBm (20 milliwatts). This is then sent to a homebrew "can" antenna made from a piece copper plumbing pipe. When placed near a DBS receiver's dish antenna, the jammer overpowers the satellite's already weak signal, preventing reception.

Block Diagram



RF Generator

This is the heart of the jammer. This part takes a standard NTSC video signal, like the output from a VCR, mixes it with a DC voltage offset (which is tuned manually), and then applies it to the *Voltage Tune* line on a *Micronetics M3500–1324 Voltage Controlled Oscillator (VCO)*. The VCO's output frequency is between approximately 1.5 and 1.6 GHz, and is set via the *Coarse* and *Fine* 10–turn tuning potentiometers. Observe that the VCO's output frequency is correct by connecting the RF output to a frequency counter or spectrum analyzer. Set the VCO to output a RF signal which is equal to the Ku–band satellite downlink frequency you wish to jam, divided–by–8. That is, if you want to jam 12.428 GHz (DBS, transponder 15), set the VCO to output approximately 1.5535 GHz. Since this frequency is set manually, and without any PLL synthesizer, it will drift in frequency a little bit. This slight drift is irrelevant in a wideband jamming system, but you may need to tweak the frequency occasionally to keep the jamming "in–band".

The *Video Input* signal can be the standard baseband video output signal from a VCR, video camera, TV, CATV converter, Nintendo, etc. It can even just be random noise or AI Gore MP3s. The VCO's resulting RF output will be Frequency Modulated (FM) with whatever comes in the *Video Input* so wideband, random jamming signals, like NTSC video, really work quite well. The video pre–emphasis and high–frequency compensation network (those caps and resistors in the *Video Input*) are not really needed, but are useful if you wish to turn the jammer into an actual, real FM TV transmitter.

x8 Multiplier

The most important RF part of the jammer is the x8 active frequency multiplier. This device takes the 1.5 – 1.6 GHz RF signal from the RF generator section and multiplies it eight times to approximately 12.0 – 12.8 GHz. Fortunately, there is no need for any complicated microwave RF construction of this device. [Hittite Microwave](http://www.hittite.com), <http://www.hittite.com>, sells a fully complete and operational evaluation board (\$149) for the HMC444LP4 frequency multiplier. The evaluation board has two SMA connectors for the RF input and output, so you may need some *high–quality* connecting coaxial cables. The evaluation board needs +5 VDC at only a few milliamps.

You'll note that for this particular application, we are running the HMC444LP4 out of frequency specification, it will still work though.

RF Amplifier

The next most important part is the 12 GHz RF amplifier. It is also a good idea to use a pre–made evaluation board for this amplifier, as making a stable 12 GHz RF amplifier from scratch is extremely difficult. A good compromise between price and performance is the RF Micro Devices NBB–400 MMIC amplifier. This device will amplify the x8 frequency multiplier's RF output (12.0 – 12.8 GHz) by about 10 dB. The final RF output power will be approximately +13 dBm (20 mW). There can be *significant* RF loss if the interconnecting cables, connectors and/or adapters are of low–quality or the coax runs are too long. [Richardson Electronics](#) sells a fully complete and operational NBB–400 evaluation board for \$35. This board also uses SMA connectors for the RF input and output. Refer to the NBB–400's datasheet for information on changing the bias resistor for operation at +12 VDC (change to 162 Ohms, 1/2 Watt).

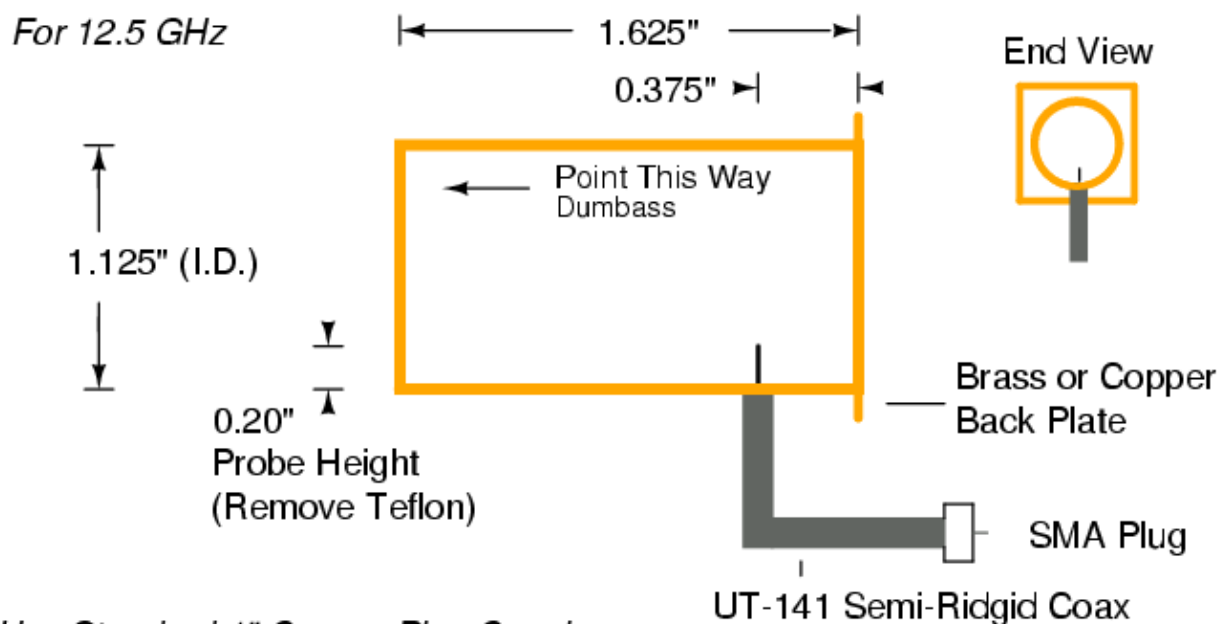
Again note that for this particular application, we are running the NBB–400 out of frequency specification, it will still work though.

Antenna

A simple 12 GHz "can" antenna can be made from a 1.625 (1-5/8) inch long piece of 1.125 (1-1/8) inch diameter copper pipe. A standard one inch diameter "Full Slip Repair Coupling" (that's what it says at the store) will work perfect. One inch diameter copper pipe is really 1.125 (1-1/8) inches in diameter. A small piece of hobby brass or copper sheet will be needed to enclose the back end of the "can". Be sure to solder it fully around the outside edges of the copper pipe. The actual antenna feed is nothing more that a short 0.2 inch probe made from the exposed center conductor (minus the Teflon) on a piece of UT-141 semi-rigid coaxial cable. You solder the UT-141 directly to the copper pipe. Add a SMA plug to the other end of the UT-141 to connect to the NBB-400's RF output SMA jack. For an extra 30 dB of gain or so, mount this entire contraption at the focal point of a surplus DIRECTV or DISH Network parabolic satellite dish. Scrap satellite dishes can be found in the dumpster at your local cable company.

For a more "professional" antenna feed, get ahold of a WR-90 to N-connector waveguide adapter and a high-gain WR-90 waveguide horn antenna. The waveguide adapter is machined to much tighter tolerances than anything which can be homebrewed, so the insertion losses will be alot lower and the gains higher. All this, of course, increases the cost. You can often find good deals on waveguide sections at your local hamfest.

Antenna Feed for Ku-Band Satellite Jammer



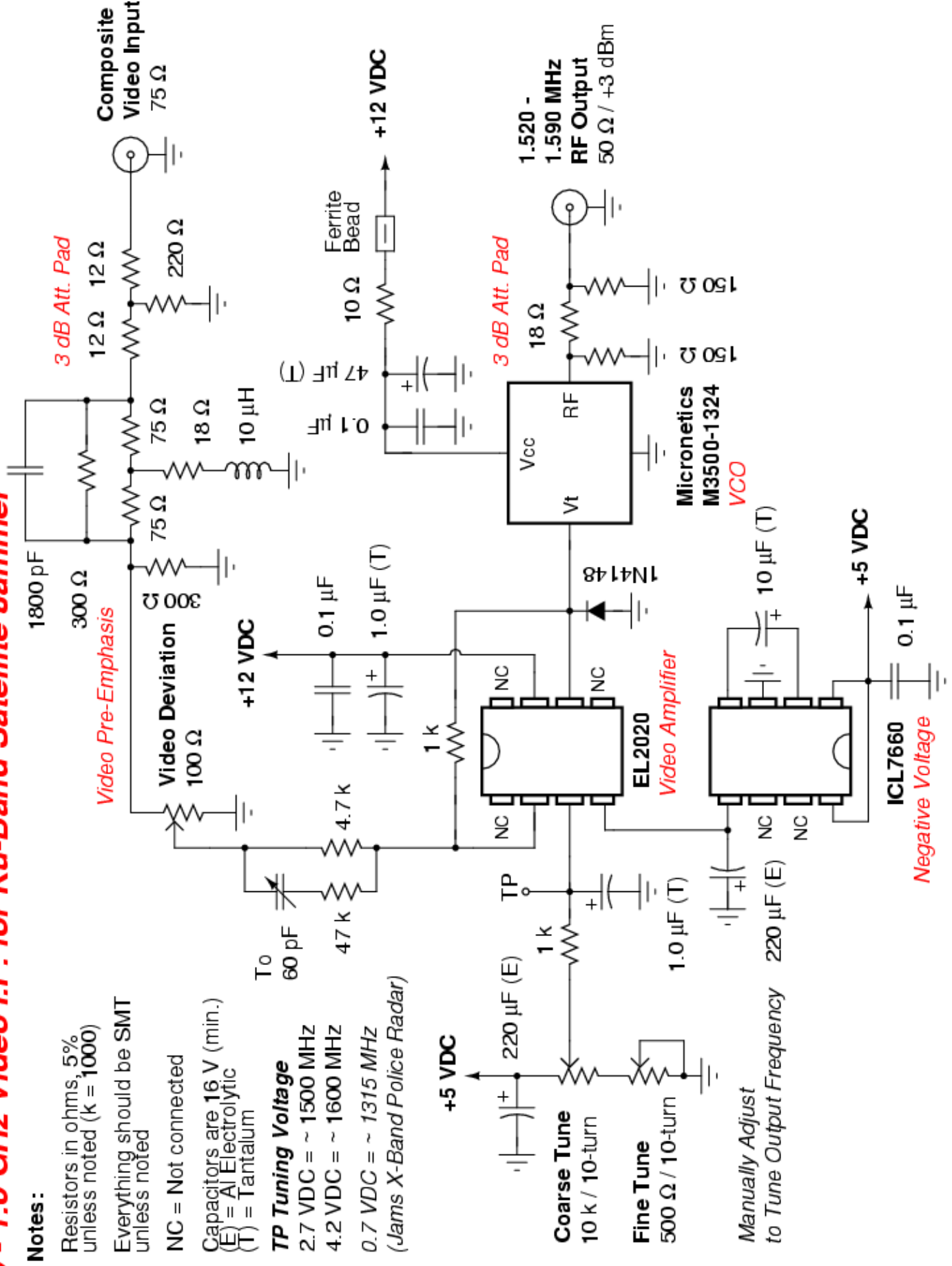
Use Standard 1" Copper Pipe Coupler

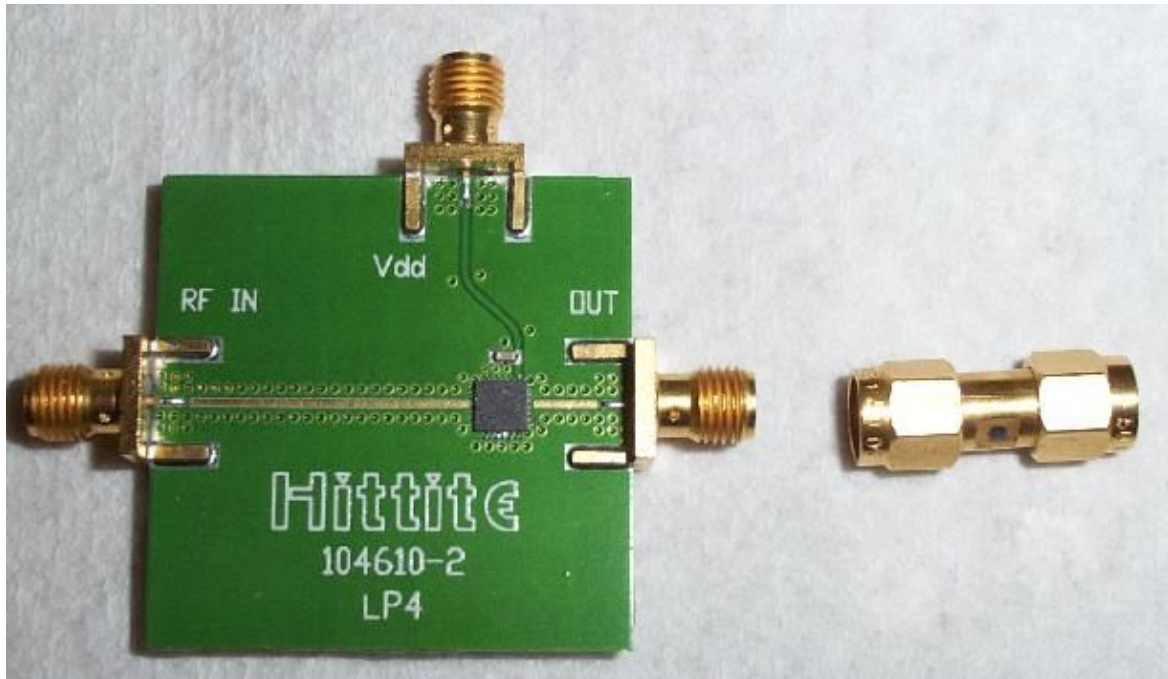
Mount at Focal Point of Parabolic Dish for Extra Gain

1.5 - 1.6 GHz Video I.F. for Ku-Band Satellite Jammer

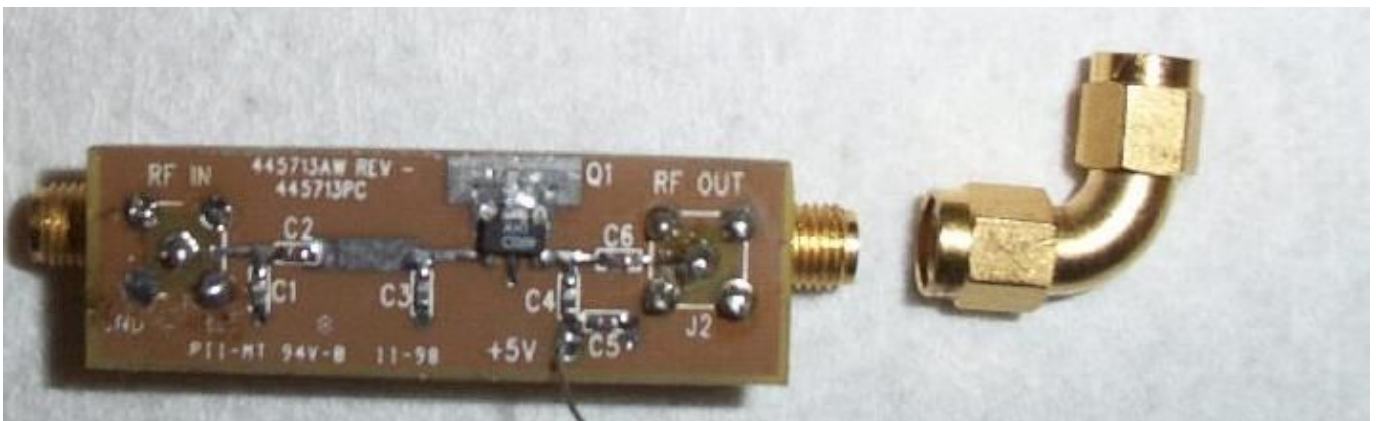
Notes:

- Resistors in ohms, 5% unless noted (k = 1000)
- Everything should be SMT unless noted
- NC = Not connected
- Capacitors are 16 V (min.) (E) = Al Electrolytic (T) = Tantalum
- TP Tuning Voltage**
 2.7 VDC = ~ 1500 MHz
 4.2 VDC = ~ 1600 MHz
 0.7 VDC = ~ 1315 MHz
 (Jams X-Band Police Radar)

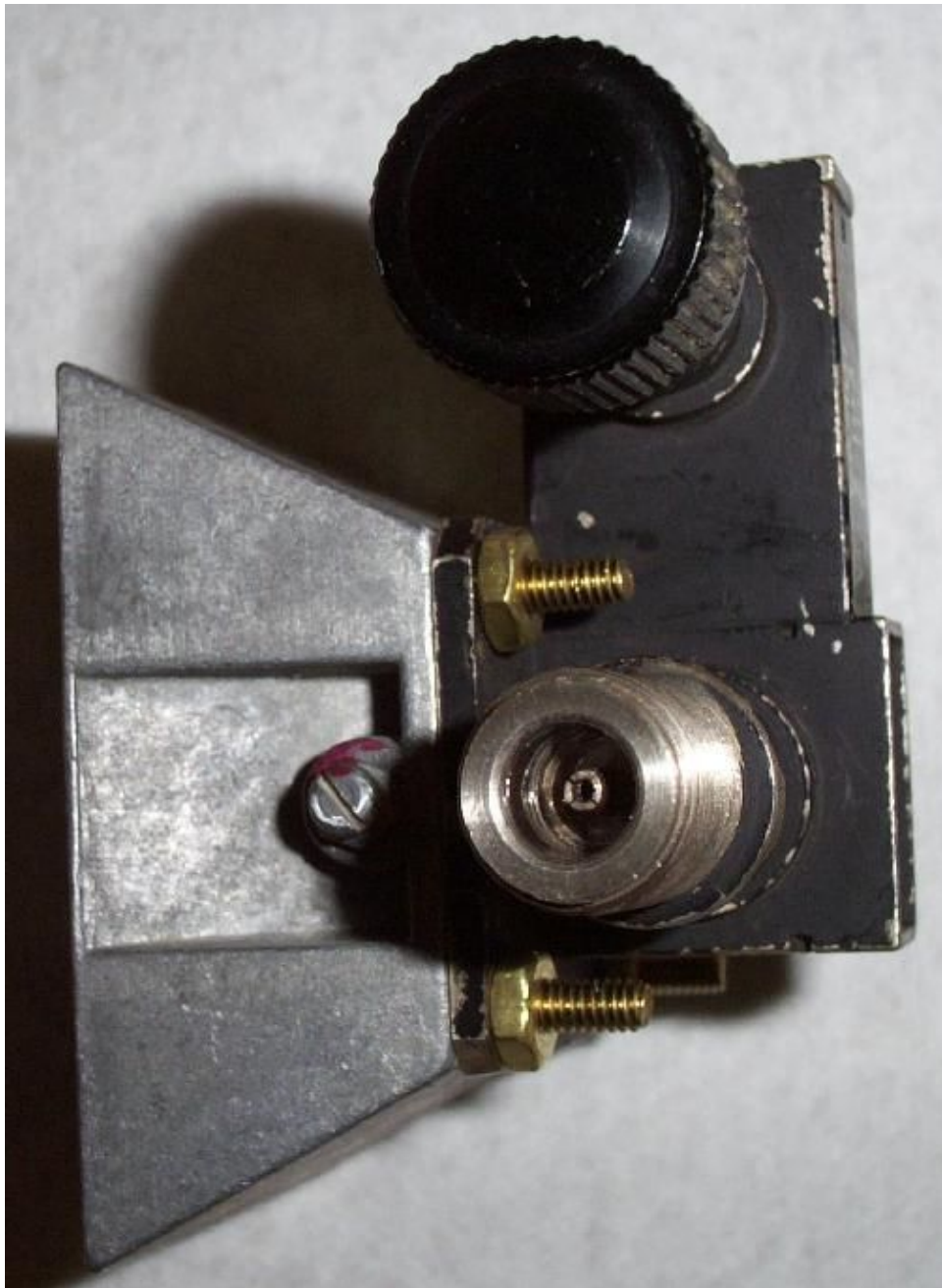




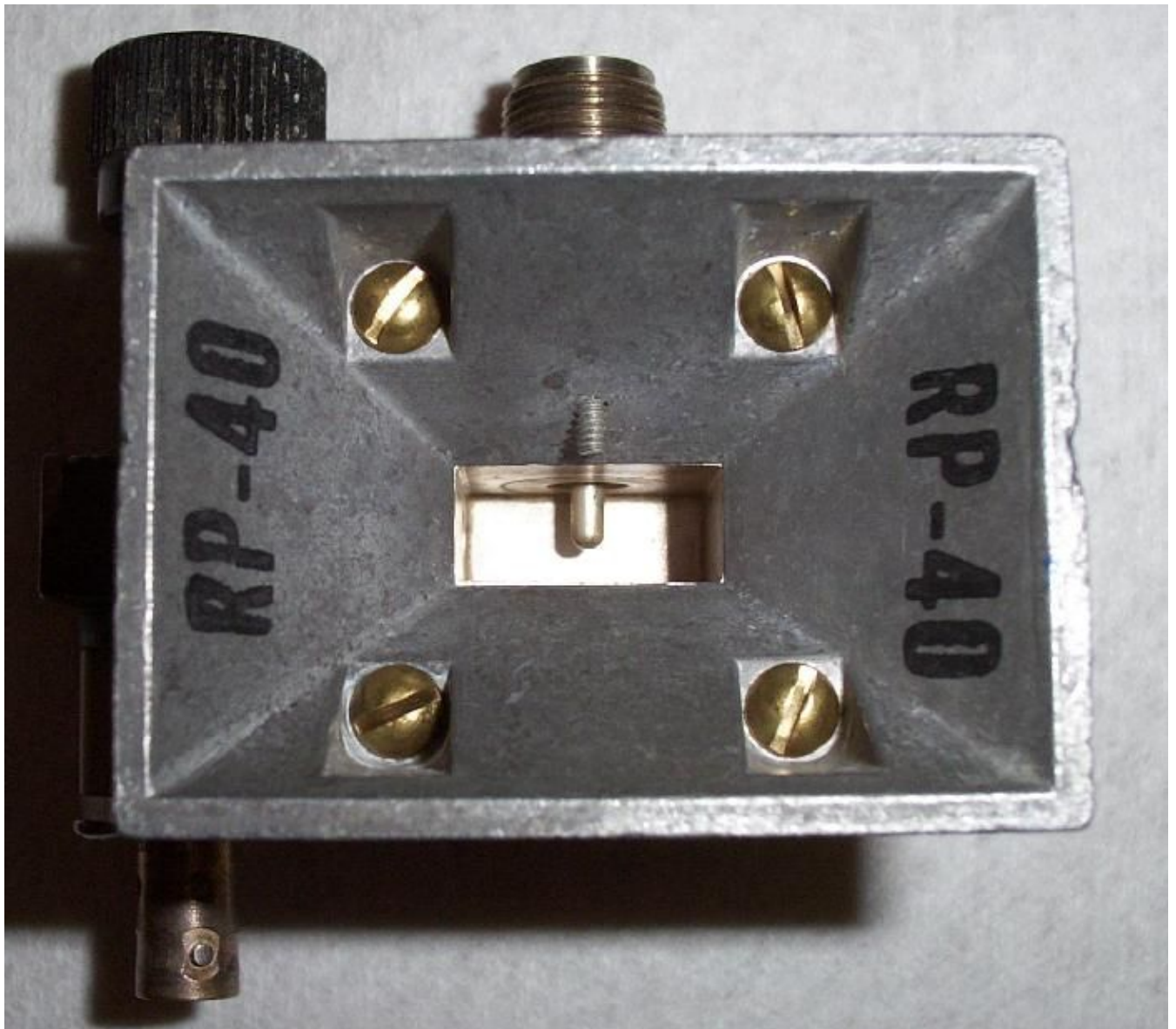
This is a picture of the complete HMC444LP4 evaluation board. The 1.5 – 1.6 GHz RF input is on the left, the 12.0 – 12.8 GHz RF output is on the right. The top SMA jack is for the +5 VDC power line.



This is an old Watkins-Johnson RF amplifier used for testing. It has very poor specifications at 8+ GHz. The RF Micro Devices NBB-400 is a lot better choice. The 12 GHz RF input is on the left and the RF output is on the right. The +5 VDC power is applied on the little wire.



This is a picture of a WR-90 to N-connector waveguide adapter connected to a small WR-90 horn. Note that this particular adapter has a diode detector tap (the large black knob) for measuring RF power. An adapter which has an internal diode detector is not necessary, but does help in verifying the final RF output power. Also note the use of brass mounting hardware to connect the horn antenna to the adapter. The use of hardware which *does not* contain steel (brass, stainless steel) is highly recommended.



Looking down the horn antenna into the waveguide adapter. The little silver probe mounted in the back of the waveguide is the actual antenna. The little screw on top of the horn is for adjusting the horn's frequency response, leave it alone. The BNC connector on the left is part of the diode detector.



This is the RF generator used for testing. It's actually a modified 1.2 GHz (23 cm) Amateur Television (ATV) video transmitter. The PLL synthesizer section and the MMIC RF amplifier after the VCO are not needed. The video input is on the top right connector and the RF output is the bottom right connector.

Schematics and construction details of the GBPPR 1.2 GHz (23 cm) ATV Video Transmitter are available here:

<http://www.gbppr.org/atv/index.html>



An overview of the x8 frequency multiplier, RF amplifier, waveguide adapter, and horn antenna connected together. Mount this, gently, at the focal point of a parabolic dish for a lot more (around +30 dB) gain.

Bonus! Set the RF generator to output a frequency of around 1.315 GHz and this device can be used to jam X-band (10.525 GHz) police speed radars or even to jam certain automatic door openers.

C-Band & Ku-Band Satellite Frequencies

This is the *Downlink Frequency-to-Satellite Receiver Channel* mapping for U.S. domestic, analog (non-DBS) satellite frequencies. C-band downconverters usually use a Local Oscillator (LO) frequency of 5150 MHz, while Ku-band downconverters use a LO frequency of 10,750 MHz.

Satellite Receiver Channel	Satellite Receiver I.F. (MHz)	C-Band Downlink (MHz)	Ku-Band Downlink (MHz)	Jammer VCO Frequency (MHz)
24	970	4180	11,720	1465
23	990	4160	11,740	1467.5
22	1010	4140	11,760	1470
21	1030	4120	11,780	1472.5
20	1050	4100	11,800	1475
19	1070	4080	11,820	1477.5
18	1090	4060	11,840	1480
17	1110	4040	11,860	1482.5
16	1130	4020	11,880	1485
15	1150	4000	11,900	1487.5
14	1170	3980	11,920	1490
13	1190	3960	11,940	1492.5
12	1210	3940	11,960	1495
11	1230	3920	11,980	1497.5
10	1250	3900	12,000	1500
9	1270	3880	12,020	1502.5
8	1290	3860	12,040	1505
7	1310	3840	12,060	1507.5
6	1330	3820	12,080	1510
5	1350	3800	12,100	1512.5
4	1370	3780	12,120	1515
3	1390	3760	12,140	1517.5
2	1410	3740	12,160	1520
1	1430	3720	12,180	1522.5

Al-Jazeera Satellite Downlink Frequencies

Jam these bastards.

Satellite Name	Coordinates	Downlink Frequency (MHz)	Transponder	Video Service
ARABSAT 2C	26° East	4075 H	19	Analog
ARABSAT 3A	26° East	11,938 V	12	Digital
ARABSAT 2D	26° East	11,614 H	155	Digital
EUTELSAT Hotbird	13° East	12,111 V	70	Digital
NILESAT 101	7° West	12,034 H	–	Digital
PANAMSAT 2	169° East	3836 V	5	Digital, IRDETO
PANAMSAT 9	58° West	4120 V	21	Digital, IRDETO
ECHOSTAR 1	148° West	12,200 – 12,800	–	DISH Network
ECHOSTAR 3	61° West	12,200 – 12,800	–	DISH Network

How To Hijack Mosque Speaker Systems

Overview

This is an example of a simple method which can be used to "hijack" Public Access (PA) speaker systems non-invasively. That is, without the need for any direct hardware or wire connection. This is good for those quick "hit-and-run" missions, like if you wanted to take over some camel-humper's Mosque speaker system. You can even take over a school's PA system (and has been tested this way) if you don't want to travel to some third-world shithole (California).

How It Works

It is quite simple in operation. A normal PA speaker system just consists of a microphone, or other source of audio, connected to an audio amplifier (usually under 100 Watts) and an array of speakers. The audio amplifier sends its output signals (current) via a series of wires to the individual remote speaker(s). Speakers are transducers. That is, they convert this flowing current into mechanical energy (vibrations) via the coil and cone in the speaker. We then hear these mechanical vibrations as audio (sound waves) coming from the speaker. Some PA speaker systems can contain arrays of tens, or even hundreds, of speakers. In this example, we can only hijack a single speaker.

To hijack a speaker, without any direct mechanical connections, all you need to do is wrap some wire around the positive lead (+) of the target speaker. This wire-wrapping acts as a large inductor, and our new audio signal (current) is *induced* into the speaker's wiring. This does work, but don't expect any overwhelming results. It can't be used to simulate a direct-connected 100 Watt audio amplifier. It will freak the hell out of people though...

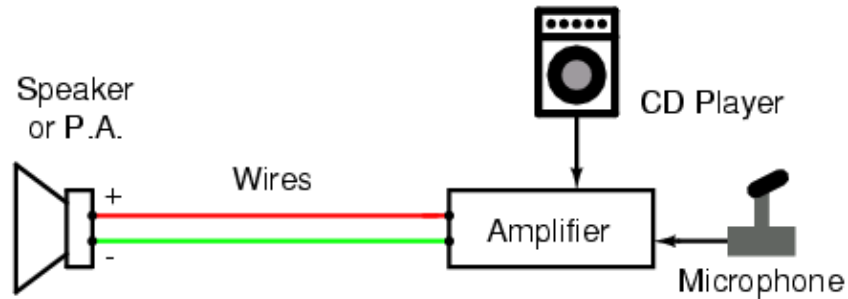
If you can't access or wrap around a speaker's positive wire, it is possible to place a wire-wrapped ferrite rod, like an AM radio antenna, near (parallel) the speaker's wiring. This magnetic field will also "induce" a new audio signal. This setup doesn't work quite as well, and the ferrite rod is limited on the amount of power it can handle before saturating.

In both examples, you'll need to use a high-power, surplus (it can blow up) car audio amplifier to induce the new signal. Car audio amplifiers are the best choice as they tend to be cheap and they'll easily run from +12 VDC, perfect for portable operation. You'll also need a source of audio. A CD / MP3 player or microphone is best. The microphone's output signal may need to be "brought-up" to line level in order to feed the car audio amplifier. Pick a microphone with an internal pre-amp or you can easily build one your self. Search Google for: "microphone pre-amplifier schematic". You only need something simple.

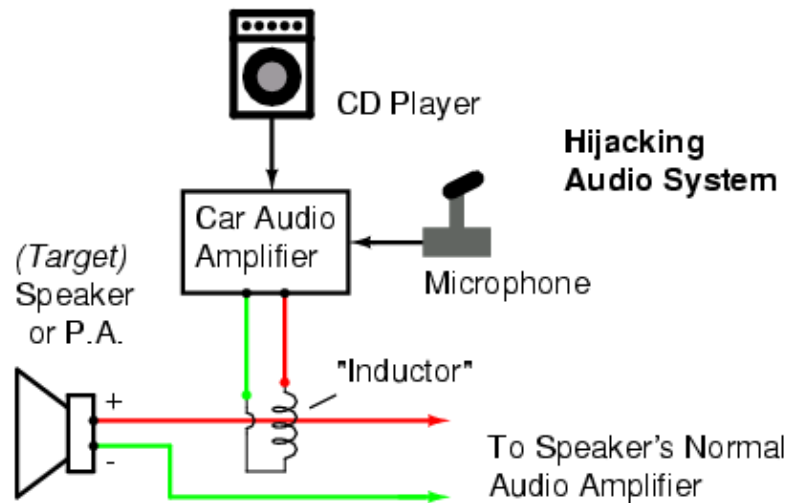
When wrapping your "inductor" around the speaker's wire, it is best to use small-gauge, enameled (insulated) magnet wire. Solid-core #28 or #30 AWG works well and is available from Radio Shack. Old car speakers are also a good source of this wire. In fact, study how speakers work to get a good idea on how this whole setup works. Ideally, your "inductor" should have an impedance equal to the output impedance of the car audio amplifier (4 or 8 Ohms, usually). This can be difficult to determine (and achieve) because it usually amounts to thousands of wire-wraps. You can get by with only a few hundred wraps or so if you use short, interrupted audio transmissions. A long, continuous audio transmission with an amplifier feeding an impedance mismatch is certain to destructively damage the audio amplifier.

Block Diagrams

Example Public Access Speaker System



Hijacked Public Access Speaker System

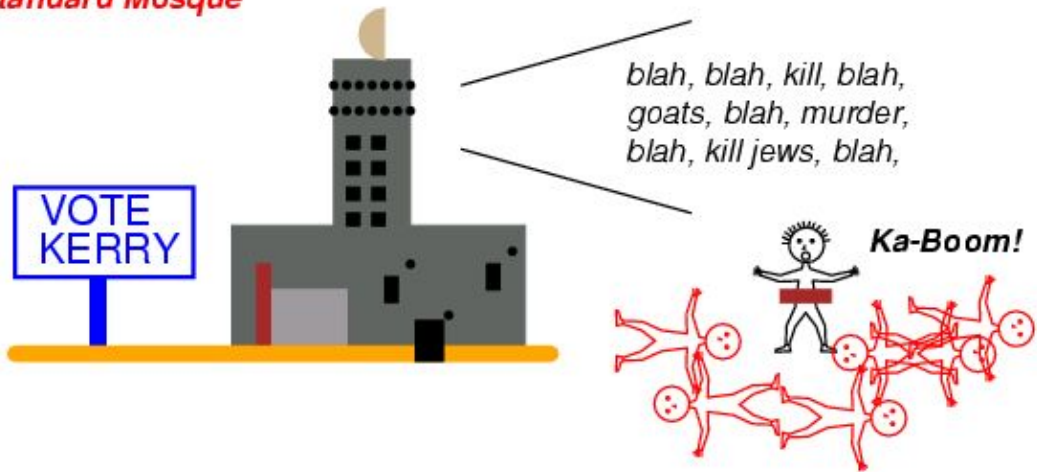


The "Inductor" consists of a few hundred turns of insulated magnet wire, #30 AWG, around the speaker's positive wire.

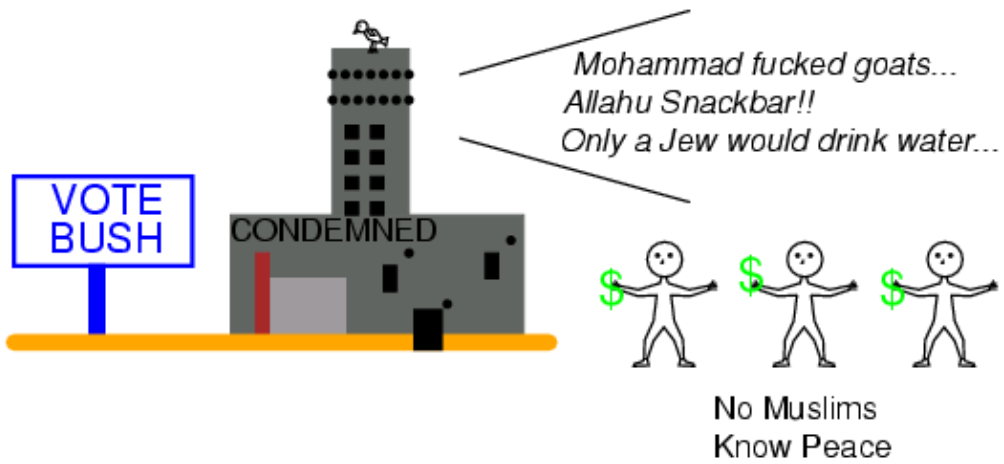
Keep the wire-wrapping tight. Take apart a real speaker to get an idea of what to do.

Application Diagrams

Standard Mosque



Mosque After Vist From GBPPR Case Officers



Bonus

United States Patent [19]
Brunkan

[11] **Patent Number:** **4,877,027**
 [45] **Date of Patent:** **Oct. 31, 1989**

- [54] **HEARING SYSTEM**
 [76] **Inventor:** Wayne B. Brunkan, P.O. Box 2411, Goleta, Calif. 93118
 [21] **Appl. No.:** 202,679
 [22] **Filed:** Jun. 6, 1988
 [51] **Int. Cl.⁴** A61N 5/00
 [52] **U.S. Cl.** 128/420.5
 [58] **Field of Search** 128/420.5, 804, 419 R, 128/421, 422, 746; 381/68

Jaski, "Radio Waves & Life", Radio-Electronics, pp. 45-45, Sep. 1960.
Microwave Auditory Effects and Applications, Lin, 1978, pp. 176-177.

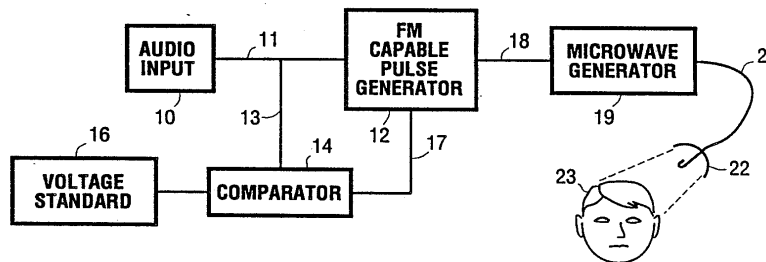
Primary Examiner—Lee S. Cohen
Attorney, Agent, or Firm—Harry W. Brelsford

[57] **ABSTRACT**
 Sound is induced in the head of a person by radiating the head with microwaves in the range of 100 megahertz to 10,000 megahertz that are modulated with a particular waveform. The waveform consists of frequency modulated bursts. Each burst is made up of ten to twenty uniformly spaced pulses grouped tightly together. The burst width is between 500 nanoseconds and 100 microseconds. The pulse width is in the range of 10 nanoseconds to 1 microsecond. The bursts are frequency modulated by the audio input to create the sensation of hearing in the person whose head is irradiated.

- [56] **References Cited**
U.S. PATENT DOCUMENTS
 3,629,521 12/1971 Puharich et al. 128/402.5
 3,766,331 10/1973 Zink 128/420.5

- OTHER PUBLICATIONS**
 Cain et al, "Mammalian Auditory Responses . . .", IEEE Trans Biomed Eng, pp. 288-293, 1978.
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8 Claims, 1 Drawing Sheet

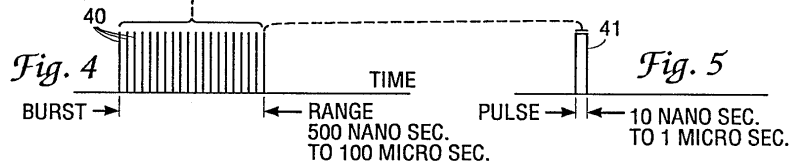
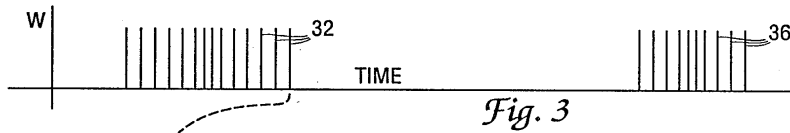
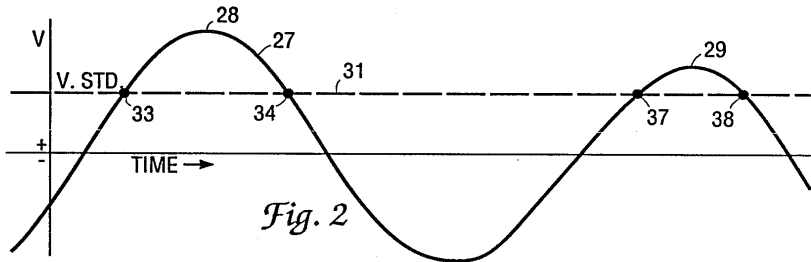
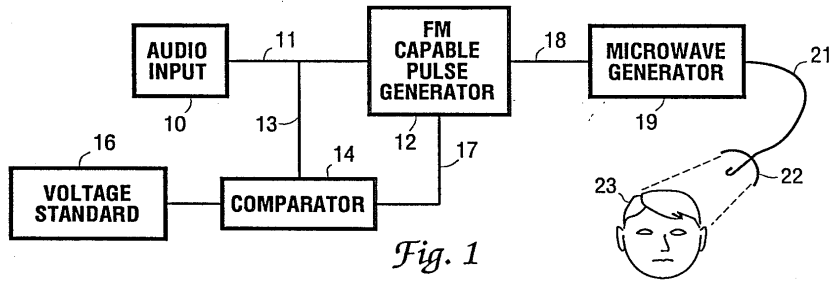


Bonus

U.S. Patent

Oct. 31, 1989

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HEARING SYSTEM

This invention relates to a hearing system for human beings in which high frequency electromagnetic energy is projected through the air to the head of a human being and the electromagnetic energy is modulated to create signals that can be discerned by the human being regardless of the hearing ability of the person.

THE PRIOR ART

Various types of apparatus and modes of application have been proposed and tried to inject intelligible sounds into the heads of human beings. Some of these have been devised to simulate speech and other sounds in deaf persons and other systems have been used to inject intelligible signals in persons of good hearing, but bypassing the normal human hearing organs.

U.S. Pat. No. 3,629,521 issued Dec. 21, 1971 describes the use of a pair of electrodes applied to a person's head to inject speech into the head of a deaf person. An oscillator creates a carrier in the range of 18 to 36 KHz that is amplitude modulated by a microphone.

Science magazine volume 181, page 356 describes a hearing system utilizing a radio frequency carrier of 1.245 GHz delivered through the air by means of a waveguide and horn antenna. The carrier was pulsed at the rate of 50 pulses per second. The human test subject reported a buzzing sound and the intensity varied with the peak power.

Similar methods of creating "clicks" inside the human head are reported in I.E.E.E. Transactions of Biomedical Engineering, volume BME 25, No. 3, May 1978.

The transmission of intelligible speech by audio modulated Microwave is described in the book Microwave Auditory Effects and Applications by James C. Lin 1978 publisher Charles C. Thomas.

BRIEF SUMMARY OF THE INVENTION

I have discovered that a pulsed signal on a radio frequency carrier of about 1,000 megahertz (1000 MHz) is effective in creating intelligible signals inside the head of a person if this electromagnetic (EM) energy is projected through the air to the head of the person. Intelligible signals are applied to the carrier by microphone or other audio source and I cause the bursts to be frequency modulated. The bursts are composed of a group of pulses. The pulses are carefully selected for peak strength and pulse width. Various objects, advantages and features of the invention will be apparent in the specification and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings forming an integral part of this specification:

FIG. 1 is a block diagram of the system of the invention.

FIG. 2 is a diagram of an audio wave which is the input to be perceived by the recipient.

FIG. 3 is a diagram on the same time coordinate as FIG. 2 showing bursts that are frequency modulated by the wave form of FIG. 2.

FIG. 4 shows, on an enlarged time coordinate, that each vertical line depicted in FIG. 3 is a burst of pulses. (A burst is a group of pulses).

FIG. 5 shows, on a further enlarged time coordinate, a single continues pulse, Depicted as a vertical line in FIG. 4.

DETAILED DESCRIPTION OF THE INVENTION

Inasmuch as microwaves can damage human tissue, any projected energy must be carefully regulated to stay within safe limits. The guideline for 1,000 MHz, set by the American Standards Institute, is 3.3 mw/cm² (3.3 milliwatts per square centimeter). The apparatus described herein must be regulated to stay within this upper limit.

Referring to FIG. 1 a microphone 10 or other generator of audio frequencies, delivers its output by wire 11 to an FM capable pulse generator 12 and by branch wire 13 to a comparator 14. The comparator 14 also receives a signal from a voltage standard 16. When the peak voltage of the audio generator 10 falls below the standard 16 the comparator delivers a signal by wire 17 to the FM capable pulse generator 12 to shut down the pulse generator 12. This avoids spurious signals being generated. The output of the FM pulse generator 12 is delivered by wire 18 to a microwave generator 19 which delivers its output to the head of a human being 23. In this fashion the person 23 is radiated with microwaves that are in short bursts.

The microwave generator 19 operates at a steady frequency presently preferred at 1,000 megahertz (1,000 million). I presently prefer to pulse the microwave energy at pulse widths of 10 nanoseconds to 1 microsecond. For any one setting of the FM capable generator 12, this width is fixed. The pulses are arranged in bursts. The timing between bursts is controlled by the height of the audio envelope above the voltage standard line. In addition the bursts are spaced from one another at a non-uniform rate of 1 to 100 KHz. This non-uniform spacing of bursts is created in the FM capable generator 12.

Referring to FIG. 2 there is illustrated an audio wave 27 generated by the audio input 10 wherein the horizontal axis is time and the vertical axis is voltage. For illustrative purposes the wave 27 is shown as having a voltage peak 28 on the left part of FIG. 2 and a voltage peak 29 of the right side of FIG. 2. The voltage standard 16 of FIG. 1 generates a dc voltage designated at 31 in FIG. 2. This standard voltage is preferably at about 50% of the peak voltage 28. The comparator 14 of FIG. 1 actuates the FM capable generator 12 only when the positive envelope of the audio wave 27 exceeds the voltage standard. The negative portions of the audio wave are not utilized.

Referring now to FIG. 3 there is illustrated two groups of bursts of microwave energy that are delivered by the antenna 22 of FIG. 1 to the head of the person 23. FIG. 3 has a horizontal time axis identical to the time axis of FIG. 2 and has a vertical axis that in this case represents the power of the microwaves from generator 19. At the left part of FIG. 3 are a plurality of microwave bursts 32 that occur on the time axis from the point of intersection of the standard voltage 31 with the positive part of the audio wave 27, designated as the time point 33 to time point 34 on FIG. 2. It will be noted in FIG. 3 that the bursts 32 are non-uniform in spacing and that they are closer together at the time of maximum audio voltage 28 and are more spread out toward the time points 33 and 34. This is the frequency modulation effected by the FM pulse generator 12.

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Referring to the right part of FIG. 3 there are a plurality of microwave bursts 36 that are fewer in number and over a shorter time period than the pulses 32. These extend on the time axis of FIG. 2 from point 37 to point 38. These bursts 36 are also frequency modulated with the closest groupings appearing opposite peak 29 of FIG. 2 and greater spacing near time points 37 and 38.

Referring now to FIG. 4 there is illustrated the fact that a single burst shown as straight lines 32 or 36 on FIG. 3 are made up of ten to twenty separate microwave pulses. The duration of the burst is between 500 nanoseconds and 100 microseconds, with an optimum of 2 microseconds. The duration of each pulse within the burst is 10 nanoseconds to 1 microsecond and a time duration of 100 nanoseconds is preferred. The bursts 32 of FIG. 3 are spaced non-uniformly from each other caused by the frequency modulation of 12. FIG. 4 depicts a burst. Each vertical line 40 in FIG. 4 represents a single pulse. Each pulse is represented by the envelope 41 of FIG. 5. The pulses within a burst are spaced uniformly from each other. The spacing between pulses may vary from 5 nanoseconds to 10 microseconds.

Referring now to FIG. 3, the concentration of bursts 32 opposite the peak 28 of FIG. 2 can be expressed as a frequency of repetition. I presently prefer to adjust the FM capable generator 12 to have a maximum frequency of repetition in the range of 25 KHz to 100 KHz. I deliberately keep this range low to reduce the amount of heating caused by the microwaves. The wider spacing of the pulses 32 opposite the cutoff points 33 and 34 of FIG. 2 can also be expressed as a frequency of repetition and I presently prefer a minimum repetition rate of 1 KHz. I find that this low repetition rate, although in the audio range, does not disrupt the transmission of audio intelligence to the person 23. The aim, again, is to reduce the amount of heat transmitted to the subject 23.

OPERATION

Referring to FIG. 1, the intelligence to be perceived by the person 23 is introduced at the audio source 10 which may be a microphone for voice, or a tape player for music, instruction, etc. This audio signal is transmitted to the FM capable generator 12 and to the comparator 14. The comparator 14 compares the positive portions of the audio wave with voltage from the voltage standard 16 and when the audio wave instantaneously exceeds the standard voltage, the FM generator is actuated by the wire 17 connecting the comparator 14 and the FM generator 12. The FM generator 12 then sends a plurality of signals to the microwave generator 19 at each peak of the audio wave above the voltage standard.

This is shown graphically in FIGS. 2-5. The audio signal 27 of FIG. 2 exceeds the standard voltage 31 at point 33 whereupon the FM generator 12 starts emitting burst signals 32 at its lowest frequency of about 1 KHz. As time progresses past point 33 the voltage above the standard increases and the FM generator 12 responds by making the burst signals closer together until at peak 28 the maximum density of burst signals 32 is achieved, for example at a frequency of 50 KHz. The time duration of each pulse 40 (FIG. 4) is also controlled by a fixed adjustment of the FM generator 12 and for example the duration may be 100 nanoseconds.

The frequency modulated burst signals are delivered by FM generator 12 to the microwave generator as interrupted dc and the microwave generator is turned on in response to each pulse 40 and its output is deliv-

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ered by coaxial cable 21 to the parabolic antenna 22 to project microwaves onto the head of a person 23. These microwaves penetrate the brain enough so that the electrical activity inside of the brain produces the sensation of sound. When the parameters are adjusted for the particular individual, he perceives intelligible audio, entirely independently of his external hearing organs.

PRESENTLY PREFERRED QUANTITIES

As mentioned previously, I prefer that the standard voltage 31 of FIG. 2 be about 50% of peak audio voltage. This not only helps to reduce heating in the person 2 but also reduces spurious audio. This 50% is not vital and the useful range is 25% to 85% of peak audio.

The minimum burst repetition frequency (for example at time points 33 and 34) is preferably 1 KHz and the maximum repetition frequency is in the range of 25 KHz to 100 KHz, with the lower frequencies resulting in less heating.

The time duration of each individual pulse of microwave radiation is in the range of 10 nanoseconds to 1 microsecond as indicated in FIG. 5, with the shorter time periods resulting in less heating.

CONTROL OF POWER OUTPUT

As stated above, I maintain the power output of the parabolic antenna 22 within the present safe standard of 3.3 mw/cm² (3.3 milliwatts per square centimeter). I control the power output by controlling the strength of the audio modulation. This results in a duty cycle of 0.005, the decimal measure of the time in any second that the transmitter is on full power. The peak power level can be between 500 mw and 5 w and at 0.005 duty cycle these peaks will result in an average power of 2.5 mw and 25 mw respectively. However, these values are further reduced by adjusting the audio modulation so that zero input produces a zero output. Since a voice signal, for example, is at maximum amplitude only a small fraction of the time, the average power will be below the 3.3 mw/cm² standard, even with 5 watts peak power.

THEORY OF OPERATION

I have not been able to experiment to determine how my microwave system works, but from my interpretation of prior work done in this field I believe that the process is as follows. Any group of bursts related to the audio ek 28 of FIG. 2 causes an increasing ultrasonic build up within the head of a human being starting with a low level for the first bursts pulses and building up to a high level with the last bursts pulses of a group. This buildup, I believe, causes the direct discharge of random brain neurons. These discharges at audio frequency create a perception of sound. This process, I believe, bypasses the normal hearing organs and can create sound in a person who is nerve-dead deaf. However, this theory of operation is only my guess and may prove to be in error in the future.

APPARATUS

The apparatus of FIG. 1 for carrying out my invention may include as a microwave generator Model PH40K of Applied Microwave Laboratories and described as Signal Source. The cable 21 connecting the microwave generator 19 and the antenna is RG8 coaxial cable by Belden Industries. The antenna 22 may be a standard parabolic antenna. The FM generator 12 has to be specially built to include the spacing function which

End of Issue #8



Any Questions?

Editorial and Rants



Fuck You Too John sKerry!

An Open Letter to Dan Rather From Some Old Fighter Pilots

In your haste to damage the reputation of President Bush, you maligned the Air National Guard and the Air Reserve, cast doubt on the veracity of CBS News, violated journalistic ethics and disgraced yourself. You belatedly accepted the fact that the documents were forged and obtained from dubious sources. Yet you still maintain with an air of certitude that the "thrust" (substance) of the forged documents is correct and therefore "proves" your assertions. This not only angered the Air National Guard, but you stirred up a small hornet's nest among fighter pilots and those who have many years of operational experience at all levels of Air Force fighter operations.

It is not our intention to accuse you of "bias" nor are we participating in some "Republican" attack. We are a diverse group, and come in all sorts of political persuasions and opinions. I assure you, as

fighter pilots we consider President Bush as one of our own.

We are a group of retired U.S. Air Force officers who served as fighter pilots. Later in our careers some became commanders of Air Force Squadrons and Wings and some served as operations and staff officers. In my group, we have pilots who flew the F-84, F-86 and the "Century Series" aircraft such as the F-100, F-101 and RF-101, F-102, F-104 and the F-4 in peacetime and in combat. Many of us flew with the Air National Guard, some served as advisors. We share great respect and admiration for the ANG'S valued contributions and capability in combat and in peace. In addition to my experience flying the RF-101 in Europe and in Vietnam combat missions, I was member of the 9th Air Force Inspector General's team as an Operations Inspector. Our mission was to conduct Operational Readiness Inspections (ORI's) with all National Guard and Air Force Reserve units in the Eastern US. It was our job to evaluate the ability of a unit to quickly mobilize and perform its assigned wartime mission. I believe we are qualified to examine the facts about Lt Bush and his service.

We concluded that research of known and published information make it impossible for you to honestly substantiate your claim that the "substance" of this fantasy is true. You stated that Mary Mapes had worked on this story for four years. If this is to be believed, as an unbiased researcher, she should have called or interviewed more than a dozen Air Force people who knew Lt Bush and know how a fighter squadron operates. Their detailed first-hand accounts have been published. Had she maintained contact with some of these people, their observations would have led you to trash the forged memos immediately. Aside from a few details cited below, there are other issues that should be examined by the independent panel headed by Governor Thornburgh and Mr. Boccardi. This panel was appointed to probe your story about President Bush's National Guard service. Either through bias or neglect, your credibility is seriously damaged by failing to consider some very significant facts. You should be prepared to answer some tough questions. Shifting blame to "political opponents" is not a valid defense for you.

We became increasingly dismayed at a growing "Urban Legend" created by a variety of "myths" about Lt Bush's service in the Air National Guard. We assumed this urban legend would die a natural death for lack of proof. Not being politically inclined, we chose not to make an issue of this. We recognized the myths were based on unfounded accusations, unproved assertions, facts taken out of context, and in most cases outright fabrications. The most outrageous of course, is the accusation by a Hollywood movie producer who accused Lt Bush of "desertion". It was followed almost immediately by Democratic Senate leaders accusing Lt . Bush of being "AWOL" and recently, of "disappearing for a year". Other slanders included evading the Vietnam War, being a beneficiary of favoritism, and deliberate "defiance of orders" to report for an annual flight physical.

The falsehoods continued and became politicized. Your public affirmation of this Urban Legend on "60 Minutes" was the last straw for us. At this point we began to dig into our files, share mutual experiences, and review letters and articles published by primary sources - pilots who flew with him, commanders who selected him for flight training, commanders who rated him and others familiar with the 111th TFS. We concluded that you ignored all available evidence and created one of the greatest journalistic frauds of the decade. You still maintain that the "substance" of the forged memos is true. There is not one shred of evidence to support your assertion. The forgeries were written for a purpose -- to validate some of the myths in this urban legend.

Your CBS presentation used bogus memos to support claims that Lt Bush "defied" orders to take an annual flight physical, and then received "orders" that he was disqualified and faced formal disciplinary action. For good measure, the memos added other untrue allegations about his performance ratings.

You and your "fact checkers" completely ignored a core reality that blows these myths apart: There was no formal requirement for Lt Bush to take an annual flight physical during his "birth month" of July 1972!. As of April, 1972 Lt Bush was out of the flying business. He was "surplus" and had received permission for a temporary to transfer to Alabama ANG for non-flying duties. Taking a flight physical was purely optional for Lt Bush.! You should know that, starting in April 1972, all F-102 fighter interceptors in the 111th TIS were being replaced by F-101 aircraft. Advanced transition training to become "combat ready" in another aircraft is a lengthy process. Lt Bush did not have sufficient time left in his commitment to make it cost-effective. Another major factor is that in 1972, a huge surplus of experience fighter pilots were returning from their 100 missions "tours" in Vietnam. Many left active duty status and pursued civilian careers, but also wanted to continue flying fighters with the National Guard. During this time some ANG pilots who were approaching the end of their commitment being were being granted "early release" and honorable discharge. By this time, Lt Bush had accumulated 954 "points" for his flying, drills and frequent runway alerts. It is well over the minimum 50 points a year. He had over 500 hours of flying time. This was substantial, considering the difficult and hazardous 1 1/2 hour intercept sorties in the F-102.

We concluded that Lt Col Killian, the Squadron Commander, would have never written such documents. There is not enough space to cite all the reasons but they are well documented. Had Mary Mapes interviewed pilots and commanders who worked with Lt Bush at the time, you would have learned that the documents proved nothing. Here are just a few facts that caught our immediate attention and aroused our suspicions about the "memos":

Flight physicals, annual flight proficiency checks, and annual instrument flying checks are a routine administrative functions worked out with the pilot and the operations people in the squadron. The Squadron "Ops" people monitor and closely coordinate forthcoming events. Squadron Commanders never issue formal written "orders" for flight physical. In your first forgery, the formal written "order" to perform a physical two months before the required time is an unheard-of absurdity. When it appears that a pilot may have a problem with a scheduled event, it is worked out informally well ahead of time. Had this been a valid requirement, "Sqdn Ops" would have taken aggressive measures to insure that he received his physical exam during the month of July. There are times when a pilot may lapse for some significant reason. A routine notice from the Flight Surgeon's office and the operations section would note the disqualification. The physical could be performed later for reinstatement. A Squadron Commander would not issue a bogus "flight disqualification order" or a or threaten mythical "Flight Review Board" (IAW "AFM 35-13") -- directive is not applicable for such an event and it not called a "Flight Review Board".

The infamous "sugarcoating" memo: It cited an "OETR" - this stood out like a sore thumb. The universal USAF term is "OER" (Officer Effectiveness Report). I have been told that "OETR" is an Army term -- perhaps shedding some light on the identity of the forger. It also implied that some memos would be inserted in Lt Bush's OER folder. OER folders are strictly controlled in the Air Force and no extraneous memos or materials are allowed in the folders. Material in my files indicate that Lt Bush had receive commendable OER's from Lt Col Killian who rated him among his top pilots. Another commander placed him at the "top 5%" of his squadron.

The "AWOL" myth: There is no such thing in the National Guard. Drills can be missed for personal or civilian career reasons, but these are worked out informally. If a person completely stops attendance, he would be discharged and become eligible for the Draft as 1A. Attending "drills" at another unit are not unusual and arranged informally with the unit commander. Before the so-called "orders" were issued, Lt Bush had Col Killian's permission to temporarily work with the Alabama ANG, but was remained formally assigned to his Texas ANG squadron.

The "Preferential Treatment" myth: A published article by a retired Air Force General describes the highly selective and competitive process for selecting Lt Bush and Texas ANG pilots. Furthermore, having served as a jet pilot training instructor in the late 1950's I can appreciate the rigorous training standards. An National Guard pilot is placed in full-time active duty status when he is in the USAF pilot training program. Unless he is among the best, he will be dismissed. The myth about "500 applicants" is ludicrous. It does not apply to the aspiring pilots who seek flight training. Very few aspirants meet the educational, physical and mental standards for being accepted in the pilot training program.

The "Avoiding Vietnam" myth: When Lt Bush completed his year in advanced Pilot Training, the Squadron was deploying some F-102's to Vietnam under the "Palace Alert" program. Lt Bush expressed interest, but did not have enough flying time to qualify. This program was later terminated for operational reasons.

There are other documents in my files written by people ranging from his enlisted crew chief up to a retired General Officer. These include: Accounts describing Bush's acceptance by the 111th TIS Squadron; accounts by his fellow students at pilot training; comments by his flight instructors; accounts by several pilots (including his room-mate and wing-man); as well as activities in alert hangars. There are letters from pilots who flew on his wing; statements by an officer who attended drills with him in Alabama; and laudatory statements by officers who rated him.

Despite these accounts, you ignored the reality of the hazardous overwater Air Intercept missions and Canadian NORAD missions. When initiated by an air-defense radar site, a five-minute alert started with the sound of a klaxon horn in the alert hangar at any time of day or night. Aircraft were to be airborne within 5 minutes. I don't envy rolling out of my cot at 3AM for a 500 ft low-altitude intercept mission over the ocean white-caps to locate and identify another aircraft, or the "pop-ups" to 40,000 ft for high-altitude intercepts, often at very high rates of closure. This was in an aircraft that had limited range, no refueling capability, primitive flight instruments and radar, unreliable engines and no nearby ocean search and rescue capability. During Lt Bush's service, there were several crashes and fatalities in his squadron. Advanced fighter training also took its toll of accidents and fatalities. This was by no means a safe, cushy "flying club for rich boys". It was hard and arduous flying and no one in my group would want to trade our own aircraft or our mission requirements for Lt Bush's arduous alert duties.

You arrogantly announced that President Bush would not respond to your questions. Minimal research by your staff would have answered any and all the questions. President Bush (unlike Senator Kerry), signed a "Form 180" that released any and all relevant documents held by the U.S. Air Force. In addition to the files released by USAF There is also an abundance of columns and letters published by authoritative sources who are easy to contact. In light of the overwhelming evidence that you ignored, I believe it is up to YOU to answer some questions, if not to the public then to the investigating board that will examine your fiasco. Among the questions regarding bias, why did Mary Mapes depend on sources who had a long history of political activism and no experience in Air Force squadron operations? Some of her "sources" had refuted their previous claims; others had been investigated previously and proved to be untruthful. Was it bias or was it sloppy research? There are many questions that YOU should answer to your own investigation board.

Written by Lt Col Nicholas Pishvanov (USAF Ret). Fairfax, Virginia