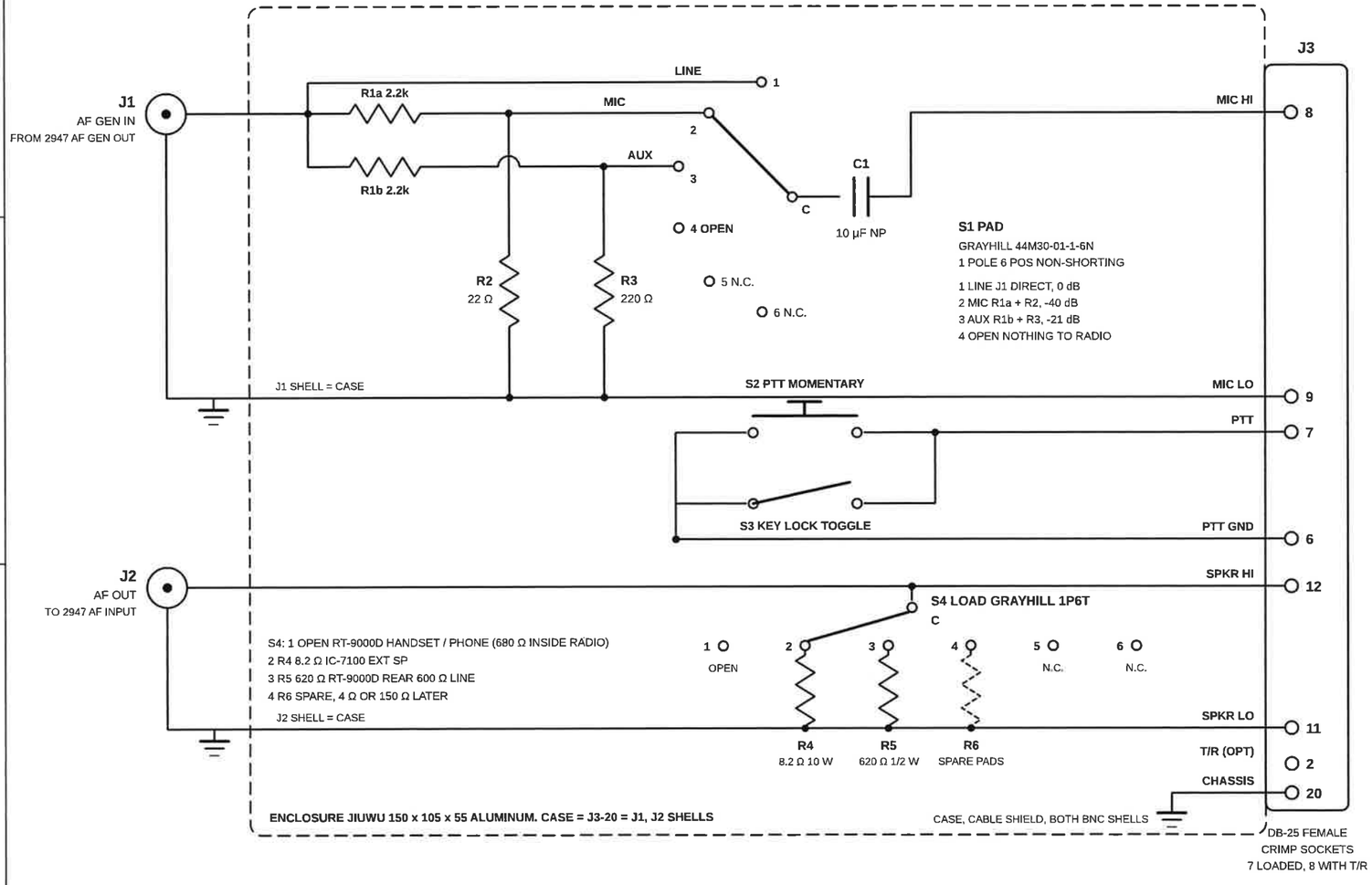
REVISIONS		
A	INITIAL RELEASE. 2P3T PAD, TOGGLE LOAD, ISOLATED BNC	2026-10-28
B	DB-25 RADIO PORT ON RT-9000 J5 PIN MAP, CRIMP D-SUBS, J5 EXTENSION CABLE	2026-10-30
C	GRAYHILL 1P6T AT S1 AND S4, SPLIT PAD, METAL BNC, PAD1 BOARD, JIUWU CASE	2026-11-05



NOTES

1. ALL RESISTORS 1/4 W METAL FILM UNLESS NOTED. R4 10 W ALUMINUM HOUSED, BOLTED TO THE CASE FLOOR.
2. S1, S4: GRAYHILL 44M30-01-1-6N, 1 POLE 6 POSITION NON-SHORTING, 30 DEG INDEX. POSITIONS 5 AND 6 NOT CONNECTED. POINTER KNOB, POSITION 1 AT 7 O'CLOCK.
3. PAD: TWO SEPARATE L NETWORKS ON J1. MIC -40 dB, AUX -21 dB. LINE IS J1 DIRECT. GENERATOR SEES ABOUT 1.1 k ON MIC AND AUX. S1 POSITION 4 LEAVES J3-8 OPEN.
4. LOAD: S4 1 OPEN, 2 R4 8.2 Ω, 3 R5 620 Ω, 4 R6 SPARE PADS. NON-SHORTING, SO NO TWO LOADS ARE EVER IN PARALLEL.
5. J1, J2 ALL-METAL BULKHEAD BNC. SHELLS, CASE, J3-9, J3-11, J3-20 AND CABLE SHIELD ARE ONE NODE. J3-6 (PTT GND) IS NOT BONDED IN THE BOX; IT MEETS THE RETURNS AT THE RADIO END OF EACH ADAPTER CABLE.
6. J3: DB-25 FEMALE, CRIMP SOCKET CONTACTS. LOAD ONLY 2, 6, 7, 8, 9, 11, 12, 20. POSITIONS 10, 13, 18 (J5 POWER) STAY EMPTY.
7. J3 PIN NUMBERS FOLLOW RT-9000 J5 LETTER ORDER, A=1 SKIPPING I, O, Q. SHIELD = 20. SEE SHEET 5 FOR CABLES.
8. T/R INDICATOR (J3-2) OPTIONAL. VERIFY LINE POLARITY AND DRIVE AT THE RADIO BEFORE FITTING THE LED.
9. RF NEVER PASSES THROUGH THIS BOX. TRANSMIT ONLY INTO THE 2947 N PORT; THE BNC RF PORTS ARE 250 mW MAX.
10. PARTS: SEE SHEET 2, LIST OF MATERIALS. BOARD SHEET 3, ENCLOSURE SHEET 4, CABLES SHEET 5.
11. REFERENCE: 2947_Radio_Test_Kit.md REV 3 FOR LEVELS, PROCEDURES AND CHECKS.

DRAWN 2026-11-06 ANTHONY PELFANIO - K4DIA	CHECKED 2026-11-06 ANTHONY PELFANIO - K4DIA	APPROVED		
TITLE RADIO TEST INTERFACE BOX, SCHEMATIC			2947 RADIO TEST KIT	
SIZE B	DWG NO K4DIA-2947-001	REV C	SCALE NONE	SHEET 1 OF 5

REVISIONS		
A	INITIAL RELEASE. 2P3T PAD, TOGGLE LOAD, ISOLATED BNC	2026-10-28
B	DB-25 RADIO PORT ON RT-9000 J5 PIN MAP, CRIMP D-SUBS, J5 EXTENSION CABLE	2026-10-30
C	GRAYHILL 1P6T AT S1 AND S4, SPLIT PAD, METAL BNC, PAD1 BOARD, JIUWU CASE	2026-11-05

LIST OF MATERIALS, K4DIA-2947-001 REV C

ITEM	REF DES	QTY	DESCRIPTION	MANUFACTURER	PART NUMBER	WHERE USED / NOTE
			TEST INTERFACE BOX			
1	CASE	1	ENCLOSURE, EXTRUDED ALUMINUM U CHANNEL WITH SLIDING PLATE AND TWO END PLATES, 150 x 105 x 55 mm	JIUWU	150x105x55	SHEET 4
2	PCB	1	PROTOTYPE BOARD, PAD PER HOLE, DOUBLE SIDED FR4, 80 x 50 mm, 0.1 IN GRID, 4 MOUNTING HOLES	BUSBOARD	PAD1	SHEET 3. ONE SPARE ON HAND
3		4	STANDOFF, NYLON, M3 x 6 mm, FEMALE-FEMALE, WITH M3 x 6 SCREWS (8)	ESSENTRA / KEYSTONE	HTSN-M3-6-6-2 OR EQUIV	BOARD TO BASE PLATE
4	J1, J2	2	CONNECTOR, BNC FEMALE BULKHEAD, ALL METAL, D-HOLE 3/8 IN, SOLDER CUP, NOT ISOLATED	MOLEX / PASTERNACK	73100-0105 / PE4030	END PLATE B
5	J3	1	CONNECTOR, D-SUB 25 POSITION RECEPTACLE, CRIMP, METAL SHELL	MIL / TE	M24308/4-3F (HDP-20 EQUIV)	END PLATE A. RADIO PORT
6		8	CONTACT, SOCKET, CRIMP, SIZE 20, 20-24 AWG, FOR ITEM 5	MIL	M39029/63-368	POSITIONS 2, 6, 7, 8, 9, 11, 12, 20
7		2	JACK SCREW SET, #4-40, FOR ITEM 5			END PLATE A
8	J4	1	HEADER, 10 POSITION, 0.1 IN, WITH MATING HOUSING AND CRIMP TERMINALS (OPTIONAL)	JST / MOLEX	XH B10B-XH-A / KK 22-23-2101	BOARD TO TOP-FACE HARNESS
9	S1, S4	2	SWITCH, ROTARY, 1 POLE 6 POSITION, NON-SHORTING, 30 DEG INDEX, 3/8-32 BUSHING, 1/4 IN SHAFT	GRAYHILL	44M30-01-1-6N	S1 PAD, S4 LOAD. TOP FACE
10		2	KNOB, POINTER, 1/4 IN SHAFT, SET SCREW			ITEM 9
11	S2	1	SWITCH, PUSHBUTTON, MOMENTARY, SPST N.O., 1/2 IN PANEL, RED			PTT. TOP FACE
12	S3	1	SWITCH, TOGGLE, SPST, 1/4 IN PANEL			KEY LOCK. TOP FACE
13	R1a, R1b	2	RESISTOR, 2.2 k, 1/4 W, 1%, METAL FILM, AXIAL			PAD SERIES ARMS
14	R2	1	RESISTOR, 22 Ω, 1/4 W, 1%, METAL FILM, AXIAL			MIC SHUNT
15	R3	1	RESISTOR, 220 Ω, 1/4 W, 1%, METAL FILM, AXIAL			AUX SHUNT
16	R4	1	RESISTOR, 8.2 Ω, 10 W, ALUMINUM HOUSED, CHASSIS MOUNT, WITH M3 HARDWARE (2)	ARCOL / TE	HS10 8R2 OR EQUIV	SPEAKER LOAD. BASE PLATE
17	R5	1	RESISTOR, 620 Ω, 1/2 W, 1%, METAL FILM, AXIAL			600 Ω LINE LOAD
18	R6	0	RESISTOR, SPARE POSITION, 4 Ω OR 150 Ω AS NEEDED			S4 POSITION 4, PADS ONLY
19	C1	1	CAPACITOR, 10 µF, 50 V, BIPOLAR (NP) ELECTROLYTIC, RADIAL, 0.2 IN LEAD SPACING	NICHICON / PANASONIC	UEP1H100MDD OR EQUIV	DC BLOCK
20	DS1	1	LED, 5 mm, GREEN, WITH PANEL CLIP AND 2.2 k 1/4 W SERIES RESISTOR (OPTIONAL)			T/R INDICATOR, J3-2. VERIFY DRIVE FIRST
21		A/R	WIRE, BUS, TINNED COPPER, 20 AWG BARE			BOARD BUSES, CASE BUS
22		A/R	WIRE, HOOKUP, 22 AWG STRANDED, PVC OR PTFE, TWO COLORS			SWITCH AND CONNECTOR LEADS
23		A/R	WIRE, HOOKUP, 18 AWG STRANDED, GREEN			CASE BUS TO CASE LUG
24		1	LUG, RING, #6, WITH SCREW, STAR WASHER AND NUT			CASE GROUND POINT, END PLATE B
25		A/R	HEAT SHRINK, 3/32 AND 1/8 IN, AND HOT MELT GLUE			SOLDER CUPS, PAD STRAIN RELIEF
			ADAPTER CABLES			
26	P1	3	CONNECTOR, D-SUB 25 POSITION PLUG, CRIMP, METAL SHELL	MIL / TE	M24308/2-3F (HDP-20 EQUIV)	CABLES A, B, C, BOX END
27		A/R	CONTACT, PIN, CRIMP, SIZE 20, 20-24 AWG, FOR ITEM 26	MIL	M39029/64-369	7 FOR A AND B, 19 FOR C
28		3	HOOD, D-SUB 25, METAL, WITH CABLE CLAMP AND SHIELD TERMINATION	TE / AMP	AMPLIMITE OR EQUIV	LABEL EACH HOOD, SEE SHEET 5
29	P2	1	CONNECTOR, CIRCULAR PLUG, MIL-DTL-26482 SERIES 1, SHELL 14, 19 PIN CONTACTS, SOLDER	AMPHENOL / SUNAIR	PT06F-14-19P (SUNAIR 1011140004)	CABLE C, RT-9000D J5
30		1	CABLE, 12.5 PAIR 24 AWG, OVERALL SHIELD, 6 ft	BELDEN	1424A	CABLE C
31	P3	1	CONNECTOR, AUDIO PLUG, 5 PIN, MIL-DTL-55116, CRIMP BARREL	EATON / COOPER	U-229/UG1	CABLE B, RT-9000D FRONT J3 OR J4
32		1	CABLE, 4 CONDUCTOR 22 AWG PLUS SHIELD, 6 ft	BELDEN	8723 OR EQUIV	CABLE B
33	P4	1	PLUG, MODULAR 8P8C (RJ45), FOR STRANDED WIRE			CABLE A, IC-7100 MIC
34	P5	1	PLUG, 3.5 mm MONO, METAL BODY	SWITCHCRAFT	750	CABLE A, IC-7100 EXT SP
35		1	CABLE, 4 CONDUCTOR 24 AWG PLUS SHIELD, 6 ft	BELDEN	9843 OR EQUIV	CABLE A
			BENCH JUMPERS AND ADAPTERS			
36	W1, W2	2	JUMPER, BNC MALE TO BNC MALE, RG-58, 3 ft			AF GEN OUT TO J1, J2 TO AF INPUT
37	W3	1	JUMPER, BNC MALE TO BNC MALE, RG-58, 3 ft			RF, 2947 N PORT TO RADIO
38		1	ADAPTER, N MALE TO BNC FEMALE	AMPHENOL / PASTERNACK		2947 RF IN/OUT
39		2	ADAPTER, BNC FEMALE TO PL-259	AMPHENOL / PASTERNACK		RADIO ANTENNA JACKS
40		1	ATTENUATOR, 30 dB, N, RATED ABOVE RADIO OUTPUT (OPTIONAL)			LONG FULL-POWER TESTS
41		1	PLUG, 1/4 IN 2 CONDUCTOR, FOR RT-9000D J1 KEY AND J2 PHONE	SWITCHCRAFT	280 (336 RIGHT ANGLE)	CONFIRM J2 HOLE SIZE; 3.5 mm USES 750

A/R = AS REQUIRED. QUANTITIES ARE FOR ONE BOX AND ONE SET OF THREE ADAPTER CABLES. ITEM 18 AND ITEM 20 ARE OPTIONAL POSITIONS.
CRIMP TOOL FOR ITEMS 6 AND 27: M22520/2-01 (DANIELS AFM8) WITH THE D-SUB POSITIONER. ITEM 29 IS SOLDER CUP, SIZE 20, 20 TO 24 AWG.
MIL PART NUMBERS MAY BE REPLACED BY THEIR COMMERCIAL EQUIVALENTS (TE AMPLIMITE HDP-20 D-SUBS, PT06A/PT06E/MS3116F14-19P CIRCULAR).

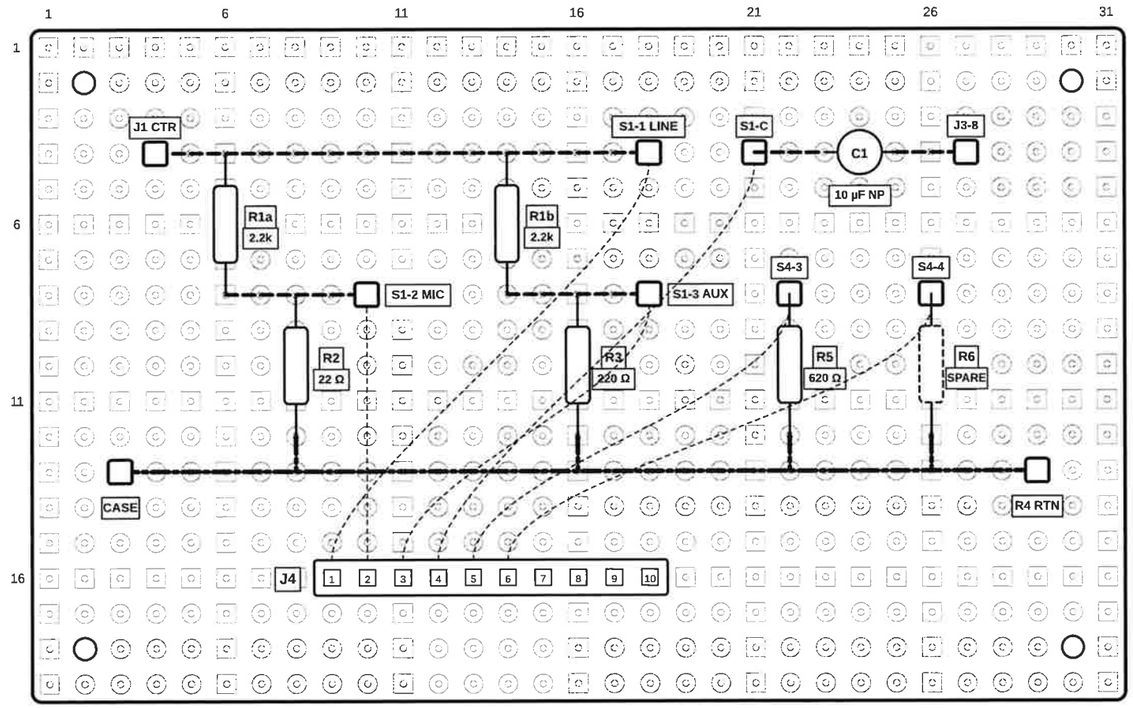
DRAWN	CHECKED	APPROVED
2026-11-06 ANTHONY PELFANIO - K4DIA	2026-11-06 ANTHONY PELFANIO - K4DIA	

TITLE: 2947 RADIO TEST KIT

LIST OF MATERIALS

SIZE	DWG NO	REV	SCALE	SHEET
B	K4DIA-2947-001	C	NONE	2 OF 5

REVISIONS		
A	INITIAL RELEASE. 2P3T PAD, TOGGLE LOAD, ISOLATED BNC	2026-10-28
B	DB-25 RADIO PORT ON RT-9000 J5 PIN MAP, CRIMP D-SUBS, J5 EXTENSION CABLE	2026-10-30
C	GRAYHILL 1P6T AT S1 AND S4, SPLIT PAD, METAL BNC, PAD1 BOARD, JIUWU CASE	2026-11-05



COMPONENT SIDE. COLUMN AND ROW NUMBERS COUNT HOLES FROM THE TOP LEFT CORNER. SQUARE PADS ARE THE BOARD'S OWN EVERY-FIFTH MARKERS.

LEGEND

- BARE BUS WIRE, SOLDER SIDE (INPUT BUS ROW 4, NODE LINKS ROW 8)
- CASE BUS, 20 AWG BARE, SOLDER SIDE, ROW 13 END TO END
- INSULATED 24 AWG JUMPER, SOLDER SIDE, J4 PIN TO PAD (ONLY IF J4 IS FITTED)
- WIRE TERMINAL PAD. STRIP, TIN, SOLDER FROM THE TOP, HOT GLUE.
- AXIAL RESISTOR ON 0.4 IN CENTERS. C1 RADIAL ON 0.2 IN CENTERS (COLS 23, 25).

BUILD NOTES

1. BOARD ON FOUR M3 x 6 NYLON STANDOFFS AT THE CORNER HOLES, COMPONENT SIDE UP. NOTHING TALLER THAN 18 mm ABOVE THE BASE PLATE.
2. LAY C1 OVER IF IT STANDS TALLER THAN 11 mm.
3. J4 IS OPTIONAL. WITHOUT IT, SOLDER THE SWITCH LEADS TO THE LABELED PADS WITH A 150 mm SERVICE LOOP.
4. SECOND PAD1 IS SPARE. NO PER-RADIO CIRCUITRY EXISTS; THE ADAPTER CABLES CARRY THE DIFFERENCES.

WIRE LIST, PAD TO PART

PAD	GOES TO	NOTE
J1 CTR	J1 CENTER PIN (BNC)	TWISTED WITH CASE LEAD
S1-1 LINE	S1 CONTACT 1	OR J4-1
S1-2 MIC	S1 CONTACT 2	OR J4-2
S1-3 AUX	S1 CONTACT 3	OR J4-3
S1-C	S1 COMMON (WIPER)	OR J4-4
J3-8	J3 PIN 8, MIC HI	TWISTED WITH CASE LEAD
CASE	J3 PINS 9, 11, 20, BOTH BNC SHELLS, CASE LUG	ONE 18 AWG TO THE CASE LUG
S4-3	S4 CONTACT 3	OR J4-5
S4-4	S4 CONTACT 4	OR J4-6
R4 RTN	R4 8.2 Ω 10 W, OTHER END TO S4 CONTACT 2	R4 BOLTED TO THE BASE PLATE
J4-7, J4-8	S4 COMMON AND S4 CONTACT 2, IF J4 IS USED	J4-7 TO J3-12, J4-8 TO R4
J4-9, J4-10	T/R LED ANODE AND CATHODE, IF FITTED	SERIES RESISTOR AT THE LED
(NONE)	S4 COMMON AND J2 CENTER TO J3-12; J2 SHELL TO CASE	NOT THROUGH THE BOARD
(NONE)	S2 AND S3 BETWEEN J3-7 AND J3-6	NOT THROUGH THE BOARD

J4 HARNESS HEADER, 10 POSITION 0.1 IN

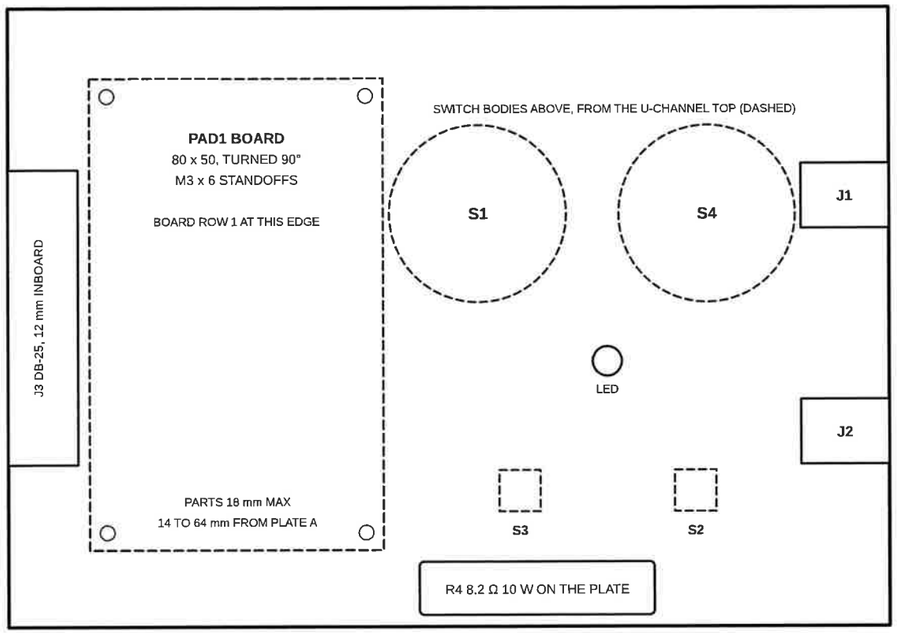
PIN	SIGNAL
1	S1-1 LINE
2	S1-2 MIC
3	S1-3 AUX
4	S1 COMMON
5	S4-3 (R5)
6	S4-4 (R6)
7	S4 COMMON, TO J3-12
8	S4-2, TO R4
9	LED +
10	LED -

ALL TEN LEAVE THE BOARD IN ONE HOUSING ON THE U-CHANNEL HARNESS, SO THE BASE PLATE PULLS CLEAR WITHOUT UNSOLDERING.

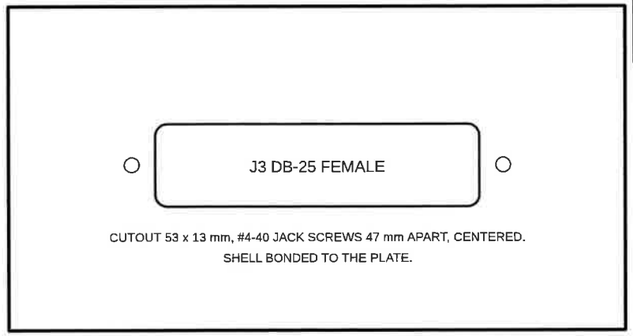
DRAWN 2026-11-06 ANTHONY PELFANIO - K4DIA	CHECKED 2026-11-06 ANTHONY PELFANIO - K4DIA	APPROVED	
TITLE: 2947 RADIO TEST KIT — **PAD1 BOARD ASSEMBLY, COMPONENT SIDE**			
SIZE: B	DWG NO: K4DIA-2947-001	REV: C	SCALE: NTS, 0.1 IN GRID / SHEET: 3 OF 5

REVISIONS		
A	INITIAL RELEASE. 2P3T PAD, TOGGLE LOAD, ISOLATED BNC	2026-10-28
B	DB-25 RADIO PORT ON RT-9000 J5 PIN MAP, CRIMP D-SUBS, J5 EXTENSION CABLE	2026-10-30
C	GRAYHILL 1P6T AT S1 AND S4, SPLIT PAD, METAL BNC, PAD1 BOARD, JIUWU CASE	2026-11-05

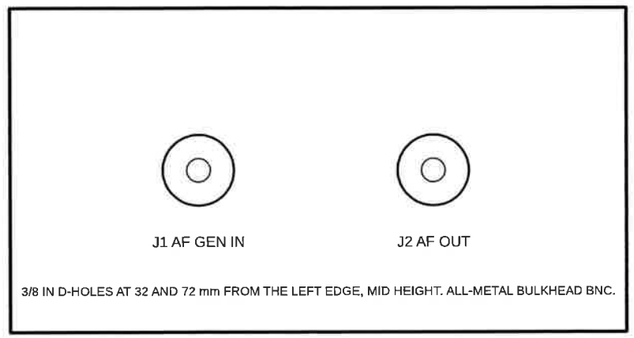
PLAN VIEW, BASE PLATE (SLIDES OUT OF THE U CHANNEL WITH THE BOARD). 150 x 105 mm. PLATE A AT LEFT, PLATE B AT RIGHT.



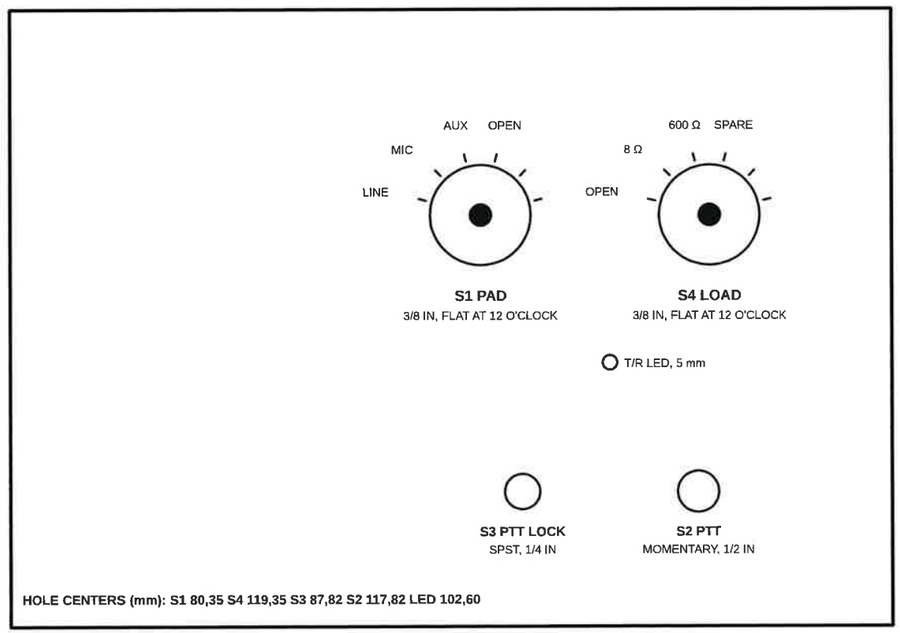
END PLATE A, 105 x 55 mm



END PLATE B, 105 x 55 mm



U-CHANNEL TOP FACE (FIXED), 150 x 105 mm. HOLE CENTERS FROM THE PLATE A END AND THE FRONT EDGE.



ARRANGEMENT

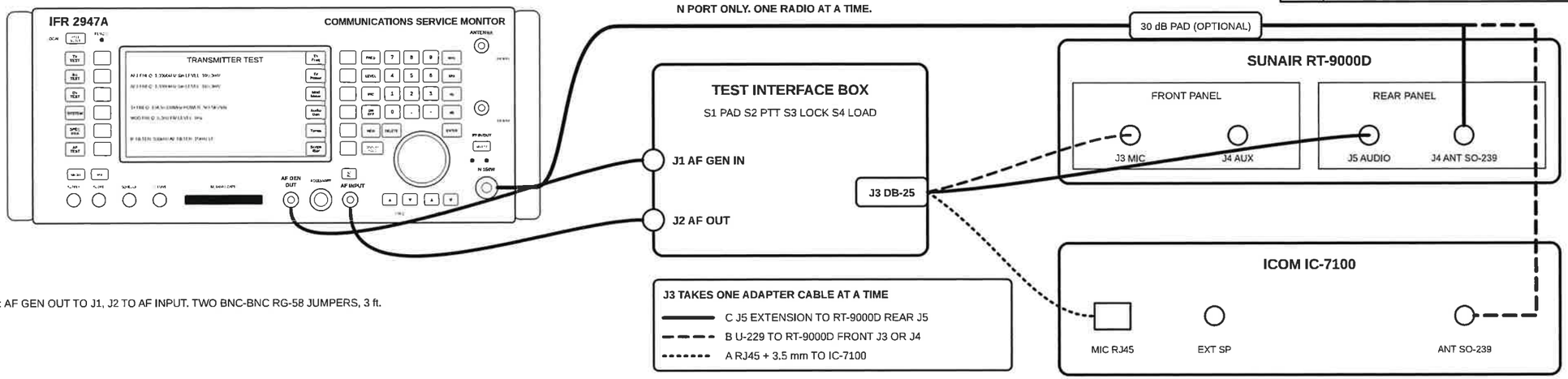
1. THE PLATE THAT SLIDES INTO THE U CHANNEL IS THE BASE. THE BOARD AND R4 MOUNT ON IT AND SLIDE OUT WITH IT.
2. THE U-CHANNEL TOP FACE CARRIES S1, S4, S3, S2 AND THE LED. END PLATES CARRY J3 AND THE BNCS. NOTHING ON THE TOP FACE LEFT OF 65 mm.
3. GRAYHILL 44M30 BODY IS 29.7 mm DIA, 26 mm DEEP BEHIND THE PANEL, PLUS LUGS. ABOUT 50 mm INSIDE THE CASE LEAVES ABOUT 18 mm ABOVE THE BASE. THE BOARD PASSES UNDER BOTH SWITCH BODIES EVERY TIME THE BASE SLIDES OUT.
4. BOARD ON 6 mm STANDOFFS TOPS OUT AT 18.6 mm WITH C1 UPRIGHT. LAY C1 OVER IF NEEDED. R4 IS ABOUT 12 mm.
5. BASE-TO-TOP WIRING THROUGH J4 ON THE BOARD, OR A 150 mm SERVICE LOOP. J3 AND BNC LEADS GET A SERVICE LOOP.
6. BNC BODIES REACH 15 mm INBOARD FROM PLATE B, THE DB-25 12 mm FROM PLATE A.
7. MEASURE THE REAL INSIDE HEIGHT BEFORE DRILLING THE TOP FACE. 50 mm IS AN ESTIMATE FROM THE OUTSIDE DIMENSION.
8. ROTARY HOLES 3/8 IN WITH AN ANTI-ROTATION FLAT OR A 3/32 IN PIN HOLE AT 12 O'CLOCK. POINTER KNOBS, POSITION 1 AT 7 O'CLOCK.

DRAWN 2026-11-06 ANTHONY PELFANIO - K4DIA	CHECKED 2026-11-06 ANTHONY PELFANIO - K4DIA	APPROVED		
TITLE **ENCLOSURE, PANEL DRILLING AND ARRANGEMENT**				
SIZE **B**	DWG NO **K4DIA-2947-001**	REV **C**	SCALE NTS, mm	SHEET 4 OF 5

K4DIA 2947 RADIO TEST KIT

REVISIONS		
A	INITIAL RELEASE, 2P3T PAD, TOGGLE LOAD, ISOLATED BNC	2026-10-28
B	DB-25 RADIO PORT ON RT-9000 J5 PIN MAP, CRIMP D-SUBS, J5 EXTENSION CABLE	2026-10-30
C	GRAYHILL 1P6T AT S1 AND S4, SPLIT PAD, METAL BNC, PAD1 BOARD, JIUWU CASE	2026-11-05

BENCH LAYOUT



AF: AF GEN OUT TO J1, J2 TO AF INPUT. TWO BNC-BNC RG-58 JUMPERS, 3 ft.

C RT-9000D REAR, J5 EXTENSION (ALL 19 CONTACTS, 1:1)

DB-25 M CRIMP PINS — BELDEN 1424A, 12.5 PAIR, 6 ft — **PT06F-14-19P** 19 PIN

DB-25	SIGNAL	RADIO END
8, 9	TX AUDIO A	H, J
12, 11	RCV AUDIO A	M, L
7, 6	KEYLINE, AGND	G, F
2	T/R	B
OTHERS	1:1 BY LETTER	A..V

A=1 ... V=19 IN ORDER, SKIP I O Q. SHIELD TO HOOD AND PIN 20 AT THE DB-25 END ONLY.
PINS 10 AND 18 CARRY +28 V, 13 CARRIES +12 V. CONNECT AND DISCONNECT WITH THE RADIO OFF.
PAIRS: H/J, L/M, S/T, A/C EACH ON ONE BELDEN PAIR. RING OUT 10, 13, 18 TO ALL OTHERS BEFORE FIRST USE.
HOOD LABEL: J5 ORDER, A=1 SKIP I O Q, SHIELD 20, +28 V ON 10 AND 18.

B RT-9000D FRONT, U-229

DB-25 M CRIMP PINS — 4 COND + SHIELD, 22 AWG, 6 ft — **U-229/U** 5 PIN

DB-25	SIGNAL	RADIO END
8	MIC HI	D
9	MIC LO	A
7	PTT	C
6	PTT GND	A
12	SPKR HI	B
11	SPKR LO	A

U-229 A COMMON, B HANDSET AUDIO, C PTT, D MIC, E CW KEYLINE (UNUSED).
SHIELD TO DB-25 PIN 20 AND HOOD ONLY; FLOATS AT THE U-229 END.
WORKS ON J3 MIC AND J4 AUX. CORD: WM-59A/U OR WM-85/U CORDAGE IF BUILDING FROM BULK.

A ICOM IC-7100, RJ45 + 3.5 mm

DB-25 M CRIMP PINS — 4 COND + SHIELD, 24 AWG, 6 ft — **RJ45 + 3.5 mm** 2 PLUGS

DB-25	SIGNAL	RADIO END
8	MIC HI	RJ45 6 MIC
9	MIC LO	RJ45 5 MIC E
7	PTT	RJ45 4 PTT
6	PTT GND	RJ45 7 GND
12	SPKR HI	3.5 TIP
11	SPKR LO	3.5 SLEEVE

RJ45 PINS 1 (+8 V), 2 (UP/DN), 3 (M8V SW), 8 (DATA/SQL) NOT CONNECTED. HM-198 OFF WHILE CONNECTED.
3.5 mm MONO TO EXT SP: TIP SPKR HI, SLEEVE SPKR LO.
SHIELD TO DB-25 PIN 20 AND HOOD ONLY.

DRAWN	CHECKED	APPROVED
2026-11-06 ANTHONY PELFANIO - K4DIA	2026-11-06 ANTHONY PELFANIO - K4DIA	

TITLE: 2947 RADIO TEST KIT

ADAPTER CABLES AND BENCH ARRANGEMENT

SIZE	DWG NO	REV	SCALE	SHEET
B	K4DIA-2947-001	C	NONE	5 OF 5