

Bill Of Materials

WR-1000e receiver

FCC ID: HNL-WREXT

BILL OF MATERIALS: WINRADIO

11 May 98 20:05

| DESCRIPTION | QTY PER UNIT | REFERENCE DESIGNATORS |
|---|--------------|--|
| RECEIVER PCB (Common Parts): | | |
| Capacitor, ceramic, SMD 0805, 0p47 ± .25p, COG | 3 | C40, C54, C163 |
| Capacitor, ceramic, SMD 0805, 1p5 ± .25p, COG | 1 | C187 |
| Capacitor, ceramic, SMD 0805, 1p8 ± .25p, COG | 1 | C85 |
| Capacitor, ceramic, SMD 0805, 2p2 ± .25p, COG | 4 | C29, C165, C184, C189 |
| Capacitor, ceramic, SMD 0805, 2p7 ± .25p, COG | 3 | C61, C148, C193 |
| Capacitor, ceramic, SMD 0805, 3p3 ± .25p, COG | 6 | C31, C44, C155, C158, C182, C183 |
| Capacitor, ceramic, SMD 0805, 3p9 ± .25p, COG | 5 | C39, C41, C48, C150, C169 |
| Capacitor, ceramic, SMD 0805, 4p7 ± .25p, COG | 4 | C24, C27, C72, C147 |
| Capacitor, ceramic, SMD 0805, 5p6 ± .25p, COG | 3 | C13, C16, C18 |
| Capacitor, ceramic, SMD 1206, 5p6 ± .25p, COG | 1 | C305 |
| Capacitor, ceramic, SMD 0805, 6p8 ± .25p, COG | 3 | C19, C64, C82 |
| Capacitor, ceramic, SMD 0805, 8p2 ± .25p, COG | 1 | C308 |
| Capacitor, ceramic, SMD 0805, 10p ± 5%, COG | 2 | C46, C70 |
| Capacitor, ceramic, SMD 0805, 12p ± 2%, COG | 1 | C63 |
| Capacitor, ceramic, SMD 0805, 15p ± 2%, COG | 4 | C25, C59, C83, C191 |
| Capacitor, ceramic, SMD 0805, 18p ± 2%, COG | 4 | C47, C62, C94, C152 |
| Capacitor, ceramic, SMD 0805, 22p ± 2%, COG | 6 | C43, C81, C143, C144, C145, C179 |
| Capacitor, ceramic, SMD 1206, 22p ± 2%, COG | 1 | C306 |
| Capacitor, ceramic, SMD 0805, 27p ± 2%, COG | 4 | C56, C71, C89, C140 |
| Capacitor, ceramic, SMD 0805, 33p ± 2%, COG | 6 | C52, C53, C55, C58, C67, C141 |
| Capacitor, ceramic, SMD 0805, 47p ± 5%, COG | 3 | C36, C86, C96 |
| Capacitor, ceramic, SMD 0805, 68p ± 2%, COG | 4 | C8, C10, C12, C14 |
| Capacitor, ceramic, 0.2" pitch, 100p ± 2%, N750 | 1 | C87 |
| Capacitor, ceramic, SMD 0805, 120p ± 2%, COG | 2 | C11, C192 |
| Capacitor, ceramic, SMD 0805, 270p ± 2%, COG | 3 | C45, C88, C92 |
| Capacitor, ceramic, SMD 0805, 330p ± 5%, COG | 13 | C117, C123, C199, C200, C201, C202, C203, C204, C205, C206, C217, C218, C219 |
| Capacitor, ceramic, SMD 0805, 560p ± 2%, COG | 3 | C76, C101, C116 |
| Capacitor, ceramic, SMD 0805, 1n ± 5%, COG | 27 | C15, C20, C28, C37, C38, C69, C90, C115, C124, C153, C154, C162, C172, C176, C180, C181, C185, C186, C188, C190, C194, C195, C197, C198, C209, C211, C216 |
| Capacitor, ceramic, SMD 1206, 1n8 ± 2%, COG | 2 | C93, C133 |
| Capacitor, ceramic, SMD 0805, 10n ± 10%, X7R | 26 | C9, C22, C23, C32, C35, C42, C49, C50, C51, C60, C65, C74, C75, C91, C99, C103, C105, C106, C107, C112, C142, C149, C156, C159, C160, C170 |
| Capacitor, ceramic, SMD 0805, 22n ± 5%, X7R | 12 | C66, C110, C111, C113, C114, C122, C126, C127, C128, C134, C161, C301 |
| Capacitor, ceramic, SMD 0805, 39n ± 5%, X7R | 5 | C2, C5, C7, C33, C109 |
| Capacitor, ceramic, SMD 0805, 100n ± 10%, X7R | 2 | C167, C168 |
| Capacitor, ceramic, SMD 0805, 100n ± 10%, X7R or Y5V | 31 | C1, C4, C6, C17, C21, C30, C68, C73, C77, C78, C84, C95, C98, C108, C118, C119, C125, C129, C130, C131, C135, C139, C212, C213, C214, C215, C222, C223, C224, C225, C228 |
| Capacitor, ceramic, SMD 1206, 100n ± 10%, X7R | 1 | C303 |
| Capacitor, electro., 4u7 25V, low profile, 1.5mm pitch | 2 | C100, C132 |
| Capacitor, electro., 22u 16V, low profile, 1.5mm pitch | 2 | C102, C104 |
| Capacitor, electro., 100u 16V, low profile, 2.5mm pitch | 16 | C79, C97, C120, C136, C137, C146, C171, C177, C178, C207, C208, C221, C226, C229, C230, C307 |
| Capacitor, trimmer, 5mm, 2.7 - 10p, NPO | 1 | CV1 |
| Diode, varicap, 1SV217 | 5 | D23, D28, D29, D30, D31 |
| Diode, signal, BAS16 | 5 | D5, D6, D7, D8, D25 |
| Diode, zener, BZX84-C4V7 | 1 | D24 |
| Diode, schottky, HSMS-2927 | 1 | D16 |
| Diode, PIN, MMBV3401-LT1 | 12 | D10, D11, D13, D14, D17, D18, D19, D20, D21, D22, D26, D27 |
| Diode, PIN, MMBV3700-LT1 | 7 | D1, D2, D3, D4, D9, D12, D15 |
| Filter, ceramic, 10.7 MHz, LT10.7MAS or similar | 2 | FL4, FL5 |
| Filter, ceramic, 455 kHz, LTW33-455HT or similar | 1 | FL3 |
| Filter, crystal, 58.075 MHz, Rosetta 58F4 | 2 | FL1A, FL1B |
| Filter, helical, 556 MHz (WM-0116) | 1 | F4 |

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|---|-----------|----|---|
| Coil, 10.4nH | (WM-0102) | 2 | L15, L19 |
| Coil, 14.8nH | (WM-0103) | 3 | L7, L9, L12 |
| Coil, 26.7nH | (WM-0104) | 1 | L8 |
| Inductor, wideband, 12uH | (WM-0107) | 1 | L13 |
| Inductor, fixed, SMD 1206, 500 ohm | | 1 | L10 |
| Inductor, fixed, SMD 1206, 150nH | | 1 | L5 |
| Inductor, fixed, SMD 1206, 220nH | | 2 | L4, L6 |
| Inductor, fixed, SMD 1206, 10uH | | 2 | L16, L17 |
| Inductor, fixed, upright 8mm dia, 680uH | | 1 | L20 |
| Plug, 2.54mm spacing, 16x2 pin | | 1 | PL1 |
| Transistor, BC808 | | 1 | Q13 |
| Transistor, BC848 | | 3 | Q10, Q11, Q20 |
| Transistor, BFQ67 | | 10 | Q1, Q2, Q3, Q4, Q14, Q15, Q16, Q17, Q18, Q19 |
| Transistor, BFS17A | | 5 | Q5, Q6, Q7, Q9, Q12 |
| Transistor, MUN2114-T1 | | 9 | Q22, Q23, Q24, Q25, Q26, Q27, Q28, Q29, Q30 |
| Resistor, SMD 0805, 0R (zero ohm link) | | 1 | R36 |
| Resistor, SMD 0805, 10R ± 5% | | 2 | R98, R102 |
| Resistor, SMD 0805, 33R ± 5% | | 3 | R58, R79, R151 |
| Resistor, SMD 0805, 68R ± 5% | | 3 | R3, R7, R18 |
| Resistor, SMD 0805, 100R ± 5% | | 18 | R22, R24, R26, R35, R40, R49, R56, R60, R72, R108, R114, R125, R127, R136, R139, R142, R144, R150 |
| Resistor, SMD 0805, 220R ± 5% | | 6 | R5, R15, R29, R39, R99, R137 |
| Resistor, SMD 1206, 330R ± 5% | | 1 | R302 |
| Resistor, SMD 0805, 470R ± 2% | | 7 | R30, R34, R53, R59, R61, R143, R148 |
| Resistor, SMD 0805, 680R ± 5% | | 2 | R27, R28 |
| Resistor, SMD 0805, 1k2 ± 5% | | 6 | R4, R12, R17, R42, R63, R95 |
| Resistor, SMD 1206, 1k2 ± 5% | | 1 | R304 |
| Resistor, SMD 0805, 2k2 ± 2% | | 10 | R19, R73, R104, R129, R130, R131, R132, R149, R160, R161 |
| Resistor, SMD 0805, 2k7 ± 5% | | 12 | R2, R6, R8, R9, R10, R11, R13, R48, R64, R65, R103, R106 |
| Resistor, SMD 0805, 4k7 ± 5% | | 2 | R77, R135 |
| Resistor, SMD 0805, 5k6 ± 2% | | 7 | R46, R74, R76, R78, R81, R82, R93 |
| Resistor, SMD 0805, 6k8 ± 5% | | 8 | R41, R44, R47, R122, R126, R134, R155, R163 |
| Resistor, SMD 0805, 12k ± 5% | | 11 | R16, R75, R92, R96, R112, R113, R115, R116, R124, R133, R164 |
| Resistor, SMD 0805, 18k ± 5% | | 2 | R120, R121 |
| Resistor, SMD 0805, 22k ± 5% | | 12 | R55, R66, R70, R71, R84, R85, R86, R87, R109, R162, R300, R301 |
| Resistor, SMD 0805, 27k ± 1% | | 1 | R156 |
| Resistor, SMD 0805, 33k ± 5% | | 2 | R69, R154 |
| Resistor, SMD 0805, 47k ± 5% | | 16 | R20, R38, R43, R45, R67, R68, R91, R107, R110, R123, R138, R140, R141, R146, R147, R152 |
| Resistor, SMD 0805, 100k ± 1% | | 8 | R14, R54, R90, R93, R97, R105, R111, R153 |
| Resistor, SMD 0805, 150k ± 5% | | 4 | R21, R23, R25, R62 |
| Resistor, SMD 0805, 470k ± 1% | | 4 | R33, R37, R118, R119 |
| Resistor, SMD 1206, 4M7 ± 5% | | 2 | R101, R117 |
| Resistor, variable cermet, 20k | | 1 | RV1 |
| Transformer, variable, 0.054uH | (WM-0110) | 2 | T24, T25 |
| Transformer, variable, 0.082uH | (WM-0111) | 2 | T3, T6 |
| Transformer, variable, 0.39uH | (WM-0112) | 9 | T5, T7, T8, T9, T10, T20, T21, T22, T23 |
| Transformer, variable, 0.68uH | (WM-0113) | 2 | T11, T16 |
| Transformer, variable, 4.7uH | (WM-0114) | 1 | T14 |
| Transformer, variable, 10.7MHz | (WM-0115) | 1 | T19 |
| Transformer, variable, 220uH | (WM-0108) | 4 | T13, T15, T17, T18 |
| Transformer, variable, 680uH | (WM-0109) | 1 | T12 |
| Transformer, balun (type 1) | (WM-0105) | 1 | T2 |
| Transformer, balun (type 2) | (WM-0126) | 1 | T1 |
| Test point, red | | 64 | TP1, TP2, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP11, TP12, TP13, TP14, TP15, TP16, TP17, TP18, TP19, TP20, TP21, TP22, TP23, TP24, TP25, TP26, TP27, TP28, TP29, TP30, TP31, TP32, TP33, TP34, TP35, TP36, TP37, TP38, TP39, TP40, TP41, TP42, TP43, TP44, TP45, TP46, TP47, TP48, TP49, TP50, TP51, TP52, TP53, TP54, TP55, TP56, |

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|--|--------------|---|
| | | TP57, TP58, TP59, TP60, TP61, TP62, TP63, TP64, TP65 |
| Integrated circuit, LM324M | 1 | U6 |
| Integrated circuit, LM337LZ | 1 | U14 |
| Integrated circuit, LM386M-1 | 1 | U9 |
| Integrated circuit, LM7805CT | 1 | U16 |
| Integrated circuit, LM833M | 1 | U13 |
| Integrated circuit, MC3372D | 1 | U2 |
| Integrated circuit, MC74HC00AD | 1 | U21 |
| Integrated circuit, MC74HC02AD | 1 | U20 |
| Integrated circuit, MC74HCU04AD | 1 | U11 |
| Integrated circuit, MC74HC574ADW | 3 | U15, U18, U19 |
| Integrated circuit, MC14052BD | 1 | U7 |
| Integrated circuit, MC145191F | 1 | U12 |
| Integrated circuit, NE612AD | 2 | U3, U4 |
| Integrated circuit, TA7640AP | 1 | U5 |
| Integrated circuit, uPC1676G | 1 | U1 |
| Integrated circuit, X9314WS | 1 | U8 |
| Quartz crystal, 12.800 MHz, 20pf, HC41 holder | 1 | Y3 |
| Quartz crystal, 47.375 MHz, 5pf, HC41 holder | 1 | Y2 |
| Quartz crystal, 57.620 MHz, series, HC41 holder | 1 | Y1 |
| Printed circuit card, receiver | 1 | N/A |
| Shield, VCO | 1 | N/A |
| ADDITIONAL ITEMS (Version A only): | | |
| Resistor, SMD 0805, 0R (zero ohm link) | 2 | R89, R94 |
| ADDITIONAL ITEMS (Version B only): | | |
| Resistor, SMD 0805, 0R (zero ohm link) | 1 | R88 |
| Integrated circuit, MC14053BD | 1 | U10 |
| RESERVED ITEMS (Possible future use only): | | |
| Capacitor, ceramic, SMD 0805, (reserved) | (TBA) | C157, C166, C174, C175 |
| Discriminator, ceramic, 455 kHz (reserved) | (TBA) | FL2 |
| Resistor, SMD 0805, (reserved) | (TBA) | R153 |

EXTERNAL BACKPLANE (WA-0304)

FCC ID: HNL-WREXT

11-May-98 19:29

| DESCRIPTION | QTY | DESIGNATOR |
|---|-----|--|
| Capacitor, 0805, 27pF \pm 2% C0G | 3 | C1 C2 C100 |
| Capacitor, 0805, 330pF \pm 5% C0G | 1 | C102 |
| Capacitor, 0805, 1nF \pm 5% C0G | 2 | C101 C104 |
| Capacitor, 0805, 27nF \pm 10% X7R | 1 | C13 |
| Capacitor, 0805, 39nF \pm 10% X7R | 1 | C11 |
| Capacitor, 0805, 100nF \pm 10% X7R or Y5V | 12 | C3 C4 C7 C8 C10 C12 C85 C95 C96 C97 C103 C105 |
| Capacitor, 1206, 1uF \pm 10%, 16V, Y5V | 2 | C5 C82 |
| Capacitor, electrolytic, 4.7uF 16V, 1.5mm pitch | 3 | C87 C88 C89 |
| Capacitor, electrolytic, 22uF 16V, 1.5mm pitch | 2 | C81 C83 |
| Capacitor, electrolytic, 100uF 16V, 2.5mm pitch | 1 | C90 |
| Capacitor, electrolytic, 2200uF 16V, axial | 1 | C86 |
| Diode, 1N4002 | 1 | D82 |
| Diode, BAT54A | 1 | D84 |
| Diode, BZX84-C4V7 | 1 | D1 |
| Diode, light emitting, red, min. rectangular | 1 | D81 |
| Ferrite choke, 6 hole prewound | 5 | L51 L52 L53 L71 L72 |
| Ferrite choke, radial, 22uH (Robotron) | 5 | L81 L82 L95 |
| Speaker, 57mm, 250mW, 8ohm, Keyrin 57-8B | 1 | LS1 |
| Plug, 2 pin, 90 deg | 1 | PL41 |
| Socket, DB9F 90 deg | 1 | J32 |
| Socket, DB15F-HD, 90 deg (PCMCIA) | 1 | J1 |
| Socket, power jack, 2.1mm pin | 1 | J81 |
| Transistor, BC848 | 1 | Q83 |
| Transistor, BD140 | 1 | Q81 |
| Transistor, BFS17A or 2SC2714 | 1 | Q100 |
| Transistor, PHN210 | 1 | Q82 |
| Link, 0805, zero ohm | 5 | LK1 LK2 LK81 LK82 R71 |
| Resistor, 0805, 100R \pm 5% | 10 | R22 R23 R24 R25 R26 R27 R28 R29 R34 R70 |
| Resistor, 0805, 390R \pm 1% | 1 | R9 |
| Resistor, 0805, 680R \pm 5% | 3 | R66 R67 R68 |
| Resistor, 0805, 1k \pm 5% | 1 | R112 |
| Resistor, 0805, 1k2 \pm 5% | 18 | R6 R51 R52 R53 R54 R55 R56 R57 R58 R59 R60 R61 R62 R64 R65 R69 R92 R93 |
| Resistor, 0805, 1k5 \pm 5% | 1 | R81 |
| Resistor, 0805, 4k7 \pm 5% | 2 | R11 R13 |
| Resistor, 0805, 10k \pm 5% | 7 | R2 R17 R18 R19 R20 R21 R111 |
| Resistor, 0805, 22k \pm 5% | 2 | R11 R97 |
| Resistor, 0805, 47k \pm 5% | 5 | R3 R4 R15 R16 R89 |
| Resistor, 0805, 100k \pm 1% | 3 | R8 R30 R63 |
| Resistor, 0805, 1M \pm 5% | 1 | R113 |
| Resistor, 1206, 4M7 \pm 5% | 1 | R1 |
| Socket, stereo jack, 3.5mm switched | 1 | SK1 |
| Speaker cable assy, Aria | 1 | SK41 |
| Socket, Precidip 415-91-232-41-001 | 1 | SK51 |
| Socket, RCA | 1 | SK52 |
| Switch, min. DPDT toggle | 1 | SW81 |
| Transformer, WM-0135 | 1 | T81 |
| Integrated circuit, DS1233DZ-10 | 1 | U1 |
| Integrated circuit, SN75188D (DS1488M) | 1 | U31 |
| Integrated circuit, SN75C189AD (DS14C89M) | 1 | U32 |
| Integrated circuit, LM324M | 1 | U4 |
| Integrated circuit, LM7805CT | 1 | U84 |
| Integrated circuit, MC14017BD | 1 | U100 |
| Integrated circuit, MC68HC705B5 | 1 | U2 |
| Integrated circuit, MC74AC74D | 1 | U82 |
| Integrated circuit, MC74HC04D | 1 | U86 |
| Crystal, 2.4567MHz \pm 30ppm, HC49/U | 1 | Y2 |
| Crystal, 3.6864MHz \pm 30ppm, HC49/U | 1 | Y3 |

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| Capacitor, ceramic, 0.2" pitch, 100p ± 2%, N750 | 1 | C87 |
| Capacitor, ceramic, SMD 0805, 120p ± 2%, COG | 2 | C11, C192 |
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| Capacitor, trimmer, 5mm, 2.7 - 10p, NPO | 1 | CV1 |
| Diode, varicap, 1SV217 | 5 | D23, D28, D29, D30, D31 |
| Diode, signal, BAS16 | 5 | D5, D6, D7, D8, D25 |
| Diode, gener, BZX84-C4V7 | 1 | D24 |
| Diode, schottky, HSMS-2927 | 1 | D16 |
| Diode, PIN, MMBV3401-LT1 | 12 | D10, D11, D13, D14, D17, D18, D19, D20, D21, D22, D26, D27 |
| Diode, PIN, MMBV3700-LT1 | 7 | D1, D2, D3, D4, D9, D12, D15 |
| Filter, ceramic, 10.7 MHz, LT10.7MAE or similar | 2 | FL4, FL5 |
| Filter, ceramic, 455 kHz, LTW33-455HT or similar | 1 | FL3 |
| Filter, crystal, 58.075 MHz, Rosetta 58F4 | 2 | FL1A, FL1B |
| Filter, helical, 556 MHz (WM-0116) | 1 | T4 |
| Filter, helical, 614 MHz (WM-0117) | 1 | T26 |
| Coil, 6.2mH (SM-0103) | 3 | L11, L14, L18 |

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| | | | |
|---|-----------|----|---|
| Coil, 10.4nH | (WM-0102) | 2 | L15, L19 |
| Coil, 14.8nH | (WM-0103) | 3 | L7, L9, L12 |
| Coil, 26.7nH | (WM-0104) | 1 | L8 |
| Inductor, wideband, 12uH | (WM-0107) | 1 | L13 |
| Inductor, fixed, SMD 1206, 500 ohm | | 1 | L10 |
| Inductor, fixed, SMD 1206, 150nH | | 1 | L5 |
| Inductor, fixed, SMD 1206, 220nH | | 2 | L4, L6 |
| Inductor, fixed, SMD 1206, 10uH | | 2 | L16, L17 |
| Inductor, fixed, upright 8mm dia, 680uH | | 1 | L20 |
| Plug, 2.54mm spacing, 16x2 pin | | 1 | PL1 |
| Transistor, BC808 | | 1 | Q13 |
| Transistor, BC848 | | 3 | Q10, Q11, Q20 |
| Transistor, BFC67 | | 10 | Q1, Q2, Q3, Q4, Q14, Q15, Q16, Q17, Q18, Q19 |
| Transistor, BFS17A | | 5 | Q5, Q6, Q7, Q9, Q12 |
| Transistor, MUN2114-T1 | | 9 | Q22, Q23, Q24, Q25, Q26, Q27, Q28, Q29, Q30 |
| Resistor, SMD 0805, 0R (zero ohm link) | | 1 | R36 |
| Resistor, SMD 0805, 10R ± 5% | | 2 | R98, R102 |
| Resistor, SMD 0805, 33R ± 5% | | 3 | R58, R79, R151 |
| Resistor, SMD 0805, 68R ± 5% | | 3 | R3, R7, R18 |
| Resistor, SMD 0805, 100R ± 5% | | 18 | R22, R24, R26, R35, R40, R49, R56, R60, R72, R108, R114, R125, R127, R136, R139, R142, R144, R150 |
| Resistor, SMD 0805, 220R ± 5% | | 6 | R5, R15, R29, R39, R99, R137 |
| Resistor, SMD 1206, 330R ± 5% | | 1 | R302 |
| Resistor, SMD 0805, 470R ± 2% | | 7 | R30, R34, R53, R59, R61, R143, R148 |
| Resistor, SMD 0805, 680R ± 5% | | 2 | R27, R28 |
| Resistor, SMD 0805, 1k2 ± 5% | | 6 | R4, R12, R17, R42, R63, R95 |
| Resistor, SMD 1206, 1k2 ± 5% | | 1 | R304 |
| Resistor, SMD 0805, 2k2 ± 2% | | 10 | R19, R73, R104, R129, R130, R131, R132, R149, R160, R161 |
| Resistor, SMD 0805, 2k7 ± 5% | | 12 | R2, R6, R8, R9, R10, R11, R13, R48, R64, R65, R103, R106 |
| Resistor, SMD 0805, 4k7 ± 5% | | 2 | R77, R135 |
| Resistor, SMD 0805, 5k6 ± 2% | | 7 | R46, R74, R76, R78, R81, R82, R83 |
| Resistor, SMD 0805, 6k8 ± 5% | | 8 | R41, R44, R47, R122, R126, R134, R155, R163 |
| Resistor, SMD 0805, 12k ± 5% | | 11 | R16, R75, R92, R96, R112, R113, R115, R116, R124, R133, R164 |
| Resistor, SMD 0805, 19k ± 5% | | 2 | R120, R121 |
| Resistor, SMD 0805, 22k ± 5% | | 12 | R55, R66, R70, R71, R84, R85, R86, R87, R109, R162, R300, R301 |
| Resistor, SMD 0805, 27k ± 1% | | 1 | R156 |
| Resistor, SMD 0805, 33k ± 5% | | 2 | R69, R154 |
| Resistor, SMD 0805, 47k ± 5% | | 16 | R20, R38, R43, R45, R67, R68, R91, R107, R110, R123, R138, R140, R141, R146, R147, R152 |
| Resistor, SMD 0805, 100k ± 1% | | 8 | R14, R54, R90, R93, R97, R105, R111, R153 |
| Resistor, SMD 0805, 150k ± 5% | | 4 | R21, R23, R25, R62 |
| Resistor, SMD 0805, 470k ± 1% | | 4 | R33, R37, R118, R119 |
| Resistor, SMD 1206, 4M7 ± 5% | | 2 | R101, R117 |
| Resistor, variable cermet, 20k | | 1 | RV1 |
| Transformer, variable, 0.054uH | (WM-0110) | 2 | T24, T25 |
| Transformer, variable, 0.082uH | (WM-0111) | 2 | T3, T6 |
| Transformer, variable, 0.39uH | (WM-0112) | 9 | T5, T7, T8, T9, T10, T20, T21, T22, T23 |
| Transformer, variable, 0.68uH | (WM-0113) | 2 | T11, T16 |
| Transformer, variable, 4.7uH | (WM-0114) | 1 | T14 |
| Transformer, variable, 10.7MHz | (WM-0115) | 1 | T19 |
| Transformer, variable, 220uH | (WM-0108) | 4 | T13, T15, T17, T18 |
| Transformer, variable, 680uH | (WM-0109) | 1 | T12 |
| Transformer, balun (type 1) | (WM-0105) | 1 | T2 |
| Transformer, balun (type 2) | (WM-0126) | 1 | T1 |
| Test point, rec | | 64 | TP1, TP2, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP11, TP12, TP13, TP14, TP15, TP16, TP17, TP18, TP19, TP20, TP21, TP22, TP23, TP24, TP25, TP26, TP27, TP28, TP29, TP30, TP31, TP32, TP33, TP34, TP35, TP36, TP37, TP38, TP39, TP40, TP41, TP42, TP43, TP44, TP45, TP46, TP47, TP48, TP49, TP50, TP51, TP52, TP53, TP54, TP55, TP56, |

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| | | |
|--|------------------|---|
| | | TP57, TP58, TP59, TP60, TP61, TP62, TP63, TP64, TP65 |
| Integrated circuit, LM324M | 1 | U6 |
| Integrated circuit, LM337LZ | 1 | U14 |
| Integrated circuit, LM386M-1 | 1 | U9 |
| Integrated circuit, LM7805CT | 1 | U16 |
| Integrated circuit, LM833M | 1 | U13 |
| Integrated circuit, MC3372D | 1 | U2 |
| Integrated circuit, MC74HC00AD | 1 | U21 |
| Integrated circuit, MC74HC02AD | 1 | U20 |
| Integrated circuit, MC74HCU04AD | 1 | U11 |
| Integrated circuit, MC74HC574ADW | 3 | U15, U18, U19 |
| Integrated circuit, MC14052BD | 1 | U7 |
| Integrated circuit, MC145191F | 1 | U12 |
| Integrated circuit, NE612AD | 2 | U3, U4 |
| Integrated circuit, TA7640AP | 1 | U5 |
| Integrated circuit, uPC1676G | 1 | U1 |
| Integrated circuit, X9314WS | 1 | U8 |
| Quartz crystal, 12.800 MHz, 20pf, HC41 holder | 1 | Y3 |
| Quartz crystal, 47.375 MHz, 5pf, HC41 holder | 1 | Y2 |
| Quartz crystal, 57.620 MHz, series, HC41 holder | 1 | Y1 |
| Printed circuit card, receiver | 1 | N/A |
| Shield, VCO | 1 | N/A |
| ADDITIONAL ITEMS (Version A only): | | |
| Resistor, SMD 0805, OR (zero ohm link) | 2 | R89, R94 |
| ADDITIONAL ITEMS (Version B only): | | |
| Resistor, SMD 0805, OR (zero ohm link) | 1 | R88 |
| Integrated circuit, MC14053BD | 1 | U13 |
| RESERVED ITEMS (Possible future use only): | | |
| Capacitor, ceramic, SMD 0805, (reserved) | (TBA) | C157, C166, C174, C175 |
| Discriminator, ceramic, 455 kHz (reserved) | (TBA) | FI2 |
| Resistor, SMD 0805, (reserved) | (TBA) | R153 |

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BILL OF MATERIALS: CRYSTAL SWITCH (WINRADIO)

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| DESCRIPTION | QTY PER UNIT | REFERENCE DESIGNATORS |
|---|--------------|-----------------------|
| Capacitor, ceramic 0805, 15p ± 5%, COG | 1 | C1 |
| Trimmer, 6.5-30p, Murata TZC03-P300-A110 or similar | 1 | CV1 |
| Diode, PIN, MMBV3401-LT1 | 2 | D1 D2 |
| Inductor, SMD 0805, 1.5uH ± 10% | 2 | L1 L2 |
| Transistor, BC848 | 1 | Q1 |
| Resistor, SMD 0805, 1k2 ± 5% | 2 | R2 R4 |
| Resistor, SMD 0805, 4k7 ± 5% | 2 | R1 R5 |
| Resistor, SMD 0805, 100k ± 5% | 1 | R3 |
| Quartz crystal, 57.607MHz, series, HC41 holder | 1 | Y2 |
| Quartz crystal, 57.620MHz, series, HC41 holder | 1 | Y1 |
| Printed circuit board, WB-0102 | 1 | |

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Bill Of Materials

BFO Board

| Part | Used | PartType | Designators |
|------|------|------------|---------------------------|
| 1 | - | Not used | N/A |
| 2 | 2 | 1SV217 | D1 D2 |
| 3 | 1 | 1k2 | R1 |
| 4 | 1 | 1u5 | L2 |
| 5 | 1 | 3n9 | C1 |
| 6 | 1 | 10k | R5 |
| 7 | 1 | 22p | C4 |
| 8 | 1 | 27k | R4 |
| 9 | 1 | 33u | L1 |
| 10 | 1 | 47k | R6 |
| 11 | 8 | 100n | C2 C5 C6 C7 C8 C9 C10 C11 |
| 12 | 1 | 270p | C3 |
| 13 | 1 | MC74HC4060 | U1 |
| 14 | 1 | MC145191 | U2 |
| 15 | 2 | ZERO | R3 R7 |

EXTERNAL BACKPLANE (WA-0304)

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| DESCRIPTION | QTY | DESIGNATOR |
|---|-----|--|
| Capacitor, 0805, 27pF \pm 2% C0G | 3 | C1 C2 C100 |
| Capacitor, 0805, 330pF \pm 5% C0G | 1 | C102 |
| Capacitor, 0805, 1nF \pm 5% C0G | 2 | C101 C104 |
| Capacitor, 0805, 27nF \pm 10% X7R | 1 | C13 |
| Capacitor, 0805, 39nF \pm 10% X7R | 1 | C11 |
| Capacitor, 0805, 100nF \pm 10% X7R or Y5V | 12 | C3 C4 C7 C8 C10 C12 C85 C95 C96 C97 C103 C105 |
| Capacitor, 1206, 1uF \pm 10%, 16V, Y5V | 2 | C5 C82 |
| Capacitor, electrolytic, 4.7uF 16V, 1.5mm pitch | 3 | C87 C88 C89 |
| Capacitor, electrolytic, 22uF 16V, 1.5mm pitch | 2 | C81 C83 |
| Capacitor, electrolytic, 100uF 16V, 2.5mm pitch | 1 | C90 |
| Capacitor, electrolytic, 2200uF 16V, axial | 1 | C86 |
| Diode, 1N4002 | 1 | D82 |
| Diode, BAT54A | 1 | D84 |
| Diode, BZX84-C4V7 | 1 | D1 |
| Diode, light emitting, red, min. rectangular | 1 | D81 |
| Ferrite choke, 6 hole prewound | 5 | L51 L52 L53 L71 L72 |
| Ferrite choke, radial, 22uH (Robotron) | 5 | L81 L82 L95 |
| Speaker, 57mm, 250mW, 8ohm, Keyrin 57-8B | 1 | LS1 |
| Plug, 2 pin, 90 deg | 1 | PL41 |
| Socket, DB9F 90 deg | 1 | J32 |
| Socket, DB15F-HD, 90 deg (PCMCIA) | 1 | J1 |
| Socket, power jack, 2.1mm pin | 1 | J81 |
| Transistor, BC848 | 1 | Q83 |
| Transistor, BD140 | 1 | Q81 |
| Transistor, BFS17A or 2SC2714 | 1 | Q100 |
| Transistor, PHN210 | 1 | Q82 |
| Link, 0805, zero ohm | 5 | LK1 LK2 LK81 LK82 R71 |
| Resistor, 0805, 100R \pm 5% | 10 | R22 R23 R24 R25 R26 R27 R28 R29 R34 R70 |
| Resistor, 0805, 390R \pm 1% | 1 | R9 |
| Resistor, 0805, 680R \pm 5% | 3 | R66 R67 R68 |
| Resistor, 0805, 1k \pm 5% | 1 | R112 |
| Resistor, 0805, 1k2 \pm 5% | 18 | R6 R51 R52 R53 R54 R55 R56 R57 R58 R59 R60 R61 R62 R64 R65 R69 R92 R93 |
| Resistor, 0805, 1k5 \pm 5% | 1 | R81 |
| Resistor, 0805, 4k7 \pm 5% | 2 | R11 R13 |
| Resistor, 0805, 10k \pm 5% | 7 | R2 R17 R18 R19 R20 R21 R111 |
| Resistor, 0805, 22k \pm 5% | 2 | R11 R97 |
| Resistor, 0805, 47k \pm 5% | 5 | R3 R4 R15 R16 R89 |
| Resistor, 0805, 100k \pm 1% | 3 | R8 R30 R63 |
| Resistor, 0805, 1M \pm 5% | 1 | R113 |
| Resistor, 1206, 4M7 \pm 5% | 1 | R1 |
| Socket, stereo jack, 3.5mm switched | 1 | SK1 |
| Speaker cable assy, Aria | 1 | SK41 |
| Socket, Precidip 415-91-232-41-001 | 1 | SK51 |
| Socket, RCA | 1 | SK52 |
| Switch, min. DPDT toggle | 1 | SW81 |
| Transformer, WM-0135 | 1 | T81 |
| Integrated circuit, DS1233DZ-10 | 1 | U1 |
| Integrated circuit, SN75188D (DS1488M) | 1 | U31 |
| Integrated circuit, SN75C189AD (DS14C89M) | 1 | U32 |
| Integrated circuit, LM324M | 1 | U4 |
| Integrated circuit, LM7805CT | 1 | U84 |
| Integrated circuit, MC14017BD | 1 | U100 |
| Integrated circuit, MC68HC705B5 | 1 | U2 |
| Integrated circuit, MC74AC74D | 1 | U82 |
| Integrated circuit, MC74HC04D | 1 | U86 |
| Crystal, 2.4567MHz \pm 30ppm, HC49/U | 1 | Y2 |
| Crystal, 3.6864MHz \pm 30ppm, HC49/U | 1 | Y3 |