

MDS-Series

UHF Receiver

DMR Loudspeakers

Service Manual (MDS-1400/2400/3400)



This device complies
with part 15 of FCC rules
Operation is subject to
the following two
conditions:

- (1) This device may not
cause harmful
interference and
- (2) This device must
accept any
interference received,
including interference
that may cause
undesired operation.

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COMMUNICATIONS MAXIMIZED

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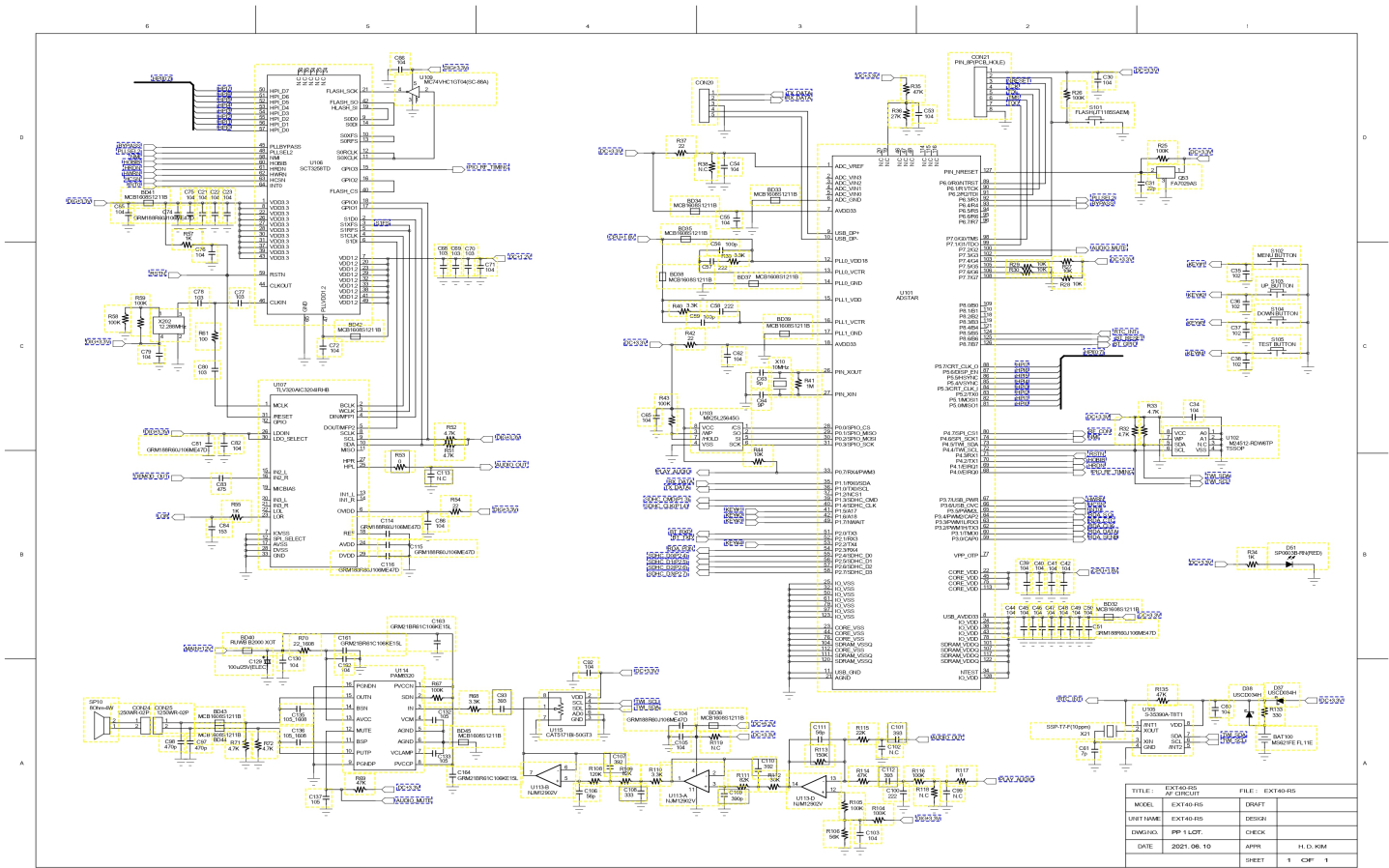
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2. Sub Board

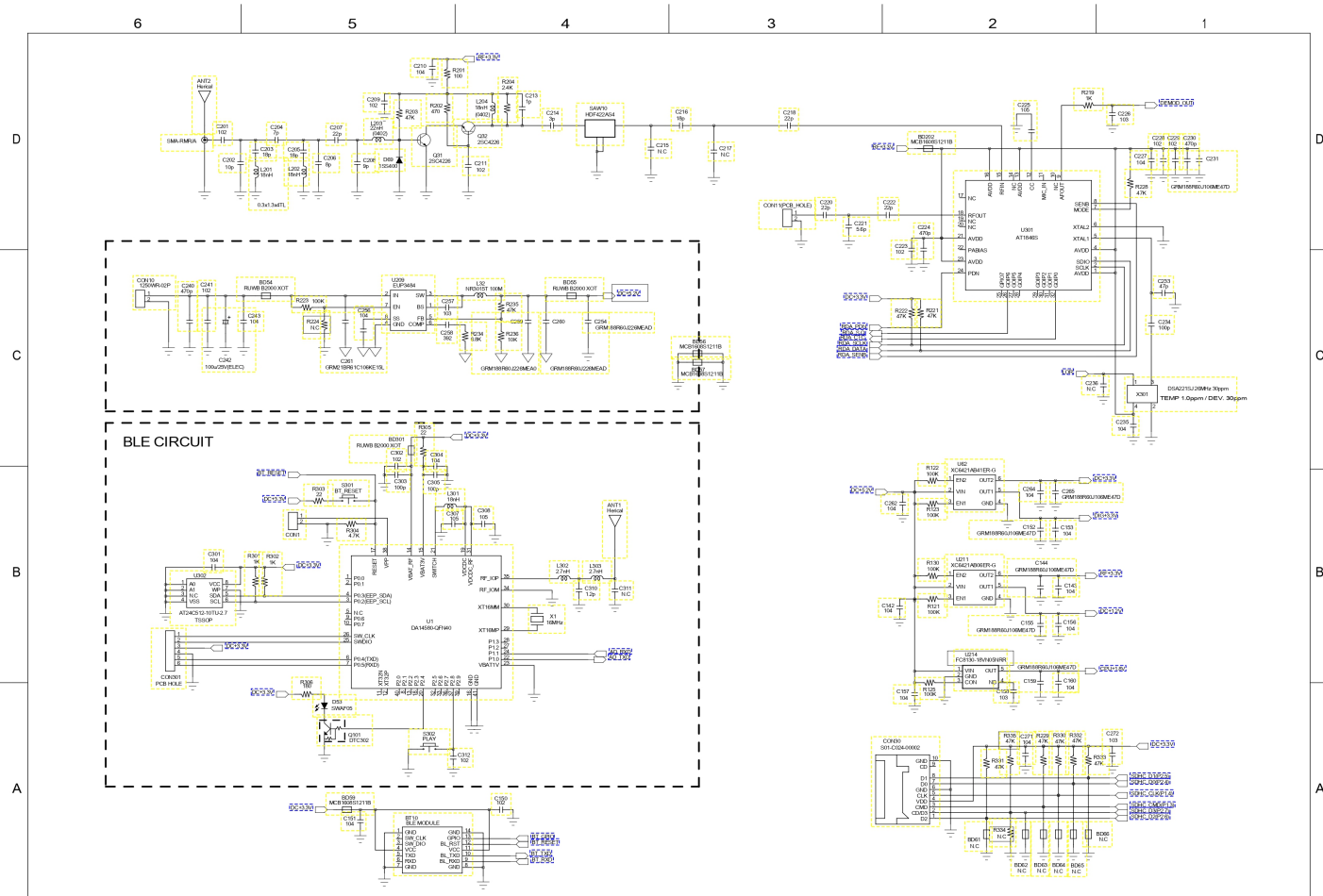
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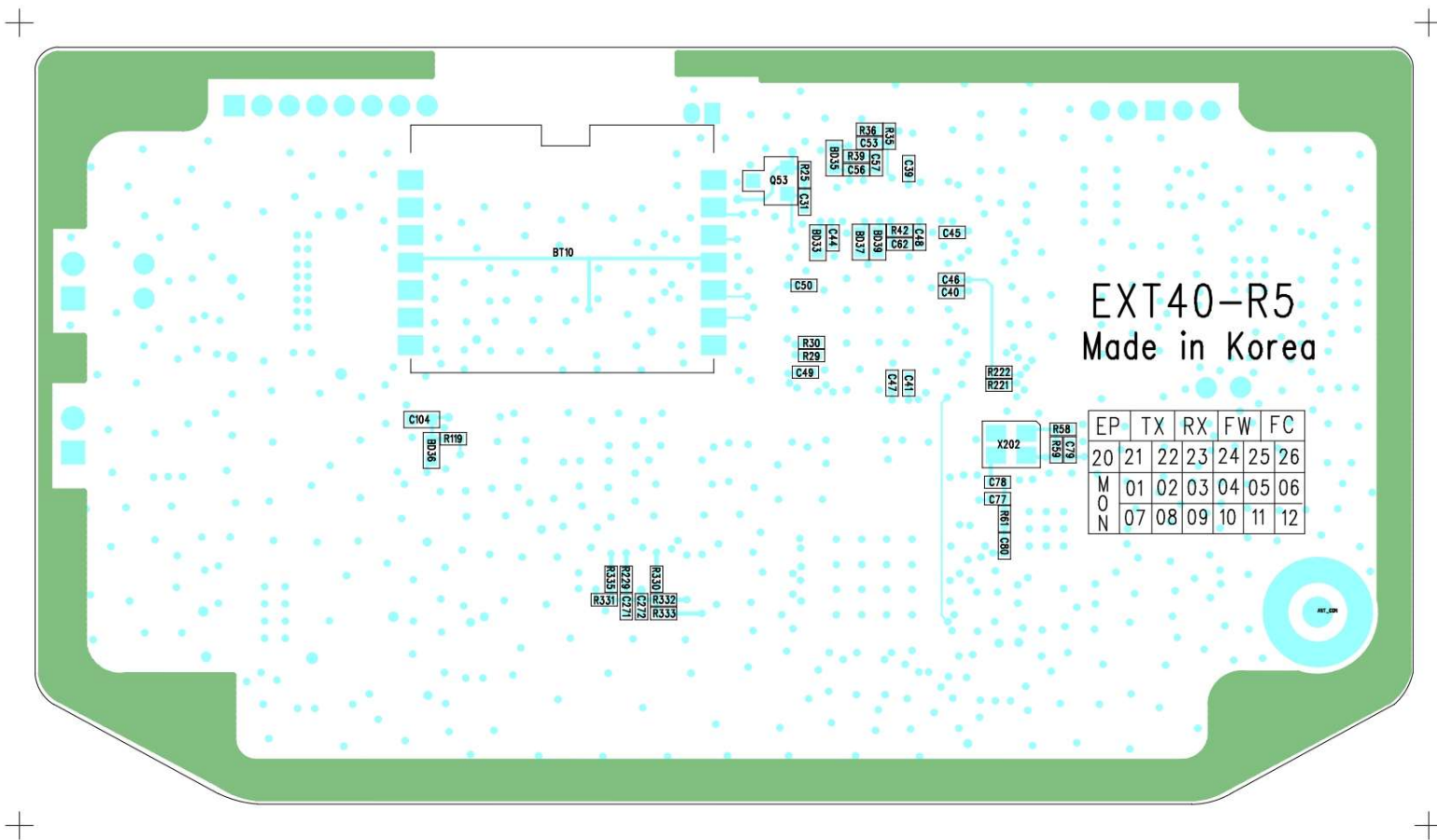
Main Board

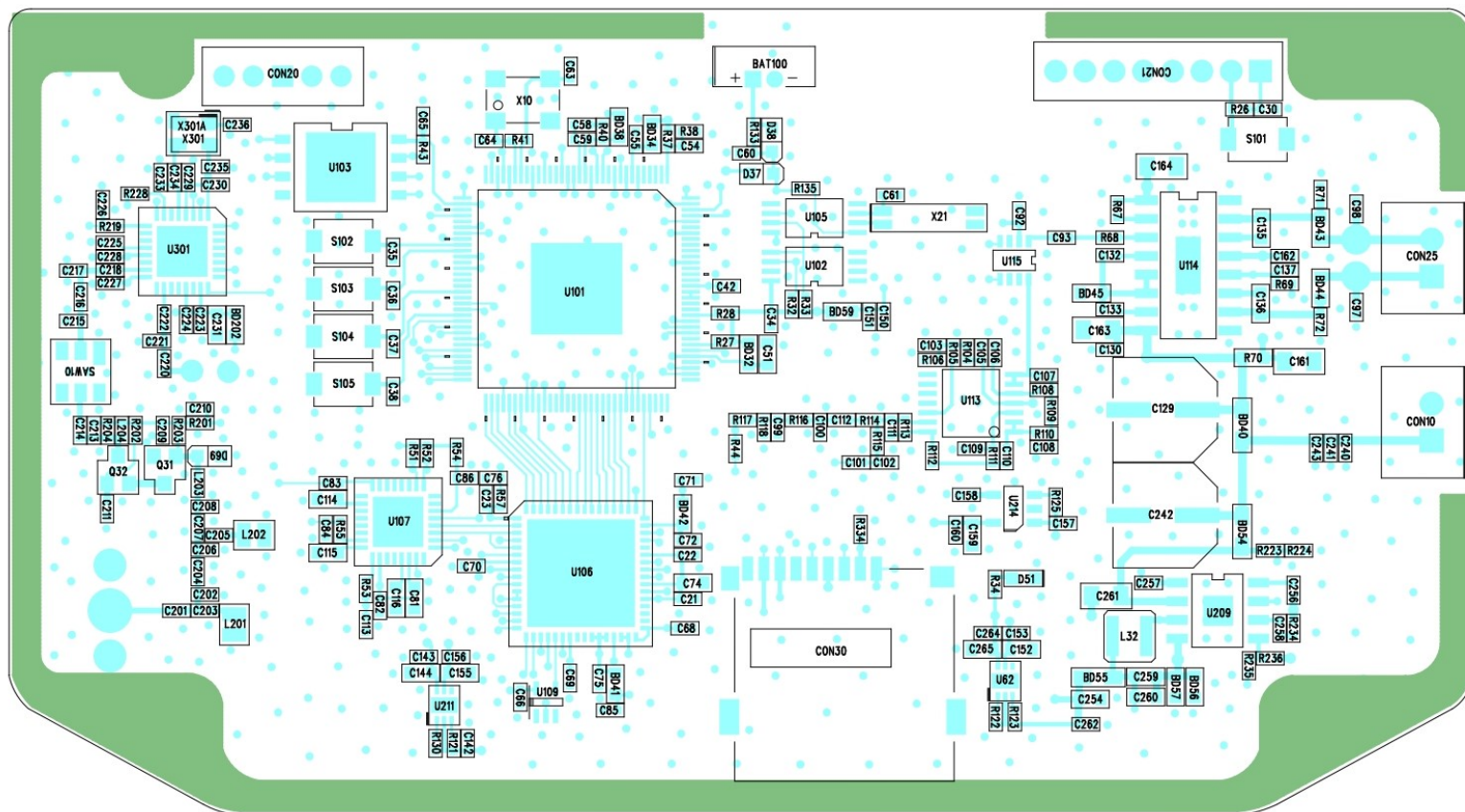
1. Schematic



2.







3. Parts List

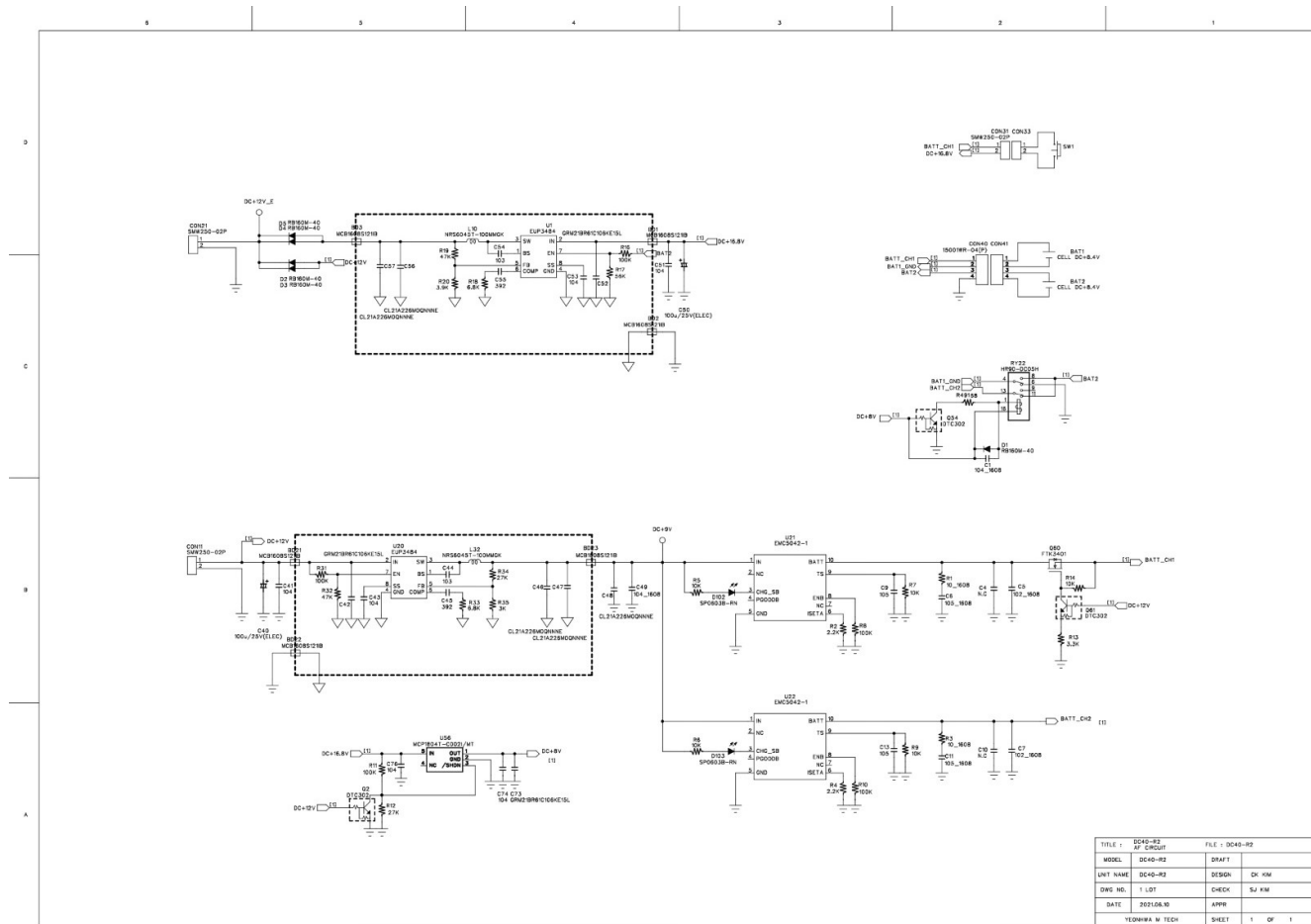
PART#	MODEL NAME	SPECS	Qty	Reference
1-001-001-00	RES, MG, SMD	1005, 1%(F), 1/16W, 0Ω	2	R53 R117
1-001-006-00	RES, MG, SMD	1005, 1%(F), 1/16W, 22Ω	3	R37 R42 R54
1-001-014-00	RES, MG, SMD	1005, 1%(F), 1/16W, 100Ω	2	R61 R201
1-001-022-00	RES, MG, SMD	1005, 1%(F), 1/16W, 330Ω	1	R133
1-001-024-00	RES, MG, SMD	1005, 1%(F), 1/16W, 470Ω	1	R202
1-001-029-00	RES, MG, SMD	1005, 1%(F), 1/16W, 1KΩ	4	R34 R55 R57 R219
1-001-033-00	RES, MG, SMD	1005, 1%(F), 1/16W, 2.2KΩ		
1-001-034-00	RES, MG, SMD	1005, 1%(F), 1/16W, 2.4KΩ	1	R204
1-001-037-00	RES, MG, SMD	1005, 1%(F), 1/16W, 3.3KΩ	4	R39 R40 R110 R68
1-001-041-00	RES, MG, SMD	1005, 1%(F), 1/16W, 4.7KΩ	6	R32 R33 R51 R52 R71 R72
1-001-043-00	RES, MG, SMD	1005, 1%(F), 1/16W, 5.6KΩ		
1-001-044-00	RES, MG, SMD	1005, 1%(F), 1/16W, 6.8KΩ	1	R234
1-001-048-00	RES, MG, SMD	1005, 1%(F), 1/16W, 10KΩ	6	R27 R28 R29 R30 R44 R236
1-001-055-00	RES, MG, SMD	1005, 1%(F), 1/16W, 22KΩ	1	R115
1-001-057-00	RES, MG, SMD	1005, 1%(F), 1/16W, 27KΩ	1	R36
1-001-058-00	RES, MG, SMD	1005, 1%(F), 1/16W, 30KΩ	1	R112
1-001-063-00	RFS, MG, SMD	1005, 1%(F), 1/16W, 47KΩ	15	R35 R69 R114 R135 R203 R221 R222 R228 R229 R235 R330 R331 R332 R333 R335
1-001-065-00	RES, MG, SMD	1005, 1%(F), 1/16W, 56KΩ	1	R106
1-001-066-00	RES, MG, SMD	1005, 1%(F), 1/16W, 68KΩ		
1-001-068-00	RES, MG, SMD	1005, 1%(F), 1/16W, 82KΩ	2	R109 R111
1-001-070-00	RES, MG, SMD	1005, 1%(F), 1/16W, 100KΩ	15	R25 R26 R43 R58 R59 R67 R104 R105 R121 R122 R123 R125 R130 R223 R116
1-001-075-00	RES, MG, SMD	1005, 1%(F), 1/16W, 150KΩ	1	R113
1-001-072-00	RES, MG, SMD	1005, 1%(F), 1/16W, 120KΩ	1	R108
1-001-091-00	RES, MG, SMD	1005, 1%(F), 1/16W, 1MΩ	1	R41
1-001-099-00	RES, MG, SMD	1608, 1%(F), 1/10W, 22Ω	1	R70
1-002-004-00	CAP, CER, SMD	GRM1555C1H1R0CA01D (1pF, 1005, 50V)	1	C213
1-002-012-00	CAP, CER, SMD	GRM1555C1H3R0CA01D (3pF, 1005, 50V)	1	C214
1-002-019-00	CAP, CER, SMD	GRM1555C1H5R6CA01D (5.6pF, 1005, 50V)	1	C221
1-002-023-00	CAP, CER, SMD	GRM1555C1H7R0DA01D (7pF, 1005, 50V)	2	C61 C204
1-002-025-00	CAP, CER, SMD	GRM1555C1H8R0DA01D (8pF, 1005, 50V)	1	C206
1-002-026-00	CAP, CER, SMD	GRM1555C1H9R0DA01D (9pF, 1005, 50V)	3	C63 C64 C208
1-002-027-00	CAP, CER, SMD	GRM1555C1H100JA01D (10pF, 1005, 50V)	1	C202
1-002-034-00	CAP, CER, SMD	GRM1555C1H180JA01D (18pF, 1005, 50V)	3	C203 C205 C216

1-002-036-00	CAP, CER, SMD	GRM1555C1H220JA01D (22pF, 1005, 50V)	5	C31 C207 C218 C220 C222
1-002-044-00	CAP, CER, SMD	GRM1555C1H470JA01D (47pF, 1005, 50V)	1	C233
1-002-046-00	CAP, CER, SMD	GRM1555C1H560JA01D (56pF, 1005, 50V)	2	C106 C111
1-002-051-00	CAP, CER, SMD	GRM1555C1H101JA01D (100pF, 1005, 50V)	3	C56 C59 C234
1-002-055-00	CAP, CER, SMD	GRM155R71H331KA01D (330pF, 1005, 50V)	0	
1-002-056-00	CAP, CER, SMD	GRM155R71H391KA01D (390pF, 1005, 50V)	1	C109
1-002-057-00	CAP, CER, SMD	GRM155R71H471KA01D (470pF, 1005, 50V)	5	C97 C98 C224 C230 C240
1-002-059-00	CAP, CER, SMD	GRM155R71H102KA01D (102, 1005, 50V)	12	C35 C36 C37 C38 C150 C201 C209 C211 C223 C228 C229 C241
1-002-061-00	CAP, CER, SMD	GRM155R71H222KA01D (222, 1005, 50V)	3	C57 C58 C100
1-002-062-00	CAP, CER, SMD	GRM155R71H332KA01D (332, 1005, 50V)	0	
1-002-063-00	CAP, CER, SMD	GRM155R71H392KA01D (392, 1005, 50V)	3	C258 C107 C110
1-002-067-00	CAP, CER, SMD	GRM155R71E103KA01D (103, 1005, 25V)	10	C68 C69 C70 C77 C78 C80 C158 C226 C257 C272
1-002-068-00	CAP, CER, SMD	GRM155R71E153KA61D (153, 1005, 50V)	1	C84
1-002-070-00	CAP, CER, SMD	GRM155R71E223KA61D (223, 1005, 25V)	0	
1-002-071-00	CAP, CER, SMD	GRM155R71A333KA01D (333, 1005, 10V)	1	C108
1-002-072-00	CAP, CER, SMD	GRM155R71A393KA01D (393, 1005, 10V)	3	C93 C101 C112
1-002-073-00	CAP, CER, SMD	GRM155R71C473KA01D (473, 1005, 16V)	0	
1-002-076-00	CAP, CER, SMD	GRM155R71C104KA88D (104, 1005, 16V)	51	C21 C22 C23 C30 C34 C39 C40 C41 C42 C44 C45 C46 C47 C48 C49 C50 C53 C54 C55 C60 C62 C65 C66 C71 C72 C75 C76 C79 C82 C85 C86 C92 C103 C105 C130 C142 C143 C151 C153 C156 C157 C160 C162 C210 C227 C235 C243 C256 C262 C264 C271
1-002-080-00	CAP, CER, SMD	GRM155R60J105KE19D (105, 1005, 6.3V)	4	C132 C133 C137 C225
1-002-131-00	CAP, CER, SMD	GRM188R61C105KA93D (105, 1608, 16V)	2	C135 C136
1-002-211-00	CAP, ELEC, SMD	RC1E107M6L07KVR (100uF / 25V, 6.3pi X 7.7mm)	2	C129 C242
1-002-230-00	CAP, CER, SMD	GRM155R60J475ME47 (475, 1005, 6.3V, 20%)	1	C83
1-002-232-00	CAP, CER, SMD	GRM188R60J226MEA0D (22 uf , 1608, 6.3V)	3	C254 C259 C260
1-002-234-00	CAP, CER, SMD	GRM188R60J106ME47D (10uf , 1608, 6.3V)	13	C51 C74 C81 C104 C114 C115 C116 C144 C152 C155 C159 C231 C265
1-002-235-00	CAP, CER, SMD	GRM21BR61C106KE15L (10 uf , 2012, 16V)	4	C161 C163 C164 C261
1-003-003-00	TR, RF, SMD	2SC4226-T1-A(R25)	2	Q31 Q32
1-004-018-00	DIODE, SWITCH, SMD	1SS400(TE61)	1	D69
1-004-026-00	DIODE, SCHOTTKY, SMD	USCD034H	2	D37 D38
1-005-016-00	IC, LINER, OPAMP, SMD	NJM12902V(TE1)	1	U113

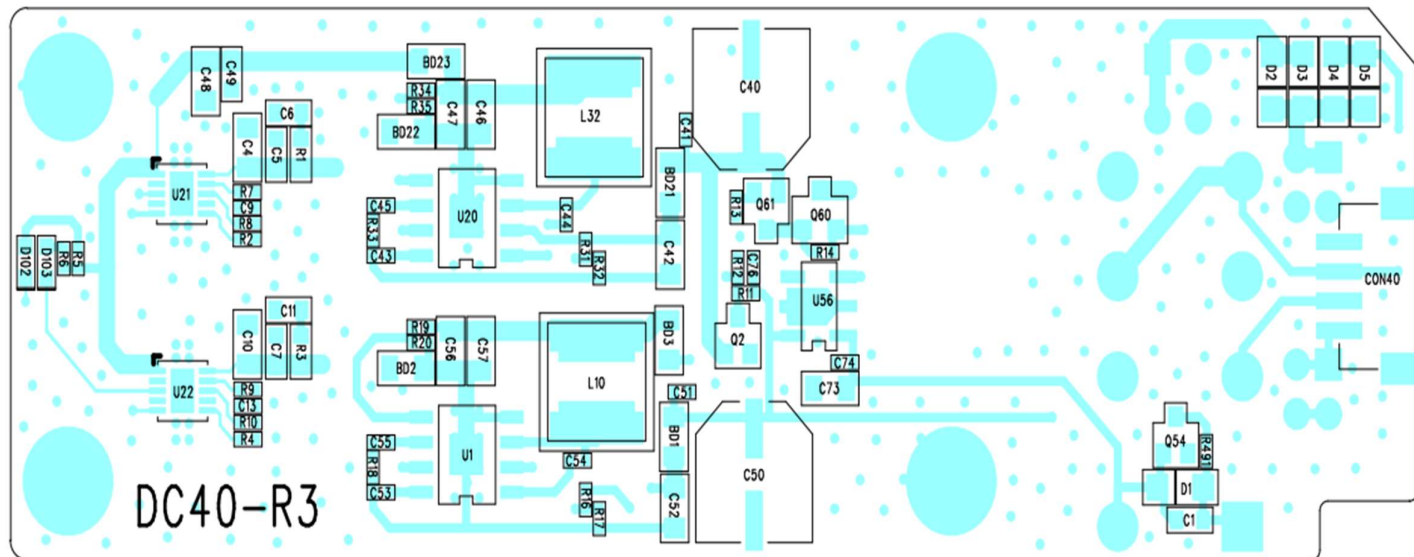
1-005-052-00	IC, LINER, RFIC, SMD	AT1846S	1	U301
1-005-071-00	IC, LINER, POTENTIALMETER, SMD	CAT5171BI-50GT3	1	U115
1-005-078-00	IC, LINER, DC/DC, SMD	EUP3484DIR1	1	U209
1-005-085-00	IC, LINER, ASP, SMD	SCT3258TD(V2-01-07PW)	1	U106
1-005-111-00	IC, LINER, RTC MODULE, SMD	S-35390A-T8T1U	1	U105
1-005-112-00	IC, LINER, LDO, SMD	FC8130- 18VN 05NRR	1	U214
1-005-115-00	IC, LINER, DUAL LDO, SMD	XC6421AB41ER-G, USP-6C (3.3V,3.3V)	1	U62
1-005-116-00	IC, LINER, DUAL LDO, SMD	XC6421AB06ER-G, USP-6C (1.2V,3.3V)	1	U211
1-005-119-00	IC, LINER, AUDIO AMP, SMD	PAM8320RDR(SO-16EP)	1	U114
1-005-120-00	IC, LINER, VOLTAGE DETECTOR, SMD	FA7029AS ,SOT-23	1	Q53
1-006-007-00	IC, LOGIC, INVERTER, SMD	MC74VHC1GT04 DFT1G /M74VHC1GT04 DFT1G	1	U109
1-006-009-00	IC, LOGIC, CODEC, SMD	TLV320AIC3204IRHBR	1	U107
1-006-020-00	IC, LOGIC, MCU, SMD	ADSTAR-D16MF512	1	U101
1-007-010-01	IC, MEM, EEPROM, SMD	M24512-RDW6TP (TSSOP, 8pin)	1	U102
1-007-014-00	IC, MEM, FLASH, SMD	MX25L25645G Z2I-08G(8-Land WSON 8X6mm)	1	U103
1-008-013-00	IND, AIR, SMD	0.30x1.3x4TL (18nH)	2	L201 L202
1-008-071-00	IND, CFR, SMD	HI-1005-18N.IT (1005 18nH)	1	L204
1-008-072-00	IND, CER, SMD	CI-B 1005 220JJT(1005, 22nH)	1	L203
1-008-138-00	IND, BEAD, SMD	MCB1608S121IB	17	BD32 BD33 BD34 BD35 BD36 BD37 BD38 BD39 BD41 BD42 BD43 BD44 BD45 BD59 BD202 BD56 BD57
1-008-139-00	IND, UWB CLOCK CHOCK, SMD	RUWB B2000X0T	3	BD40 BD54 BD55
1-008-141-00	IND, POWER, SMD	NR3015T-100M (10uH±20%)	1	L32
1-009-012-00	X-TAL, TCXO, SMD	12.288MHz, 2ppm, 3225 SIZE	1	X202
1-009-016-00	X-TAL, OSC, SMD	10MHz X-TAL, 5X3.2mm	1	X10
1-009-017-00	X-TAL, OSC, SMD	32.768kHz ,SSP-T7-F(10ppm)	1	X21
1-009-020-00	X-TAL, VCTCXO, SMD	26MHz ,DSA321SDN, 1XTV26000MCA (18~24ppm,400mhz), 3225size	1	X301A
1-011-009-00	DISPLAY, LED, SMD	SP0603B-RN	1	D51
1-012-037-00	FILTER, SAW, SMD	HDF422AS4	1	SAW10
1-015-002-00	BATTERY, RECHARGEABLE, COIN, DIP	MS621FE FL11E (3V, 5.5mAh)	1	BAT100
2-004-159-05	PCB, MULT-4, 1.2T	EXT40-R5, FR4, Gold, 4L (4pcs)	1	PCB
2-005-057-00	CONN, HEADER SOCKET , DIP	2.0mm HEADER SOCKET(1*5P)	1	CON20
2-005-061-00	CONN, SOCKET, SMD	S01-C024-00002 , SDcard Socket	1	CON30
2-005-062-01	CONN, WIRE TO BOARD, DIP	SMW250-02P, Straight, 2.50mm pitch	2	CON10 CON25
2-008-010-01	SWITCH, TACT, SMD	SKRKAEE020, JT1185SAEM	5	S101 S102 S103 S104 S105

Sub Board

1. Schematic



2. Component Layout



3. Part List

PART#	MODEL NAME	SPECS	Qty	Reference
1-001-013-00	RES, MG, SMD	1005, 1%(F), 1/16W, 68Ω	1	R491
1-001-033-00	RES, MG, SMD	1005, 1%(F), 1/16W, 2.2KΩ	2	R2 R4
1-001-036-00	RES, MG, SMD	1005, 1%(F), 1/16W, 3.0KΩ	1	R35
1-001-037-00	RES, MG, SMD	1005, 1%(F), 1/16W, 3.3KΩ	1	R13
1-001-039-00	RES, MG, SMD	1005, 1%(F), 1/16W, 3.9KΩ	1	R20
1-001-044-00	RES, MG, SMD	1005, 1%(F), 1/16W, 6.8KΩ	2	R18 R33
1-001-048-00	RES, MG, SMD	1005, 1%(F), 1/16W, 10KΩ	5	R5 R6 R7 R9 R14
1-001-057-00	RES, MG, SMD	1005, 1%(F), 1/16W, 27KΩ	2	R12 R34
1-001-063-00	RES, MG, SMD	1005, 1%(F), 1/16W, 47KΩ	2	R19 R32
1-001-065-00	RES, MG, SMD	1005, 1%(F), 1/16W, 56KΩ	1	R17
1-001-070-00	RES, MG, SMD	1005, 1%(F), 1/16W, 100KΩ	5	R8 R10 R11 R16 R31
1-001-098-00	RES, MG, SMD	1608, 1%(F), 1/10W, 10Ω	2	R1 R3
1-002-063-00	CAP, CER, SMD	GRM155R71H392KA01D (392, 1005, 50V)	2	C45 C55
1-002-067-00	CAP, CER, SMD	GRM155R71E103KA01D (103, 1005, 25V)	2	C44 C54
1-002-076-00	CAP, CER, SMD	GRM155R71C104KA88D (104, 1005, 16V)	6	C41 C43 C51 C53 C74 C76
1-002-080-00	CAP, CER, SMD	GRM155R60J105KE19D(105, 1005, 6.3V)	2	C9 C13
1-002-128-00	CAP, CER, SMD	GRM188R71H102KA01D (102, 1608, 50 V)	2	C5 C7
1-002-130-00	CAP, CER, SMD	GRM188R71C104KA01D (104, 1608, 50V)	2	C1 C49
1-002-131-00	CAP, CER, SMD	CL10A105K08NNNC (105, 1608, 16V)	2	C6 C11
1-002-211-00	CAP, ELEC, SMD	RC1E107M6L07KVR (100uF / 25V, 6.3pi X 7.7mm)	2	C40 C50
1-002-235-00	CAP, CER, SMD	GRM21BR61C106KE15L (10 uf , 2012, 16V)	3	C42 C52 C73
1-002-239-00	CAP, CER, SMD	CL21A226MOQNNNE (22uF, 2012, 16V)	5	C46 C47 C48 C56 C57
1-003-036-00	TR, POWER FET, SMD	FTK3401	1	Q60
1-003-041-00	TR, BRT, SMD	DTC302	3	Q2 Q54 Q61
1-004-015-00	DIODE, SCHOTTKY, SMD	RB160M-40TR	5	D1 D2 D3 D4 D5
1-005-078-00	IC, LINER, DC/DC, SMD	EUP3484ADIR1	2	U1 U20
1-005-129-00	IC, LINER, CHARGER, SMD	EMC5042, TDFN-10L (3x3 mm)	2	U21 U22
1-005-135-01	IC, LINER, LDO, SMD	MCP1804T-C0021/MT(R1500H120B)12V LDO, SOT-89-5	1	U56
1-008-138-00	IND, BEAD, SMD	MCB1608S1211B	6	BD1 BD2 BD3 BD21 BD22 BD23

1-008-157-00	IND, POWER, SMD	NRS6045T-100MMGK	2	L10 L32
1-011-009-00	DISPLAY, LED, SMD	SP0603B-RN	2	D102 D103
2-004-179-02	PCB, DOUBLE, 1.2T	DC40-R2 , FR4, HASL, 2L (4pcs)	1	PCB
2-005-018-00	CONN, WIRE TO BOARD, SMD	15001WR-04(P)	1	CON40
2-005-062-01	CONN, WIRE TO BOARD, DIP	SMW250-02P, Straight, 2.50mm pitch	3	CON11 CON21 CON31
2-008-019-00	SWITCH, RELAY, DIP	HR90 DC05-H	1	RY22