



Service Manual

**MP-4416 UHF Transceiver
MP-4116 VHF Transceiver**

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

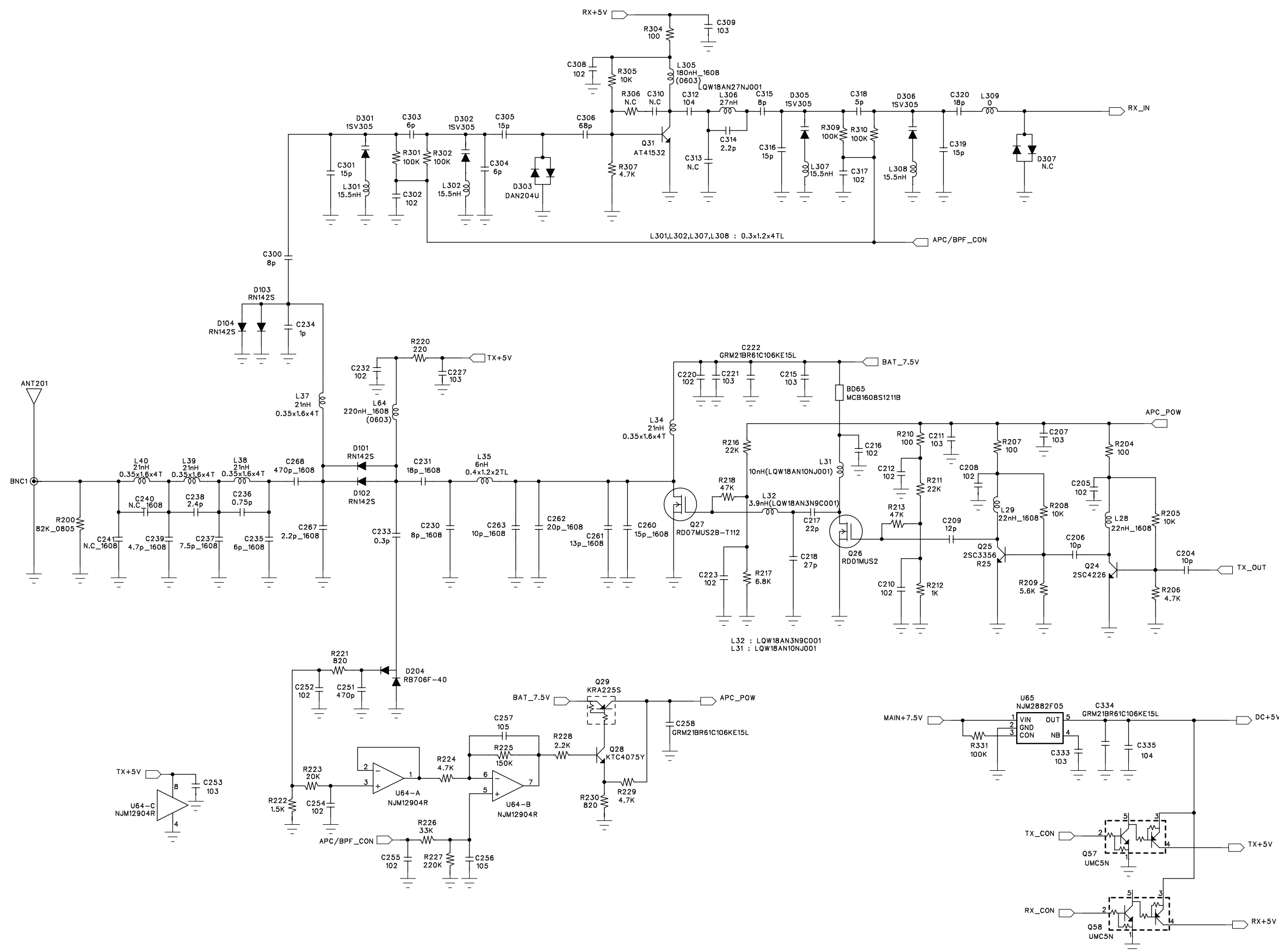
(2) This device must accept
any interference received,
including interference that
may cause undesired
operation.

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1. Schematic

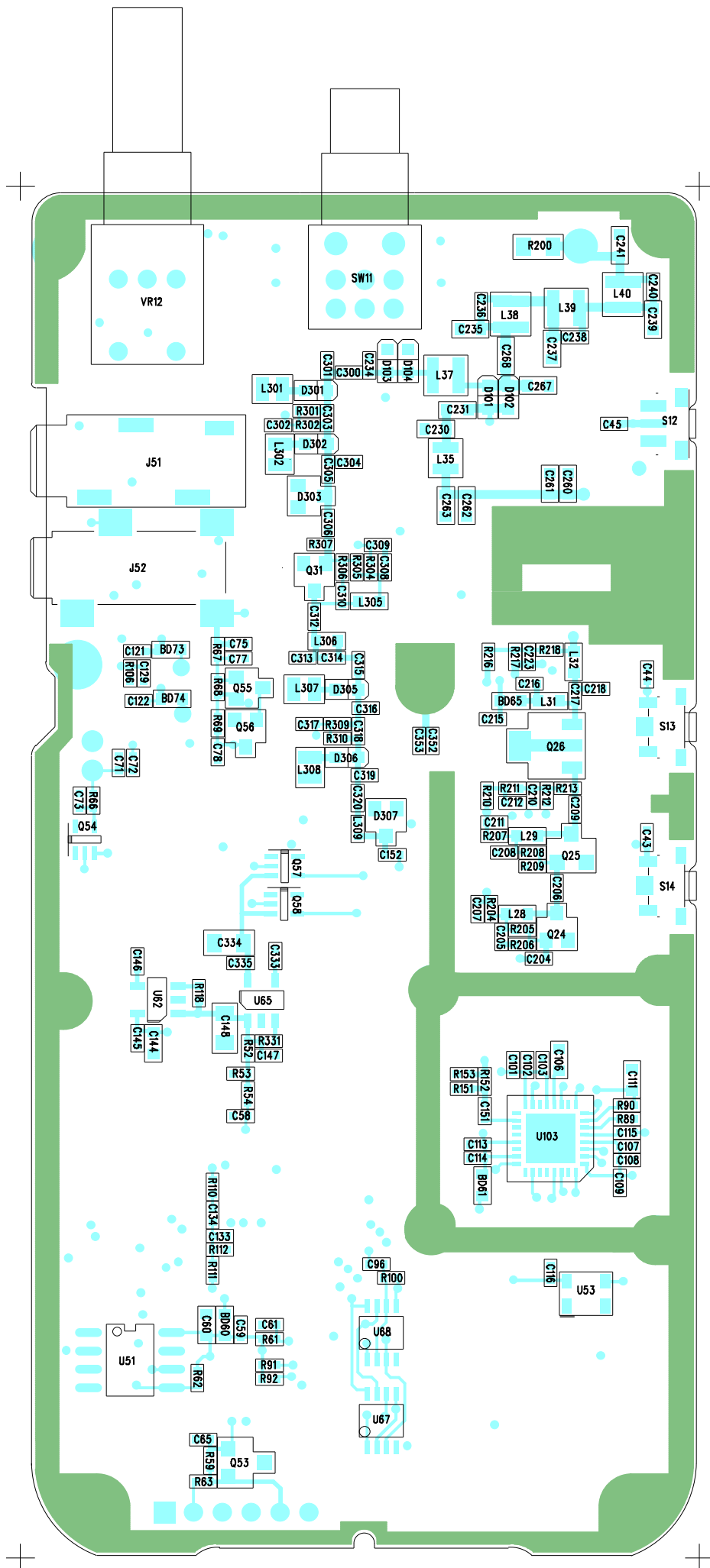
2. Component Layout

3. Part List





	EP	TX	RX	FW	EC
	18	19	20	21	22
MON	01	02	03	04	05
	07	08	09	10	11



품목코드	품목명	규격명	수량	위치
1-001-001-00	RES, MG, SMD	1005, 1%(F), 1/16W, 0Ω	4	R89 R100 L309 R111
1-001-003-00	RES, MG, SMD	1005, 1%(F), 1/16W, 4.7Ω	2	R102 R103
1-001-005-00	RES, MG, SMD	1005, 1%(F), 1/16W, 18Ω	1	R152
1-001-011-00	RES, MG, SMD	1005, 1%(F), 1/16W, 51Ω	1	R61
1-001-014-00	RES, MG, SMD	1005, 1%(F), 1/16W, 100Ω	4	R204 R207 R210 R304
1-001-019-00	RES, MG, SMD	1005, 1%(F), 1/16W, 220Ω	2	R101 R220
1-001-022-00	RES, MG, SMD	1005, 1%(F), 1/16W, 330Ω	2	R151 R153
1-001-028-00	RES, MG, SMD	1005, 1%(F), 1/16W, 820Ω	2	R221 R230
1-001-029-00	RES, MG, SMD	1005, 1%(F), 1/16W, 1KΩ	3	R54 R57 R212
1-001-030-00	RES, MG, SMD	1005, 1%(F), 1/16W, 1.2KΩ	1	R56
1-001-031-00	RES, MG, SMD	1005, 1%(F), 1/16W, 1.5KΩ	1	R222
1-001-033-00	RES, MG, SMD	1005, 1%(F), 1/16W, 2.2KΩ	2	R66 R228
1-001-037-00	RES, MG, SMD	1005, 1%(F), 1/16W, 3.3KΩ	1	R78
1-001-039-00	RES, MG, SMD	1005, 1%(F), 1/16W, 3.9KΩ	1	R59
1-001-041-00	RES, MG, SMD	1005, 1%(F), 1/16W, 4.7KΩ	9	R62 R67 R91 R92 R114 R206 R224 R229 R307
1-001-042-00	RES, MG, SMD	1005, 1%(F), 1/16W, 5.1KΩ	1	R113
1-001-043-00	RES, MG, SMD	1005, 1%(F), 1/16W, 5.6KΩ	1	R209
1-001-044-00	RES, MG, SMD	1005, 1%(F), 1/16W, 6.8KΩ	2	R107 R217
1-001-048-00	RES, MG, SMD	1005, 1%(F), 1/16W, 10KΩ	3	R205 R208 R305
1-001-054-00	RES, MG, SMD	1005, 1%(F), 1/16W, 20KΩ	1	R223
1-001-055-00	RES, MG, SMD	1005, 1%(F), 1/16W, 22KΩ	3	R71 R211 R216
1-001-059-00	RES, MG, SMD	1005, 1%(F), 1/16W, 33KΩ	1	R226
1-001-063-00	RES, MG, SMD	1005, 1%(F), 1/16W, 47KΩ	11	R63 R69 R76 R90 R115 R119 R120 R121 R122 R213 R218
1-001-066-00	RES, MG, SMD	1005, 1%(F), 1/16W, 68KΩ	1	R68
1-001-070-00	RES, MG, SMD	1005, 1%(F), 1/16W, 100KΩ	12	R53 R73 R74 R75 R77 R104 R118 R301 R302 R309 R310 R331
1-001-075-00	RES, MG, SMD	1005, 1%(F), 1/16W, 150KΩ	2	R106 R225
1-001-078-00	RES, MG, SMD	1005, 1%(F), 1/16W, 220KΩ	2	R227 R110
1-001-082-00	RES, MG, SMD	1005, 1%(F), 1/16W, 330KΩ	2	R52 R72
1-001-087-00	RES, MG, SMD	1005, 1%(F), 1/16W, 560KΩ	1	R105
1-001-091-00	RES, MG, SMD	1005, 1%(F), 1/16W, 1MΩ	1	R58
1-001-167-00	RES, MG, SMD	2012, 5%(J), 1/8W, 82KΩ	1	R200
1-002-001-00	CAP, CER, SMD	GRM1555C1HR30CA01D (0.3pF, 1005, 50V)	1	C233
1-002-003-00	CAP, CER, SMD	GRM1555C1HR75CA01D (0.75pF, 1005, 50V)	1	C236
1-002-004-00	CAP, CER, SMD	GRM1555C1H1R0CA01D (1pF, 1005, 50V)	1	C234
1-002-009-00	CAP, CER, SMD	GRM1555C1H2R2CA01D (2.2pF, 1005, 50V)	1	C314
1-002-010-00	CAP, CER, SMD	GRM1555C1H2R4CA01D (2.4pF, 1005, 50V)	1	C238
1-002-012-00	CAP, CER, SMD	GRM1555C1H3R0CA01D (3pF, 1005, 50V)	1	C63
1-002-018-00	CAP, CER, SMD	GRM1555C1H5R0CA01D (5pF, 1005, 50V)	1	C318
1-002-020-00	CAP, CER, SMD	GRM1555C1H6R0CA01D (6pF, 1005, 50V)	2	C303 C304
1-002-025-00	CAP, CER, SMD	GRM1555C1H8R0DA01D (8pF, 1005, 50V)	2	C300 C315
1-002-027-00	CAP, CER, SMD	GRM1555C1H100JA01D (10pF, 1005, 50V)	2	C204 C206
1-002-029-00	CAP, CER, SMD	GRM1555C1H120JA01D (12pF, 1005, 50V)	4	C115 C151 C152 C209
1-002-032-00	CAP, CER, SMD	GRM1555C1H150JA01D (15pF, 1005, 50V)	4	C305 C301 C316 C319
1-002-034-00	CAP, CER, SMD	GRM1555C1H180JA01D (18pF, 1005, 50V)	3	C62 C64 C320
1-002-036-00	CAP, CER, SMD	GRM1555C1H220JA01D (22pF, 1005, 50V)	2	C128 C217
1-002-038-00	CAP, CER, SMD	GRM1555C1H270JA01D (27pF, 1005, 50V)	1	C218
1-002-048-00	CAP, CER, SMD	GRM1555C1H680JA01D (68pF, 1005, 50V)	1	C306
1-002-052-00	CAP, CER, SMD	GRM1555C1H151JA01D (150pF, 1005, 50V)	1	C81
1-002-057-00	CAP, CER, SMD	GRM155R71H471KA01D (470pF, 1005, 50V)	12	C71 C74 C75 C76 C102 C108 C114 C121 C122 C123 C251 C352
1-002-059-00	CAP, CER, SMD	GRM155R71H102KA01D (102, 1005, 50V)	33	C43 C44 C45 C46 C47 C48 C49 C50 C73 C77 C78 C101 C103 C107 C109 C113 C133 C137 C205 C208 C210 C212 C216 C220 C223 C232 C252 C255 C302 C308 C317 C353 C254
1-002-067-00	CAP, CER, SMD	GRM155R71E103KA01D (103, 1005, 25V)	12	C116 C134 C140 C146 C207 C211 C215 C221 C227 C253 C309 C333
1-002-068-00	CAP, CER, SMD	GRM155R71E153KA61D (153, 1005, 50V)	1	C100
1-002-070-00	CAP, CER, SMD	GRM155R71C223KA01D (223, 1005, 16V)	1	C72
1-002-072-00	CAP, CER, SMD	GRM155R71A393KA01D (393, 1005, 10V)	1	C79
1-002-075-00	CAP, CER, SMD	GRM155R71A683KA01D (683, 1005, 10V)	0	
1-002-076-00	CAP, CER, SMD	GRM155R71C104KA88D (104, 1005, 16V)	15	C58 C59 C61 C65 C80 C82 C96 C127 C129 C130 C141 C145 C147 C312 C335
1-002-077-00	CAP, CER, SMD	GRM155R61A224KE19D (224, 1005, 10V)	2	C124 C125
1-002-080-00	CAP, CER, SMD	GRM155R60J105KE19D(105, 1005, 6.3V)	2	C256 C257
1-002-092-00	CAP, CER, SMD	GRM1885C1H4R7CZ01D (4.7pF, 1608, 50V)	1	C239
1-002-096-00	CAP, CER, SMD	GRM1885C1H6R0DZ01D (6pF, 1608, 50V)	1	C235
1-002-099-00	CAP, CER, SMD	GRM1885C1H7R5DZ01D (7.5pF, 1608, 50V)	1	C237
1-002-100-00	CAP, CER, SMD	GRM1885C1H8R0DZ01D (8pF, 1608, 50V)	1	C230
1-002-102-00	CAP, CER, SMD	GRM1885C1H100JA01D (10pF, 1608, 50V)	1	C263
1-002-105-00	CAP, CER, SMD	GRM1885C1H130JA01D (13pF, 1608, 50V)	1	C261
1-002-106-00	CAP, CER, SMD	GRM1885C1H150JA01D (15pF, 1608, 50V)	1	C260
1-002-108-00	CAP, CER, SMD	GRM1885C1H180JA01D (18pF, 1608, 50V)	1	C231
1-002-109-00	CAP, CER, SMD	GRM1885C1H200JA01D (20pF, 1608, 50V)	1	C262
1-002-126-00	CAP, CER, SMD	GRM188R71H471KA01D (470pF, 1608, 50V)	1	C268
1-002-131-00	CAP, CER, SMD	GRM188F51E105ZA12D (105, 1608, 50V)	1	C106
1-002-198-00	CAP, TANT, SMD	TMCMA1A226MTRF (22uF / 10V, A)	1	C131
1-002-225-00	CAP, CER, SMD	GRM1885C1H2R2CA01D (2.2pF, 1608, 50V)	1	C267
1-002-233-00	CAP, CER, SMD	GRM188R60J475KE19D (475, 1608, 6.3V)	1	C138

1-002-234-00	CAP, CER, SMD	GRM188R60J106ME47D (10uf , 1608, 6.3V)	3	C60 C111 C144
1-002-235-00	CAP, CER, SMD	GRM21BR61C106KE15L (10 uf , 2012, 16V)	4	C126 C258 C222 C334
1-003-001-01	TR, RF, SMD	2SC3356G-B/SOT-23-3 (UTC)	1	Q25
1-003-005-00	TR, RF, SMD	AT-41532	1	Q31
1-003-003-00	TR, RF, SMD	2SC4226-T1-A(R25)	1	Q24
1-003-014-00	TR, POWER FET, SMD	RD01MUS2B-T513	1	Q26
1-003-015-00	TR, POWER FET, SMD	RD07MUS2B-T512	1	Q27
1-003-019-00	TR, GENERAL, SMD	UMT3906(T106)	1	Q55
1-003-021-00	TR, GENERAL, SMD	KTC4075-Y-RTK/P	1	Q28
1-003-022-00	TR, GENERAL, SMD	KRA225S-RTK/P	1	Q29
1-003-041-00	TR, BRT, SMD	DTC114EUA T106 -> DTC302	2	Q51 Q56
1-003-029-00	TR, BRT, SMD	UMC5NTR	3	Q54 Q57 Q58
1-004-005-01	DIODE, VVC, SMD	1SV305,L3F	4	D301 D302 D305 D306
1-004-012-00	DIODE, PIN, SMD	RN142S(TE61)	4	D101 D102 D103 D104
1-004-014-00	DIODE, SCHOTTKY, SMD	RB706F-40	1	D204
1-004-019-00	DIODE, SWITCH, SMD	DA204U	1	D303
1-005-003-00	IC, LINER, AUDIO AMP, SMD	TDA8541T (SO8, SOT96-1)	1	U108
1-005-018-00	IC, LINER, OPAMP, SMD	NJM12904R(TE1)	1	U64
1-005-019-00	IC, LINER, OPAMP, SMD	NJM2107F3(TE1)	1	U58
1-005-042-00	IC, LINER, LDO, SMD	NJM2882F05(TE1)	1	U65
1-005-043-00	IC, LINER, LDO, SMD	NJM2882F33	1	U62
1-005-052-00	IC, LINER, RFIC, SMD	AT1846S	1	U103
1-005-059-00	IC, LINER, ANALOG SWITCH, SMD	TC7S66FU(T5L,F,T)	1	U59
1-005-062-01	IC, LINER, VOLTAGE DETECTOR, SMD	FA7025AS,SOT-23	1	Q53
1-006-001-00	IC, LOGIC, MCU, SMD	R5F212CCSDFP	1	U50
1-007-008-00	IC, MEM, EEPROM, SMD	GT24C512A-2GLI-TR (150mil SOIC, 8pin)	1	U51
1-008-001-00	IND, AIR, SMD	0.40x1.2x2TL (6nH)	1	L35
1-008-012-00	IND, AIR, SMD	0.3x1.2x4TR (15.5nH)	4	L301 L302 L307 L308
1-008-016-00	IND, AIR, SMD	0.35x1.6x4TL (21nH)	5	L34 L37 L38 L39 L40
1-008-054-00	IND, FIXED, SMD	LQW18AN3N9C00 (1608, 3.9nH)	1	L32
1-008-057-00	IND, FIXED, SMD	LQW18AN27NJ00D (1608, 27nH)	1	L306
1-008-103-00	IND, CER, SMD	HI-1608-22NJT (1608, 22nH)	2	L28 L29
1-008-121-00	IND, CER, SMD	HI-1608-R18JT (1608, 180nH)	1	L305
1-008-123-00	IND, CER, SMD	HI-1608-R22JT (1608, 220nH)	1	L64
1-008-138-00	IND, BEAD, SMD	MCB1608S121IB	5	BD60 BD61 BD65 BD73 BD74
1-008-147-00	IND, FIXED, SMD	LQW18AN10NG00D (1608, 10nH, 2%)	1	L31
1-009-009-00	X-TAL, TCXO, SMD	14340070-26.000MHz-K, TX30(3.2x2.5x0.9mm)	1	U53
1-011-014-00	DISPLAY, LED, SMD	TO-1615BC-MRMGEE(11-22SDRYGC)	1	D51
1-012-032-00	FILTER, XTAL, SMD	C5032(19.2MHz)	1	X10
2-003-001-00	MIC, CONDENSOR, DIP	COB627P-2044-00-TA	1	MIC10
2-005-020-00	CONN, JACK, DIP, EARJACK	TSH-3814-002-T2 (TSH-3814-052-T2)	1	J51
2-006-007-00	JACK, PHONE, SMD	TG-2574-005-1AG-1(D1 : TG-2574-PA6T-1AG-1)	1	J52
2-008-009-00	SWITCH, TACT, SMD	SKRTLAE010	1	S12
2-008-012-00	SWITCH, TACT, SMD	LS10N2	3	S11 S13 S14
2-012-018-00	VR, DIP	RP08110SNAX-V01-1089-AEC15C6.3-A203 (XL)	1	VR12
2-012-002-00	VR, ENCODER, DIP	ED08C030-FE157.0-A16-1002	1	SW11
2-004-131-02	PCB, MULT-4, 1.2T	XL40R-R2, 46X94.4X1.2T, Gold, 4L (4pcs)	1	PCB