

MBR-400

Service Manual



UHF Transceiver DMR LCD Type Radio

This device complies with part
15 of FCC rules

Operation is subject to the
following two conditions:

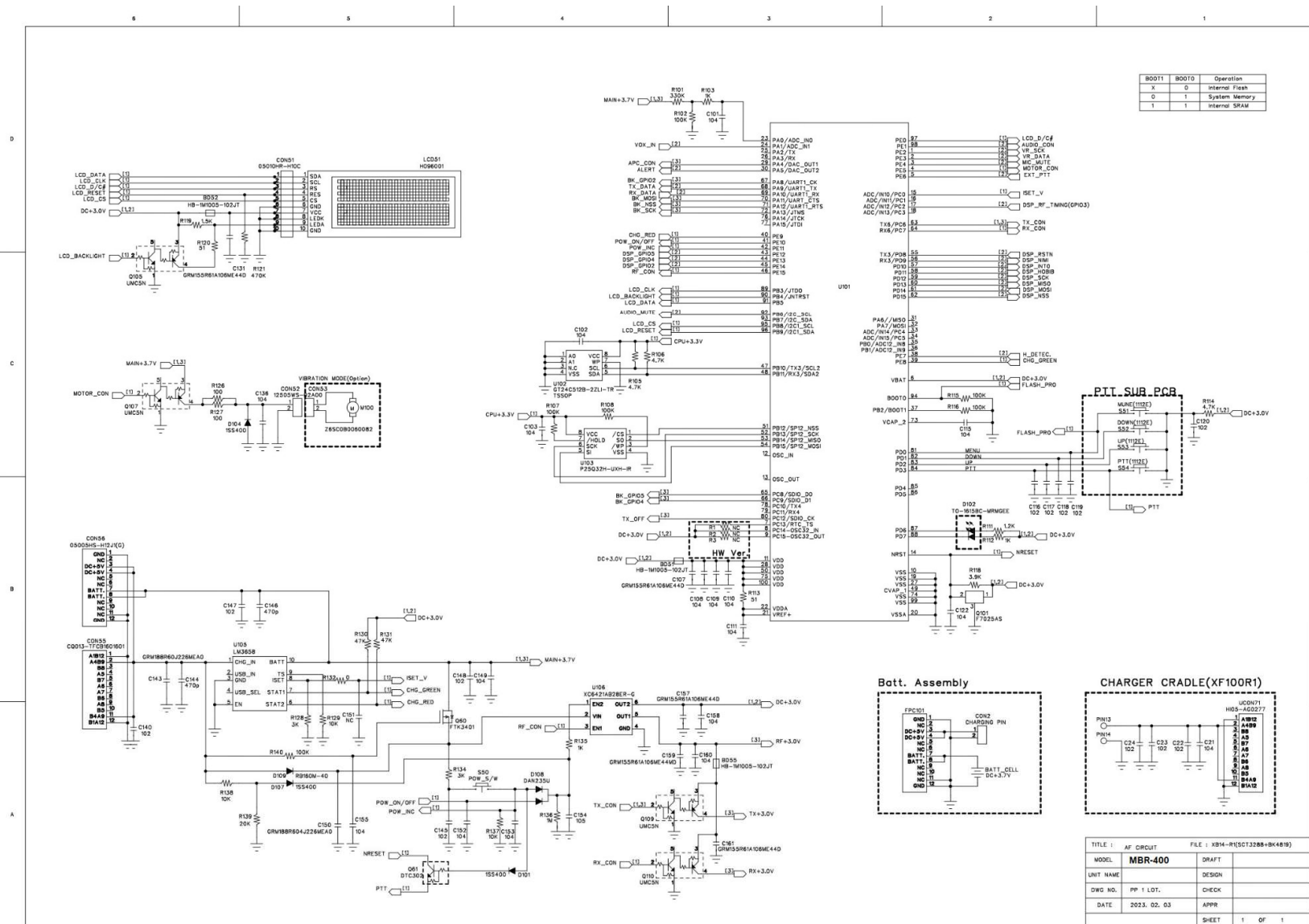
- (1) This device may not cause
harmful interference and
- (2) This device must accept
any interference received,
including interference that
may cause undesired
operation.

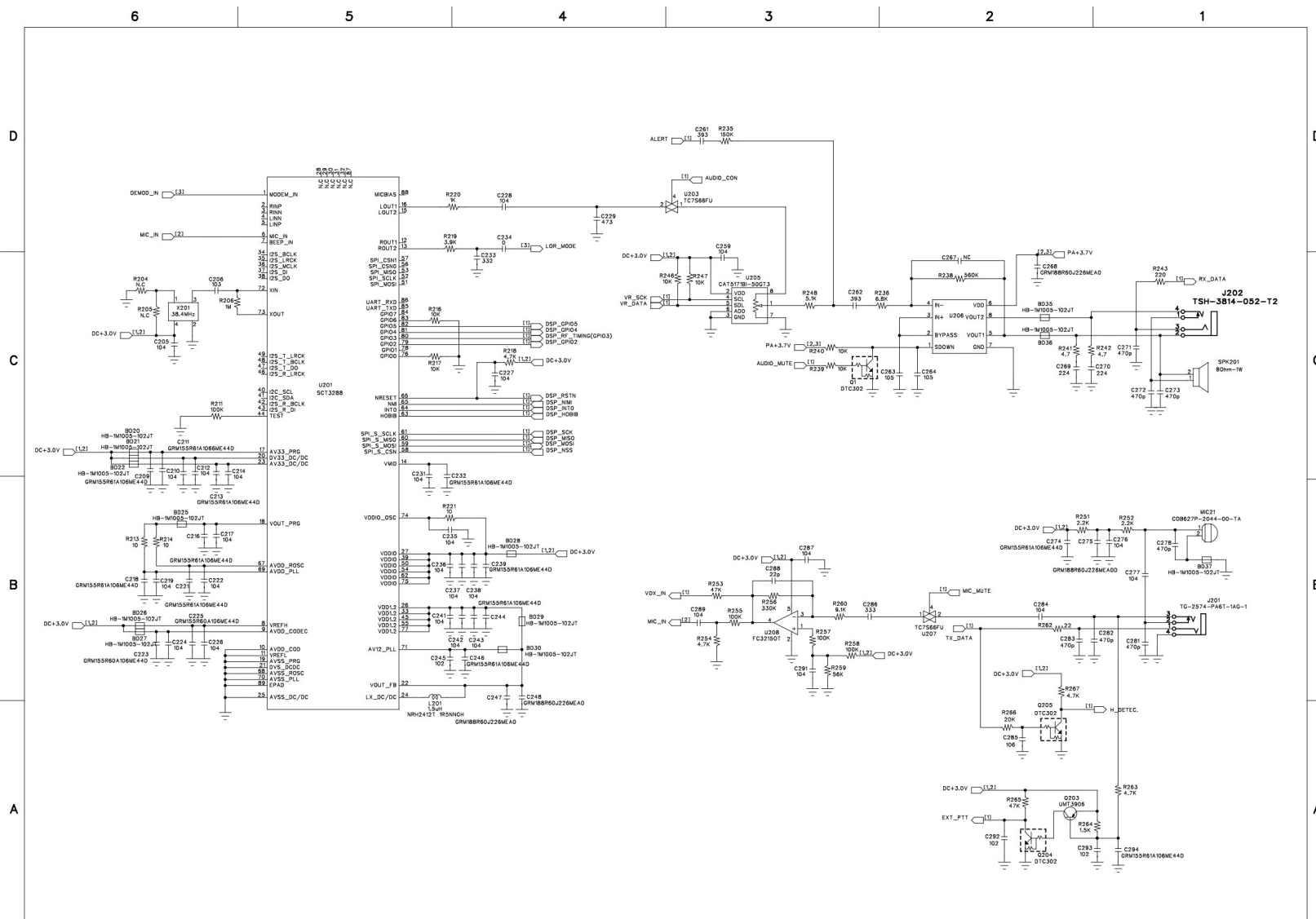
maxon[®]
COMMUNICATIONS MAXIMIZED

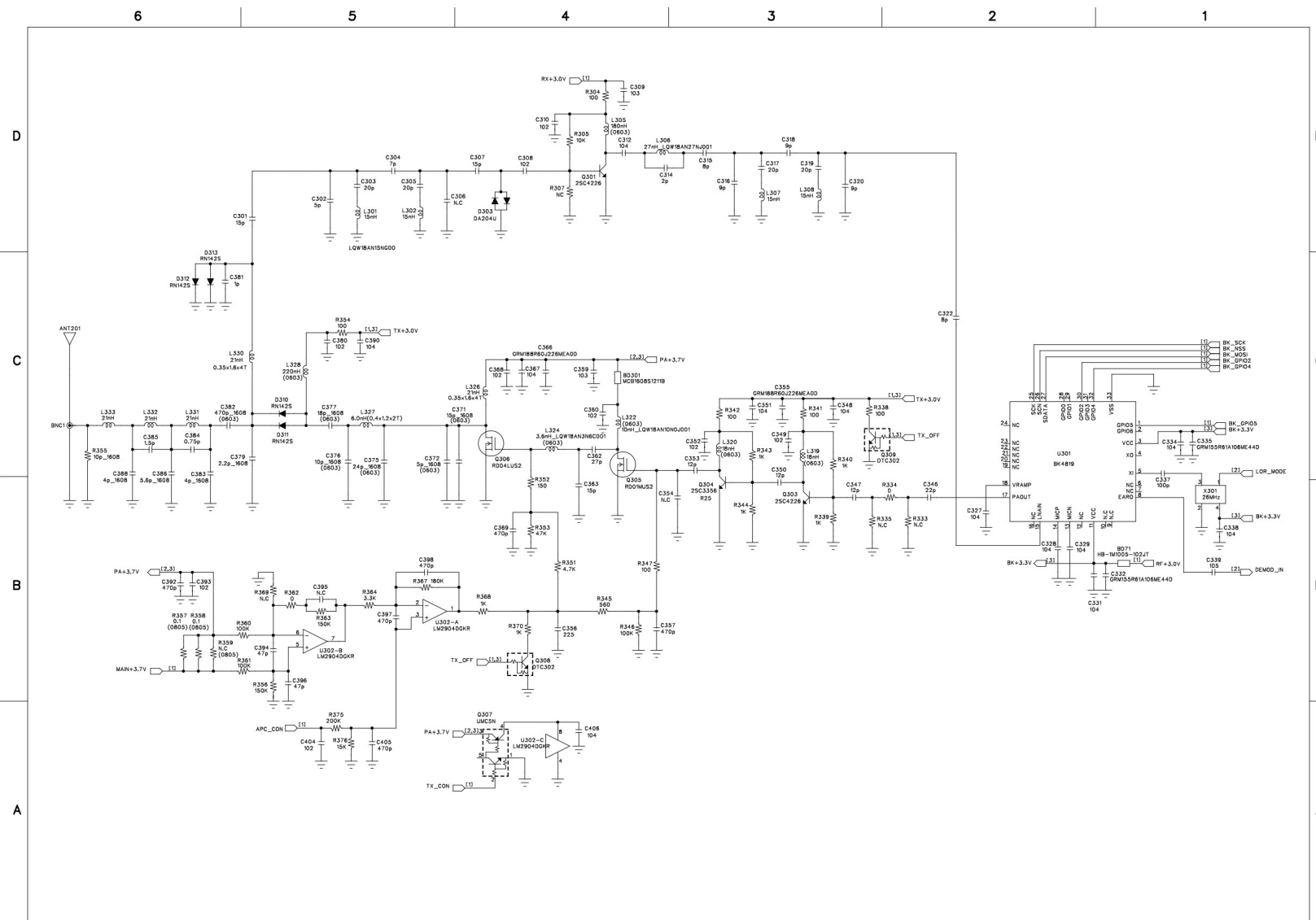
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1. Schematic

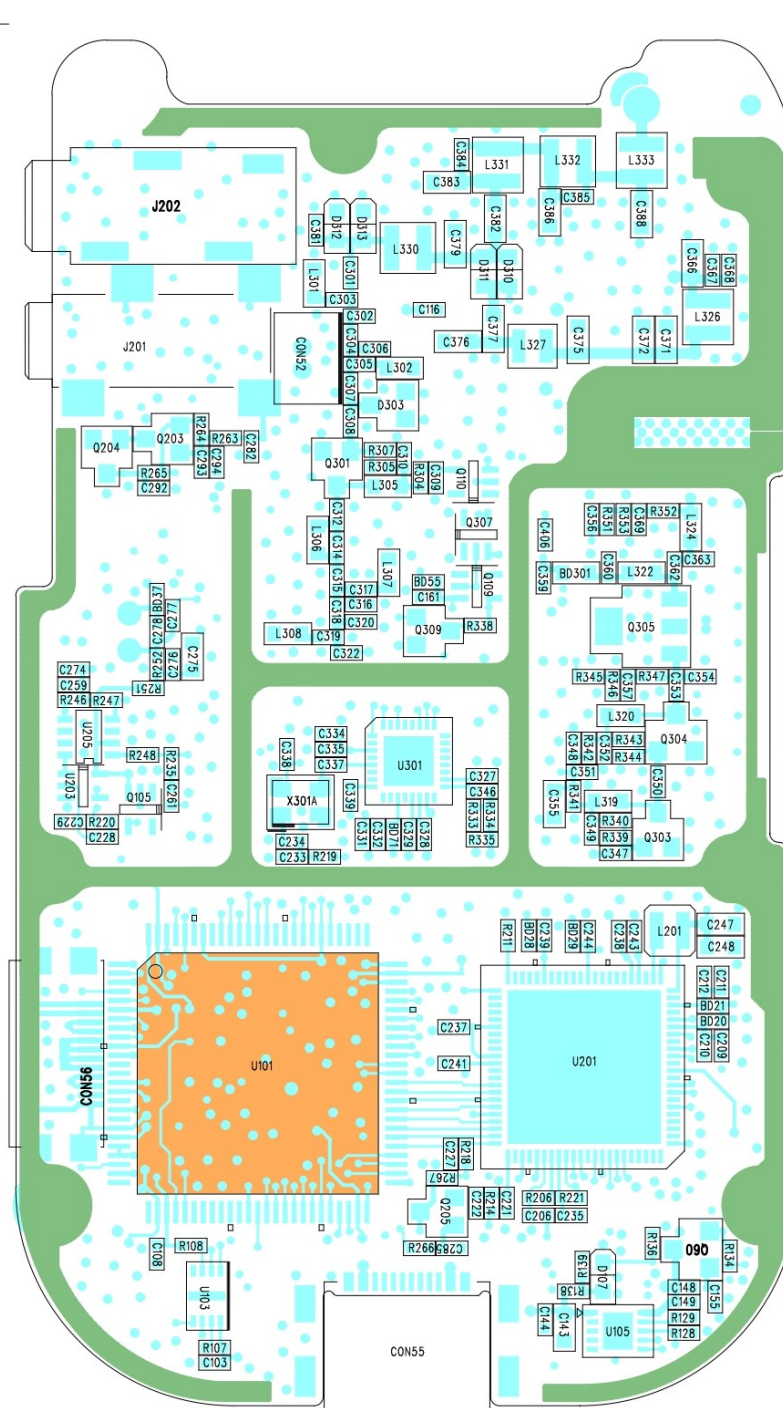








Bottom



3. Parts List

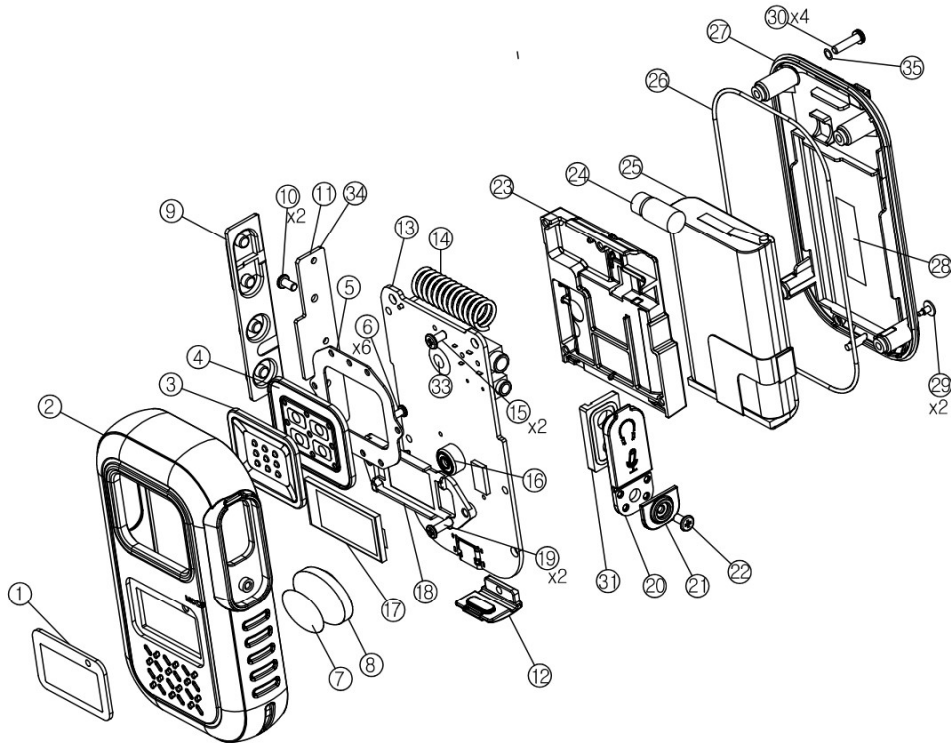
PART#	DESCRIPTION	SPECIFICATIONS	Qty	Reference
1-001-001-00	RES, MG, SMD	1005, 1% (F), 1/16W, 0Ω	4	C234 R362 R334 R132
1-001-003-00	RES, MG, SMD	1005, 1% (F), 1/16W, 4.7Ω	2	R241 R242
1-001-004-00	RES, MG, SMD	1005, 1% (F), 1/16 W, 10Ω	3	R213 R214 R221
1-001-006-00	RES, MG, SMD	1005, 1% (F), 1/16W, 22Ω	1	R262
1-001-011-00	RES, MG, SMD	1005, 1% (F), 1/16W, 51Ω	2	R113 R120
1-001-014-00	RES, MG, SMD	1005, 1% (F), 1/16W, 100Ω	8	R126 R127 R304 R338 R341 R342 R347 R354
1-001-016-00	RES, MG, SMD	1005, 1% (F), 1/16W, 150Ω	1	R352
1-001-019-00	RES, MG, SMD	1005, 1% (F), 1/16W, 220Ω	1	R243
1-001-025-00	RES, MG, SMD	1005, 1% (F), 1/16W, 560Ω	1	R345
1-001-029-00	RES, MG, SMD	1005, 1% (F), 1/16W, 1KΩ	10	R103 R112 R135 R340 R343 R344 R368 R370 R220 R339
1-001-030-00	RES, MG, SMD	1005, 1% (F), 1/16W, 1.2KΩ	1	R111
1-001-031-00	RES, MG, SMD	1005, 1% (F), 1/16W, 1.5KΩ	2	R119 R264
1-001-033-00	RES, MG, SMD	1005, 1% (F), 1/16W, 2.2KΩ	2	R251 R252
1-001-036-00	RES, MG, SMD	1005, 1% (F), 1/16W, 3.0KΩ	2	R128 R134
1-001-037-00	RES, MG, SMD	1005, 1% (F), 1/16W, 3.3KΩ	1	R364
1-001-039-00	RES, MG, SMD	1005, 1% (F), 1/16W, 3.9KΩ	2	R118 R219
1-001-041-00	RES, MG, SMD	1005, 1% (F), 1/16W, 4.7KΩ	8	R105 R106 R114 R218 R254 R263 R351 R267
1-001-042-00	RES, MG, SMD	1005, 1% (F), 1/16W, 5.1KΩ	1	R248
1-001-044-00	RES, MG, SMD	1005, 1% (F), 1/16W, 6.8KΩ	1	R236
1-001-046-00	RES, MG, SMD	1005, 1% (F), 1/16W, 8.2KΩ	0	
1-001-047-00	RES, MG, SMD	1005, 1% (F), 1/16W, 9.1KΩ	1	R260
1-001-048-00	RES, MG, SMD	1005, 1% (F), 1/16W, 10KΩ	9	R129 R216 R217 R240 R246 R247 R137 R239 R138
1-001-052-00	RES, MG, SMD	1005, 1% (F), 1/16W, 15KΩ	1	R376
1-001-054-00	RES, MG, SMD	1005, 1% (F), 1/16W, 20KΩ	2	R266 R139
1-001-063-00	RES, MG, SMD	1005, 1% (F), 1/16W, 47KΩ	6	R253 R265 R305 R130 R131 R353
1-001-065-00	RES, MG, SMD	1005, 1% (F), 1/16W, 56KΩ	1	R259
1-001-070-00	RES, MG, SMD	1005, 1% (F), 1/16W, 100KΩ	13	R102 R107 R108 R115 R116 R211 R255 R257 R258 R346 R360 R361 R140
1-001-075-00	RES, MG, SMD	1005, 1% (F), 1/16W, 150KΩ	3	R363 R356 R235
1-001-076-00	RES, MG, SMD	1005, 1% (F), 1/16W, 180KΩ	1	R367
1-001-077-00	RES, MG, SMD	1005, 1% (F), 1/16W, 200KΩ	1	R375
1-001-082-00	RES, MG, SMD	1005, 1% (F), 1/16W, 330KΩ	2	R101 R256
1-001-086-00	RES, MG, SMD	1005, 1% (F), 1/16W, 470KΩ	1	R121
1-001-087-00	RES, MG, SMD	1005, 1% (F), 1/16W, 560KΩ	1	R238
1-001-091-00	RES, MG, SMD	1005, 1% (F), 1/16W, 1MΩ	2	R136 R206
1-001-182-00	RES, MG, SMD	2012, 1% (F), 1/4W, 0.1Ω	2	R357 R358
1-002-003-00	CAP, CER, SMD	GRM1555C1HR75CA01D (0.75pF, 1005, 50V)	1	C384
1-002-004-00	CAP, CER, SMD	GRM1555C1H1R0CA01D (1pF, 1005, 50V)	1	C381
1-002-006-00	CAP, CER, SMD	GRM1555C1H1R5CA01D (1.5pF, 1005, 50V)	1	C385
1-002-008-00	CAP, CER, SMD	GRM1555C1H2R0CA01D (2pF, 1005, 50V)	1	C314
1-002-018-00	CAP, CER, SMD	GRM1555C1H5R0CA01D (5pF, 1005, 50V)	1	C302

1-002-023-00	CAP, CER, SMD	GRM1555C1H7R0DA01D (7pF, 1005, 50V)	1	C304
1-002-025-00	CAP, CER, SMD	GRM1555C1H8R0DA01D (8pF, 1005, 50V)	2	C315 C322
1-002-026-00	CAP, CER, SMD	GRM1555C1H9R0DA01D (9pF, 1005, 50V)	3	C316 C318 C320
1-002-029-00	CAP, CER, SMD	GRM1555C1H120JA01D (12pF, 1005, 50V)	3	C347 C350 C353
1-002-032-00	CAP, CER, SMD	GRM1555C1H150JA01D (15pF, 1005, 50V)	3	C301 C307 C363
1-002-035-00	CAP, CER, SMD	GRM1555C1H200JA01D (20pF, 1005, 50V)	4	C303 C305 C317 C319
1-002-036-00	CAP, CER, SMD	GRM1555C1H220JA01D (22pF, 1005, 50V)	2	C288 C346
1-002-038-00	CAP, CER, SMD	GRM1555C1H270JA01D (27pF, 1005, 50V)	1	C362
1-002-044-00	CAP, CER, SMD	GRM1555C1H470JA01D (47pF, 1005, 50V)	2	C394 C396
1-002-051-00	CAP, CER, SMD	GRM1555C1H101JA01D (100pF, 1005, 50V)	1	C337
1-002-057-00	CAP, CER, SMD	GRM155R71H471KA01D (470pF, 1005, 50V)	15	C144 C146 C271 C272 C273 C278 C281 C282 C283 C357 C369 C392 C397 C398 C405
1-002-059-00	CAP, CER, SMD	GRM155R71H102KA01D (102, 1005, 50V)	21	C117 C118 C119 C140 C145 C147 C148 C245 C292 C293 C308 C310 C349 C352 C360 C368 C380 C393 C404 C120 C116
1-002-062-00	CAP, CER, SMD	GRM155R71H332KA01D (332, 1005, 50V)	1	C233
1-002-067-00	CAP, CER, SMD	GRM155R71E103KA01D (103, 1005, 25V)	3	C206 C309 C359
1-002-071-00	CAP, CER, SMD	GRM155R71A333KA01D (333, 1005, 10V)	1	C286
1-002-072-00	CAP, CER, SMD	GRM155R71A393KA01D (393, 1005, 10V)	2	C261 C262
1-002-073-00	CAP, CER, SMD	GRM155R71C473KA01D (473, 1005, 16V)	1	C229
1-002-076-00	CAP, CER, SMD	GRM155R71C104KA88D (104, 1005, 16V)	53	C101 C102 C103 C108 C109 C110 C111 C115 C122 C149 C152 C153 C158 C160 C205 C210 C212 C214 C217 C219 C222 C224 C226 C227 C228 C231 C235 C236 C237 C238 C241 C242 C243 C259 C276 C277 C284 C287 C289 C291 C312 C327 C328 C329 C331 C334 C338 C348 C351 C367 C390 C406 C155
1-002-076-00	CAP, CER, SMD	GRM155R71C104KA88D (104, 1005, 16V)	1	C136
1-002-077-00	CAP, CER, SMD	GRM155R61A224KE19D (224, 1005, 10V)	2	C269 C270
1-002-080-00	CAP, CER, SMD	GRM155R60J105KE19D (105, 1005, 6.3V)	4	C263 C339 C264 C154
1-002-091-00	CAP, CER, SMD	GRM1885C1H4R0CA01D (4pF, 1608, 50V)	2	C383 C388
1-002-093-00	CAP, CER, SMD	GRM1885C1H5R0CZ01D (5pF, 1608, 50V)	1	C372
1-002-095-00	CAP, CER, SMD	GRM1885C1H5R6CA01D (5.6pF, 1608, 50V)	1	C386
1-002-102-00	CAP, CER, SMD	GRM1885C1H100JA01D (10pF, 1608, 50V)	2	C376 R355
1-002-106-00	CAP, CER, SMD	GRM1885C1H150JA01D (15pF, 1608, 50V)	1	C371
1-002-108-00	CAP, CER, SMD	GRM1885C1H180JA01D (18pF, 1608, 50V)	1	C377
1-002-111-00	CAP, CER, SMD	GRM1885C1H240JA01D (24pF, 1608, 50V)	1	C375
1-002-126-00	CAP, CER, SMD	GRM188R71H471KA01D/CL10B471KB8NNC (470pF, 1608, 50V)	1	C382
1-002-225-00	CAP, CER, SMD	GRM1885C1H2R2CA01D (2.2pF, 1608, 50V)	1	C379
1-002-217-00	CAP, CER, SMD	GRM155R61A225KE95D (225, 1005, 10V)	1	C356
1-002-232-00	CAP, CER, SMD	GRM188R60J226MEA0D (22 uf, 1608, 6.3V)	8	C143 C150 C247 C248 C268 C275 C355 C366

1-002-258-00	CAP, CER, SMD	CL05A106MQ5NUNC (10uF , 1005 , 6.3V)	22	C107 C131 C157 C159 C161 C209 C211 C213 C216 C218 C221 C223 C225 C232 C239 C244 C246 C274 C294 C332 C335 C285
1-003-001-02	TR, RF, SMD	2SC3356 R25 (ISC)	1	Q304
1-003-003-00	TR, RF, SMD	2SC4226-T1-A(R25)	2	Q301 Q303
1-003-019-00	TR, GENERAL, SMD	UMT3906(T106)	1	Q203
1-003-029-00	TR, BRT, SMD	UMC5NTR	5	Q105 Q107 Q109 Q110 Q307
1-003-036-00	TR, POWER FET, SMD	FTK3401	1	Q60
1-003-041-00	TR, BRT, SMD	DTC302	6	Q204 Q308 Q309 Q1 Q61 Q205
1-003-031-00	TR, POWER FET, SMD	RD04LUS2-T512	1	Q306
1-003-014-00	TR, POWER FET, SMD	RD01MUS2B-T513	1	Q305
1-004-012-00	DIODE, PIN, SMD	RN142S(TE61)	4	D310 D311 D312 D313
1-004-015-00	DIODE, SCHOTTKY, SMD	RB160M-40TR	1	D109
1-004-018-00	DIODE, SWITCH, SMD	1SS400(TE61)/ 1SS400SM T2R	3	D101 D104 D107
1-004-019-00	DIODE, SWITCH, SMD	DA204U	1	D303
1-004-020-00	DIODE, BANDSWITCH, SMD	DAN235U	1	D108
1-005-018-02	IC, LINER, OPAMP, SMD	LM2904A-VR /LM2904DGKR/(NJM12904R, 호환 사용)	1	U302
1-005-019-01	IC, LINER, OPAMP, SMD	FC321SOT /NJM2107F3(TE1) 대체 자재	1	U208
1-005-048-00	IC, LINER, CHARGER, SMD	LM3658SD/NOPB ROHS	1	U105
1-005-059-00	IC, LINER, ANALOG SWITCH, SMD	TC7S66FU(T5L,F,T)	2	U203 U207
1-005-062-01	IC, LINER, VOLTAGE DETECTOR, SMD	FA7025AS,SOT-23	1	Q101
1-005-071-00	IC, LINER, POTENTIALMETER, SMD	CAT5171TBI-50GT3	1	U205
1-005-114-00	IC, LINER, DUAL LDO, SMD	XC6421AB28ER-G , USP-6C (3V,3V)	1	U106
1-005-140-01	IC, LINER, ASP, SMD	SCT 3288TD (V3.01.01.B7)	1	U201
1-005-142-00	IC, LINER, RFIC, SMD	BK4819	1	U301
1-005-143-00	IC, LINER, AUDIO AMP, SMD	PA4871G-SM1-R	1	U206
1-006-011-03	IC, LOGIC, MCU, SMD	AT32F403AVGT6	1	U101
1-007-010-00	IC, MEM, EEPROM, SMD	GT24C512B-2ZLI-TR / 호환 M24512-RDW6TP (TSSOP, 8pin)	1	U102
1-007-015-00	IC, MEM, FLASH, SMD	P25Q32HUXU (8-Land USON(3x2x0.55mm))	1	U103
1-008-001-00	IND, AIR, SMD	0.40x1.2x2TL (6nH)	1	L327
1-008-016-00	IND, AIR, SMD	0.35x1.6x4TL (21nH)	5	L326 L330 L331 L332 L333
1-008-053-00	IND, FIXED, SMD	LQW18AN3N6C00 (1608, 3.6nH)	1	L324
1-008-056-00	IND, FIXED, SMD	LQW18AN18MGOOD (1608, 18nH)	2	L319 L320
1-008-057-00	IND, FIXED, SMD	LQW18AN27NJ00D (1608, 27nH)	1	L306
1-008-123-00	IND, CER, SMD	HI-1608-R22JT (1608, 220nH)	2	L305 L328
1-008-138-00	IND, BEAD, SMD	MCB1608S121IB	1	BD301
1-008-138-10	IND, BEAD, SMD	EBMS100505A102 0.5A (1K-BEAD)	16	BD20 BD21 BD22 BD25 BD26 BD27 BD28 BD29 BD30 BD35 BD36 BD37 BD51 BD52 BD55 BD71
1-008-147-00	IND, FIXED, SMD	LQW18AN10NG00D (1608, 10nH, 2%)	1	L322
1-008-155-00	IND, FIXED, SMD	LQW18AN15NJ00 (1608, 15nH)	4	L301 L302 L307 L308
1-008-166-00	IND, POWER, SMD	NRH2412T-2R2MNGH (2.2uH±20%)	1	L201
1-009-015-02	X-TAL, VC-TCXO, SMD	38.4MHz , DSA221 SDN , (400mhz) ,2520 size, (SCT3288)	1	X201

1-009-020-00	X-TAL, VCTCXO, SMD	26MHz ,DSA321SDN, 1XTV26000MCA (18~24ppm,400mhz), 3225size	1	X301
1-011-014-00	DISPLAY, LED, SMD	TO-1615BC-MRMGEE(11-22SDRYGC)	1	D102
2-003-001-00	MIC, CONDENSOR, DIP	COB627P-2044-00-TA	1	MIC21
2-004-198-04	PCB, MULIT-6, 1.2T	XB14-R3, FR4, Gold,6L (4pcs)	1	PCB
2-005-020-01	CONN, JACK, DIP, EARJACK	PJ-3036-2L6S (TSH-3814-052-T2)	1	J202
2-005-044-00	CONN, WIRE TO BOARD , DIP	12512WS-02B	1	CON52
2-005-080-00	CONN, WIRE TO BOARD , SMD	05010HR-10C(G)	1	CON1
2-005-081-00	CONN, SMD, MICRO USB	CQ013	1	CON55
2-005-082-00	CONN, WIRE TO BOARD , SMD	05005HS-H12JT	1	CON56
2-006-007-01	JACK, PHONE, SMD	PJ2008A-B / (TG-2574-PA6T-1AG-1 대체)	1	J201

4. Assembly



SYM	Rev.No.	C O N T E N T S	CHK.	APPR.	DATE

No	DWG NO.	DESCRIPTION	SPECIFICATION	QTY	REM
1	3-023-004-10	LCD WINDOW	PC 1t	1	
2	3-023-009-10	FRONT CASE	PC	1	
3	3-023-012-10	PTT BUTTON	PC	1	
4	3-023-016-10	PTT RUBBER	SILICON RUBBER	1	
5	3-023-005-10	PTT PLATE	PC 0.5t	1	
6	4-016-017-03	SCREW TAP	1.7x3x3	6	
7	3-023-007-10	SPEAKER FELT		1	
8		SPEAKER	SG-POT2014-S2	1	
9	3-023-017-10	SIDE RUBBER	SILICON RUBBER	1	
10	4-009-120-04	SCREW MACHINE	M2x4()	2	
11		SIDE PCB ASSY	PCB + DOME	1	
12	3-023-019-10	USB COVER	SILICON RUBBER	1	
13		MAIN PCB ASSY	PCB SMD + DOME	1	
14	3-023-003-10	ANTENNA SPRING		1	
15	4-007-120-04	SCREW MACHINE	M2x4 CH	2	
16	3-017-057-10	CUSHION MIC	SILICON RUBBER	1	
17		LCD	TFT 0.96inch	1	Shantai
18	3-023-011-10	LCD HOLDER	POM(BLACK)	1	
19	4-008-120-06	SCREW MACHINE	M2x6x3.5CH BLK	2	
20	3-019-017-10	EAR RUBBER	SILICON RUBBER	1	
21	3-019-011-10	EAR RUBBER STOPPER	PC	2	
22	4-019-020-04	SCREW TAP		1	
23	3-023-006-10	FRAME	AL DC	1	
24		VIBRATION MOTOR		1	
25		BATTERY ASSY	2000mA+PCM+HPC	1	
26	3-023-018-10	REAR PACKING	SILICON RUBBER	1	
27	3-016-014-10	REAR COVER	PC	1	
28		양면 TAPE		1	
29	3-007-039-10	CHARGER CONTACT		2	
30	4-019-120-08	SCREW MACHINE	M2x8 BLK WS	4	
31	3-008-014-11	EAR PACKING	PC	1	
32					

33	3-023-001-10	SHEET DOME PTT	on main pcb assy	1	
34	3-023-002-10	SHEET DOME SIDE	on side pcb assy	1	
35	3-017-038-10	PACKING SCREW	SILICON RUBBER	4	
36					
37					

GENERAL TOLERANCE		DESIGNED	CHECKED	APPROVED	MATERIAL
0 - 16	±0.1				TITLE: MBR DMR SET
16 - 63	±0.2	2023.02.09			DWG No.
63 - 250	±0.3	SCALE	n/s	UNIT	mm
250 - 1000	±0.4	SIZE	A3	SHEET	1 of 1
					MODEL MBR