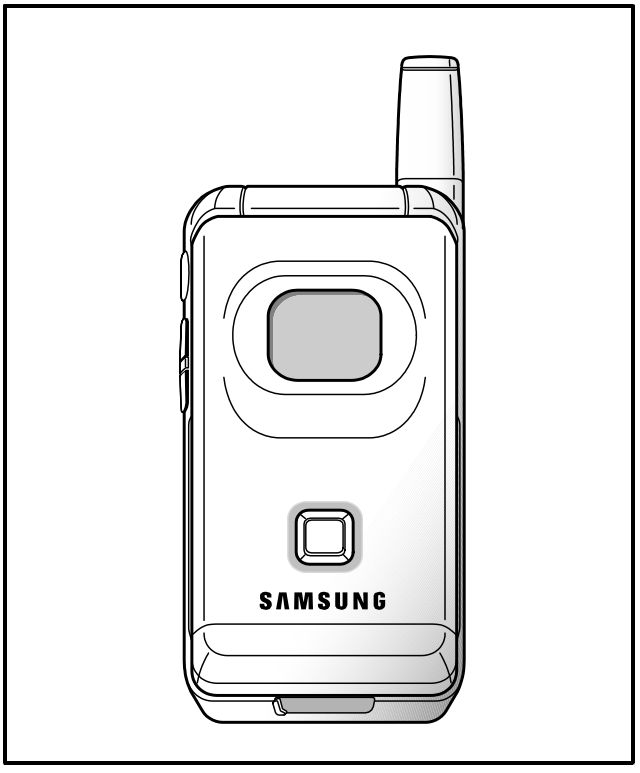
SAMSUNG

GSM TELEPHONE
SGH-X400

SERVICE Manual

GSM TELEPHONE



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1. SGH-X400 Specification

1. GSM General Specification

	GSM900 Phase 1	EGSM 900 Phase 2	DCS1800 Phase 1	PCS1900
Freq. Band[MHz] Uplink/Downlink	890~915 935~960	880~915 925~960	1710~1785 1805~1880	1850~1910 1930~1990
ARFCN range	1~124	0~124 & 975~1023	512~885	512~810
Tx/Rx spacing	45MHz	45MHz	95MHz	80MHz
Mod. Bit rate/ Bit Period	270.833kbps 3.692us	270.833kbps 3.692us	270.833kbps 3.692us	270.833kbps 3.692us
Time Slot Period/Frame Period	576.9us 4.615ms	576.9us 4.615ms	576.9us 4.615ms	576.9us 4.615ms
Modulation	0.3GMSK	0.3GMSK	0.3GMSK	0.3GMSK
MS Power	33dBm~13dBm	33dBm~5dBm	30dBm~0dBm	30dBm~0dBm
Power Class	5pcl ~ 19pcl	5pcl ~ 19pcl	0pcl ~ 15pcl	0pcl ~ 15pcl
Sensitivity	-102dBm	-102dBm	-100dBm	-100dBm
TDMA Mux	8	8	8	8
Cell Radius	35Km	35Km	2Km	-

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2. GSM TX power class

TX Power control level	GSM900
5	33±2 dBm
6	31±3 dBm
7	29±3 dBm
8	27±3 dBm
9	25±3 dBm
10	23±3 dBm
11	21±3 dBm
12	19±3 dBm
13	17±3 dBm
14	15±3 dBm
15	13±3 dBm
16	11±5 dBm
17	9±5 dBm
18	7±5 dBm
19	5±5 dBm

TX Power control level	DCS1800
0	30±2 dBm
1	28±3 dBm
2	26±3 dBm
3	24±3 dBm
4	22±3 dBm
5	20±3 dBm
6	18±3 dBm
7	16±3 dBm
8	14±3 dBm
9	12±4 dBm
10	10±4 dBm
11	8±4dBm
12	6±4 dBm
13	4±4 dBm
14	2±5 dBm
15	0±5 dBm

TX Power control level	PCS1900
0	30±2 dBm
1	28±3 dBm
2	26±3 dBm
3	24±3 dBm
4	22±3 dBm
5	20±3 dBm
6	18±3 dBm
7	16±3 dBm
8	14±3 dBm
9	12±4 dBm
10	10±4 dBm
11	8±4dBm
12	6±4 dBm
13	4±4 dBm
14	2±5 dBm
15	0±5 dBm

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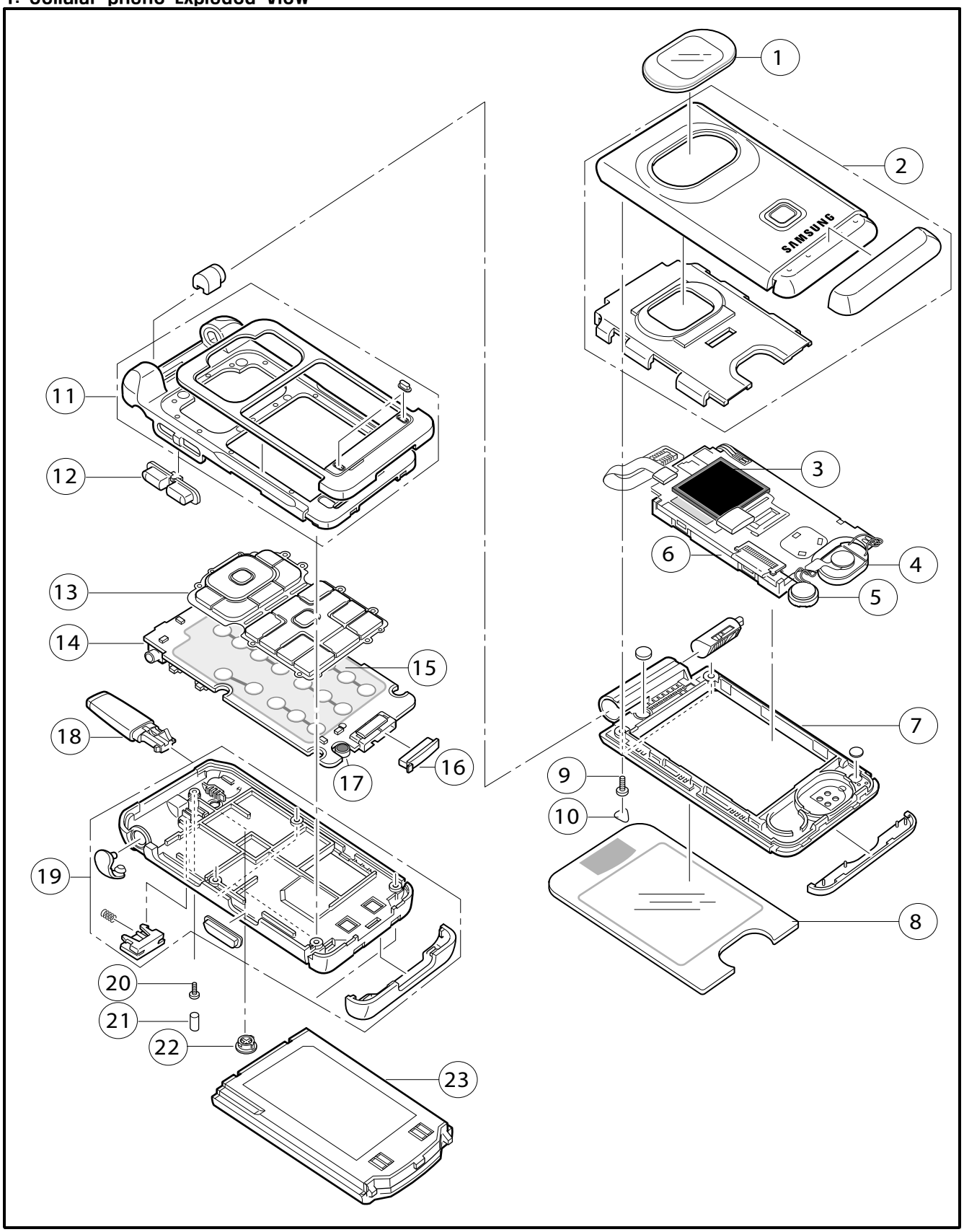
2. SGH-X400 Exploded View and its Parts list

1. Cellular phone Exploded View



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2. Cellular phone Parts list

NO	Description	SEC.CODE	REMARK
1	DUAL WINDOW LCD	GH75-03088A	
2	FOLDER UPPER	GH75-02636B	
3	DUAL LCD	GH07-00319A	
4	SPEAKER	3001-001393	
5	MOTOR	3101-001351	
6	MAIN LCD	GH07-00247A	
7	FOLDER LOWER	GH75-02635B	
8	MAIN WINDOW LCD	GH72-07620A	
9	SCREW	6001-001155	
10	HOLE SHEET(A)	GH74-04896B	
	HOLE SHEET(B)	GH74-04897B	
11	FRONT COVER	GH75-02633B	
12	SIDE KEY	GH75-02632A	
13	KEYPAD	GH75-03162A	
14	MAIN PBA	GH92-01422A	
15	DOME SHEET	GH59-00745A	
16	IF COVER	GH73-01688B	
17	MIC	GH30-00015A	
18	ANTENNA	GH42-00285A	
19	REAR COVER	GH75-02634B	
20	SCREW	6001-001478	
21	SCREW CAP	GH73-01692B	
22	RF COVER	GH73-01743B	
23	BATTERY	GH43-00830B	900MAH
		GH43-00853B	620MAH

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3. Test Jig (GH80-00865A)

3-1. RF Test Cable (GH39-00090A)

3-2. Test Cable (GH00-00127A)

3-3. Serial Cable

3-4. Power Supply Cable

3-5. DATA CABLE (GH39-00159A)

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3. SGH-X400 MAIN Electrical Parts List

Design LOC	SEC Code
GH92-01553A	PBA
GH41-00443A	PCB
2203-000995	C1003
2203-000233	C1004
2203-002677	C1005
2203-002677	C1006
2203-000233	C1007
2203-002677	C1008
2203-002677	C1009
2203-000812	C101
2203-000233	C1010
2203-005234	C1012
2203-005234	C1013
2203-000812	C1014
2203-000995	C1015
2203-000812	C1016
2404-001151	C1017
2203-000438	C1018
2203-000812	C1019
2203-005061	C102
2203-000812	C1020
2404-001151	C1021
2203-001598	C103
2203-000812	C104
2203-000812	C105
2404-001105	C106
2203-000254	C1063
2404-001268	C107
2203-005482	C108
2203-001652	C109
2203-001652	C110
2203-000438	C1101
2203-000679	C1102
2203-000995	C1103
2203-001405	C1104
2404-001105	C1105
2203-000885	C1106

Design LOC	SEC Code
2203-005512	C1107
2203-000254	C1108
2203-005065	C1109
2203-006053	C111
2203-001405	C1110
2203-005509	C1111
2203-001405	C1112
2203-001405	C1113
2203-005065	C1114
2203-005480	C1115
2203-005481	C1116
2203-005481	C1117
2203-005481	C1118
2203-005480	C1119
2203-006053	C112
2203-000438	C1120
2203-000278	C1121
2203-005050	C1122
2203-001405	C1123
2203-001405	C1124
2203-001652	C113
2203-001598	C114
2203-000254	C115
2203-006053	C116
2203-006053	C117
2203-000233	C118
2203-000812	C119
2203-005061	C120
2203-001598	C121
2203-000254	C201
2203-006113	C202
2203-006113	C203
2203-006113	C204
2203-006113	C205
2203-006113	C208
2203-006113	C209
2203-006257	C212

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Design LOC	SEC Code
2203-005509	C213
2203-005061	C214
2203-005061	C215
2203-005682	C220
2203-005682	C221
2203-005682	C222
2203-005682	C223
2203-005682	C224
2203-005682	C225
2203-005682	C226
2203-005682	C227
2203-005061	C301
2203-005061	C302
2203-005061	C303
2203-005061	C304
2203-000812	C305
2203-000359	C401
2203-005061	C402
2203-001405	C403
2203-005061	C404
2404-001086	C405
2203-000995	C406
2203-000995	C407
2203-000885	C408
2203-005061	C409
2203-005065	C410
2404-001086	C413
2203-000438	C416
2203-005061	C417
2404-001151	C420
2404-001151	C421
2203-005061	C422
2203-005065	C423
2203-000438	C425
2203-000438	C426
2203-005682	C430
2203-005682	C431

Design LOC	SEC Code
2203-005682	C432
2203-005682	C433
2203-005682	C434
2203-005682	C435
2203-005682	C436
2203-005682	C437
2203-000812	C441
2203-000940	C450
2203-005061	C501
2203-005061	C502
2203-005061	C503
2203-000254	C504
2203-005061	C505
2203-005496	C601
2203-005496	C602
2203-000254	C603
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2203-005480	C607
2203-005061	C608
2203-001405	C609
2203-000679	C610
2203-000254	C611
2203-000628	C613
2203-000233	C614
2203-000628	C615
2203-005496	C704
2203-005065	C705
2203-005061	C706
2203-000254	C707
2203-005480	C708
2203-005480	C709
2203-000254	C710
2203-000254	C711
2203-000254	C712
2203-000233	C801

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Design LOC	SEC Code
2203-000233	C802
2203-000233	C803
2203-000254	C804
2203-000254	C805
2203-000254	C806
2203-000995	C904
2203-001405	C905
2203-000812	C906
2203-000233	C908
2203-001405	C909
2203-000233	C910
2203-001405	C911
3705-001255	CN1001
3709-001187	CN101
3711-005078	CN201
3710-001816	CN300
3722-001715	CN401
0405-001110	D1101
0405-001110	D1102
2909-001191	F1001
2904-001450	F1002
2203-005234	L1001
2203-001195	L1002
2703-002602	L1003
2703-002603	L1004
2703-001734	L1005
2703-002608	L1006
2703-001409	L1007
2703-001794	L1101
2703-002102	L1102
2703-002102	L1103
2703-001235	L401
2703-001235	L402
2703-001235	L403
2703-001235	L490
2703-001751	L901
0601-001819	LED201

Design LOC	SEC Code
0601-001819	LED202
0601-001790	LED203
0601-001790	LED204
0601-001790	LED205
0601-001819	LED206
0601-001790	LED207
0601-001819	LED208
0601-001819	LED209
0601-001819	LED210
0601-001790	LED211
0601-001790	LED212
0601-001790	LED213
0601-001790	LED214
0601-001819	LED215
0601-001819	LED216
0604-001261	LED217
0601-001790	LED218
0601-001790	LED219
0601-001790	LED220
0601-001790	LED221
4302-001130	M101
2801-004189	OSC1101
2801-004025	OSC601
2809-001260	OSC801
0502-001201	Q101
0506-001052	Q102
0504-000168	Q103
0504-000168	Q104
0504-001012	Q1101
0501-000225	Q401
2007-001288	R1001
2007-001307	R1002
2007-007008	R1003
2007-007008	R1004
2007-001288	R1005
2007-001307	R1006
2007-007008	R1007

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Design LOC	SEC Code
2007-007008	R1008
2007-007107	R1009
2007-000171	R101
2007-007142	R102
2007-007139	R103
2007-001323	R104
2007-000758	R105
2007-000171	R106
2007-000171	R107
2007-000171	R108
2007-000172	R109
2007-001319	R110
2007-000172	R1101
2007-007135	R1102
2007-000148	R1103
2007-000162	R1104
2007-000172	R1105
2007-000174	R1106
2007-000775	R1107
2007-000148	R1108
2007-000162	R1109
2007-000171	R111
2007-000148	R112
2007-000172	R201
2007-001291	R202
2007-001301	R218
2007-008587	R220
2007-008587	R221
2007-008587	R222
2007-008587	R223
2007-008587	R224
2007-008587	R225
2007-008587	R226
2007-008587	R227
2007-000157	R301
2007-000157	R302
2007-000157	R303

Design LOC	SEC Code
2007-000140	R304
2007-000140	R305
2007-000140	R306
2007-000140	R307
2007-000140	R308
2007-000140	R309
2007-000140	R310
2007-000140	R312
2007-000140	R313
2007-003001	R401
2007-000162	R402
2007-003001	R403
2007-000164	R404
2007-000161	R405
2007-000775	R406
2007-000159	R407
2007-000148	R408
2007-001325	R410
2007-000159	R411
2007-000141	R412
2007-001316	R413
2007-000141	R414
2007-000148	R415
2007-000159	R416
2007-001333	R417
2007-000140	R418
2007-000171	R419
2007-000148	R421
2007-008587	R430
2007-008587	R431
2007-008587	R432
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2007-008587	R434
2007-008587	R435
2007-008587	R436
2007-008587	R437
2007-000171	R502

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Design LOC	SEC Code
2007-000172	R503
2007-000160	R504
2007-000157	R601
2007-000171	R602
2007-000170	R603
2007-000157	R605
2007-007142	R606
2007-007308	R607
2007-007308	R608
2007-000162	R609
2007-000157	R610
2007-000157	R611
2007-000162	R701
2007-007200	R702
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2007-000162	R704
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2007-000171	R710
2007-000172	R801
2007-000137	R802
2007-001313	R803
2007-000138	R804
1201-001889	U1001
GH71-01052A	U1002
1203-002127	U101
1203-002902	U102
1204-002023	U1101
1201-001951	U1102
1203-002054	U1103
1009-001010	U202
1001-001183	U401
1204-002161	U402
1001-001152	U403
1109-001274	U501
GH09-00023A	U601
1209-001219	U602
1204-001984	U701

Design LOC	SEC Code
0504-001042	U702
0504-001042	U703
0504-001042	U704
1205-002185	U901
1205-002268	U902
1209-001434	U903
3404-001152	VOL_DOWN
3404-001152	VOL_UP
0406-001150	ZD301
0403-001427	ZD302
0406-001150	ZD303
0406-001150	ZD304
0406-001150	ZD305
0406-001150	ZD306
0406-001150	ZD307
0406-001150	ZD308
0406-001150	ZD309
0406-001150	ZD310
0406-001150	ZD311
0406-001184	ZD312
0406-001150	ZD313
0406-001150	ZD402
0406-001150	404

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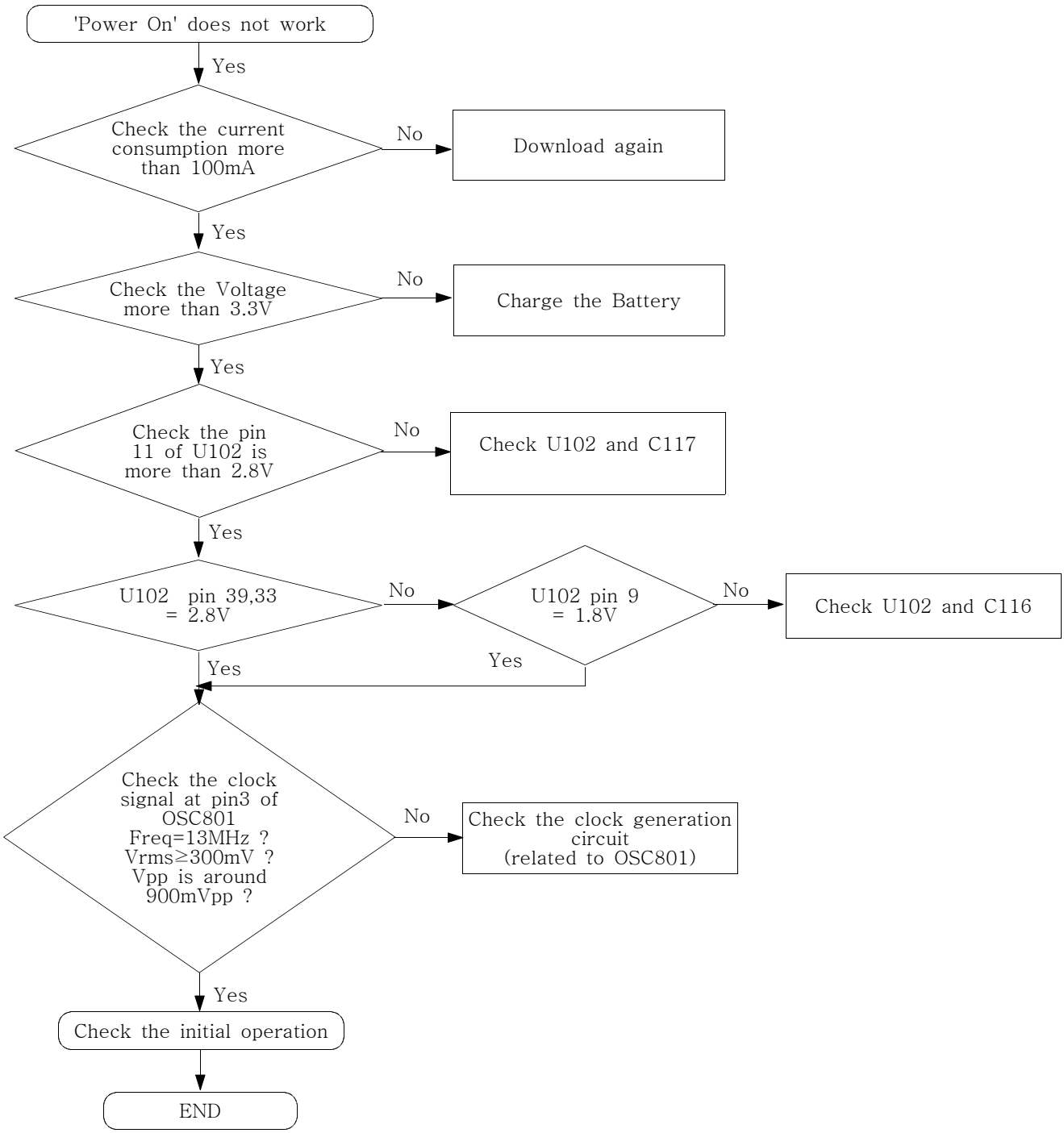
4. SGH-X400 Flow Chart of Troubleshooting

1. Power On



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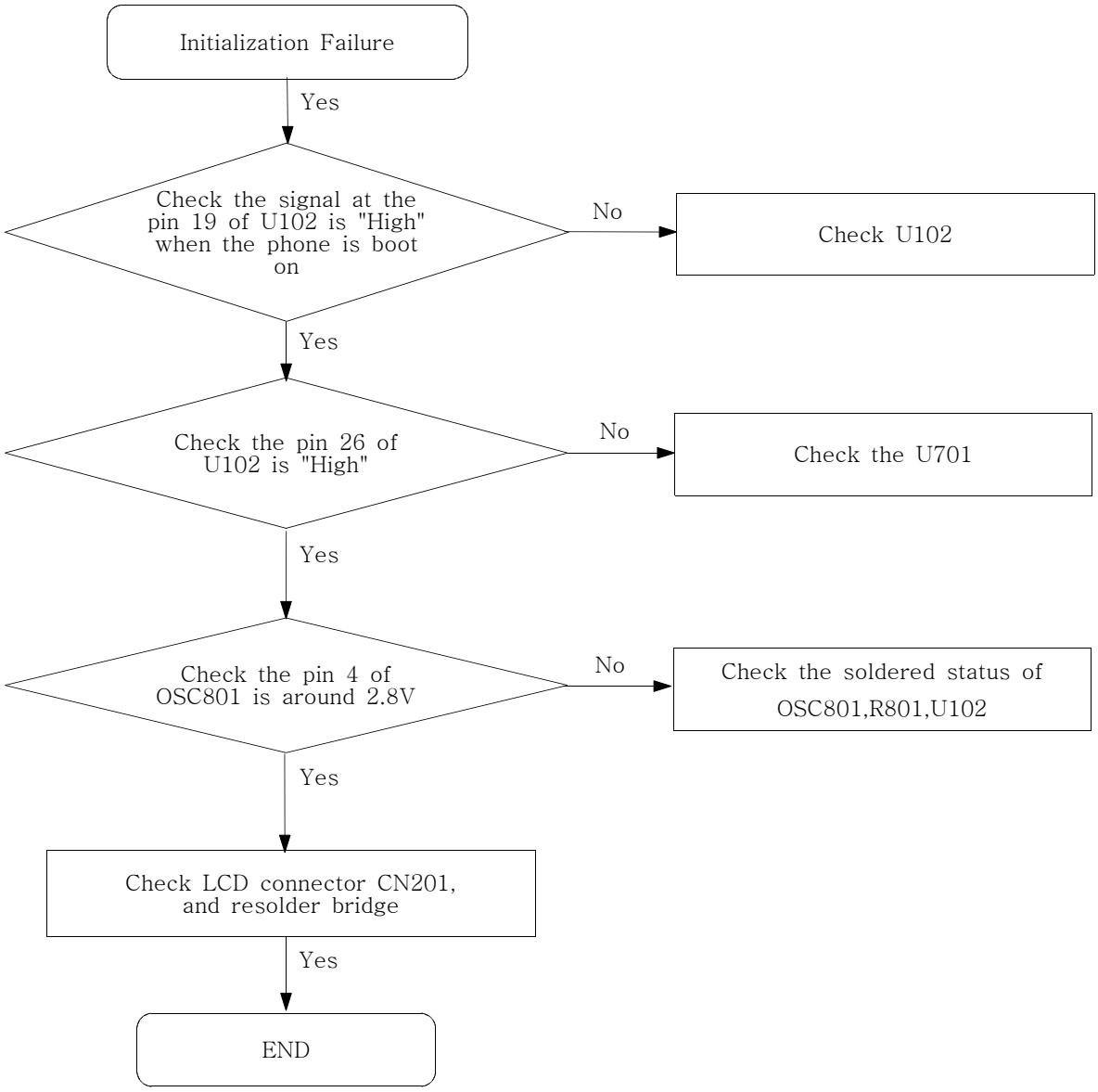
2. Initial



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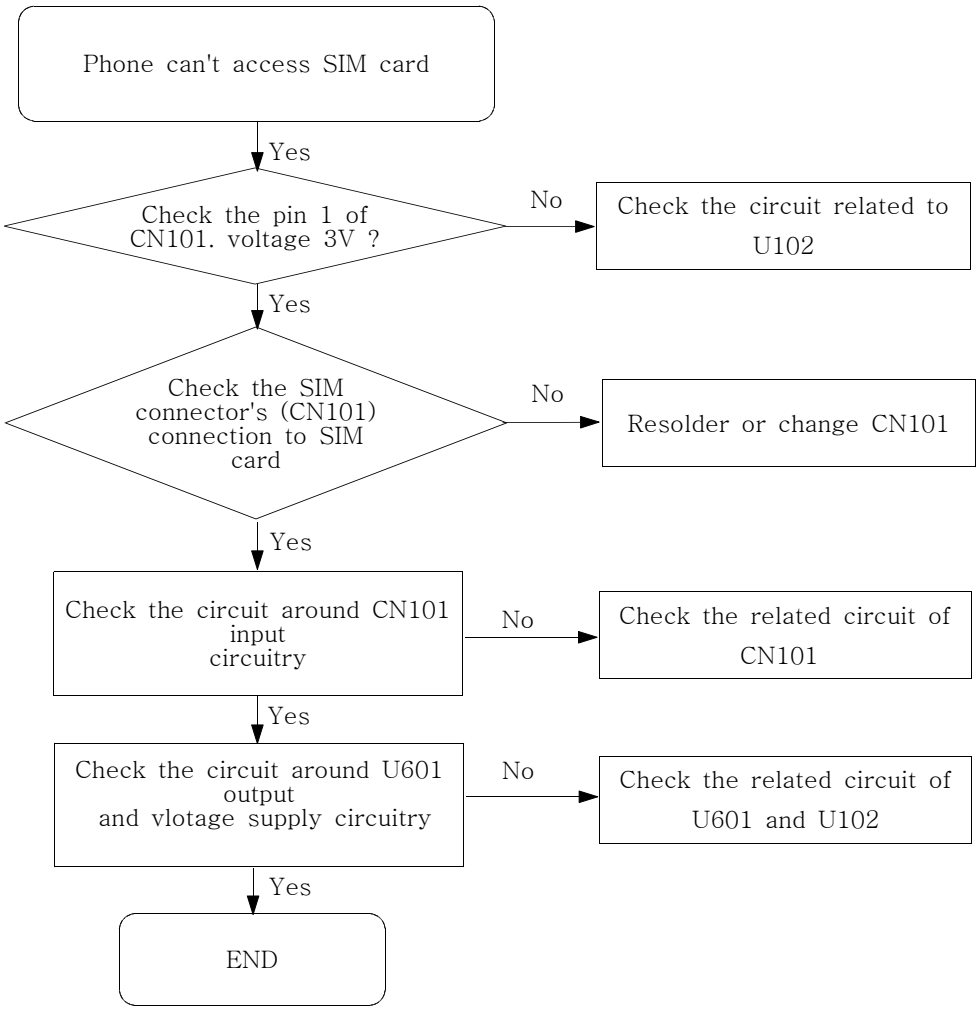
3. Sim Part



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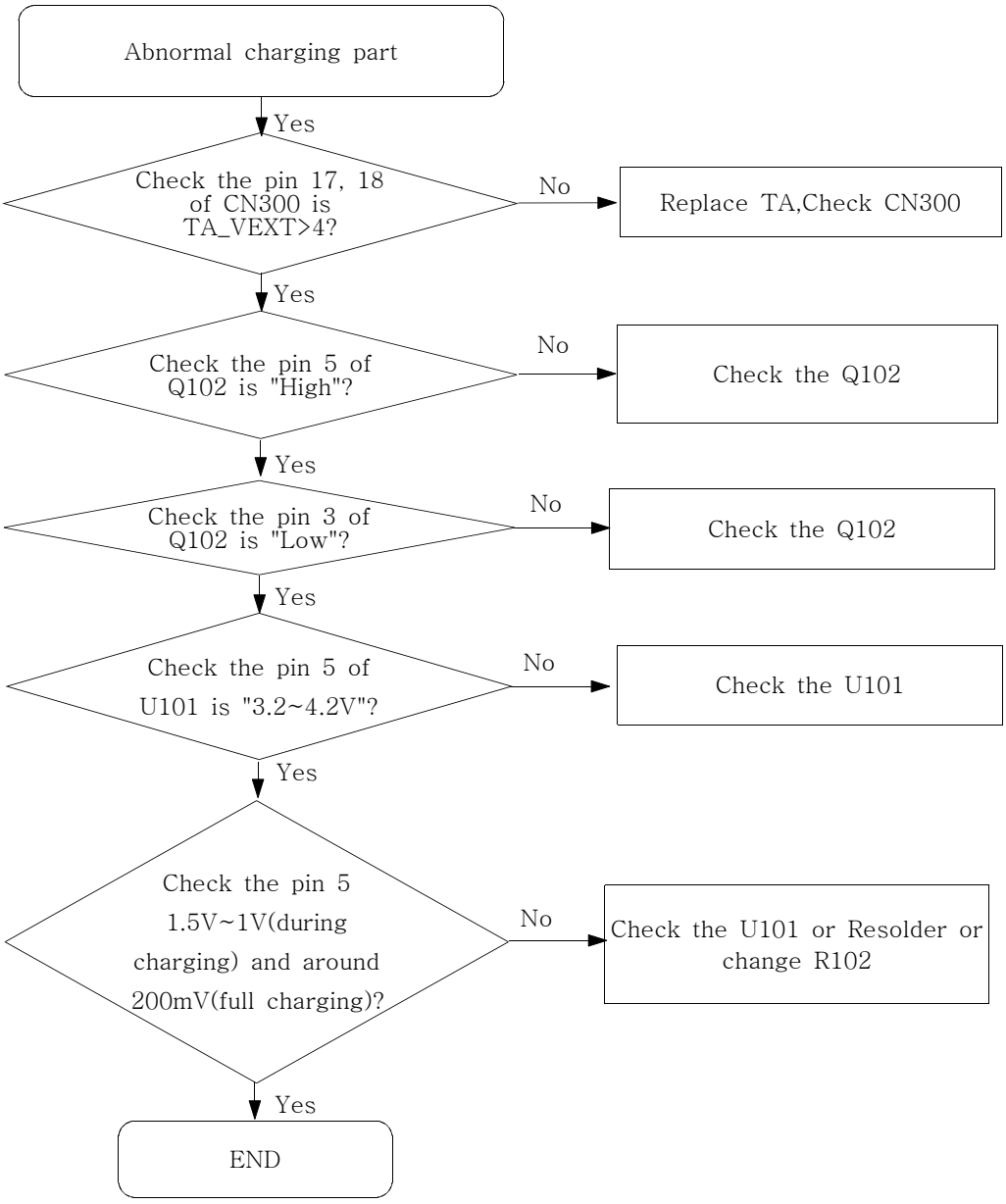
4. Charging Part



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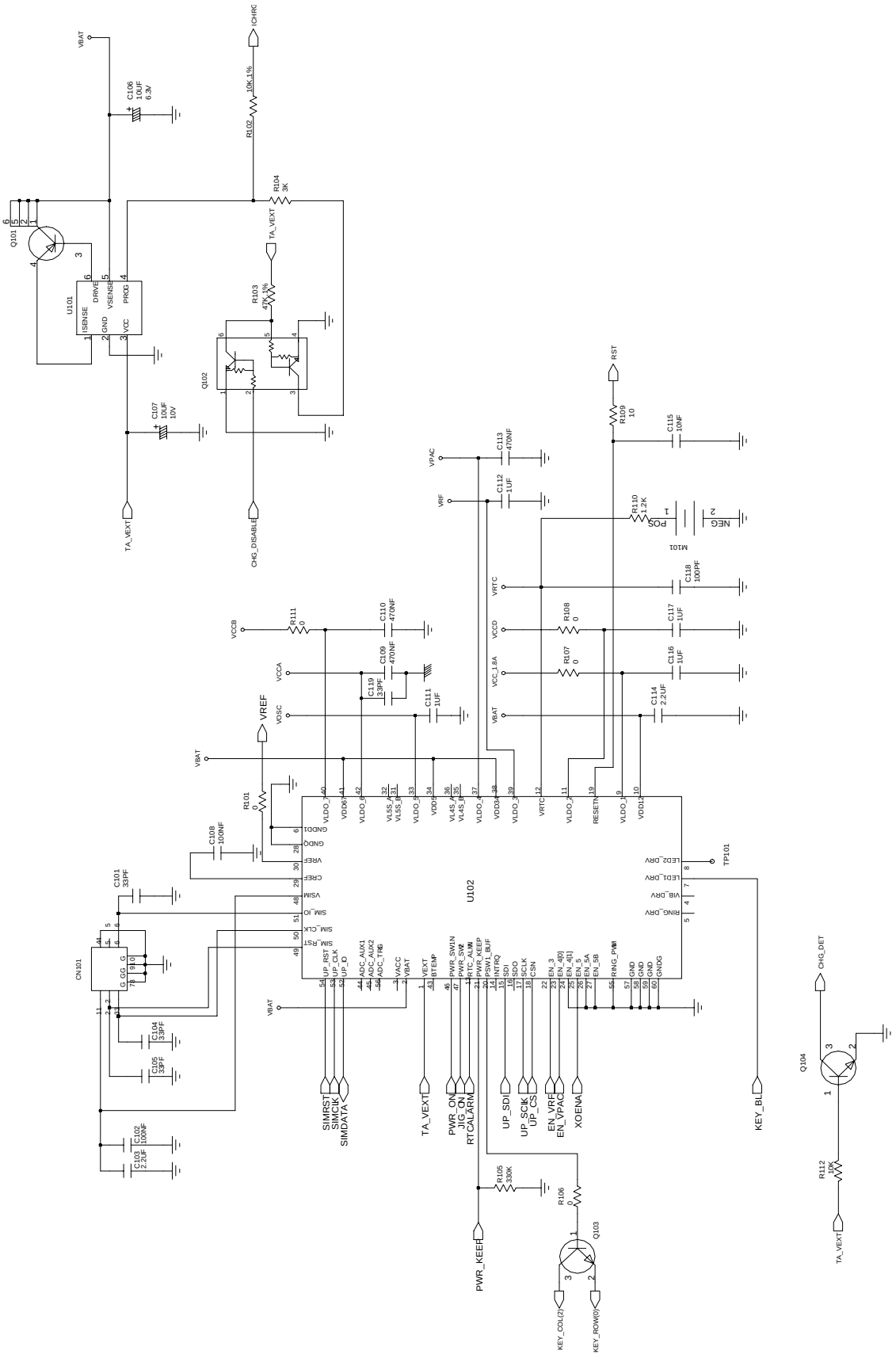

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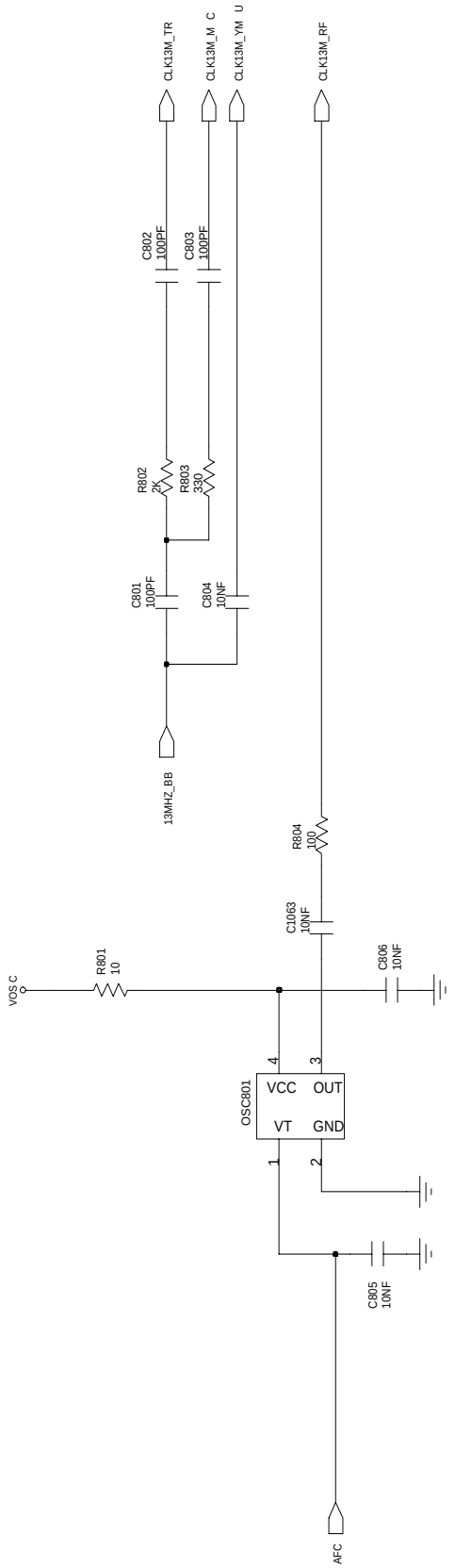

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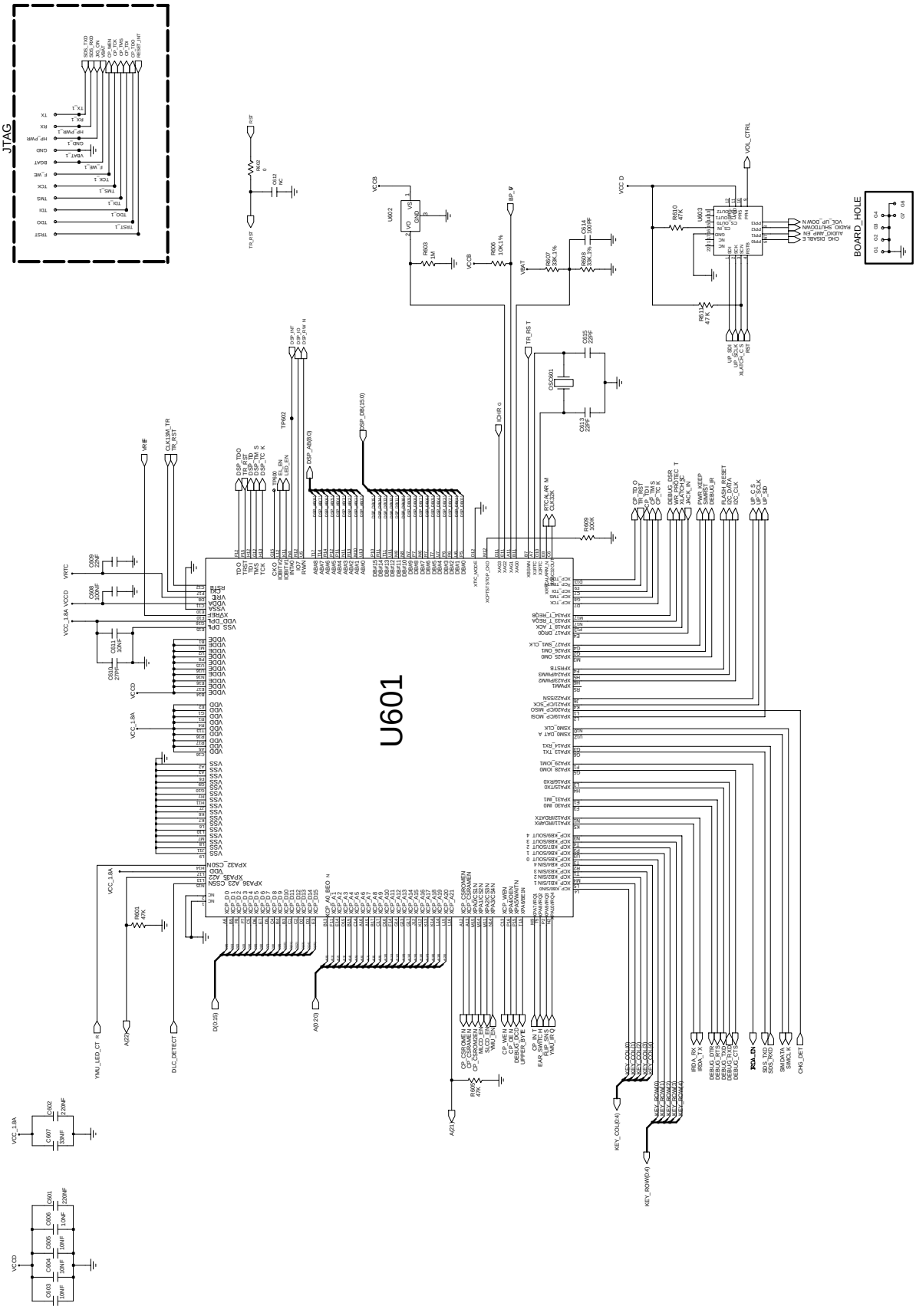
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JTAG
BOARD_HOLE
VCC_1.8A
VCCD
VRTC
VCC
VBAT
VOL_CTRL
KEY_COL0:4
KEY_ROW0:4
DSP_DB(15:0)
DSP_AB(8:0)
A0:20
D0:15
XPA32_CSSN
XPA36_A23
XPA37_A24
XPA38_A25
XPA39_A26
XPA40_A27
XPA41_A28
XPA42_A29
XPA43_A30
XPA44_A31
XPA45_BSEL0
XPA46_BSEL1
XPA47_DBG0
XPA48_DBG1
XPA49_DBG2
XPA50_DBG3
XPA51_DBG4
XPA52_DBG5
XPA53_DBG6
XPA54_DBG7
XPA55_DBG8
XPA56_DBG9
XPA57_DBG10
XPA58_DBG11
XPA59_DBG12
XPA60_DBG13
XPA61_DBG14
XPA62_DBG15
XPA63_DBG_WEO
XPA64_DBG_OEO
XPA65_DBG_CSO
XPA66_DBG_ADVO
XPA67_DBG_WAITO
XPA68_DBG_BLEO
XPA69_DBG_BHEO
XPA70_DBG_CLKO
XPA71_DBG_ALEO
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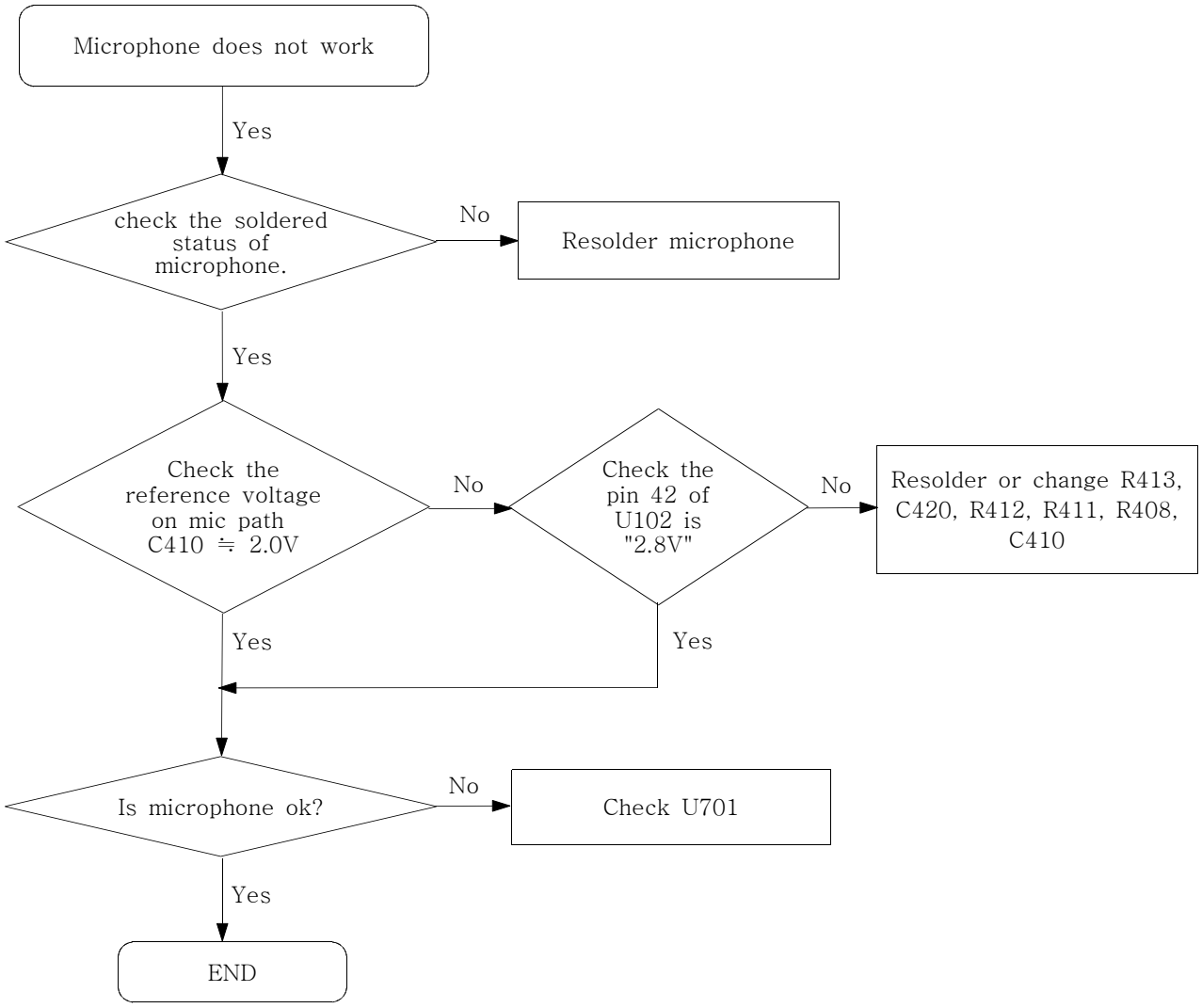
XPA105_DBG_FLASH_RYBYO
XPA106_DBG_FLASH_ACCO
XPA107_DBG_FLASH_CLKO
XPA108_DBG_FLASH_SIO
XPA109_DBG_FLASH_SOO
XPA110_DBG_FLASH_SCKO
XPA111_DBG_FLASH_CSO
XPA112_DBG_FLASH_WPO
XPA113_DBG_FLASH_RSTO

5. Microphone Part



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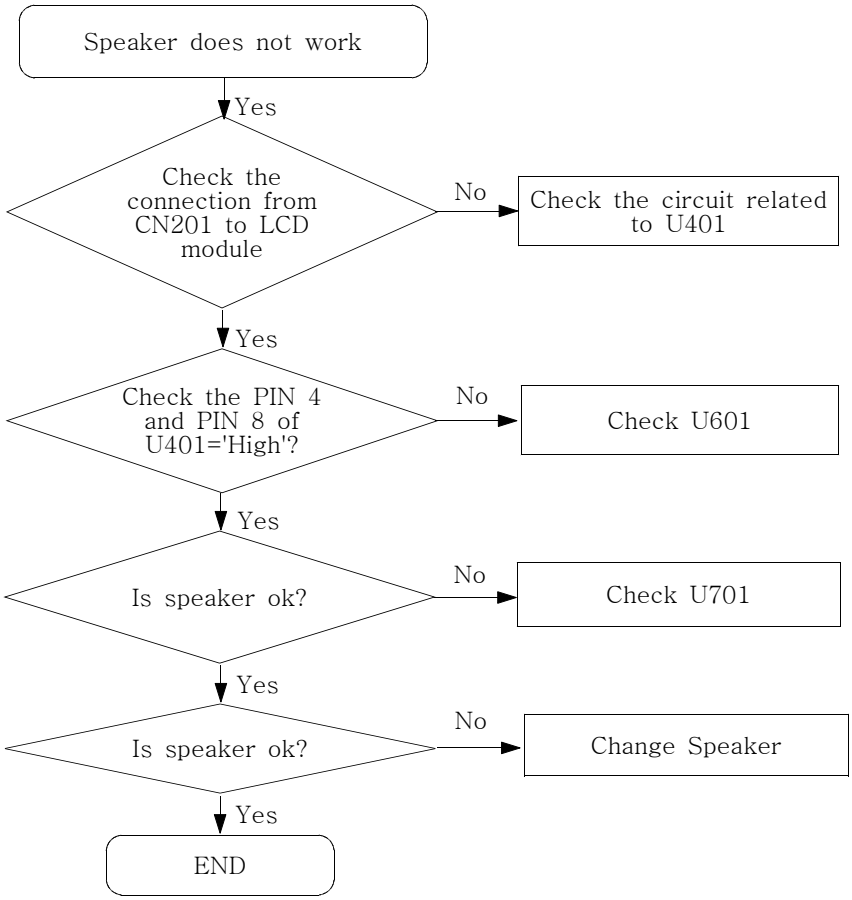
6. Speaker Part



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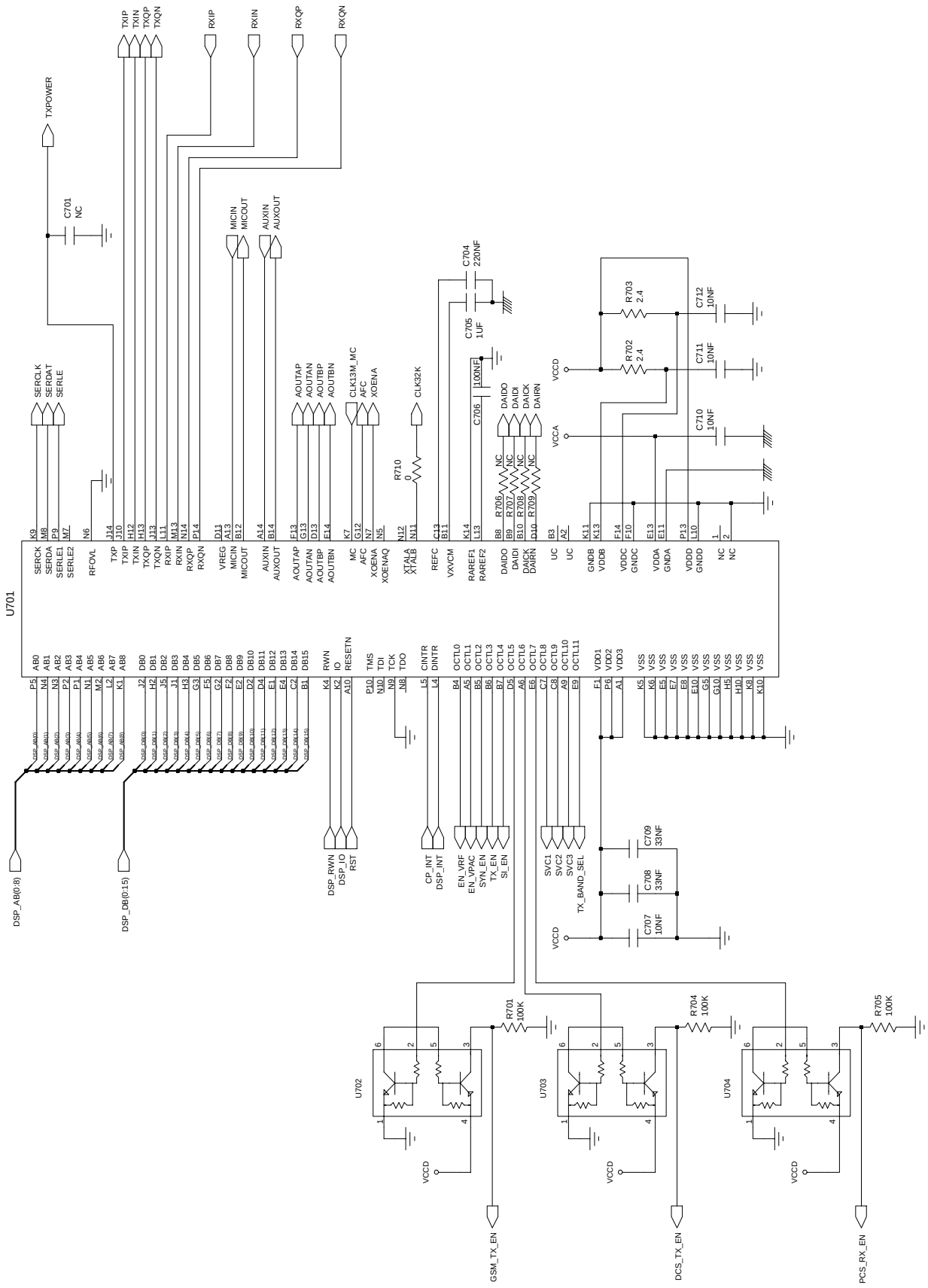

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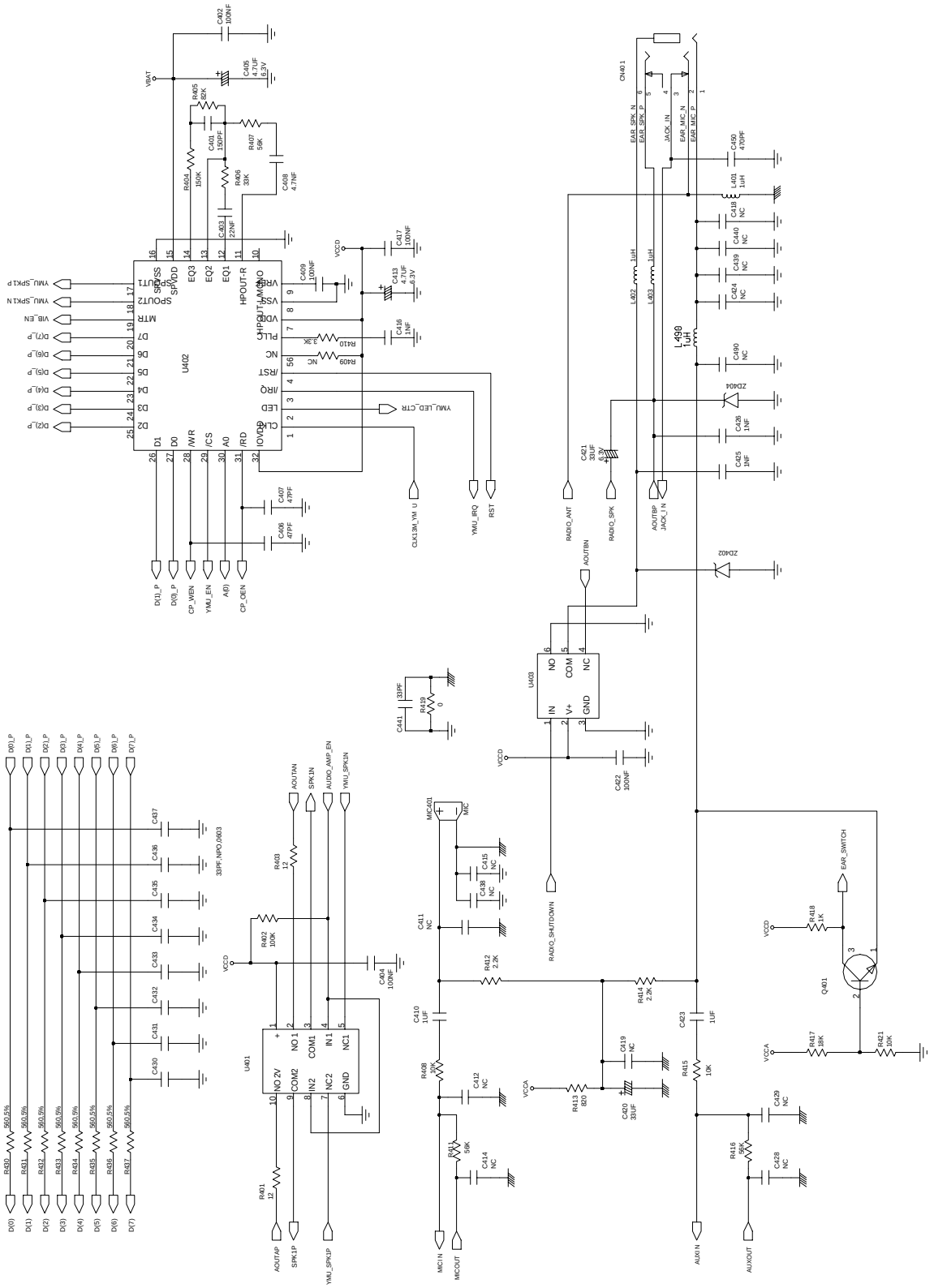

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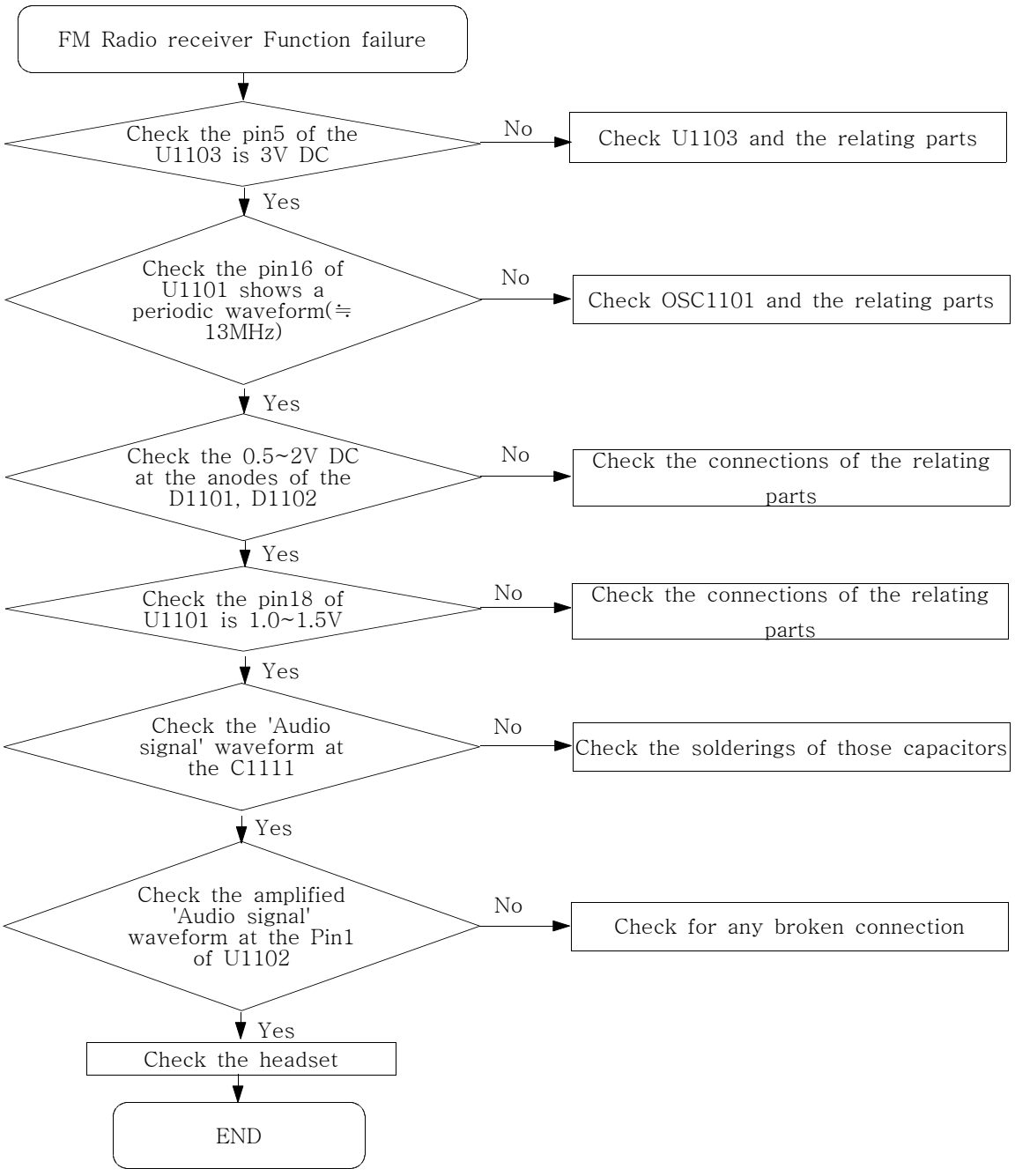
7. FM Radio part



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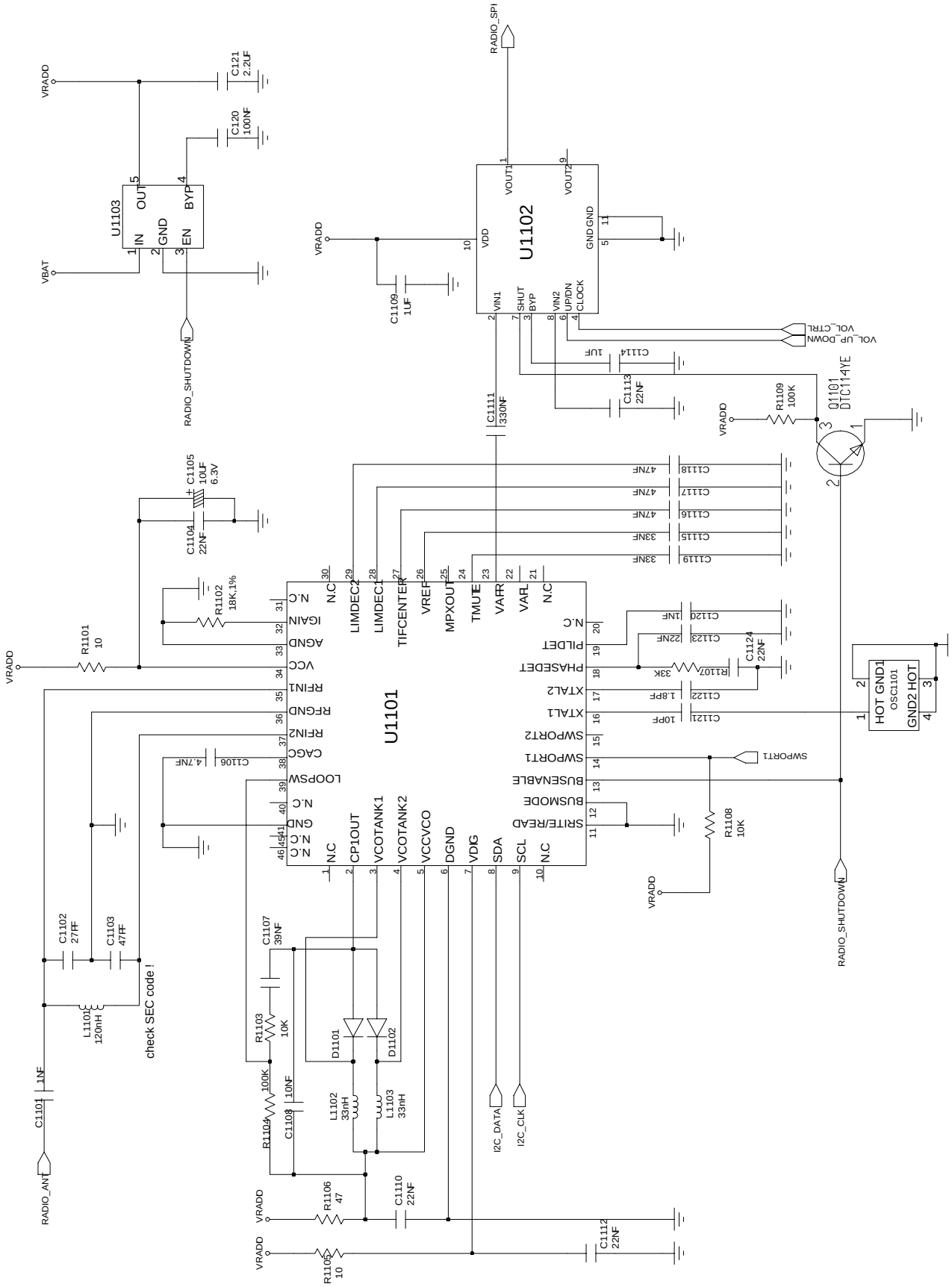

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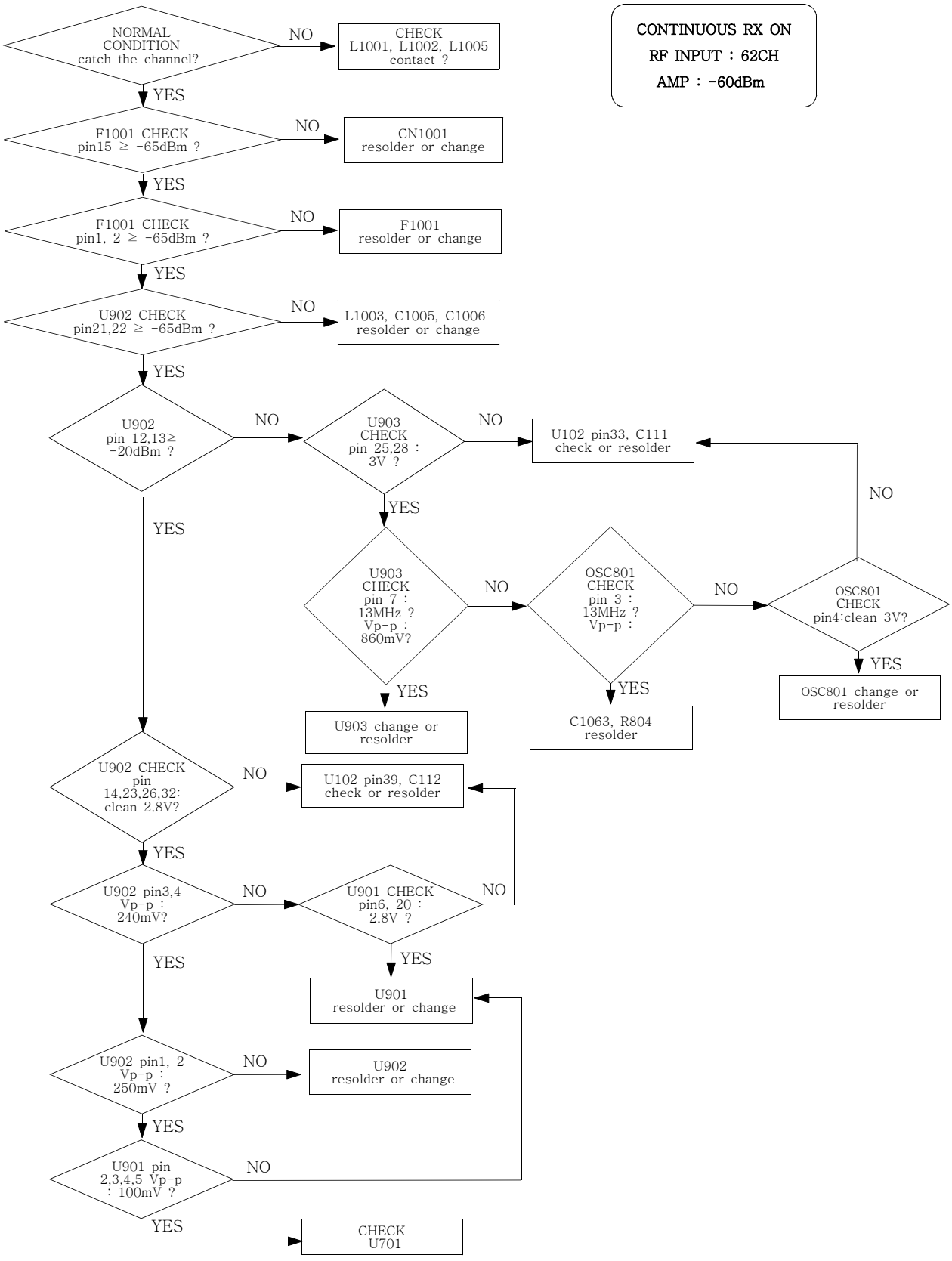
8. EGSM Reciever



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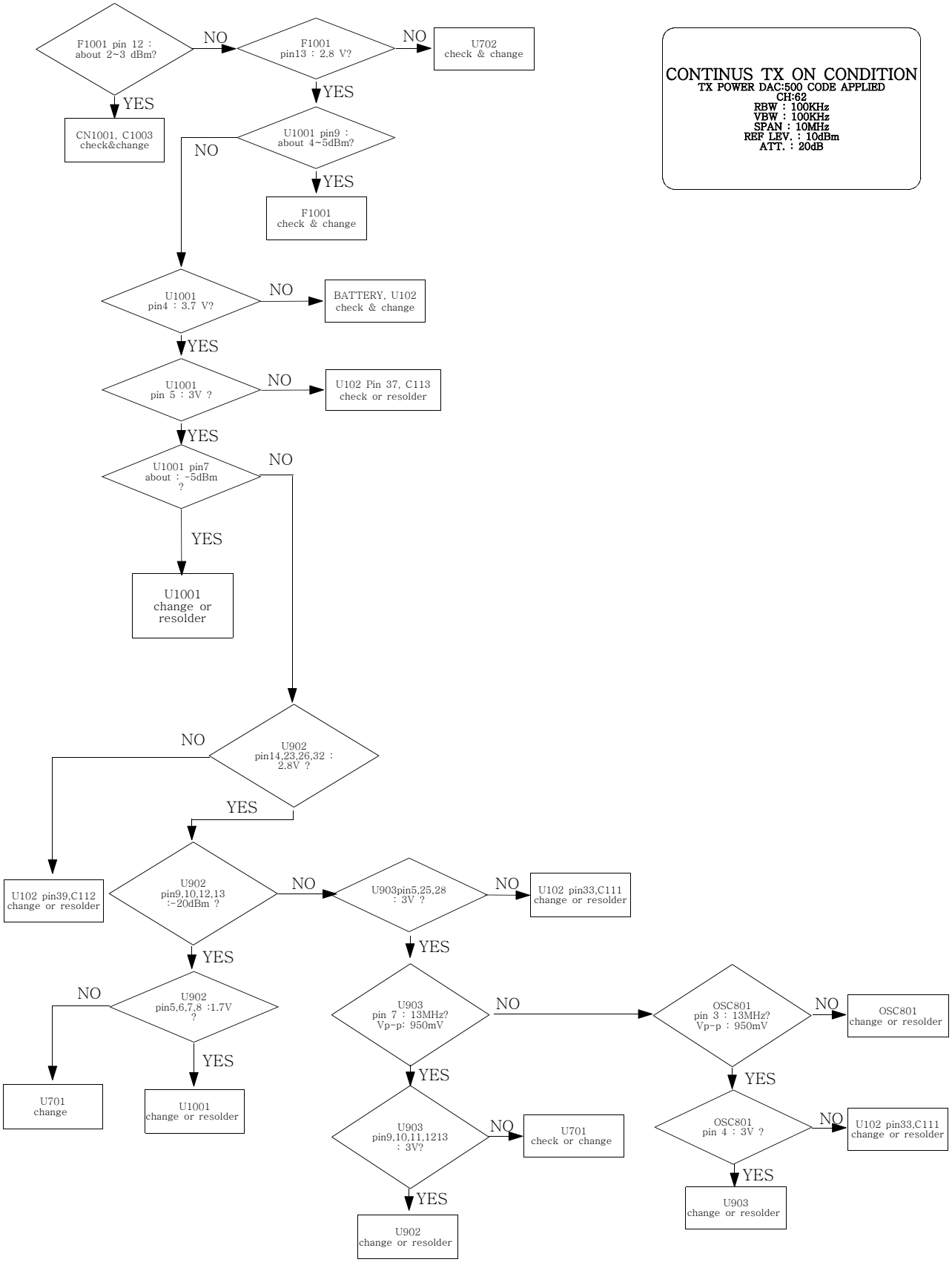
9. EGSM transmitter



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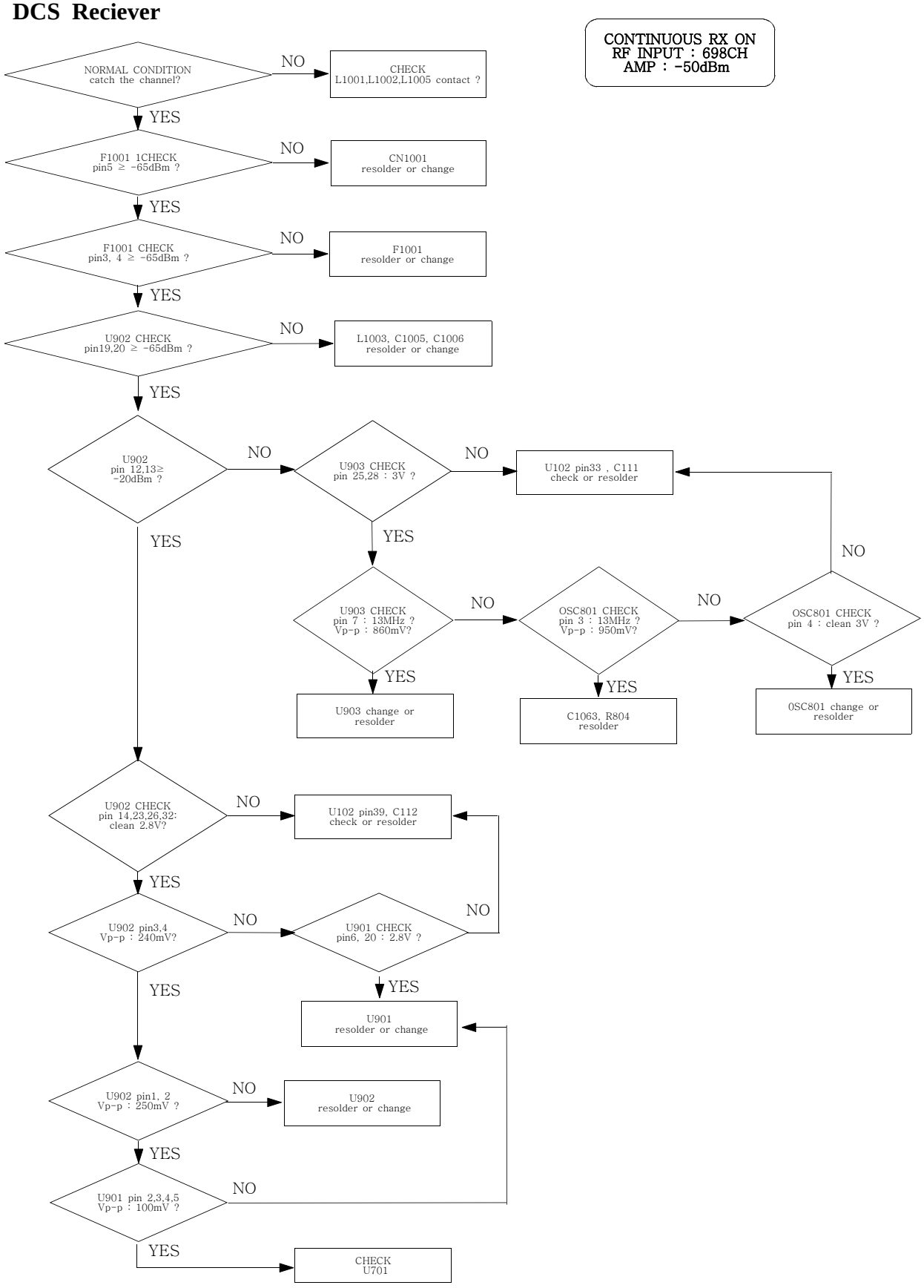
10. DCS Reciever



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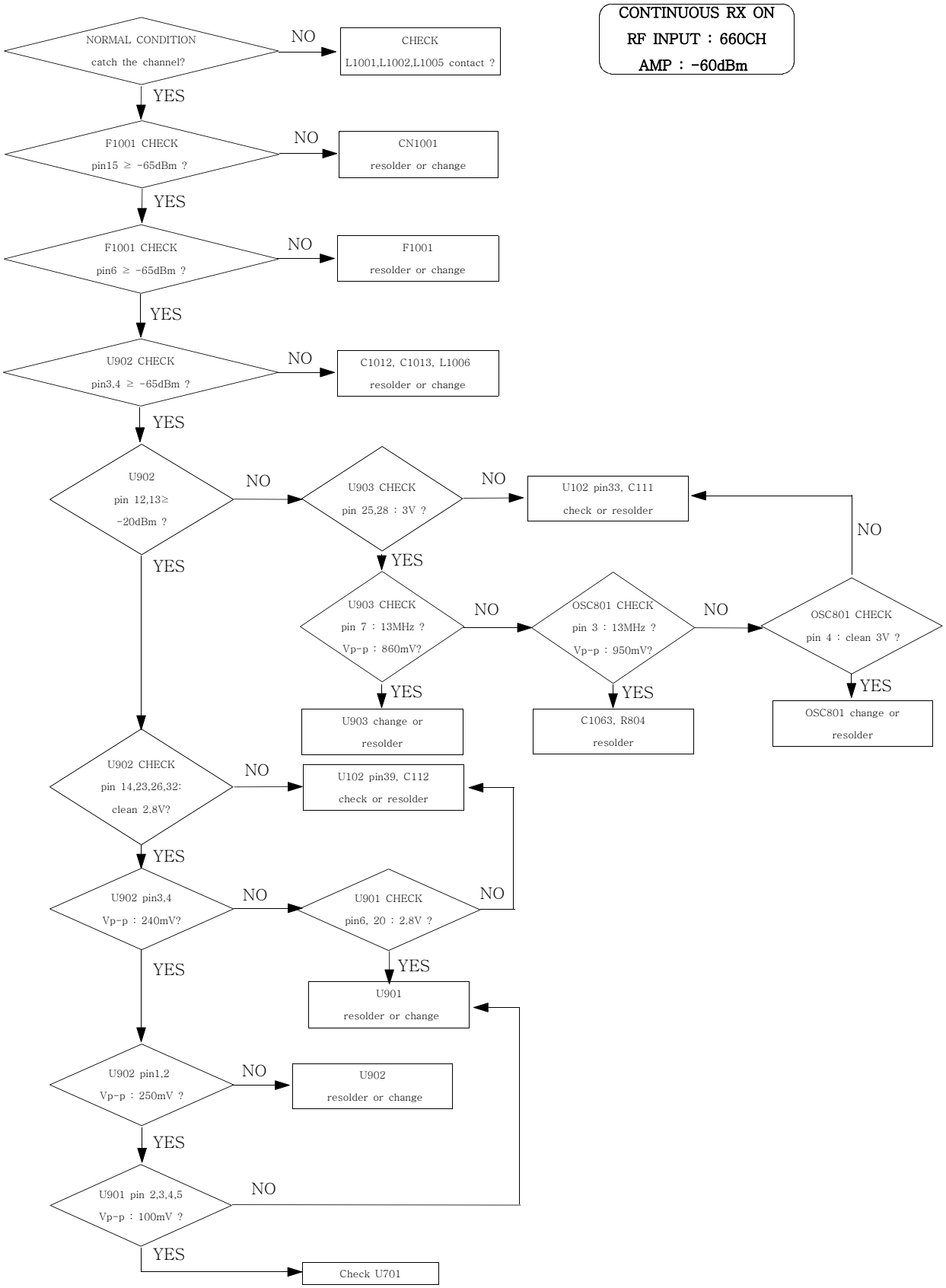
11. PCS Reciever



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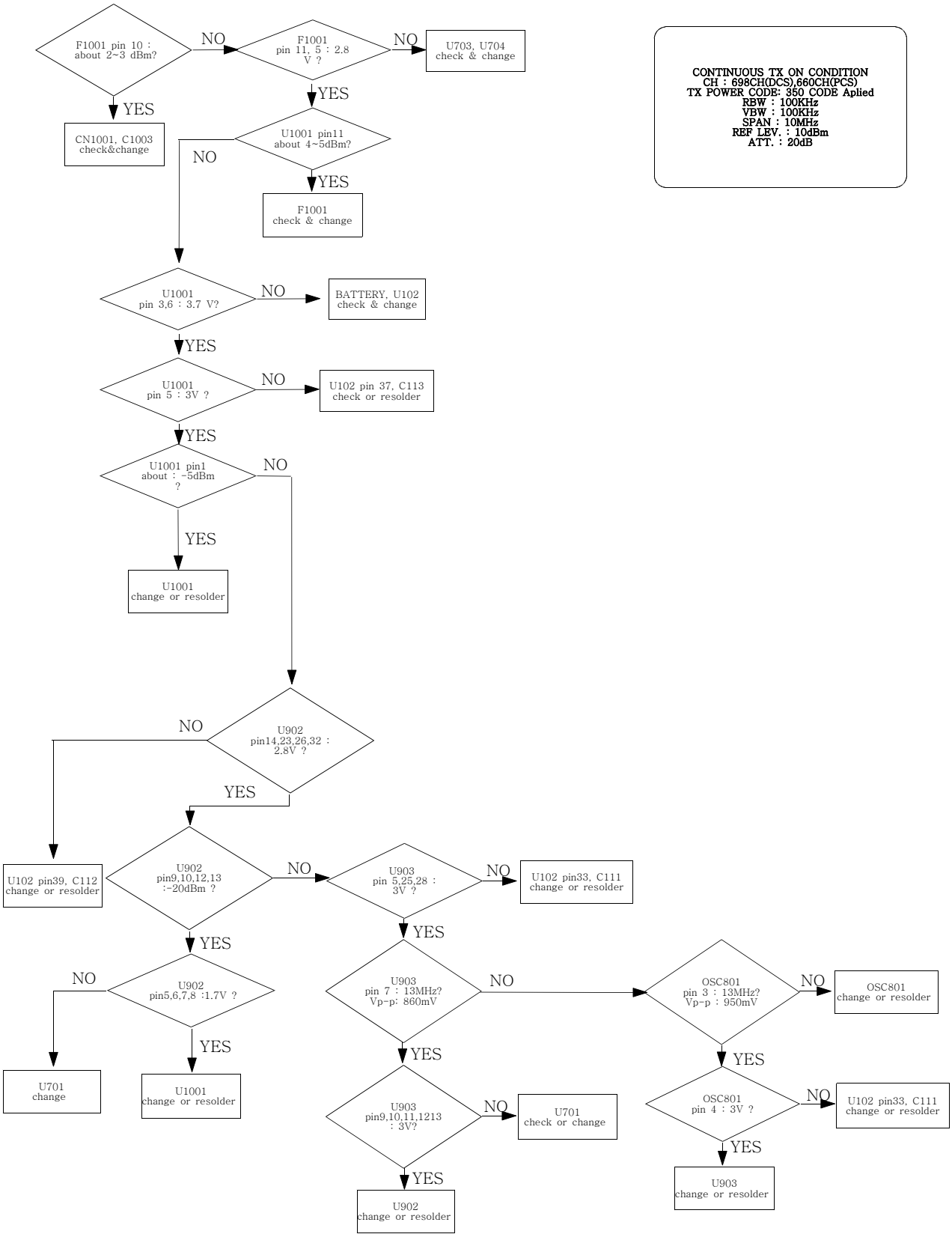
12. DPCS transmitter



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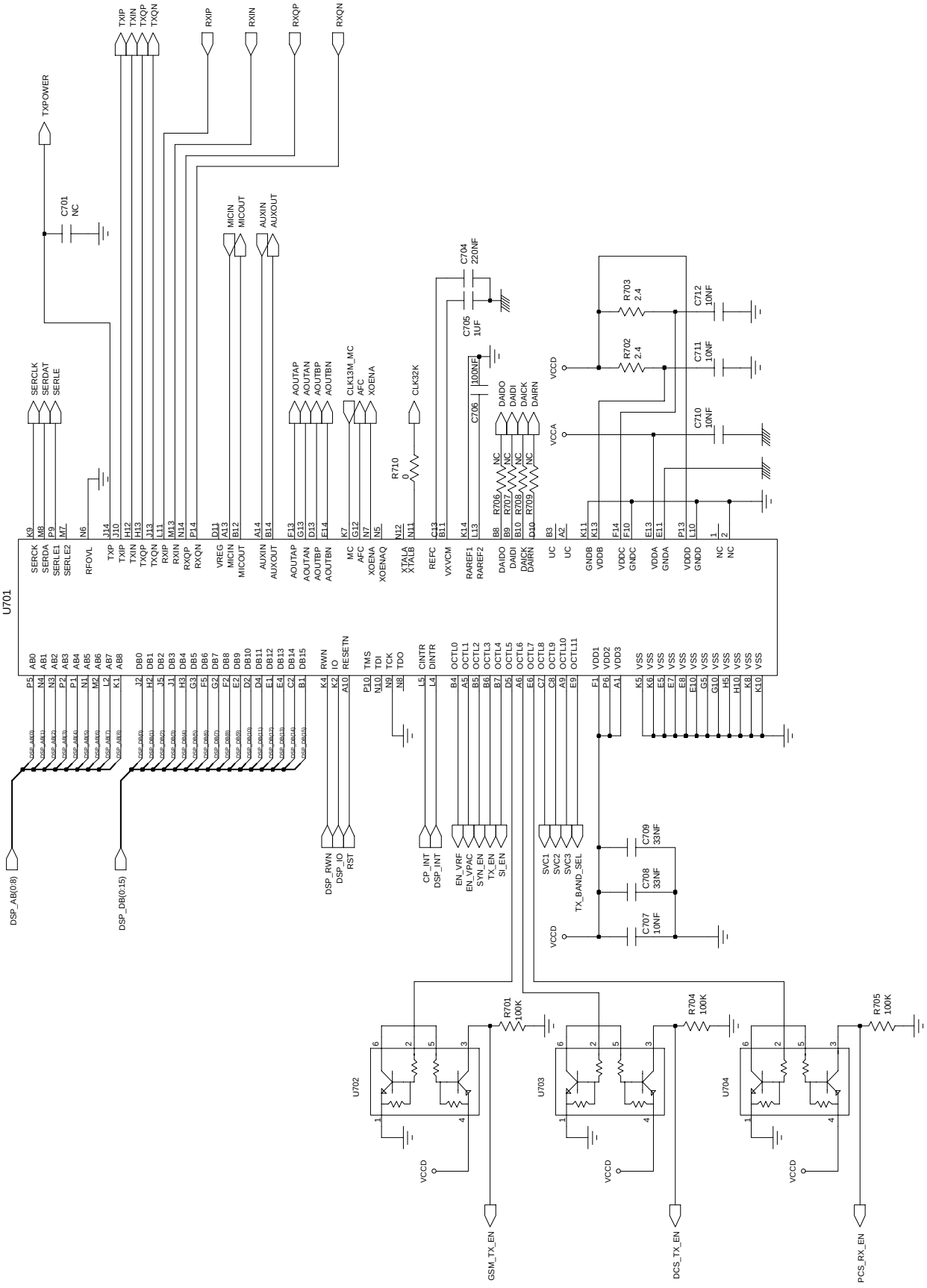

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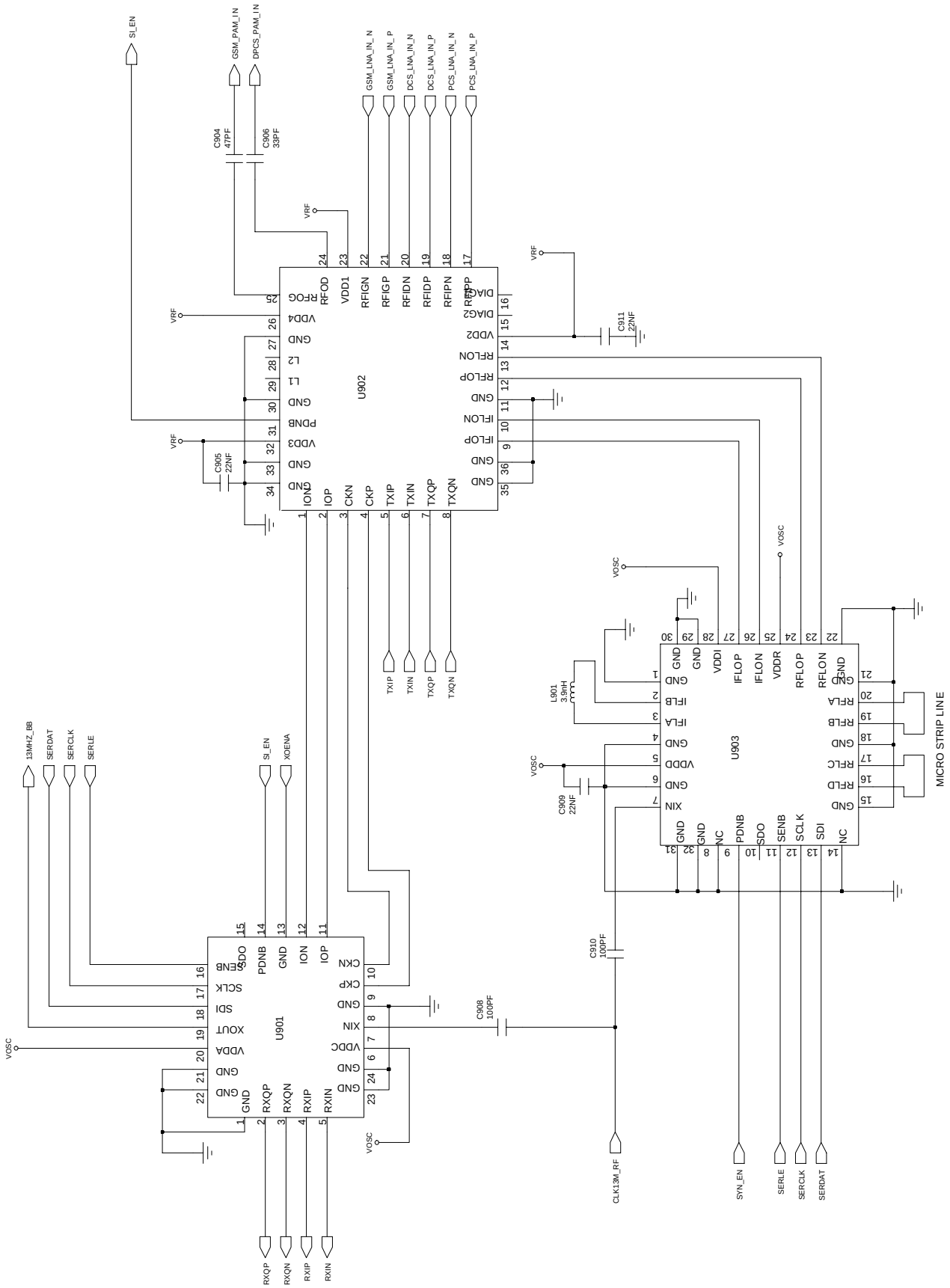

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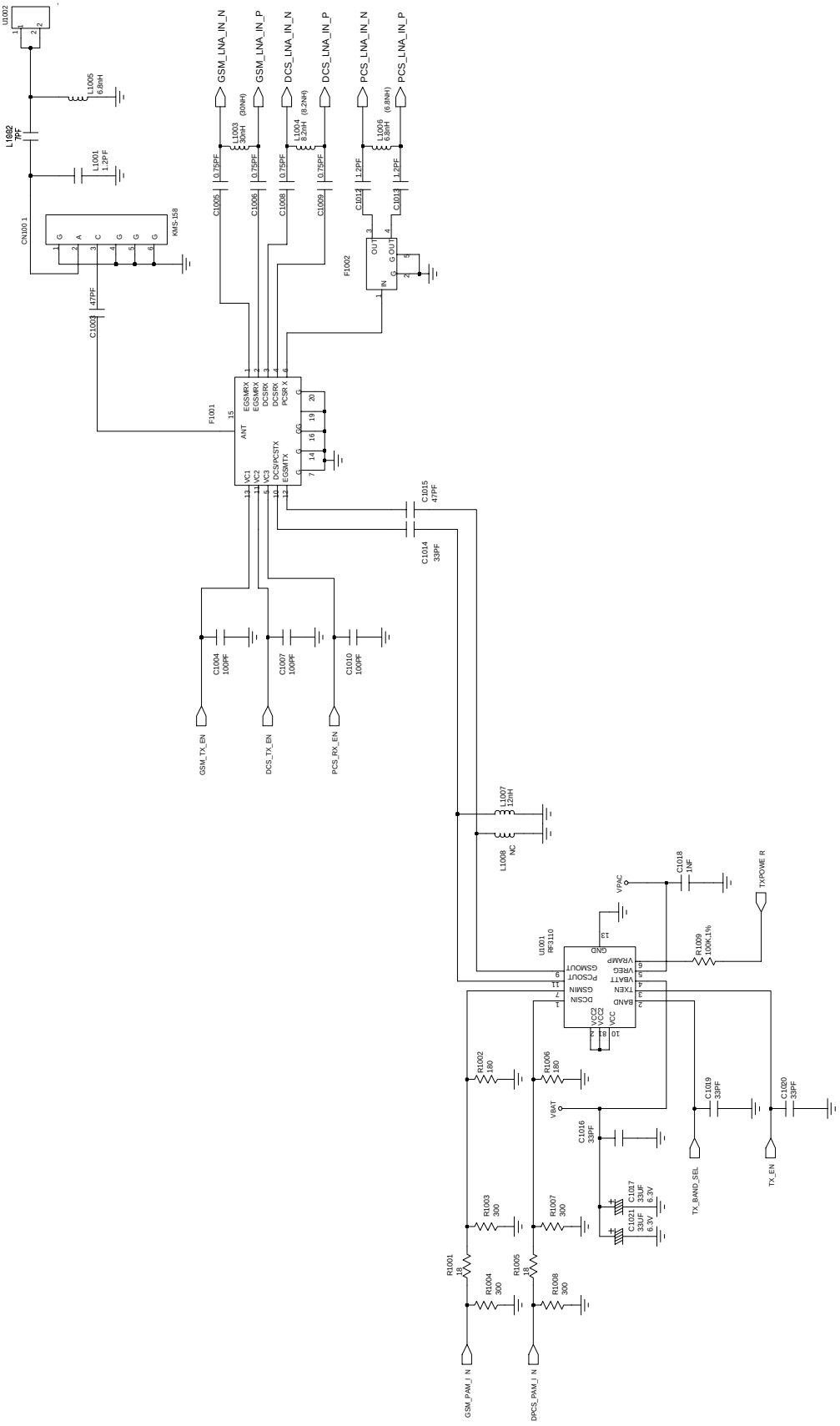

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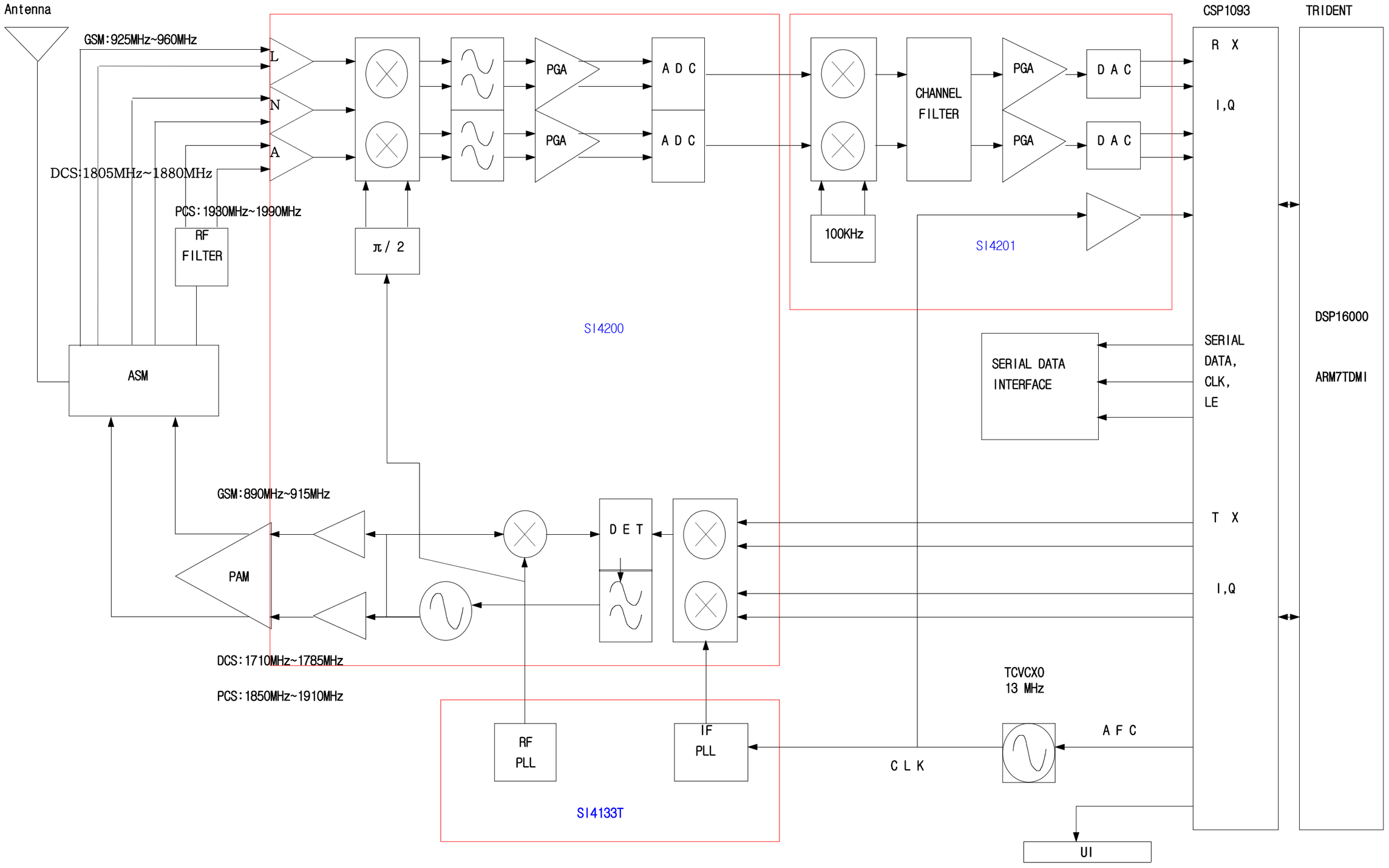
5. SGH-X400 Block Diagrams

1. RF Solution Block Diagram



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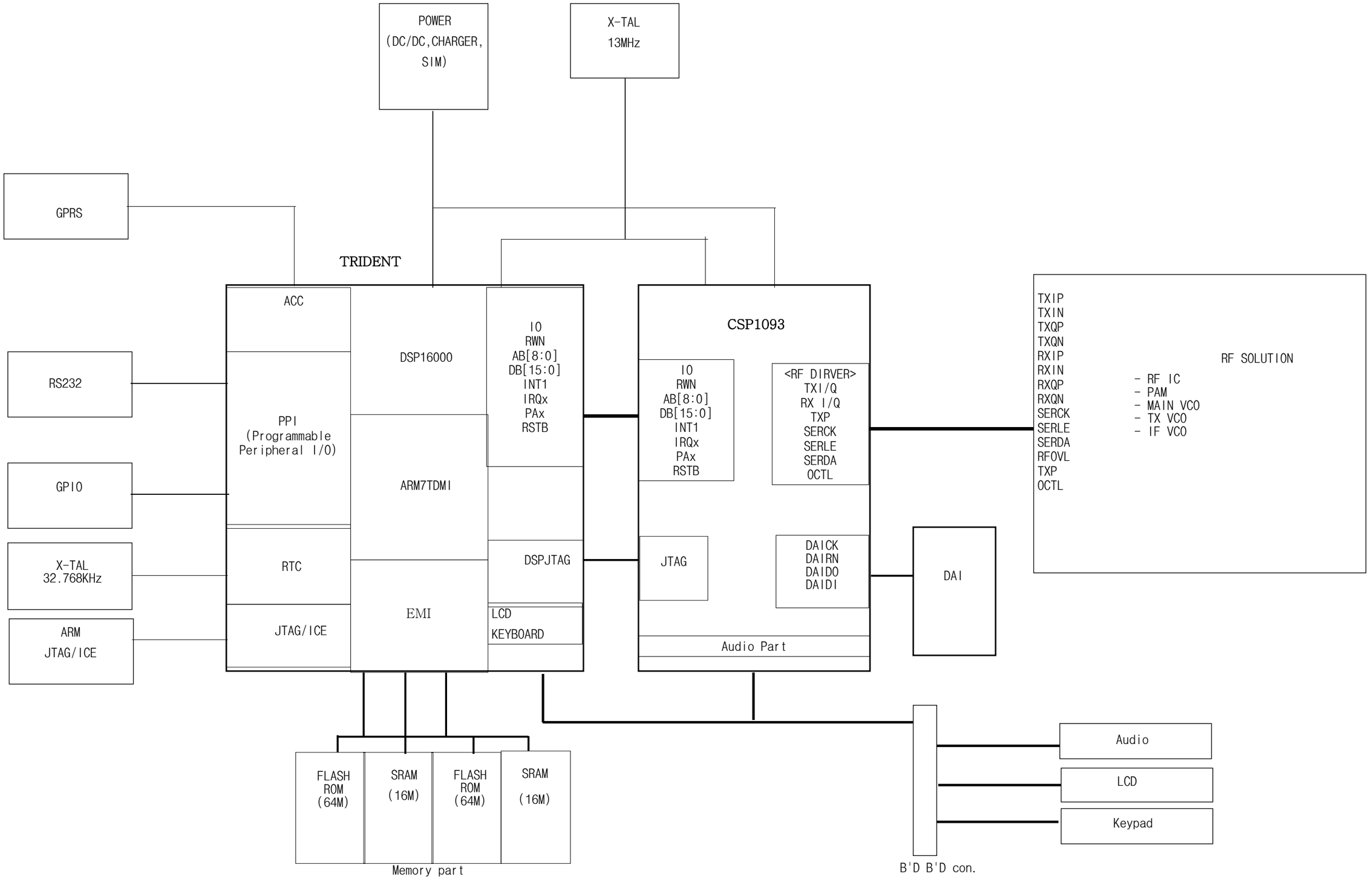
2. Base Band Solution Block Diagram



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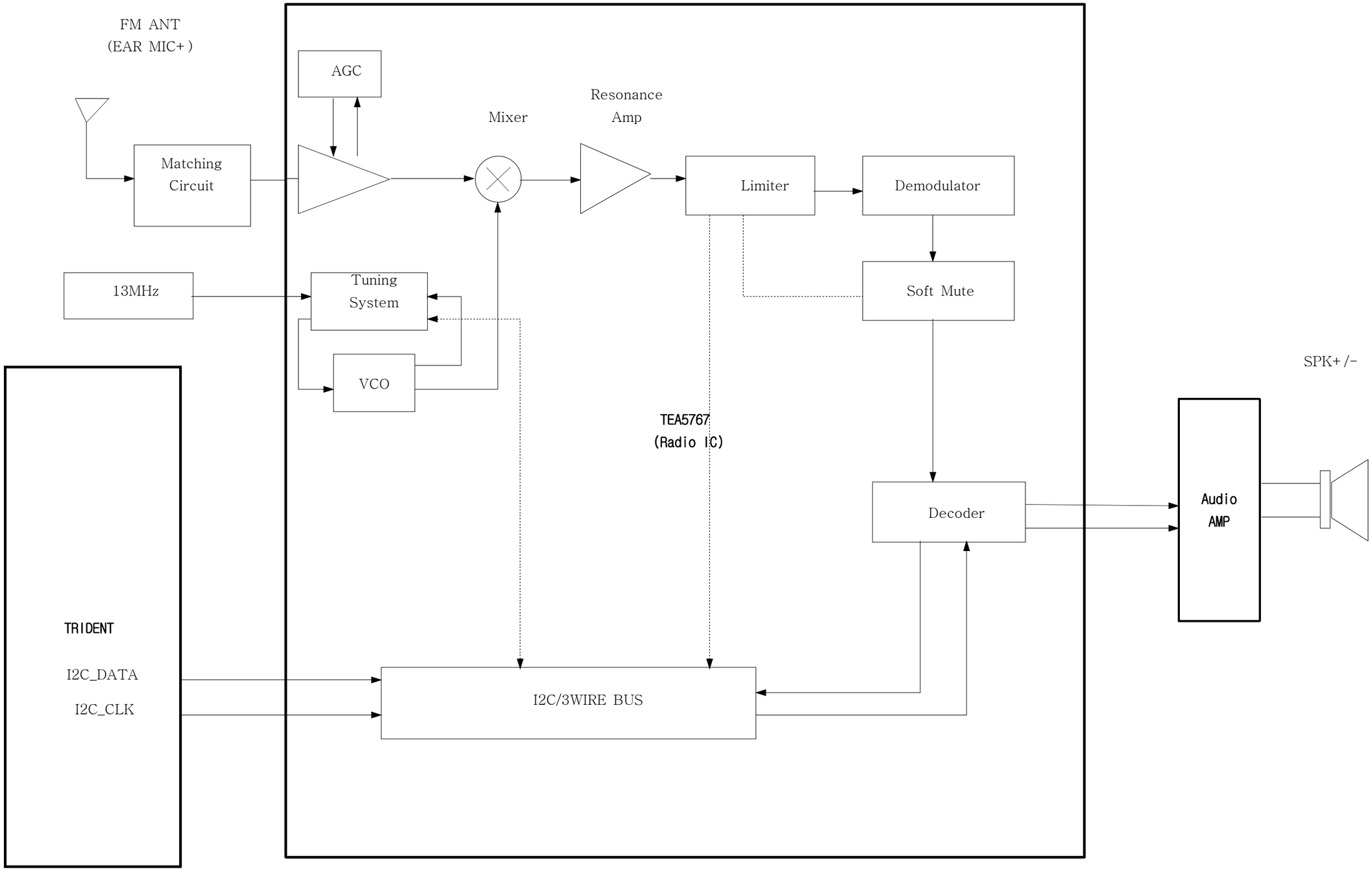
3. FM Radio Block Diagram



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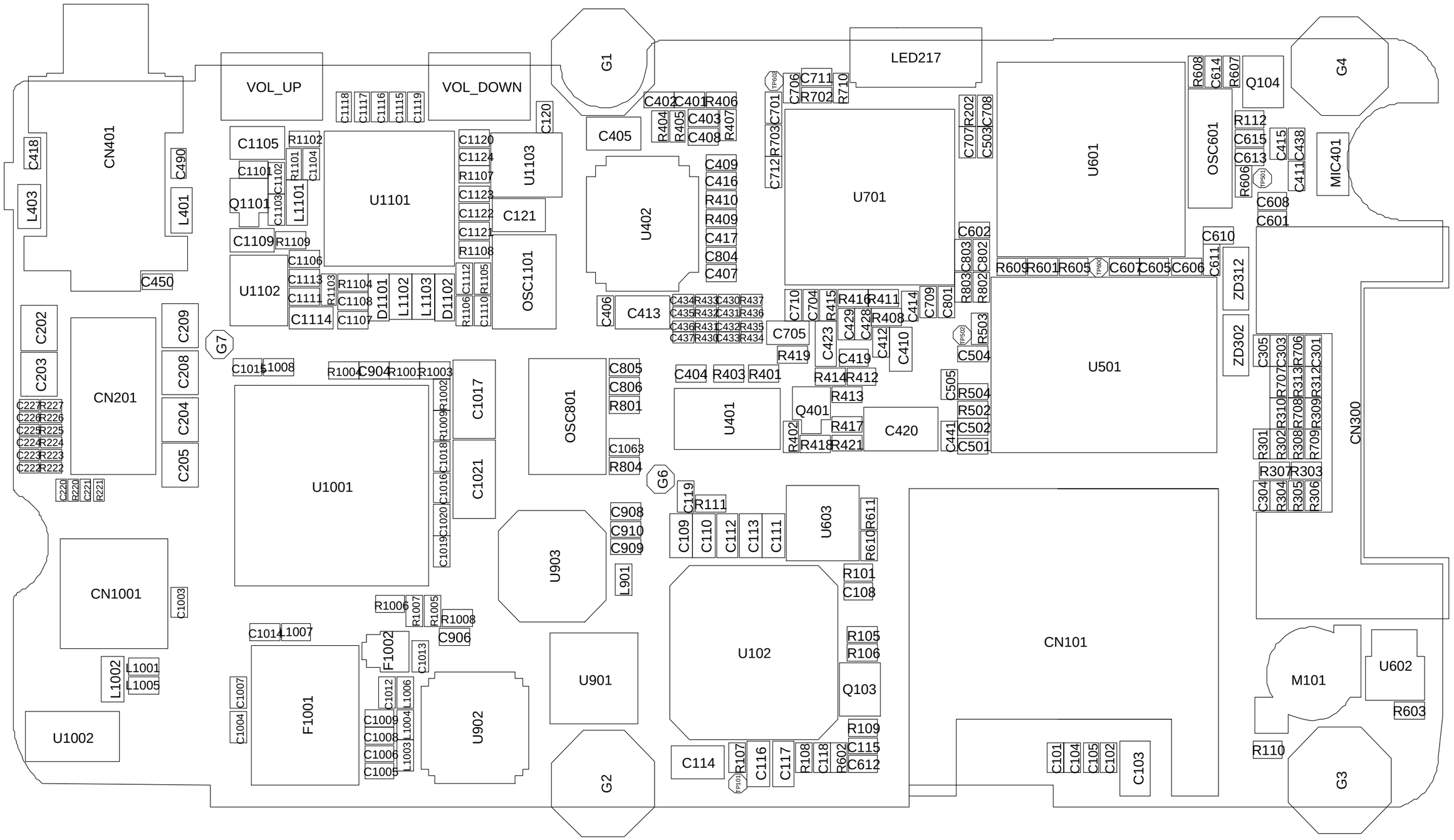
6. SGH-X400 PCB Diagrams

1. Main PCB Top Diagram



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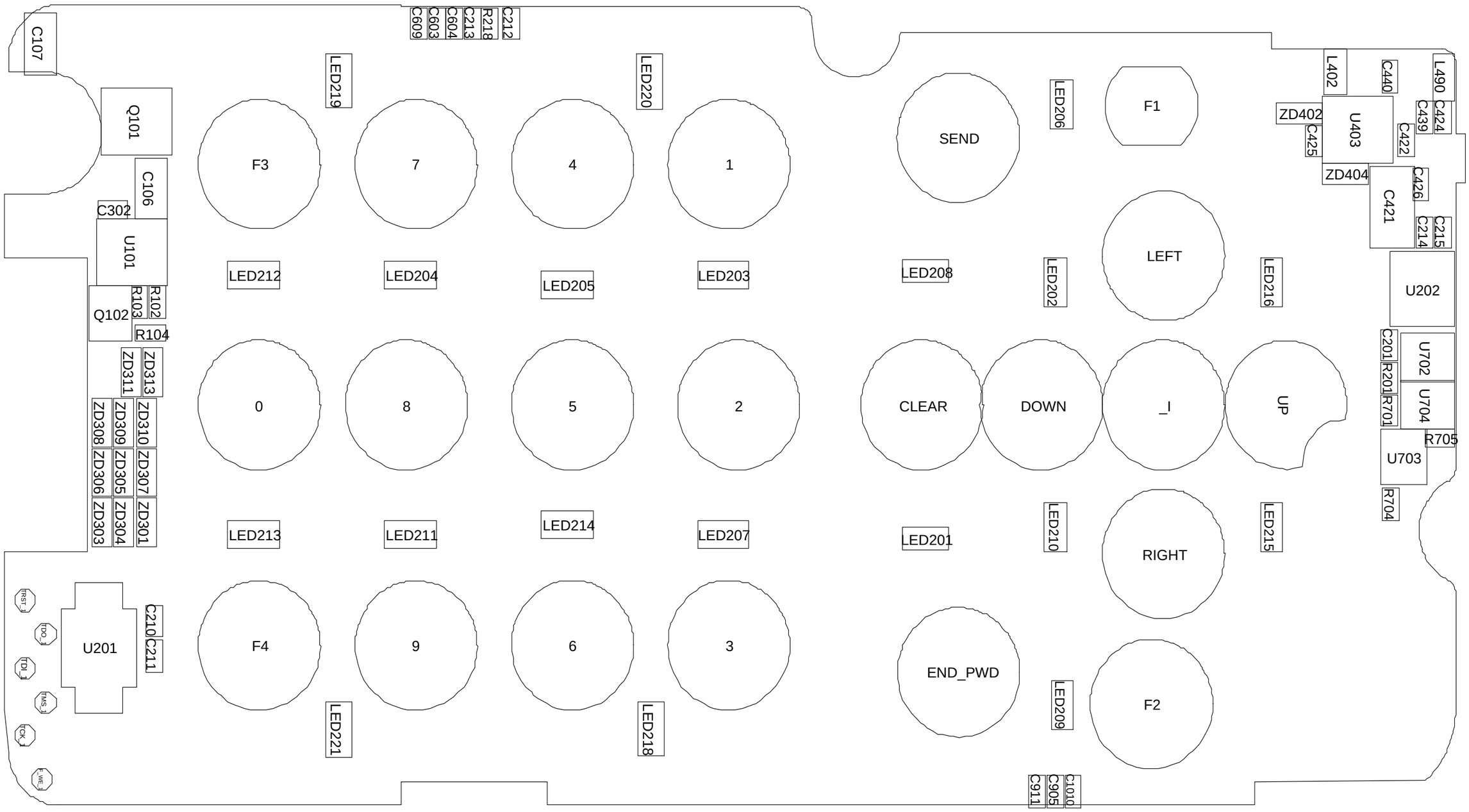
2. Main PCB Bottom Diagram



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