



Cellular Phone SCH-A302

SERVICE *Manual*

Cellular Phone



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1. SCH-A302 Specification (REF TIA/EIA/IS-137-A-1)

1. GENERAL

ITEM	CDMA
TX Freq. Range	824 ~ 849 MHz
RX Freq. Range	869 ~ 894 MHz
Channel Bandwidth	1.23 MHz
Channel Spacing	30 kHz
Number of Channels	20 FA
Duplex Separation	45 MHz
In/Output Impedance	50 Ω
TX Intermediate Freq.	130.38 MHz
RX Intermediate Freq.	85.38 MHz
TX Local Freq.	1st($F_{TX} + 130.38$ MHz)
	2nd(260.76 MHz)
RX Local Freq.	1st($F_{TX} + 210.38$ MHz)
	2nd(170.76 MHz)
TCXO freq.	19.68 MHz
Freq. Stability	($F_{RX} - 45$ MHz) \pm 350 Hz
Operating Temperature	-30 $^{\circ}$ C ~ +60 $^{\circ}$ C
Supply Voltage	+ 3.8 V
Size and Weight	SMALL : 81 x 42 x 21 mm 84 g
	MIDDLE : 81 x 42 x 22 mm 87 g
	LARGE : 81 x 42 x 25 mm 98 g

2. 800 MHz CDMA

2-1. GENERAL

TX Freq. Range	824 ~ 849 MHz
RX Freq. Range	869 ~ 894 MHz
Channel Bandwidth	1.23 MHz
Channel Spacing	30 kHz
Number of Channels	20 FA
Duplex Separation	45 MHz
In/Output Impedance	50 Ω
TX Intermediate Frequency	130.38 MHz
RX Intermediate Frequency	85.38 MHz
TX Local Frequency	1st ($F_{TX} + 130.38$ MHz)
	2nd (260.76 MHz)
RX Local Frequency	1st ($F_{RX} + 85.38$ MHz)
	2nd (170.76 MHz)
TCXO Frequency	19.68 MHz
Freq. Stability	(FRX - 45 MHz) \pm 150 Hz
Operating Temperature	-30 $^{\circ}$ C ~ +60 $^{\circ}$ C
Supply Voltage	+ 3.8 V

2-2. TRANSMITTER

Waveform Quality	0.944 or more
Open Loop Power Control	
-25 dBm	-57.5 dBm ~ -38.5 dBm
-65 dBm	-17.5 dBm ~ +1.5 dBm
-104 dBm	+18.0 dBm ~ +30.0 dBm
Minimum TX Power Control	Below -50 dBm
Closed Loop TX Power Control Range	\pm 24 dB
Maximum RF Output Power	200 mW (+24.5 dBm)
Occupied Band Width	1.32 MHz
Conducted Spurious Emission	@900 kHz
	@1.25 MHz
	-42 dBc / 30 kHz
	-54 dBc / 30 kHz

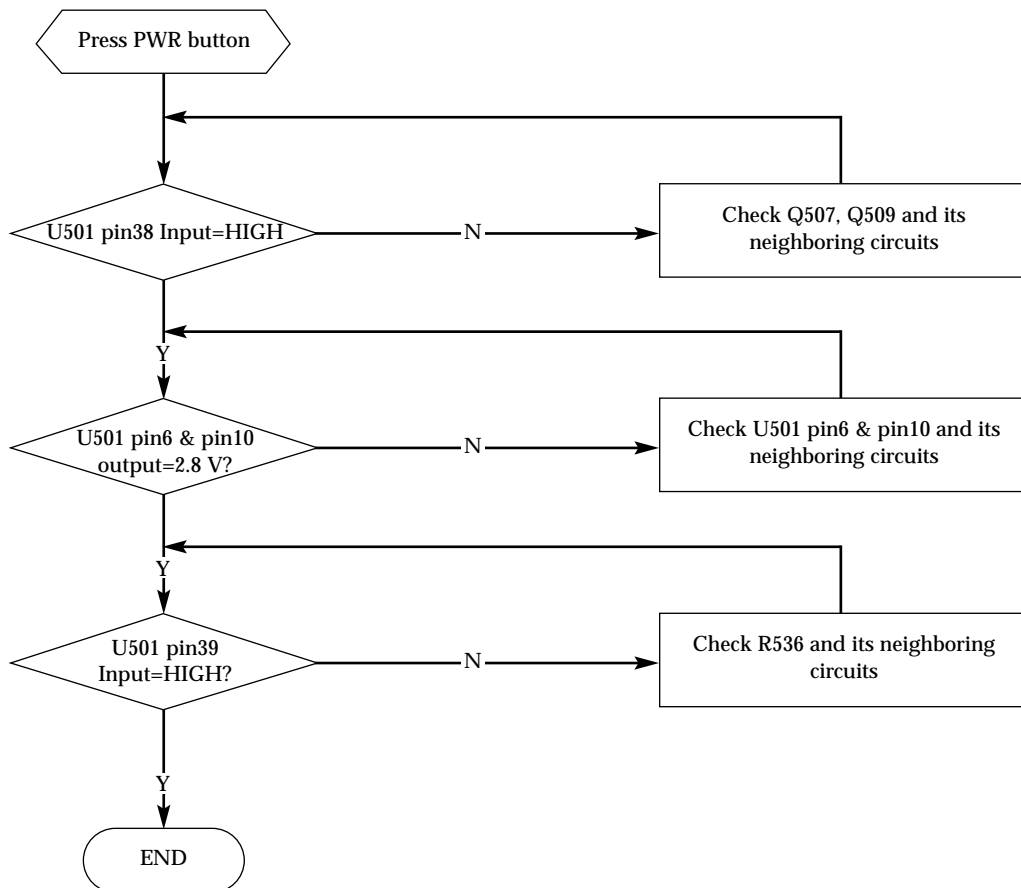
2-3. RECEIVER

Rx Sensitivity and Dynamic Range	-104 dBm, FER=0.5 % or less
	-25 dBm, FER=0.5 % or less
Conducted Spurious Emission 869 ~ 894 MHz 824 ~ 849 MHz All other Frequencies	< -81 dBm < -61 dBm < -47 dBm
Single Tone Desensitization Rx Power level -101 dBm Tone Power level -30 dBm Tone Offset from Carrier \pm 900 kHz	Lower than 1 %
Intermoculation Spurious Response Attenuation Tone 1 offset from carrier = \pm 900 kHz Tone 2 offset from carrier = \pm 1,700 kHz -Test 1, 2 Rx power = -101 dBm Tone 1 power = -43 dBm Tone 2 power = -43 dBm -Test 3, 4 Rx power = -90 dBm Tone 1 power = -32 dBm Tone 2 power = -32 dBm -Test 5, 6 Rx power = -79 dBm Tone 1 power = -21 dBm Tone 2 power = -21 dBm	Lower than 1 %

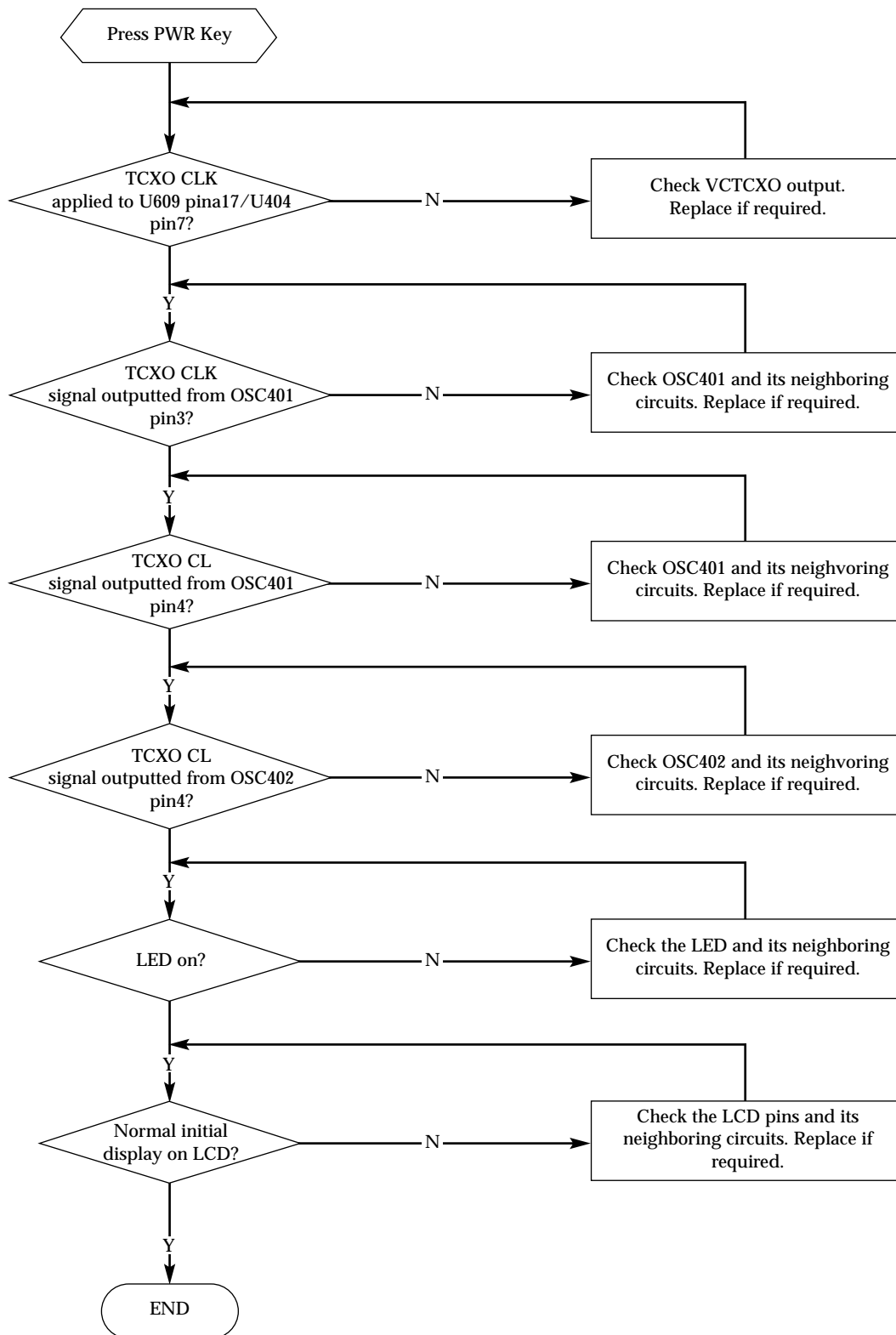
2. SCH-A302 Trouble Shooting

1. Logic Section

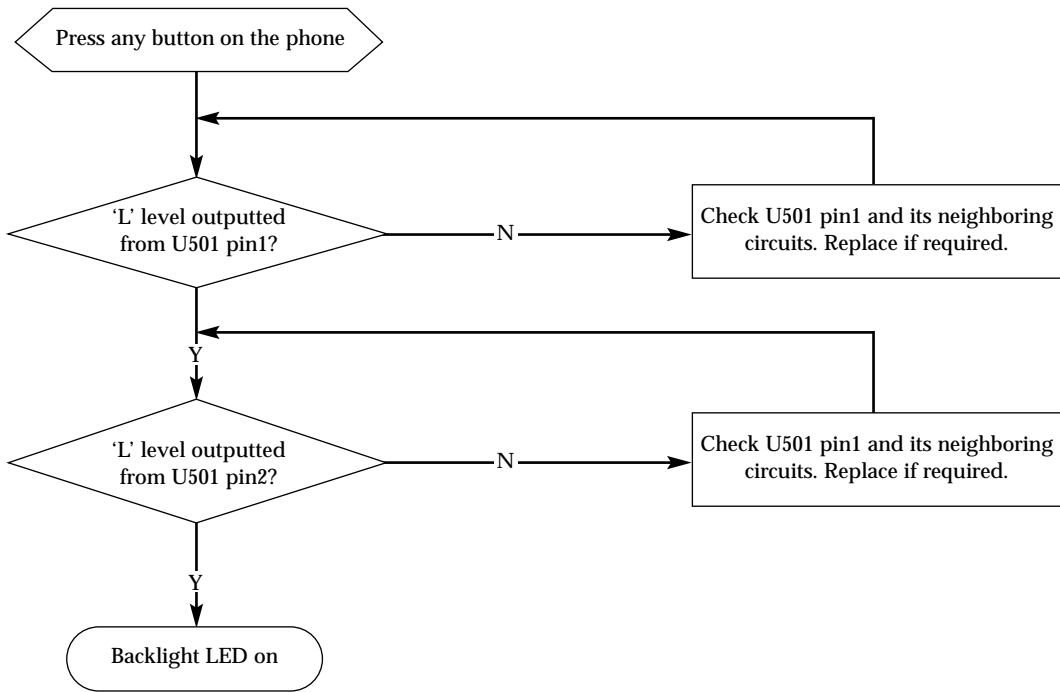
1-1. No Power



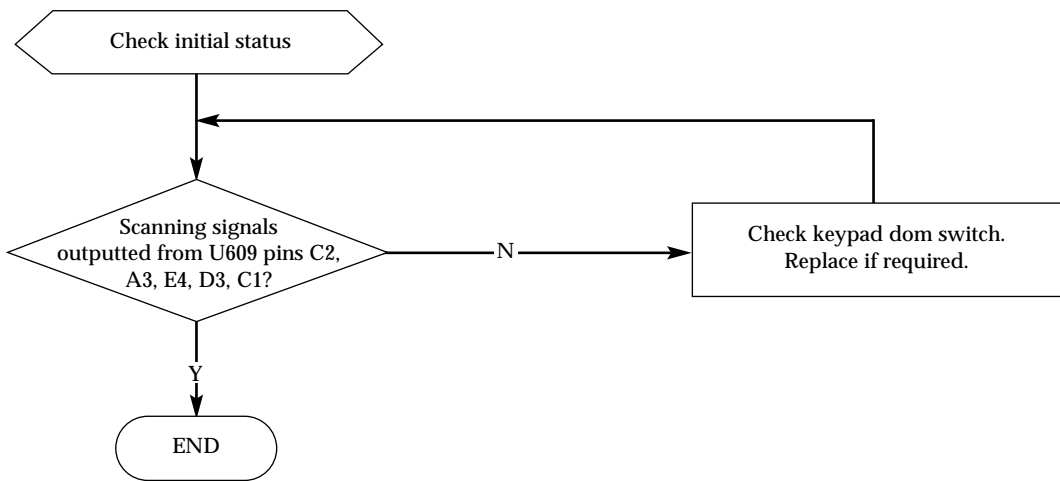
1-2. Abnormal Initial Operation



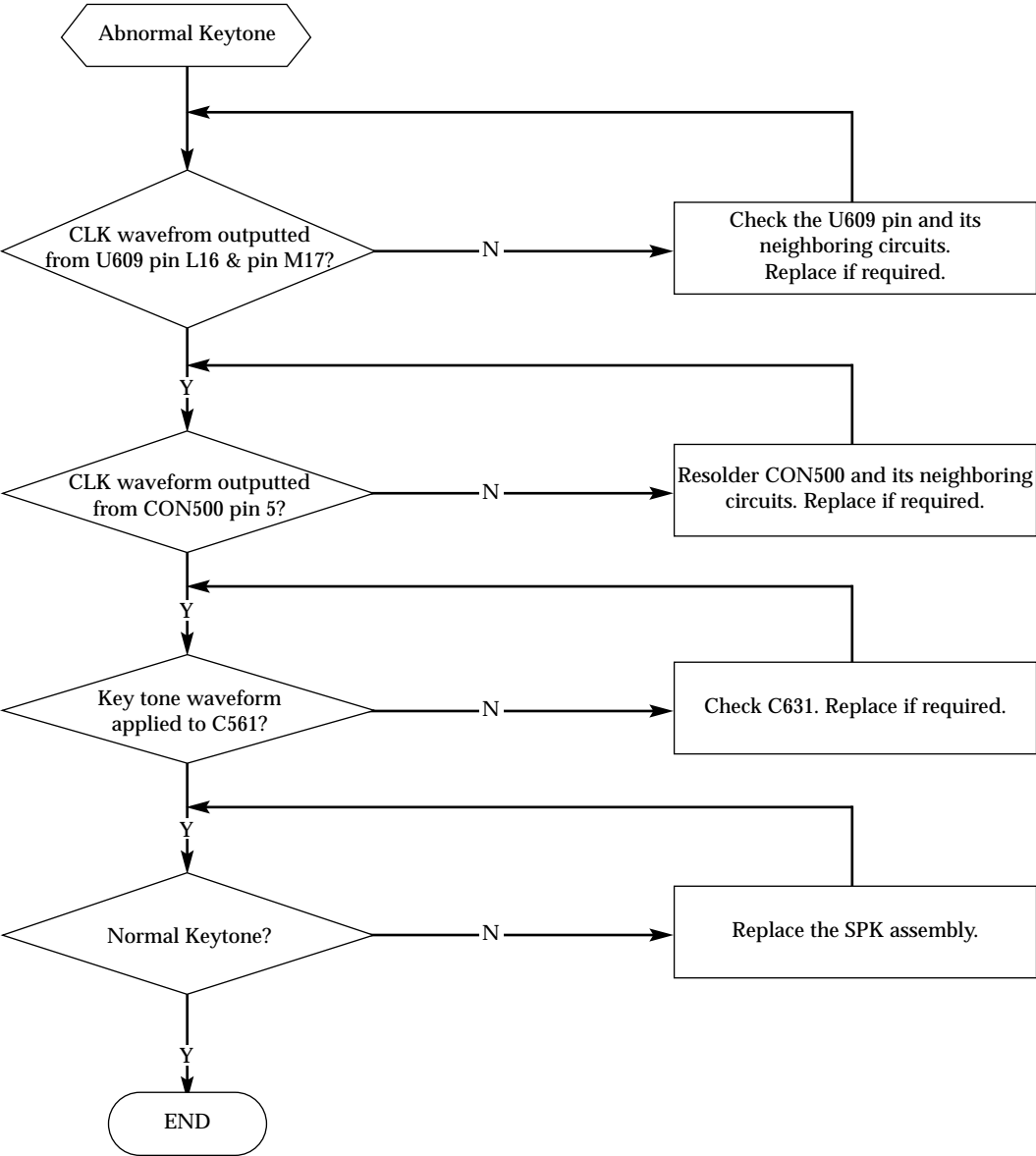
1-3. Abnormal Backlight Operation



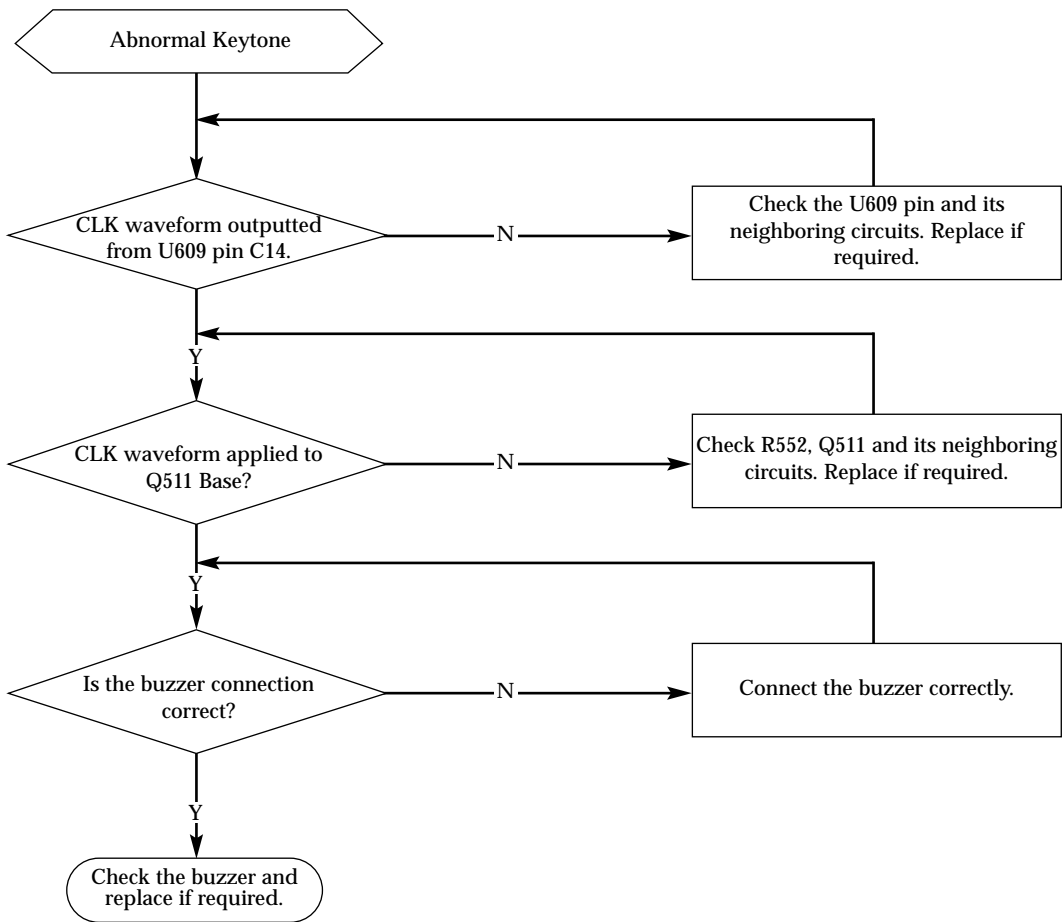
1-4. Abnormal Key Data Input



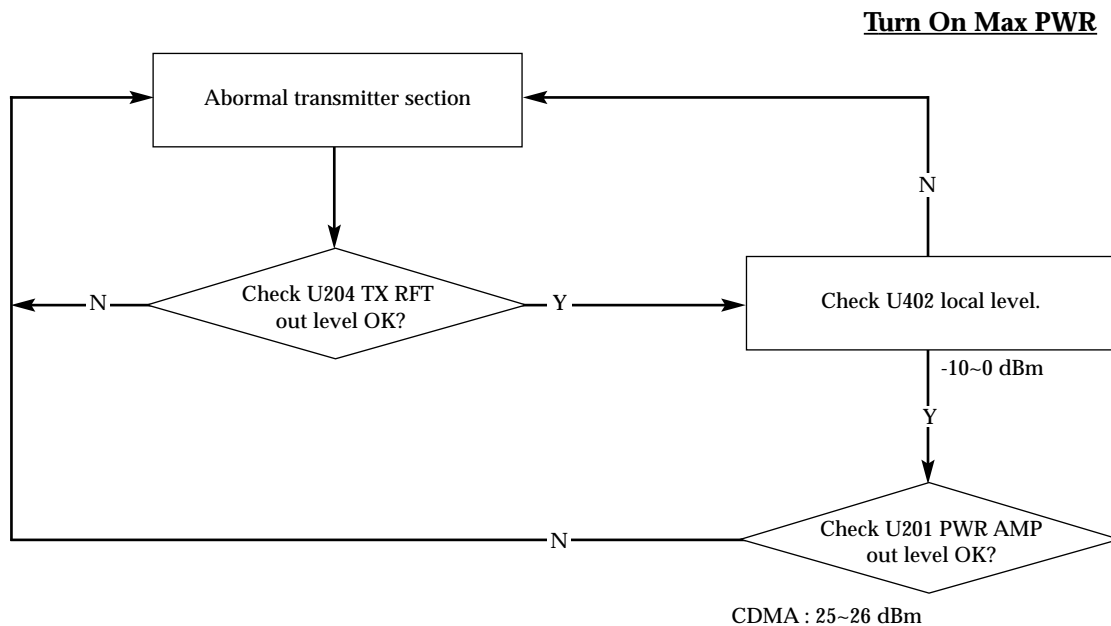
1-5. Abnormal Keytone



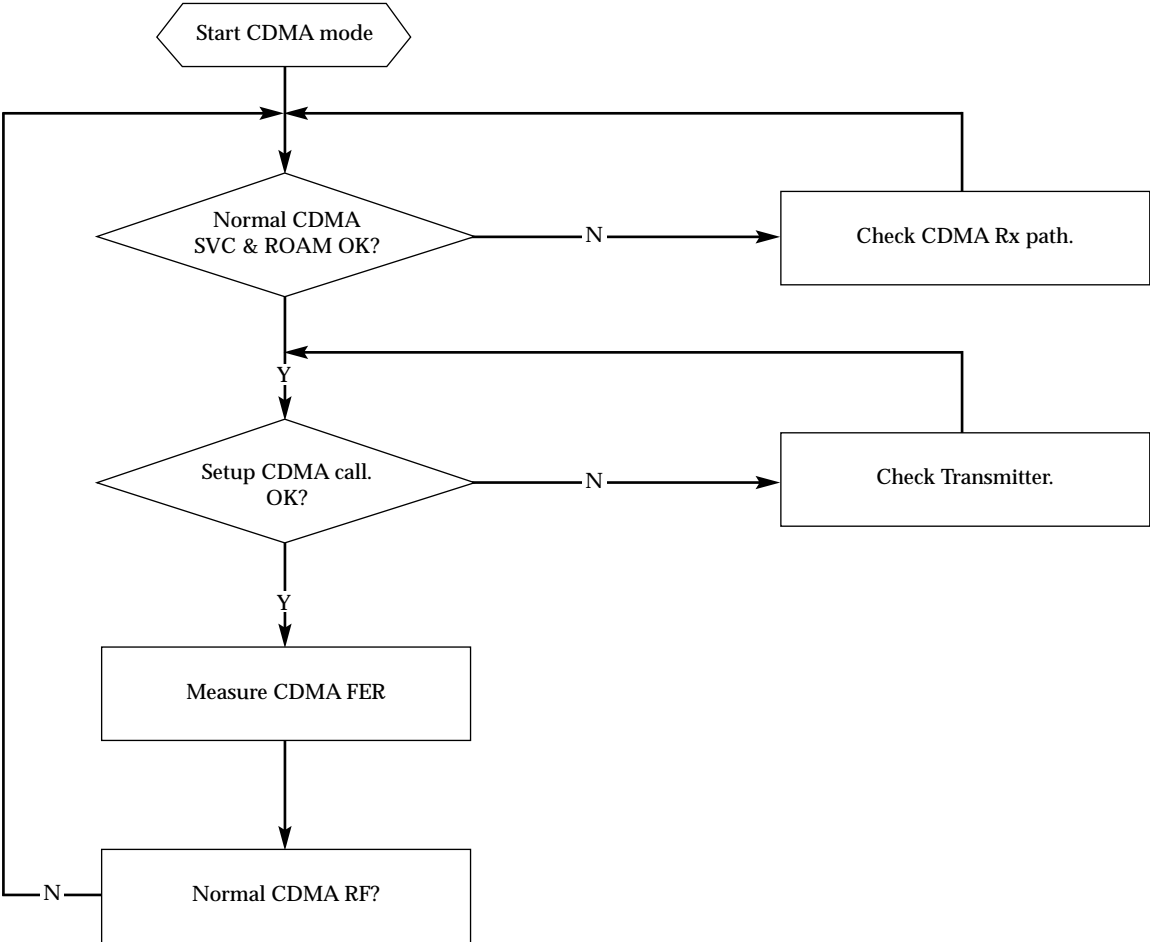
1-6. Abnormal Alert Tone



2. Transmitter Section



3. Receiver Section : CDMA MODE



4. Repair Guide

4-1. TX Part Check Point

Using commands in test mode

-01, 09 (0363), 07, 34, 71 (380)

(1) 130.38 MHz (TX IF) output line

- RFT3100 (U204) PIN #14,#15 (about -30 dBm)
- IF TXIF problem Then Check TX 2nd LOCAL (260.76 MHz)
- TX 2nd LOCAL check - RFT 3100 PIN #19 (about 23 dBm)

(2) TXRF (824~849 MHz) out lines.

- From RFT3100 (U204) pin #15 to CELLA_OUT
- F201 input and output is ok? - Pin #2 and #5 (about 16 dBm)
- PAM input is ok? U201 pin #2 (about 20 dBm)
- PAM voltage is ok? U201 pin #3 (3 V), 1,4 (3.7 V)
- PA output is ok? U201 pin #5 (about +10 dBm)
- Duplex input and out put is ok? Duplex input is same with PAM output.
Output is You can check CN302 #2 (about 10 dBm)

4-2. RX Part Check Point

(1) RX RF (869~894 MHz) Signal input lines.

- HP Equipment setting
- RF ch 363 (RX:880.89 MHz, TX:835.89 MHz)- at CALL CTRL MENU
- sctr A pwr : -25 dBm (for more easy to check use Spectrum Analyzer)
- Rf Lvl offset : -1.4 at config screen
- Spectrum Analyzer Setting
- center Freq: 880.89 MHz (when check RXRF in 363 Ch)
- span : 5 MHz
- RF input line from Duplex to Mixer check point
- CN302 input and Duplex out (You can check Duplex out at C652) is ok?
- LNA (U360)input ,output and operating voltage is ok?
:Operating voltage-pin#1 (2.5 v) in & out (#3 66 dBm,#4 49 dBm)
- F303 input and output is ok? #2,#5 (about 50 dBm)
- RX Mixer (U361) input is ok? #1 (about 49 dBm)

(2) RF IF circuit (Received RXRF Signal + 1st local = RX IF (85.38 MHz fixed)

- 1st local is ok? U361 #4,#5 (about 13 dBm)
- Voltage is ok? U361 pin #3 3.0v
- Mixer output is ok? U361 pin #6 RXIF (85.38 Mhz-fixed) (about 50 dBm)
- F301 input and output is ok?

(3) IFR (U302) neighbor circuit

- IF input is ok? U300 pin #11,12 (about 75 dBm)
- RX 2nd local is ok? U300 pin #21,22 (about 25 dBm)
- 3.0 V IF (3.0IF) lines are ok? IFR operating voltage

4-3. PLL Part Check Point

- (1) VCO (Voltage Controlled Oscillator)
 - Operating voltage is ok? OSC402 pin #7
 - VT voltage is ok? OSC402 pin #5 (VT voltage was changed according to CH)
 - Out is ok? OSC402 pin#1 output 1st local frequency each CH
- (2) PLL(Phase Looped Lock)
 - Operating voltages are ok? It use + 3.0 VR lines voltages
 - TCXO_IN input is ok? U402 pin#8 It use TCXO Freq (19.68 MHz) for Reference.

4-4. Power Line Check Point

- (1) U501 VBATT - #4 check
Reset - #B7 check
- (2) X501 (Sleep X-tal) 32.768 MHz (pk-pk 2.7 v)
- (3) TCXO(OSC401) 19.68 MHz
- (4) IFR3000(U302) - #37 check TCXO-N (4.96 MHz) TCXO/N
#38 check CHIP X8-(9.84 MHz)

4-5. Reference Regulators

PM1000 U501
 RESET : B7 RESET SIGNAL OUT
 3.0_RX : H5 - RX CIRCUIT OPERATING VOLTAGE
 3.0_TX : G5 TX CIRCUIT OPERATING VOLTAGE. (Controlled By Idle Signal)
 3.0_IF : H7 RFT3100,IFR3000 AND Etc.

4-6. SAMPLING REPAIR RESULT (SCH-A302)

- (1) No.1 : 24108148669 Tx Power Problem
 - TX IF does not out from RFT3100 (U204) pin#1,2.
 - 2nd local and operating voltages (3.0 IF,3.0 VR,VDC) are ok.
 - Estimated factor: IFT After replace IFT It working ok.
- (2) No.2 : 24108205255 - Tx Power Problem
 - TX IF does not out from RFT3100 (U402)pin#6,7.
 - 2nd local and operating voltages (3.0_MP, 3.0_TX, 3.0_TX_IF, 3.0_TXRF, 3.0_TX_LO) are ok.
 - PA ON signal does not out from MSM.
 - MSM also failed to J-TAG Tester.
 - Estimated factor: MSM defect

(3) No.3 : 24108167813 - Tx Power Problem

- All TX path is good from RFT 3100 to Mixer input port.
- Mixer output is lower than normal status.
- 1st local and operating voltages are ok.
- TX AGC ADJ voltage is too low.
- Estimated factor: Chip capacitor (C203) which connect to TX AGC ADJ voltage line C203 Replace ok.

(4) No.4 : Tx Power Problem

- All TX path and voltages are ok from Duplex input to RFT3100 input
- CELLA_OUT (-pin#17) is ok, But U201 RF_IN (-pin#2)is not good.
- Estimated factor : F201 Replace ok.

(5) No.5 : 24108146584 When touch MSM, RX RSSI value has lost.

- All RX path is good from Duplex to Mixer input port .
- 1st local & TCXO did not oscillate.
- TCXO upper case pushed then case and inside components were short when B'D is twisted.
Estimated factor : TCXO After replace TCXO It working ok.

(6) No.6 : 24108221088 - Problem with display (When power on, display was abnormal working)

- LCD and neighbor patterns are ok.
- Estimated Factor: Broken data which is in E2PROM. Data Rebuilding OK

(7) No.7 : 24108134768 - RX problem (No SVC)

- Handset doe not acquire SVC then searching CH repeat very quickly.
- All RX value is good at Rx Part Check Point.
- Ec/Io value (in debug screen) is bad.
- Estimated factor : MSM does not decode receiving signal.

(8) No.8 : No Power on (Can't not power on)

- X501 Sleep X-tal (32.768 MHz) is O.K
- V_DC 3.0V is O.K
- CHIP X8 No output IFR #38
- TCXO_N No output IFR #37
- TCXO Not oscillator Pin # 3
- TCXO crack : TCXO replace O.K

(9) No.9 : 24108233382 - ESN INVALID

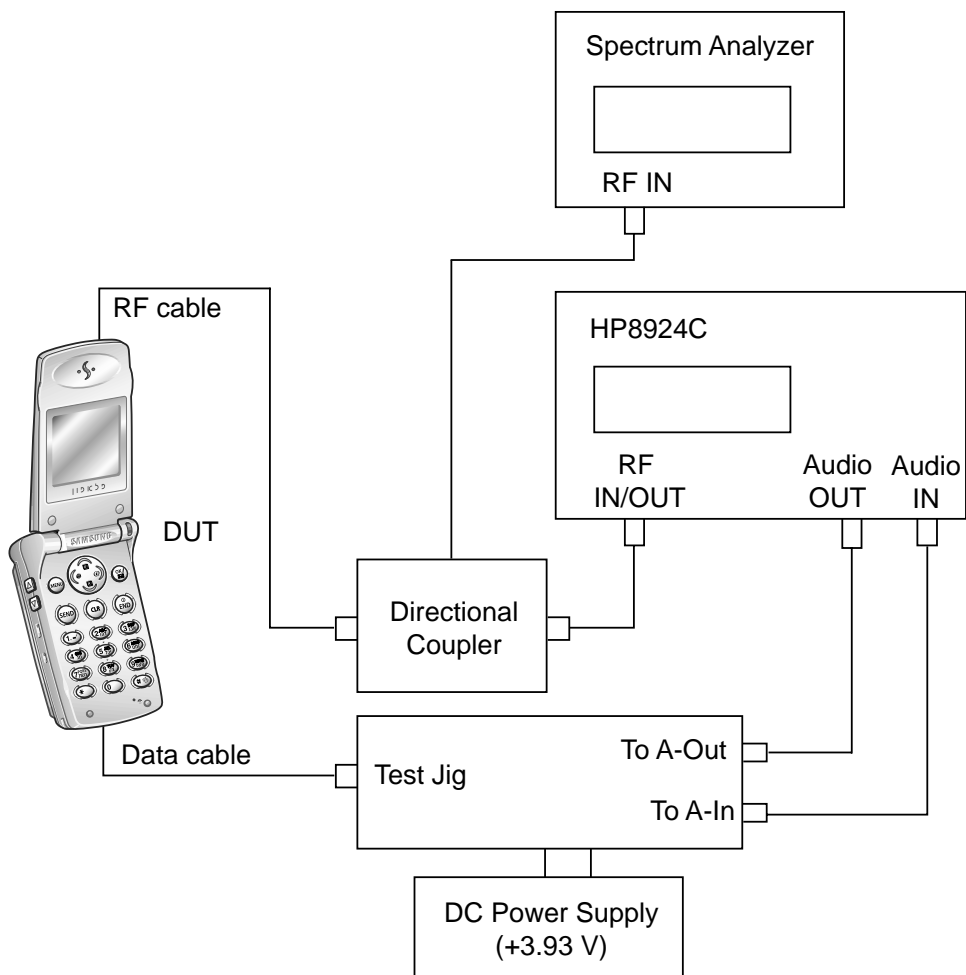
- ESN No was broken : 0000000
- ESN data at E2PROM was broken caused ESD or Electric shock.
- E2PROM replace and rewriting ESN number.

3. SCH-A302 Tune-up Procedure & Test Procedure list

1. List of Equipment

- DC Power Supply
- Test Jig : HHP I/F TESTJIG GH80-10502C
- Test Cable : GH3900052A
- RF Cable : GH3900075A
- CDMA Mobile Station Test Set HP8924C, HP83236A, CMD-80, etc
- Spectrum Analyzer(include CDMA Test Mode) HP8596E

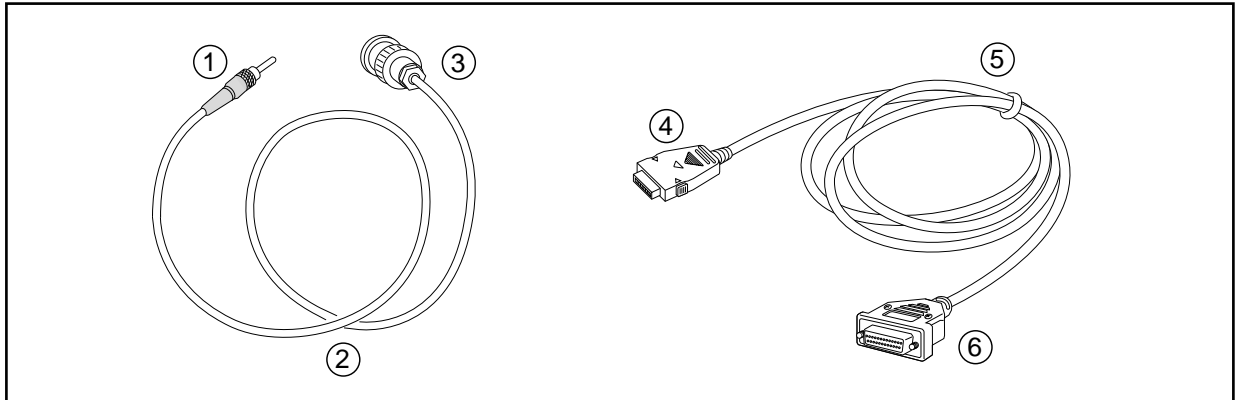
2. Configuration of Test



- **CAUTION** : The test jig and data cable has a voltage drop of 0.15 V at FM Max power output, you'd better set the DC power supply is 3.8 V for normal test condition. (Nominal voltage of battery is 3.8 V at cellular phone)

3. Test Cable Description for SCH-A302

3-1. Test Cable



3-2. Test Cable Connections

1	MHC 172
2	RF CABLE (1.4 dB Loss for CDMA800 and AMPS, 2.1 dB Loss for PCS)
3	BNC CONECTOR (RF)
4	PLUG CONNECT TO SCH-A302
5	DATA CABLE
6	Dsub 25PIN CONNECTOR (DATA)

Change to Test Mode

A. To Change the phone's state from Normal Mode to Test Mode, You should enter the following keys.
: Press [* 7 5 9 # 8 1 3 5 8 0 "(A+Y)"]

B. The Command "2 1" is mode and channel change.



and Push the [OK] Key to save.

C. The command "0 1" is Suspend.

D. To finish the Test Mode, You should enter the command "0 2".

Channel Selection and Tx Power Output Level Control

1. CDMA

A. Enter to Test Mode [* 7 5 9 # 8 1 3 5 8 0 "(A+Y)"]

B. The command "2 1" is mode and channel change.



Push the [OK] Key to save.

- C. "0 1" : Suspend.
- D. "2 1 + 2 0 3 6 3 '#'" : Set to '0363' channel.
- E. "0 7" " Carrier On.
- F. "3 4" : Spread spectrum to 1.23 MHz band width.
- G. "7 1 * * * " : Adjust RF power level.
Set the accurate power with press 'SEND' (power growing up) or 'END' (power growing down).
" * * * " means AGC level and AGC level range is from 000 to 511.

2. CDMA

TEST ITEMS	PROCEDURE
1. PREPARANCE	<p>Set test equipments up. [* 7 5 9 # 8 1 3 5 8 0 "(A+Y)"] : Enter the Test Mode "0 1" : Suspend Confirm that the phone is in te "CDMA Mode". (If not CDMA Mode, Use Test COMMAND "21" "2XXXX" and Push the [OK] Key to "save", and enter "0 2" to restart)</p> <p>If you select a wrong key, press "CLR", then enter new command. To exit the Test Mode at any time, just press [0 2].</p>
2. FREQUENCY ACCURACY	<p>"0 1" : Suspend. "0 9 + 0 3 6 3 '#'" : Set channel to 363. "0 7" : Carrier On. "3 4" : Spread spectrum. "7 1 3 0 0 '#'" : Set AGC level. Measure the TX frequency : 836.49 MHz \pm 300 Hz.</p>
3. OCCUPIED CDMA BANDWIDTH	<p>"0 1" : Suspend. "0 9 + 0 3 6 3 '#'" : Set channel to 383. "0 7" : Carrier On. "3 4" : Spread spectrum. "7 1 X X X '#'" : Enter AGC Code(XXX) to adjust RF Output Power. Measure the bandwidth (spec : 1.23 MHz)</p>
4. LIMITATIONS ON EMISSIONS	<p>"0 1" : Suspend. "0 9 + 0 3 6 3 '#'" : Set channel to 363. "0 7" : Carrier On. "3 4" : Spread spectrum. "7 1 X X X '#'" : Enter AGC Code(XXX) to adjust RF Output Power.</p> <p>Measure the spurious at $F_c \pm 900$ kHz, $F_c \pm 1.98$ MHz, $2F_c$, $3F_c$, $1/2F_c$. spec : $F_c \pm 900$ kHz below 42 dBc / 30 kHz $F_c \pm 1.98$ kHz below 54 dBc / 30 kHz Outside Receive Band $43 + 10 \log$ (PY) PY : Mean Output Power in watts</p>

3. CDMA Test Procedure

(1) PREPARATION

(2) FREQUENCY ACCURACY

Set to HP8924c auto test mode.
Then run auto test.
See the auto test result.

(3) OCCUPIED CDMA BANDWIDTH

※ Before call condition.

① HP8924c call control screen.

1. RF channel : equal to CDMA terminal.
2. Protocol : IS-95a
3. RF CH STD : MS AMPS
4. Traffic data mode : SVC OPT 2
5. Data rate : full rate
6. Power : avg power
7. Sector a power : -75 dBm

② Range screen setting

8. Pilot : -7 dBm
9. Traffic : -7.4 dBm
10. Pwr cotl : always up

③ Config screen(shift + test)

1. RF level offset : on
2. RF in/out : -1.4 dBm

④ Etc

1. Test cable loss : -1.4 dBm
2. Splitter loss : input measured loss

※ A method of measurement

① Call control screen

1. HP8924C channel equal to CDMA terminal.
2. Send call
Power : Always up.
Sector A power : -104 dBm
3. Spectrum analyser
Mode : cdma analyser - Freq - occupy bandwidth - occupied
4. Read Max power

(4) LIMITATIONS ON EMISSIONS

※ Before call control

① HP8924C call control screen

1. RF channel : Equal to CDMA terminal
2. Protocol : IS-95a
3. RF CH STD : MS AMPS
4. Traffic data mode : SVC OPT 2
5. Data Rate : FULL Rate
6. Power : CH power
7. Sector A power : -60 dBm
8. PWR COTL : CLOSED LOOP

- ② Config Screen (shift + test) screen
 1. RF Level Offset : ON
 2. RF In/Out : Input measured LOSS
- ③ ETC
 1. Test cable loss : -1.4 dBm
 2. SPLITTER : Input measured loss
- ※ A method of measurement
- ① Call control screen
 1. HP8924C channel equal to CDMA terminal.
 2. Send call
 3. Spectrum analyser
 - Mode : cdma analyser - more - more - xmtr spurious-spurious close
 - Measure -13 dB spurious
 4. Change segment F-, F+, Fc then check wave form quality
- ② Specification

"A" is pass, or when "A" was fail, "B" and "C" must pass.

	IN BAND	OUT BAND
Center Frequency OFF set	*30 kHz bandwidth-over 900 kHz *1 MHz bandwidth-over 1.385 MHz	*30 kHz bandwidth-over 1.98 MHz *1 MHz bandwidth-over 2.465 MHz
	(A) -42dBc / 30kHz	(A) -54dBc / 30kHz
	(B) -60dBc / 30 kHz	(B) -60dBc / 30 kHz
	(C) -55dBm / 30 kHz	(C) -55dBm / 30 kHz

4. Download New software

To download program, you need to connect your pc and mobile using data link cable or jig box. Please make sure your phone is in DM mode (menu 4 -> 9) before you are using Ndloader. (It is easier this way)

- (1) Connect your pc and handset using data link cable or jig box.
- (2) Power on the phone. Please check that the phone is in DM mode. (Menu->4->9).
If it is in Handsfree mode, please change it to DM mode and press ok.
The phone will be restarted.
- (3) Run the Ndloader.
- (4) To make sure that your phone is connected with Ndloader, click ? icon on the program, you would get the phone information.
- (5) Click folder icon on the Ndloader to choose new binary file to download.
You will see the file information.
- (6) On the right middle of Ndloader, you will see download types. Choose Normal.
- (7) Now you are ready to download new software.
Then Click download icon (the green runner) to start download. Please wait until download is done.

If download is completed properly, the phone will be restarted.

4. SCH-A302 Frequency Synthesizer Circuit & Spurious radiation suppression circuit

1. Frequency Synthesizer Circuit

The Frequency synthesizer is an indirect frequency synthesizer PLL(Phased Locked Loop). It consists of a VCTCXO(OSC401), PLL, VCO (OSC402, U402), and loop filter.

VCTCXO

The VCTCXO is a reference source of the frequency synthesizer. It provides 19.68MHz reference frequency to PLL, VCO (OSC402, U402). The VCTCXO is a Voltage Controlled Temperature Compensated Crystal Oscillator having 19.68 MHz \pm 2.5 ppm frequency stability over all useful temperature range. A correct frequency tuning is made by the control voltage.

VCO, PLL

The PLL, VCO Module(OSC402, U402) generates the signal having 966 \pm 12.5 MHz center frequency with the voltage control. The PLL, VCO (OSC402, U402) controls this signal.

The PLL, VCO Module(OSC402, U402) includes prescalers and charge pump. The reference divider in the PLL, VCO Module(OSC402, U402) divides the frequency of VCTCXO by 1968 and makes reference frequency 10kHz. This reference frequency is supplied to one of the input of phase detector. The signal generated at the PLL, VCO Module(OSC402, U402) goes into another input stage of the phase detector through a prescaler and the main divider.

At this point, the error proportional to the phase difference of two inputs is occurred.

This error signal is supplied to the frequency control input stage of the PLL, VCO (OSC402, U402) through the loop filter consisted RC.

2. Spurious Radiation Suppression Circuit

The spurious signal from antenna is suppressed at the duplexer. The duplexer has a flat characteristics to the receive signal and a high attenuation characteristics to the harmonic signal of transmission. So it suppress the spurious radiation

Table: The characteristic of CDMA duplexer filter(F302)

PARAMETER	VALUE
T X	
Center Frequency	836.5 MHz (F _T)
Bandwidth	F _T ± 12.5 MHz
Insertion Loss at BW	3.0 dB Max
VSWR at BW	1.8 Max
Input power	3.0 W Max
Attenuation	869 ~ 894 MHz 40 dB Min
Ripple at BW	1.6 dB Max
R X	
Center Frequency	881.5 MHz (F _R)
Bandwidth	F _R ± 12.5 MHz
Insertion Loss at BW	4.0 dB Max
VSWR at BW	1.8 Max
Input power	1 W Max
Attenuation	824 ~ 849 MHz 56 dB Min
Ripple at BW	2.0 dB Max
T X to R X	
Isolation	824 ~ 849 MHz 55 dB Max
	869 ~ 894 MHz 49 dB Max

5. SCH-A302 NAM Programming

NAM features can be programmed as follows:

Notes:

- If you enter the NAM program mode, each item shows the currently stored data. Go to the next item by pressing OK.
- You can modify the data by entering a new data.
- If you enter a wrong digit, press CLR to delete the last digit. Press and hold CLR to delete all digits.
- To scroll items backwards or forwards, press the VOLUME button on the left side of the phone.

1. General Setup

LCD Display	Key in	Function
	47*869#08#9	-selects NAM programming
NAM Program 1:General 2:NAM1 Setup 3:NAM2 Setup 4:Advanced	1	-Choose 'General'
ESN B0000000	Volume ▲	-Electronic Serial Number of the phone is displayed
CAI version 3	Volume ▲	-Common Air Interface version is displayed
13K EVRC/8K 13K voice	◀ * or # ▶ OK	Vocoder sample rate -changes the status. -stores it. -8K is not supported.
SCM 01101010	Volume ▲	-Station Class Mark displays the power class, transmission, slotted class, dual mode.
Lock Code 0000	Volume ▲ 4-digit code OK	Lock code, current status is displayed -to change, enter new code. -stores it
Slot Mode Yes	◀ * or # ▶ OK	Slot mode. 'Yes' indicates the slot mode. -changes the status. -stores it.
Slot Index 2	Volume ▲ 0~7 OK	Slot mode index. The higher,the longer sleeping time -to change, enter new one. -stores it.

2. Setting Up NAM

LCD Display	Key in	Function
NAM Program 1:General 2:NAM1 Setup 3:NAM2 setup 4:Advanced	2	-Choose 'NAM1 Setup'
CDMA TEL NO. 3003003000	number OK	MIN1,MIN2 is displayed -to change, enter new one. -stores it.
IMSI MCC 000	number OK	IMSI Mobile Country Code,current code is displayed. -to change, enter new one. -stores it.
IMSI MNC 00	number OK	IMSI Mobile Network Code,current code is displayed. -to change, enter new one. -stores it.
SYSTEM Standard	OK	- Only 'Standard' mode is supported.
ACCOLC 0	class number OK	CDMA Access Overload Class,current status is displayed. -to change,enter new one. -stores it.
Pchn Sys A 000	channel number OK	Primary CDMA Channel for System A is displayed -to change, enter new one. -stores it.
Pchn Sys B 000	channel number OK	Primary CDMA Channel for System B is displayed -to change, enter new one. -stores it.
Schn Sys A 000	channel number OK	Secondary CDMA Channel for System A is displayed -to change, enter new one. -stores it.
Schn Sys B 000	channel number OK	Secondary CDMA Channel for System B is displayed -to change, enter new one. -stores it.
LockoutSID 1~10 0000	SID number OK	CDMA SID to lockout is displayed -to change, enter new one. -stores it.
CDMA HOME SID Yes	# or * OK	CDMA Home system ID, current value is displayed. -changes the status. -stores it.

LCD Display	Key in	Function
CDMA fSID Yes	# or * OK	CDMA foreign SID, current value is displayed. -changes the status. -stores it.
CDMA fNID Yes	# or * OK	CDMA foreign NID, current value is displayed. -changes the status. -stores it.
HomeSID #1 ~ #4 4120	number OK	CDMA HOME SIDs written in the list, current value is displayed. -to change, enter new one. -stores it.
HomeNID #1 ~ #4 65535	number OK	CDMA HOME NIDs written in the list, current value is displayed. -to change, enter new one. -stores it.

6. SCH-A302 Electrical parts list

Level	SEC CODE	Design LOC	DESCRIPTIONS
0	GH92-00996A		
1	GH41-00192A		PCB-SCHA302 MAIN SCH-A302, -, 6L, -, 0.7T, 100 x 138 mm, -, 3, -, -
1	GH71-00052A		NPR-ANT.CONTACT SCH-A100, BE-CU, T0.1, AU
1	GH73-00214A		RMO-ANTENNA RUBBER SPH-A1000, RUBBER, 2 x 3 x T0.5, BLK, 50
1	GH73-00442A		RMO-BUZZER HOLDER SCH-A300, RUBBER, -, BLK, 50, -
1	GH74-00843A		MPR-FPCB CUSHION SCH-A8800, 71TS, T3, BRN, -
1	GH74-00892A		MPR-SHIELD TAPE 5 SCH-A8800, TAPE, T0.14, -, -
1	GH74-00898A		MPR-SHIELD TAPE 6 SCH-A300, -, 6 x 4, S/BLU, -
1	3002-001101	AU501	BUZZER-MAGNETIC 88 dB, 3.6 V, 100 mA, 2550 Hz, TP
1	2203-000254	C101	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000995	C102	C-CERAMIC, CHIP 0.047 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000254	C103	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000940	C104	C-CERAMIC, CHIP 470 pF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000940	C105	C-CERAMIC, CHIP 470 pF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000254	C106	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-005061	C107	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-005061	C108	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000254	C109	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000233	C110	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-005061	C111	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000233	C112	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-005061	C113	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000940	C114	C-CERAMIC, CHIP 470 pF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000940	C115	C-CERAMIC, CHIP 470 pF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000254	C116	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000233	C117	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000233	C118	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000438	C119	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000438	C120	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000438	C121	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-005061	C122	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000254	C123	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-005061	C124	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005

Level	SEC CODE	Design LOC	DESCRIPTIONS
1	2203-000438	C125	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000438	C126	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000438	C127	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000254	C128	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000714	C129	C-CERAMIC, CHIP 3.3 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000254	C140	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-005061	C142	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-005061	C143	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000254	C144	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000940	C145	C-CERAMIC, CHIP 470 pF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000254	C146	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000438	C147	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000438	C150	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000438	C151	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000438	C152	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2404-001017	C160	C-TA, CHIP 1 uF, 20 %, 10 V, GP, TP, 2012, 2, 0
1	2203-000940	C161	C-CERAMIC, CHIP 470 pF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000940	C162	C-CERAMIC, CHIP 470 pF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000628	C201	C-CERAMIC, CHIP 0.022 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-005061	C202	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000885	C203	C-CERAMIC, CHIP 4.7 nF, 10 %, 25 V, X7R, TP, 1005, -
1	2203-000995	C204	C-CERAMIC, CHIP 0.047 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000254	C205	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000233	C207	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000254	C208	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-001598	C209	C-CERAMIC, CHIP 2200 nF, +80-20 %, 16 V, Y5 V, TP, 2012
1	2203-005503	C210	C-CERAMIC, CHIP 0.18 nF, 5 %, 25 V, NP0, TP, 1005
1	2203-005503	C211	C-CERAMIC, CHIP 0.18 nF, 5 %, 25 V, NP0, TP, 1005
1	2203-001598	C213	C-CERAMIC, CHIP 2200 nF, +80-20 %, 16 V, Y5 V, TP, 2012
1	2203-000254	C214	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000233	C215	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000995	C216	C-CERAMIC, CHIP 0.047 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000254	C217	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-001072	C218	C-CERAMIC, CHIP 0.056 nF, 5 %, 50 V, NP0, TP, 1005

Level	SEC CODE	Design LOC	DESCRIPTIONS
1	2203-000254	C219	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2404-001151	C220	C-TA, CHIP 33 uF, 20 %, 6.3 V, LZ, TP, 3216
1	2203-001017	C221	C-CERAMIC, CHIP 0.004 nF, 0.25 pF, 50 V, NP0, TP, 1005
1	2203-001259	C222	C-CERAMIC, CHIP 0.008 nF, 0.5 pF, 50 V, NP0, TP, 1005
1	2203-001072	C223	C-CERAMIC, CHIP 0.056 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000940	C226	C-CERAMIC, CHIP 470 pF, 10 %, 50 V, X7R, TP, 1005, -
1	2404-001017	C227	C-TA, CHIP 1 uF, 20 %, 10 V, GP, TP, 2012, 2, 0
1	2203-000233	C229	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000438	C23	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000254	C230	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000233	C231	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-001072	C234	C-CERAMIC, CHIP 0.056 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000438	C235	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000995	C237	C-CERAMIC, CHIP 0.047 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000995	C238	C-CERAMIC, CHIP 0.047 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000386	C240	C-CERAMIC, CHIP 0.015 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000438	C250	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-001437	C318	C-CERAMIC, CHIP 5 pF, 0.25 pF, 50 V, X7R, TP, 1005, 1.0
1	2203-000254	C320	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-005382	C321	C-CERAMIC, CHIP 0.006 nF, 0.1 pF, 50 V, NP0, TP, 1005
1	2203-001437	C323	C-CERAMIC, CHIP 5 pF, 0.25 pF, 50 V, X7R, TP, 1005, 1.0
1	2203-000438	C331	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000438	C332	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2404-001105	C333	C-TA, CHIP 10 uF, 20 %, 6.3 V, GP, TP, 2012
1	2203-000254	C334	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000233	C335	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000233	C337	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000254	C338	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000885	C339	C-CERAMIC, CHIP 4.7 nF, 10 %, 25 V, X7R, TP, 1005, -
1	2203-000254	C340	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-005061	C341	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000438	C342	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000359	C343	C-CERAMIC, CHIP 0.15 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-005395	C344	C-CERAMIC, CHIP 0.0047 nF, 0.1 pF, 50 V, NP0, TP, 1005

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1	2203-000885	C345	C-CERAMIC, CHIP 4.7 nF, 10 %, 25 V, X7R, TP, 1005, -
1	2203-000359	C346	C-CERAMIC, CHIP 0.15 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-005480	C349	C-CERAMIC, CHIP 33 nF, 10 %, 10 V, X7R, TP, 1005, -
1	2404-001086	C350	C-TA, CHIP 4.7 uF, 20 %, 6.3 V, GP, TP, 2012, -
1	2203-005383	C370	C-CERAMIC, CHIP 7 pF, 0.1 pF, 50 V, NPO, TP, 1005, -
1	2203-000628	C371	C-CERAMIC, CHIP 0.022 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000438	C372	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000233	C373	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000696	C375	C-CERAMIC, CHIP 0.002 nF, 0.25 pF, 50 V, NP0, TP, 1005
1	2203-005444	C376	C-CERAMIC, CHIP 0.003 nF, 0.1 pF, 50 V, NP0, TP, 1005
1	2203-000438	C377	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-005061	C378	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2404-001105	C379	C-TA, CHIP 10 uF, 20 %, 6.3 V, GP, TP, 2012
1	2203-000233	C380	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000278	C381	C-CERAMIC, CHIP 0.01 nF, 0.5 pF, 50 V, NP0, TP, 1005
1	2203-000438	C382	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-005444	C383	C-CERAMIC, CHIP 0.003 nF, 0.1 pF, 50 V, NP0, TP, 1005
1	2203-002443	C384	C-CERAMIC, CHIP 0.33 nF, 10 %, 50 V, X7R, TP, 1005
1	2203-005480	C385	C-CERAMIC, CHIP 33 nF, 10 %, 10 V, X7R, TP, 1005, -
1	2203-005061	C386	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000233	C387	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-005061	C388	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2404-001105	C389	C-TA, CHIP 10 uF, 20 %, 6.3 V, GP, TP, 2012
1	2203-000386	C390	C-CERAMIC, CHIP 0.015 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000386	C391	C-CERAMIC, CHIP 0.015 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000233	C392	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000885	C393	C-CERAMIC, CHIP 4.7 nF, 10 %, 25 V, X7R, TP, 1005, -
1	2203-005061	C394	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000885	C395	C-CERAMIC, CHIP 4.7 nF, 10 %, 25 V, X7R, TP, 1005, -
1	2203-001432	C396	C-CERAMIC, CHIP 47 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2404-001105	C397	C-TA, CHIP 10 uF, 20 %, 6.3 V, GP, TP, 2012
1	2203-000438	C398	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000438	C407	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000233	C408	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005

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1	2203-000438	C409	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000254	C410	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000233	C411	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000233	C412	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000233	C413	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-001072	C414	C-CERAMIC, CHIP 0.056 nF, 5 %, 50 V, NP0, TP, 1005
1	2404-001151	C415	C-TA, CHIP 33 uF, 20 %, 6.3 V, LZ, TP, 3216
1	2203-000725	C416	C-CERAMIC, CHIP 3.9 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-005061	C417	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000254	C418	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000254	C419	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000585	C420	C-CERAMIC, CHIP 220 pF, 10 %, 50 V, X7R, TP, 1005, -
1	2404-001092	C421	C-TA, CHIP 220 nF, 20 %, 20 V, GP, TP, 2012, -
1	2203-000254	C422	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000233	C423	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000233	C424	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000254	C425	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000233	C426	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000278	C427	C-CERAMIC, CHIP 0.01 nF, 0.5 pF, 50 V, NP0, TP, 1005
1	2203-000254	C428	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000995	C429	C-CERAMIC, CHIP 0.047 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000233	C431	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000233	C432	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000233	C433	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000254	C435	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000233	C436	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000233	C437	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000233	C438	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000254	C501	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000254	C502	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000254	C503	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000254	C504	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2404-001151	C506	C-TA, CHIP 33 uF, 20 %, 6.3 V, LZ, TP, 3216
1	2203-000233	C507	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005

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1	2203-005061	C508	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2404-001151	C509	C-TA, CHIP 33 uF, 20 %, 6.3 V, LZ, TP, 3216
1	2203-005061	C510	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000679	C513	C-CERAMIC, CHIP 0.027 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000679	C514	C-CERAMIC, CHIP 0.027 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-005065	C515	C-CERAMIC, CHIP 1000 nF, +80-20 %, 10 V, Y5 V, TP, 1608
1	2203-000254	C516	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-005061	C517	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000233	C519	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-001724	C520	C-CERAMIC, CHIP 4700 nF, +80-20 %, 16 V, Y5 V, TP, 3216
1	2203-000233	C522	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-005065	C523	C-CERAMIC, CHIP 1000 nF, +80-20 %, 10 V, Y5 V, TP, 1608
1	2203-005061	C524	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-001724	C525	C-CERAMIC, CHIP 4700 nF, +80-20 %, 16 V, Y5 V, TP, 3216
1	2203-000233	C526	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-001724	C527	C-CERAMIC, CHIP 4700 nF, +80-20 %, 16 V, Y5 V, TP, 3216
1	2203-005061	C528	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000233	C529	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-001598	C530	C-CERAMIC, CHIP 2200 nF, +80-20 %, 16 V, Y5 V, TP, 2012
1	2203-005061	C531	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-001598	C532	C-CERAMIC, CHIP 2200 nF, +80-20 %, 16 V, Y5 V, TP, 2012
1	2404-001017	C533	C-TA, CHIP 1 uF, 20 %, 10 V, GP, TP, 2012, 2, 0
1	2203-005061	C534	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000233	C535	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-005065	C536	C-CERAMIC, CHIP 1000 nF, +80-20 %, 10 V, Y5 V, TP, 1608
1	2203-005061	C537	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-005061	C538	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000233	C539	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000233	C540	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000254	C542	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-005061	C549	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-001432	C556	C-CERAMIC, CHIP 47 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000438	C566	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000359	C567	C-CERAMIC, CHIP 0.15 nF, 5 %, 50 V, NP0, TP, 1005

Level	SEC CODE	Design LOC	DESCRIPTIONS
1	2203-000438	C568	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-001432	C601	C-CERAMIC, CHIP 47 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	1405-001082	C602	VARISTOR 5.6 V, 20 A, 1 x 0.5 x 0.6 mm, TP
1	1405-001082	C603	VARISTOR 5.6 V, 20 A, 1 x 0.5 x 0.6 mm, TP
1	2404-001151	C604	C-TA, CHIP 33 uF, 20 %, 6.3 V, LZ, TP, 3216
1	2203-000585	C605	C-CERAMIC, CHIP 220 pF, 10 %, 50 V, X7R, TP, 1005, -
1	2404-001105	C606	C-TA, CHIP 10 uF, 20 %, 6.3 V, GP, TP, 2012
1	2203-005061	C607	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-005061	C608	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000254	C609	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-005061	C610	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-005061	C611	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-005061	C612	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-005061	C613	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-005061	C615	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000254	C616	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-005061	C617	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-005061	C618	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-005061	C619	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000254	C620	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000254	C621	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000254	C622	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-005061	C640	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-005061	C641	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-005061	C651	C-CERAMIC, CHIP 100 nF, +80-20 %, 16 V, Y5 V, TP, 1005
1	2203-000438	C652	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000233	C653	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000254	C654	C-CERAMIC, CHIP 10 nF, 10 %, 16 V, X7R, TP, 1005, -
1	2203-000233	C655	C-CERAMIC, CHIP 0.1 nF, 5 %, 50 V, NP0, TP, 1005
1	2203-000438	C656	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	2203-000438	C663	C-CERAMIC, CHIP 1 nF, 10 %, 50 V, X7R, TP, 1005, -
1	3710-001653	CN101	CONNECTOR-SOCKET 18P, 1R, 0.5 mm, SMD-A, A uF
1	3705-001178	CN302	CONNECTOR-COAXIAL SMC, JACK, 100 Mohm, 50 ohm, .5DB
1	3722-001530	CN303	JACK-PHONE 5P, 2.6PI, A uF, BLK, -

Level	SEC CODE	Design LOC	DESCRIPTIONS
1	0407-000115	D160	DIODE-ARRAY DAN202U, 80 V, 100 mA, CA2-3, SC-70,
1	0405-001035	D201	DIODE-VARACTOR 1SV279, 15 V, 3 nA, USC, TP
1	0405-001035	D202	DIODE-VARACTOR 1SV279, 15 V, 3 nA, USC, TP
1	0405-001035	D302	DIODE-VARACTOR 1SV279, 15 V, 3 nA, USC, TP
1	0405-001035	D303	DIODE-VARACTOR 1SV279, 15 V, 3 nA, USC, TP
1	0409-001016	D350	DIODE-PIN BAR63-02 W, 50 V, 100 mA, SCD-80, TP
1	0409-001016	D351	DIODE-PIN BAR63-02 W, 50 V, 100 mA, SCD-80, TP
1	0407-000115	D501	DIODE-ARRAY DAN202U, 80 V, 100 mA, CA2-3, SC-70,
1	0407-001006	D601	DIODE-ARRAY DA221, 20 V, 100 mA, C2-3, EM3, TR
1	0407-001006	D602	DIODE-ARRAY DA221, 20 V, 100 mA, C2-3, EM3, TR
1	2901-001193	F101	FILTER-EMI SMD 25 V, 0.1 A, -, 35 pF, 3.2 x 1.6 x 0.75 mm, TP
1	2901-001193	F102	FILTER-EMI SMD 25 V, 0.1 A, -, 35 pF, 3.2 x 1.6 x 0.75 mm, TP
1	2901-001193	F103	FILTER-EMI SMD 25 V, 0.1 A, -, 35 pF, 3.2 x 1.6 x 0.75 mm, TP
1	2904-001172	F201	FILTER-SAW 836.5 MHz, 25 MHz, +-12.5 MHz/1.5, TP, +-12.5 MHz/2.5 dB,
1	2904-001236	F301	FILTER-SAW 85.38 MHz, -, 0.8, TP, 9.4 dB, -
1	2909-001122	F302	FILTER-DUPLEXER 881.5 MHz, 836.5 MHz, 4/2.5 dB, TP, 824-849
1	2904-001173	F303	FILTER-SAW 881.5 MHz, 25 MHz, +-12.5 MHz/2 dB, TP, +-12.5 MHz/3.5 dB,
1	4709-001242	F401	COUPLER-DIRECTION 925-960 MHz, 10+-1.5 dB, 23 dB, 2 x 1.25 x 1 mm,
1	3710-001585	J101	CONNECTOR-SOCKET 20P, 2R, 0.5 mm, SMD-S, A uF
1	3710-001585	J102	CONNECTOR-SOCKET 20P, 2R, 0.5 mm, SMD-S, A uF
1	3301-001120	L201	CORE-FERRITE BEAD AB, 30 ohm, 2 x 1.25 x 0.85 mm, 3000 mA, TP,
1	3301-001105	L202	CORE-FERRITE AB, 1.6 x 0.8 x 0.8 mm, -, -
1	2703-001726	L204	INDUCTOR-SMD 27 nH, 5 %, 1 x 0.5 x 0.5 mm
1	2703-001726	L205	INDUCTOR-SMD 27 nH, 5 %, 1 x 0.5 x 0.5 mm
1	2703-001786	L206	INDUCTOR-SMD 10 nH, 5 %, 1.0 x 0.5 x 0.5 mm
1	2703-001543	L209	INDUCTOR-SMD 33 nH, 5 %, 1.8 x 1.12 x 1.02 mm
1	3301-001105	L210	CORE-FERRITE AB, 1.6 x 0.8 x 0.8 mm, -, -
1	3301-001105	L211	CORE-FERRITE AB, 1.6 x 0.8 x 0.8 mm, -, -
1	3301-001342	L212	CORE-FERRITE BEAD AB, 1.5 kohm, 1 x 0.5 x 0.5 mm, 100 mA, TP, M,
1	3301-001342	L213	CORE-FERRITE BEAD AB, 1.5 kohm, 1 x 0.5 x 0.5 mm, 100 mA, TP, M,
1	2703-001126	L307	INDUCTOR-SMD 270 nH, 5 %, 2.29 x 1.73 x 1.52 mm
1	2703-001914	L311	INDUCTOR-SMD 180 nH, 2 %, 1.6 x 0.8 x 0.8 mm
1	3301-001105	L318	CORE-FERRITE AB, 1.6 x 0.8 x 0.8 mm, -, -
1	2703-001514	L319	INDUCTOR-SMD 68 nH, 5 %, 1.8 x 1.12 x 1.02 mm

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1	2703-001954	L320	INDUCTOR-SMD 2.7 nH, 0.3 nH, 1.0 x 0.5 x 0.5 mm
1	3301-001105	L321	CORE-FERRITE AB, 1.6 x 0.8 x 0.8 mm, -, -
1	3301-001105	L322	CORE-FERRITE AB, 1.6 x 0.8 x 0.8 mm, -, -
1	2703-002106	L323	INDUCTOR-SMD 220 nH, 5 %, 1.6 x 0.8 x 0.8 mm
1	2703-001595	L324	INDUCTOR-SMD 47 nH, 5 %, 1.0 x 0.5 x 0.5 mm
1	2703-001790	L325	INDUCTOR-SMD 3.3 nH, 0.3 nH, 1.0 x 0.5 x 0.5 mm
1	2703-001728	L326	INDUCTOR-SMD 1.5 nH, 0.3 nH, 1 x 0.5 x 0.5 mm
1	2703-001952	L327	INDUCTOR-SMD 8.2 nH, 5 %, 1.0 x 0.5 x 0.5 mm
1	2703-001772	L328	INDUCTOR-SMD 18 nH, 5 %, 1.0 x 0.5 x 0.5 mm
1	2703-001772	L329	INDUCTOR-SMD 18 nH, 5 %, 1.0 x 0.5 x 0.5 mm
1	2703-000175	L331	INDUCTOR-SMD 270 nH, 10 %, 0.8 x 1.6 x 0.8 mm
1	2703-001409	L332	INDUCTOR-SMD 12 nH, 10 %, 1 x 0.5 x 0.5 mm
1	3301-001105	L402	CORE-FERRITE AB, 1.6 x 0.8 x 0.8 mm, -, -
1	3301-001105	L403	CORE-FERRITE AB, 1.6 x 0.8 x 0.8 mm, -, -
1	2703-001952	L405	INDUCTOR-SMD 8.2 nH, 5 %, 1.0 x 0.5 x 0.5 mm
1	2703-001748	L406	INDUCTOR-SMD 5.6 nH, 0.3 nH, 1.0 x 0.5 x 0.5 mm
1	3301-001342	L501	CORE-FERRITE BEAD AB, 1.5 kohm, 1 x 0.5 x 0.5 mm, 100 mA, TP, M,
1	2703-001748	L601	INDUCTOR-SMD 5.6 nH, 0.3 nH, 1.0 x 0.5 x 0.5 mm
1	2703-001952	L602	INDUCTOR-SMD 8.2 nH, 5 %, 1.0 x 0.5 x 0.5 mm
1	2809-001241	OSC401	OSCILLATOR-VCTCXO 19.68 MHz, 2ppm, 10 kohm//10 pF, TP, 2.8 V, 1.5mA
1	2806-001200	OSC402	OSCILLATOR-VCO 967 MHz, -, 50, TP, 3 V, 8.5 mA
1	0501-002202	Q101	TR-SMALL SIGNAL MMBT2222AWT1, NPN, 150 mW, SOT-323
1	0501-002202	Q102	TR-SMALL SIGNAL MMBT2222AWT1, NPN, 150 mW, SOT-323
1	0504-000167	Q160	TR-DIGITAL RN1102, NPN, 100 mW, 10K/10K, SSM, TP
1	0501-000162	Q161	TR-SMALL SIGNAL 2SA1576, PNP, 200 mW, SOT-323, TP, 180-390
1	0501-000218	Q350	TR-SMALL SIGNAL 2SC4081, NPN, 200 mW, UMT, TP, 180-3
1	0504-000172	Q501	TR-DIGITAL RN2104, PNP, 100 mW, 47K/47K, SSM, TP
1	0501-000225	Q502	TR-SMALL SIGNAL 2SC4617, NPN, 200 mW, EM3, TP, 120-5
1	0501-002202	Q503	TR-SMALL SIGNAL MMBT2222AWT1, NPN, 150 mW, SOT-323
1	0505-001165	Q505	FET-SILICON SI3443D V, P, -20 V, +3.5 mA, 65mohm
1	0501-000225	Q507	TR-SMALL SIGNAL 2SC4617, NPN, 200 mW, EM3, TP, 120-5
1	0504-000168	Q508	TR-DIGITAL RN1104, NPN, 100 mW, 47K/47K, SSM, TP
1	0504-000168	Q509	TR-DIGITAL RN1104, NPN, 100 mW, 47K/47K, SSM, TP
1	0501-002202	Q511	TR-SMALL SIGNAL MMBT2222AWT1, NPN, 150 mW, SOT-323

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1	2007-000148	R101	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-003019	R103	R-CHIP 430 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000157	R104	R-CHIP 47 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000758	R105	R-CHIP 330 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R106	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000138	R108	R-CHIP 100 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R109	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000153	R110	R-CHIP 22 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000932	R111	R-CHIP 470 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000138	R115	R-CHIP 100 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000165	R117	R-CHIP 200 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000165	R118	R-CHIP 200 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000165	R122	R-CHIP 200 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R123	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000157	R124	R-CHIP 47 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000138	R125	R-CHIP 100 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000138	R126	R-CHIP 100 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001313	R127	R-CHIP 330 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000138	R128	R-CHIP 100 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000138	R129	R-CHIP 100 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000162	R130	R-CHIP 100 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001319	R131	R-CHIP 1.2 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001313	R132	R-CHIP 330 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000165	R133	R-CHIP 200 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R134	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R136	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R137	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R138	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R139	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R140	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R141	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R142	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R144	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R147	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005

Level	SEC CODE	Design LOC	DESCRIPTIONS
1	2007-007771	R148	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R149	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R160	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000137	R161	R-CHIP 2 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000157	R169	R-CHIP 47 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000138	R170	R-CHIP 100 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000138	R171	R-CHIP 100 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R172	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R175	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R201	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R202	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001311	R203	R-CHIP 270 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000162	R204	R-CHIP 100 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000162	R205	R-CHIP 100 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R206	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R207	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R208	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R209	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007309	R210	R-CHIP 12 kohm, 1 %, 1/16 W, DA, TP, 1005
1	2007-007771	R211	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R213	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001320	R214	R-CHIP 1.8 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000165	R215	R-CHIP 200 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000138	R216	R-CHIP 100 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001284	R218	R-CHIP 4.7 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001284	R219	R-CHIP 4.7 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001298	R220	R-CHIP 51 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007137	R221	R-CHIP 1.2 kohm, 1 %, 1/16 W, DA, TP, 1005
1	2007-007771	R222	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R312	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000775	R313	R-CHIP 33 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001313	R315	R-CHIP 330 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R316	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R317	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005

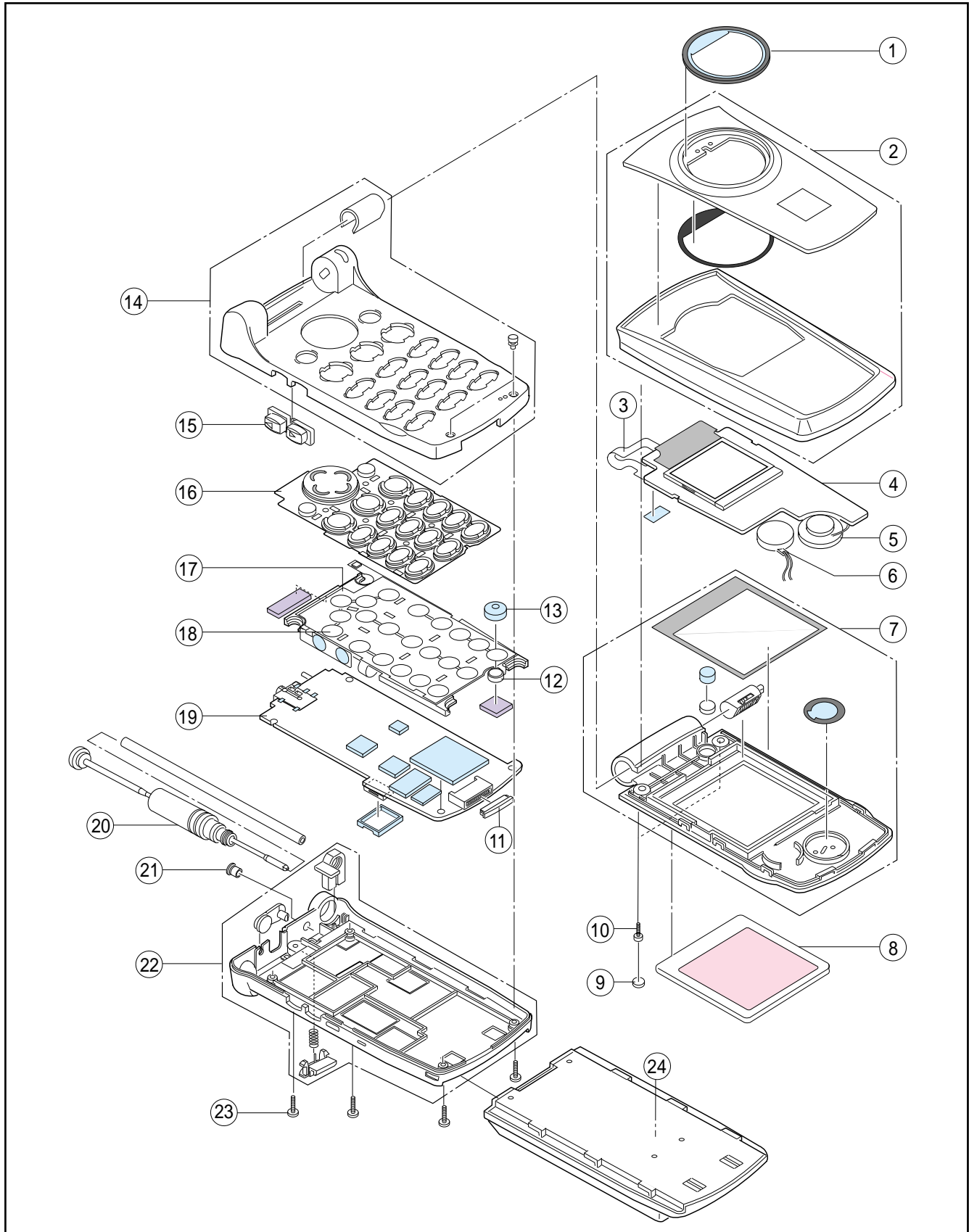
Level	SEC CODE	Design LOC	DESCRIPTIONS
1	2007-007771	R318	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001317	R319	R-CHIP 910 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R330	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R331	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000172	R370	R-CHIP 10 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000172	R371	R-CHIP 10 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001319	R372	R-CHIP 1.2 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000172	R373	R-CHIP 10 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R374	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R375	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000172	R376	R-CHIP 10 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000932	R377	R-CHIP 470 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001298	R380	R-CHIP 51 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R404	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000172	R406	R-CHIP 10 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-003006	R410	R-CHIP 16 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R411	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-003010	R413	R-CHIP 20 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000141	R414	R-CHIP 2.2 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000144	R415	R-CHIP 5.1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R418	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000172	R420	R-CHIP 10 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R424	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000170	R427	R-CHIP 1 Mohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R480	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	1404-001040	R501	THERMISTOR-NTC 10 kohm, 5 %, 3650K, -, TP
1	2007-000142	R502	R-CHIP 2.7 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000147	R503	R-CHIP 8.2 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000143	R504	R-CHIP 4.7 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R506	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000153	R507	R-CHIP 22 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R508	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001325	R509	R-CHIP 3.3 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001294	R510	R-CHIP 36 ohm, 5 %, 1/16 W, DA, TP, 1005

Level	SEC CODE	Design LOC	DESCRIPTIONS
1	2007-001294	R511	R-CHIP 36 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001294	R512	R-CHIP 36 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R514	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R515	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R521	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R524	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000305	R528	R-CHIP 10 Mohm, 5 %, 1/16 W, DA, TP, 1608
1	2007-007771	R529	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R531	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R535	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000146	R536	R-CHIP 6.8 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R537	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000162	R539	R-CHIP 100 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000162	R540	R-CHIP 100 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000162	R541	R-CHIP 100 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000143	R542	R-CHIP 4.7 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000153	R543	R-CHIP 22 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000162	R544	R-CHIP 100 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R552	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R553	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007137	R554	R-CHIP 1.2 kohm, 1 %, 1/16 W, DA, TP, 1005
1	2007-000165	R603	R-CHIP 200 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000162	R604	R-CHIP 100 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000162	R605	R-CHIP 100 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000143	R606	R-CHIP 4.7 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-007771	R607	R-CHIP 0 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000141	R611	R-CHIP 2.2 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000242	R612	R-CHIP 1.5 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R613	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001339	R614	R-CHIP 180 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R616	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000168	R617	R-CHIP 470 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R618	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001339	R619	R-CHIP 180 kohm, 5 %, 1/16 W, DA, TP, 1005

Level	SEC CODE	Design LOC	DESCRIPTIONS
1	2007-000137	R620	R-CHIP 2 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000140	R622	R-CHIP 1 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000831	R628	R-CHIP 39 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000161	R629	R-CHIP 82 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000162	R631	R-CHIP 100 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000162	R632	R-CHIP 100 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-000148	R636	R-CHIP 10 kohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001298	R643	R-CHIP 51 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001305	R645	R-CHIP 120 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001305	R646	R-CHIP 120 ohm, 5 %, 1/16 W, DA, TP, 1005
1	2007-001298	R647	R-CHIP 51 ohm, 5 %, 1/16 W, DA, TP, 1005
1	1106-001274	U101	IC-SRAM 616U4110, 256K x 16BIT, CSP, 48P, -, 70NS, 3 V, -, -, -40TO85 C,
1	1109-001158	U103	IC-ETC. MEMORY 84VD22194, 4M x 8/2M x 16Bit, BGA, 73P, 457MIL, 90nS,
1	1103-001184	U106	IC-EEPROM 24C256, 32K x 8Bit, dBGA, 8P, 92MIL, -, 2.7 V, -, PLASTIC, -
1	1201-001491	U201	IC-POWER AMP 912, LCC, 7P, 226MIL, SINGLE, 28 dB, PLASTIC, 4.2 V, -, -
1	0505-001376	U202	FET-SILICON FDC6329L, N/P, 8 V, 2.5A, -, 0.7 W, SC-74
1	0505-001376	U203	FET-SILICON FDC6329L, N/P, 8 V, 2.5A, -, 0.7 W, SC-74
1	1204-001682	U204	IC-IF/FM/AM RFT3100, BCC, 32P, 196MIL, PLASTIC, 3 V, -, -30to+85C, TP, -
1	1204-001581	U302	IC-IF CIRCUIT IFR3000-48BCCF-TR, BCC, 48P, -, PLASTIC, 3.5 V, -, -
1	1205-001943	U360	IC-DATA COMM./GEN. RF2366TR7, SOT23-6, 6P, -, PLASTIC, 8 V, -, -
1	1205-001928	U361	IC-MIXER CMY212B, SOP, 8P, 63MIL, PLASTIC, 5 V, -, -55to+150C, TP, -
1	1209-001197	U402	IC-PLL LMX2332LSLB, CSP, 20P, -, PLASTIC,
1	1201-001248	U404	IC-CASCADE AMP 0916, SOT-143, 4P, -, -, 2.7 V, -, 6Vd
1	1203-001967	U501	IC-POWER SUPERVISOR 1000, BGA, 64P, 315MIL, PLASTIC, 1.6/3.3 V, -, -
1	1202-000192	U601	IC-PHASE COMPARATOR 75W393, -, 8P, -, DUAL, 36 V, CMOS, PL
1	1205-002032	U609	IC-TRANSCEIVER MSM3100C, FBGA, 208P, -, PLASTIC, 3.7 V, -, -
1	1201-001248	U610	IC-CASCADE AMP 0916, SOT-143, 4P, -, -, 2.7 V, -, 6Vd
1	3711-004642	VCON1	CONNECTOR-HEADER NOWALL, 2P, 1R, 2.5 mm, SMD-S, A uF
1	3711-004642	VCON2	CONNECTOR-HEADER NOWALL, 2P, 1R, 2.5 mm, SMD-S, A uF
1	2801-003856	X501	CRYSTAL-SMD 0.032768 MHz, 20PPM, 28-ACP, 7 pF, 65 kohm, TP
1	0406-001051	ZD101	DIODE-TVS SMS05C, 6 V, 300 W, SOT-23-6
1	0406-001051	ZD102	DIODE-TVS SMS05C, 6 V, 300 W, SOT-23-6
1	0406-001051	ZD103	DIODE-TVS SMS05C, 6 V, 300 W, SOT-23-6
1	0403-001387	ZD601	DIODE-ZENER UDZS5.1B, 4.89-5.2 V, 200 mW, SOD-323, TP

7. SCH-A302 Exploded View & parts list

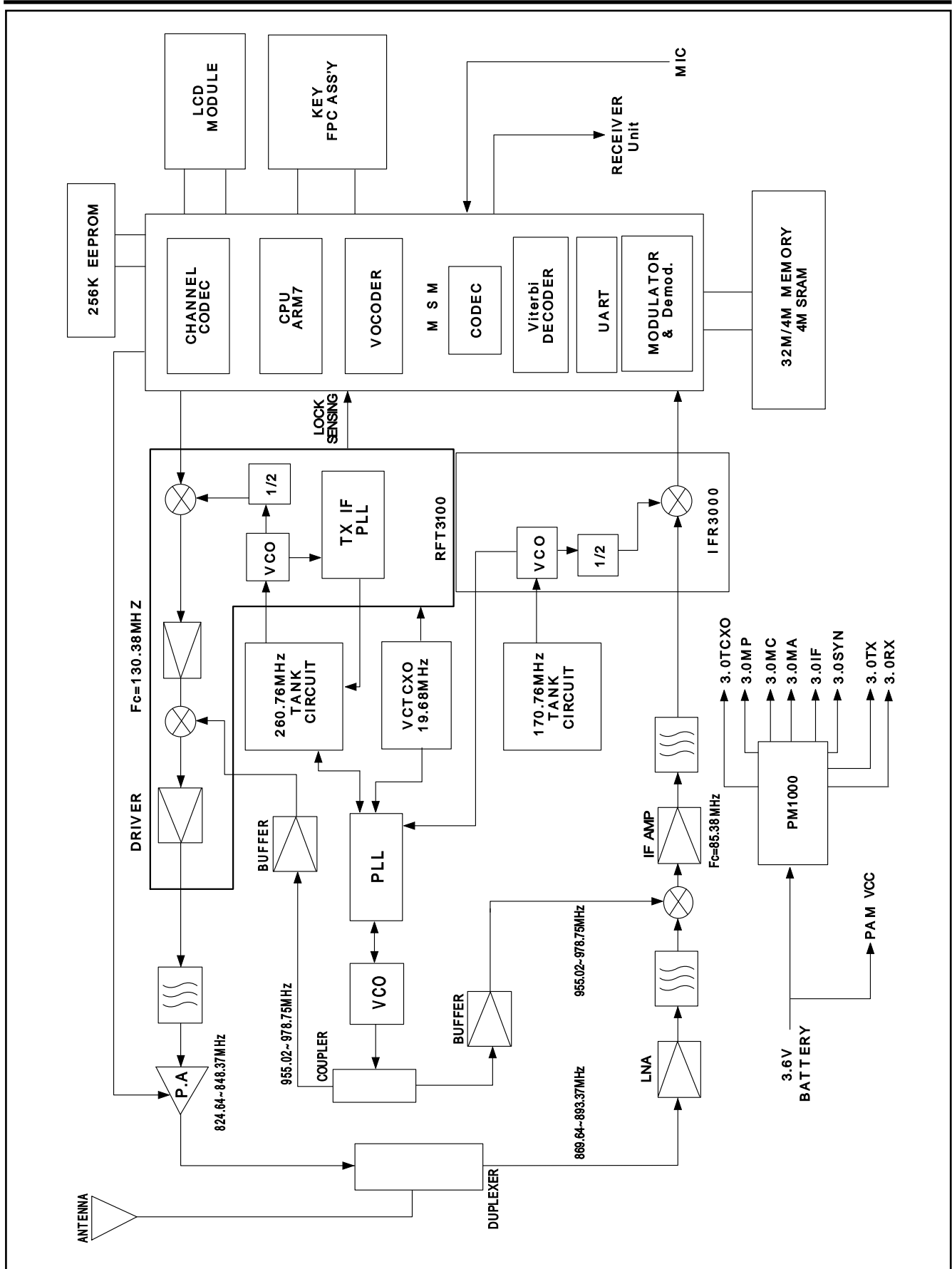
1. Cellular phone Exploded View

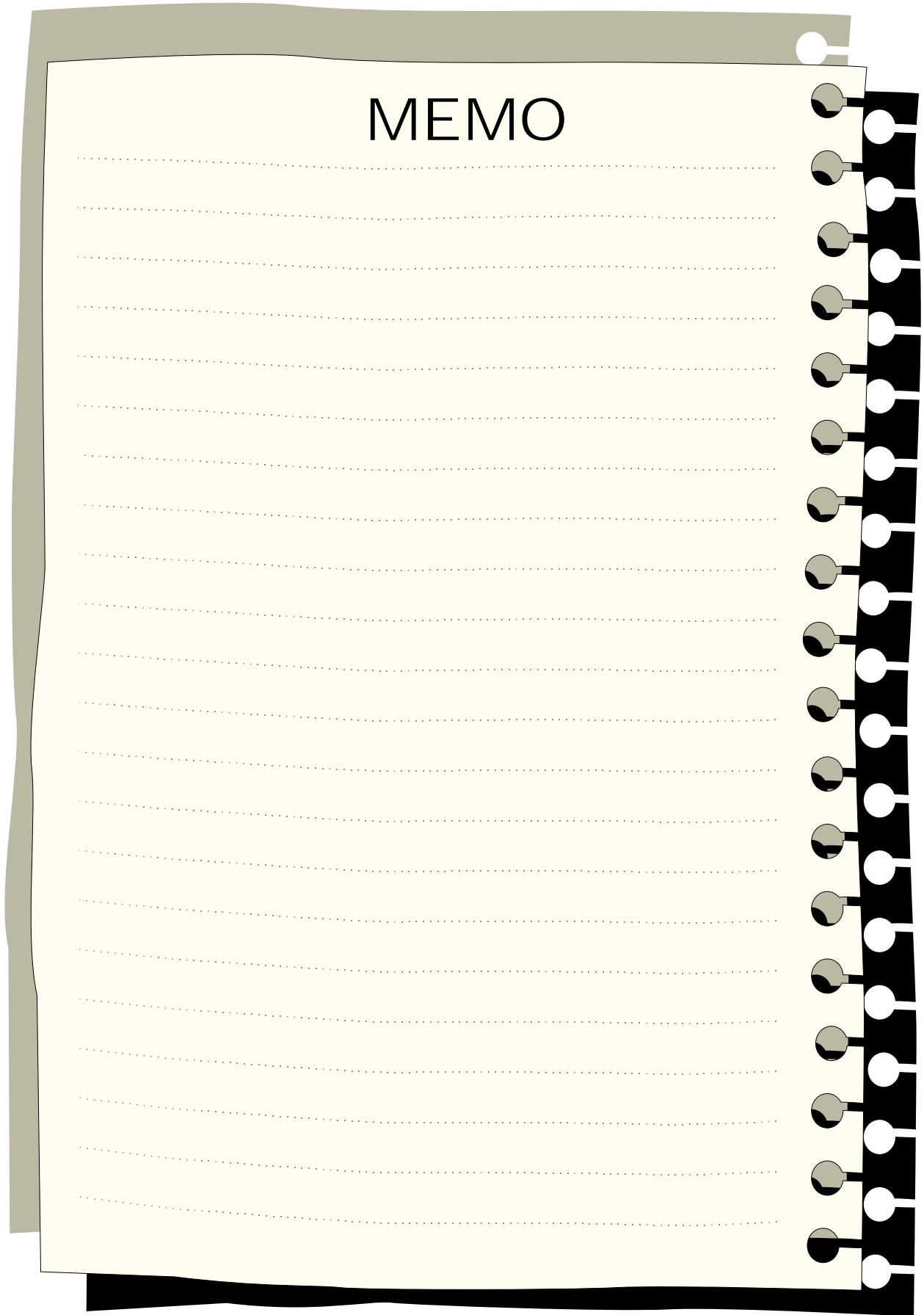


2. Cellular phone Parts List

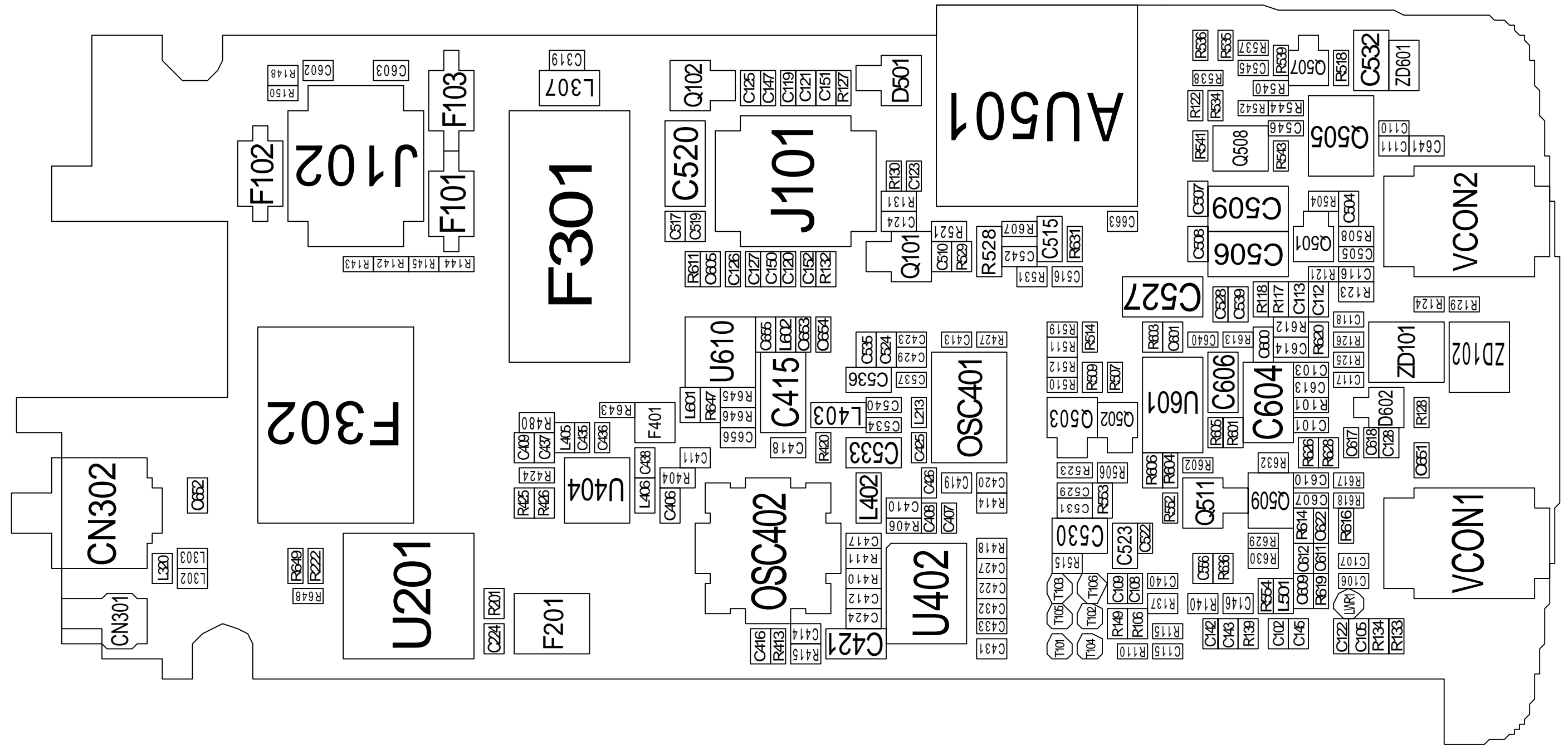
Location No.	Description	SEC CODE		Remark
		Gold	Silver	
1	DUAL WINDOW	GH72-03350A	GH72-03350A	
2	SUA, FOLDER UPPER	GH75-01081B	GH75-01081C	
3	FPCB ASS'Y	GH59-00109A	GH59-00109A	
4	LCD PBA	GH96-00918A	GH96-00918A	
5	SPEAKER	3001-001176	3001-001176	
6	VIBRATOR	GH31-00018A	GH31-00018A	
7	SUA, FOLDER LOWER	GH75-01016B	GH75-01016D	
8	LCD WINDOW	GH72-02386H	GH72-02386J	
9	DUMMY LABEL	GH68-00370J	GH68-00370H	
10	SCREW MACHINE (M1.4 X L3)	6001-000464	6001-000464	
11	IF CONN-COVER	GH73-00921A	GH73-00921B	
12	MIC	3003-001053	3003-001053	
13	MIC HOLDER	GH73-00441A	GH73-00441A	
14	SUA, FRONT COVER	GH75-00687B	GH75-00687D	
15	VOLUME KEY	GH72-01572A	GH72-01572A	
16	KEY PAD	GH72-01582K	GH72-01582L	
17	SUA, SHIELD COVER	GH75-00719A	GH75-00719A	
18	KEY FPCB	GH59-00107A	GH59-00107A	
19	PBA	GH92-00996A	GH92-00996A	
20	ANTENNA	GH42-00126A	GH42-00126A	
21	RF JACK	GH73-00440B	GH73-00440D	
22	SUA, REAR COVER	GH75-00690D	GH75-00690E	
23	SCREW MACHINE (M1.4 X L5)	6001-000883	6001-000883	
24	BATTERY	GH43-00338A	GH43-00339A	520mAh
		GH43-00331A	GH43-00332A	820mAh

8. SCH-A302 Block Diagram





2. Main PCB Bottom Diagram



10. SCH-A302 Circuit description & Circuit Diagrams

1. Logic Section

(1) Power Supply

For the POWER ON, with the battery installed on the phone and by pressing the PWR key, the VBAT and ON_SW signals will be connected, also by connecting the TA(travel adaptor). This will turn on Q507(2SC4617). This will turn on U501. This voltage is supplied to pin 6 and pin10 of PM(power management) U501 , thus releasing them from the shut-down state to output regulated 2.8 V, thus releasing them from the shut-down state to output regulated 2.8 V.

Simultaneously, VBAT applied to ON_SW will turn on Q508(DTC144EE/TR) resulting in the signal ON_SW_SENSE to change state from HIGH to LOW. This will allow MSM to send out PS_HOLD(logical HIGH) to turn on Q507(2SC4617) even after the PWR key is released.

For the POWER OFF, by pressing PWR_KEY of the keypad for few seconds the VBAT voltage will be applied to the ON_SW and will drive Q508(DTC144EE/TR) to input LOW on the ON_SW_SENSE of the MSM. The MSM will recognize this and will output LOW on the PS_HOLD.

The voltage(+2.8 V) from the pin 6 and pin10 of the U501 is used in the digital parts of MSM.

The voltage(+3.0 V) from the pin 20 of the U501 is used in the parts of IFR.

The voltage(+3.0 V) from the pin 15 of the U501 is used in the RX parts of RF.

The voltage(+3.0 V) from the pin 18 of the U501 is used in the TX parts of RF.

The voltage(+2.7 V) from U501 is used in the analog part.

(2) Logic Part

The logic part consists of internal CPU of MSM, Memory and EEPROM. The MSM receives TCXO and CHIPX8 clock signals from the IFR and controls the phone during the CDMA and the FM mode.

The major components are as follows:

- CPU : MSM3100C(U609) - ARM7TDMI μ -processor
- Memory : U103(MB84VD2219EC-90PBS) - 16MBIT FLASH ROM
U101(KM616U4110CLZI-7L) - 4MBIT SRAM
- EEPROM : U106(AT24C256-10UI-2.7-T.R) - 256KBIT SERIAL EEPROM

CPU

ARM7TDMI μ -processor is used for the main processing.

The CPU controls all the circuitry. For the CPU clock, 27 MHz resonator is used.

MEMORY (U103 and U101)

16M FLASH ROM(U103)and 4M SRAM(U101) packages are used to store the terminal's program, the internal flag information, call processing data, data service, and timer data.

Using the down-loading program, the program can be changed even after the terminal is fully assembled.

EEPROM(U106)

One 256KBIT EEPROM is used to store ESN, NAM, power level, volume level, and telephone number.

KEY MATRIX

For key recognition, key matrix is setup using KEYSENE0-2 of KEYSENSE signals and KEYSENE0-2 of input ports of MSM. Ten LEDs and backlight circuitry are included in the board for easy operation in the dark.

LCD MODULE

LCD module contains a controller which will display the information onto the LCD by 8-bit data from the MSM.

(3) Baseband Part**MOBILE SYSTEM MODEM (MSM)**

The MSM equipped with the QUALCOMM ARM7TDMI μ -processor is an important component of the CDMA cellular phone. The MSM comes in a 208 pins FBGA package.

MICROPROCESSOR INTERFACE

The interface circuitry consists of reset circuit, address bus(A1-A20), data bus(D1-D16), and memory controls (\sim LBE, \sim UBE, \sim LWR, \sim RAM_CS1, \sim ROM_CS, \sim RD, \sim RESIN).

INPUT CLOCK

- CPU clock: 19.68 MHz, 32.769 kHz(sub-clock)
- TCXO(pin A17): 19.68 MHz.

This clock signal from the IFR is the reference clock for the MSM except in CDMA mode.

- CHIPX8(pin 2G): 9.8304 MHz.

The reference clock used during the CDMA mode.

- SLEEP-XTAL-IN/OUT(pins R17,T17) : 32.768 MHz

IFR INTERFACE

CDMA, FM Data Interface

- TXIQDATA0-7 (pins 11, 12, 13, 14, 15, 16, 17, 18):TX data bus used during COMA and FM mode.
- C_RX_IDATA0-3 (pins 45-48) and C_RX_QDATA0-3 (pins 39-42):RX data bus used during CDMA mode.
- FM_RX_IDATA (pin 47) and FM_RX_QDATA (pin 48):RX data bus used during FM mode.

Clock

- TX_CLK(pin 19), TX_CLK/(pin 20):Analog to Digital Converter(ADC) reference clock used in TX mode.
- CHIPX8: ADC reference clock used in CDMA RX mode.
- FMCLK: Reference clock in FM RX mode.

Data Port Interface

Includes the UART. Also, supports Diagnostic Monitor(DM) and HP equipment interface.

RF Interface

TX: TX_AGC_ADJ(pin 2L) port is used to control the TX power level.

The PA_ON(pin 1P) signal is used to control the power amplifier.

RX: TRK_LO_ADJ(pin 1R) is used to compensate the TCXO clock.

General Purpose I/O Register Pins

Input/output ports to control external devices.

Power Consumption Control

When the phone is in the sleep mode, it is disabled all the pins except for the basic operation of the MSM.

(4) Audio Part**TX AUDIO PATH**

The voice signal from the microphone is filtered and amplified by the internal OP-AMP1 and the external OP-AMP2, is converted to PCM data by the MSM(U609)'s internal CODEC.

This signal then applied to the MSM's internal vocoder.

RX AUDIO PATH

The PCM data from the MSM is converted to audio signal by ADC of MSM CODEC, is then amplified by MSM's internal CODEC to be sent to the speaker unit.

FM TX PATH**Pre-Emphasis Circuit**

The circuit features +6 dB/oct to reduce signal loss and noise in Tx path.

Compressor

The compressor features 2:1 level to reduce signal loss and noise in Tx path. The zero crossing level of the compressor is ± 2.9 kHz/dev, attack time is 3 mS, and release time is 13.5 mS.

Limiter

The limiter performs to cut ± 0.53 Vp-p or higher audio signal level so that the FM frequency deviation is not over ± 12 kHz/dev. The function is sued confusion over phone line. LPF is used to reduce a specific high frequency of limited signal.

RX AUDIO PATH**De-Emphasis Circuit**

This circuit is 1st LPE featuring -6 dB/oct to reduce signal loss and noise in Rx path.

Expander

The expander features 1:2 level to reduce signal loss and noise in Rx path. The zero crossing level of the expander is ± 2.9 kHz/dev, attack time is 3 mS, and release time is 13.5 mS.

Volume Adjust

Volume can be adjusted up to 3 steps for the user to obtain a proper loudness of received signal.

(5) TX WBD, ST, and SAT

These signals are generated from MSM. The modulation level of TX WBD and ST is ± 8 kHz/dev, and SAT is ± 2 kHz/dev.

(6) Buzzer Driving Circuitry

Buzzer generate alert tone. When the buzzer receives the timer signal from the MSM, it generates alert tone. The buzzer level is adjusted by the alert signal's period generated from the MSM timer.

2. CDMA

(1) Receiver

Low Noise Amplifier(LNA)

The low noise amplifier featuring 1.8 dB Noise Figure and 14.5 dB gain amplifier a weak signal receiver from the base station to obtain the optimum signal level.

Down Converter(MIXER)

First local signal is applied to this down converter. The down converter transfers the signal amplified at the LNA into 85.38 MHz IF signal. 85.38 MHz IF signal is made by subtracting 881 ± 12.5 MHz RF signal 966 ± 12.5 MHz first local signal.

The LNA and down converter is U361.

RF Band Pass Filter(BPF)

The RF BPF(F303) passes only a specific frequency(881.49 ± 12.5 MHz) from the signal received from the mobile station. The width is 25 MHz.

IF SAW Band Pass Filter(CDMA)

If SAW BPF(F200) is used for CDMA system having 1.23 MHz wide band and ± 630 kHz bandwidth. The filter also eliminates the image product generated by the mixer.

Voltage Controlled Oscillator, Phase Locked Loop(PLL)

The VCO+PLL (OSC402 , U402) generates the signal having 966 MHz center frequency and ± 12.5 MHz deviation with voltage control. The VCO , PLL Module(OSC402, U402) controls this signal.

Input reference frequency is generated at VC-TCXO(OSC402, U402) and RF local signal is generated at VCO , PLL (OSC402, U402). The VCO , PLL (OSC402, U402) compares the two signals and generates the desired signal with a preprogrammed counter which controls voltage.

Voltage Controlled Temperature Compensated Crystal Oscillator

It provides 19.68 MHz reference frequency to VCO , PLL (OSC402, U402) and RFT3100(U204), IFR(U302). A correct frequency tuning is made by the voltage control.

Duplexer

Duplexer(F302) controls to transmit through the antenna only signals within acceptable TX frequency range(836.03 ± 12.5 MHz). It also matches LNA(U360) input in receiving part and PA output in transmitter part with the antenna.

(2) Transmitter

Power Amp

Power amp module(U201) amplifiers the signal to be sent out to the base station through the antenna.

RFT3100

The RFT3100(U204) receives the first local signal to generate 836.03 ± 12.5 MHz.

836.03 ± 12.5 MHz signal comes out from the mixer output by subtracting 130.38 MHz IF signal to 967.41 ± 12.5 MHz first local signal.

Antenna

Antenna allows signal to send to receive from the base station.

RF Band Pass Filter(BPF)

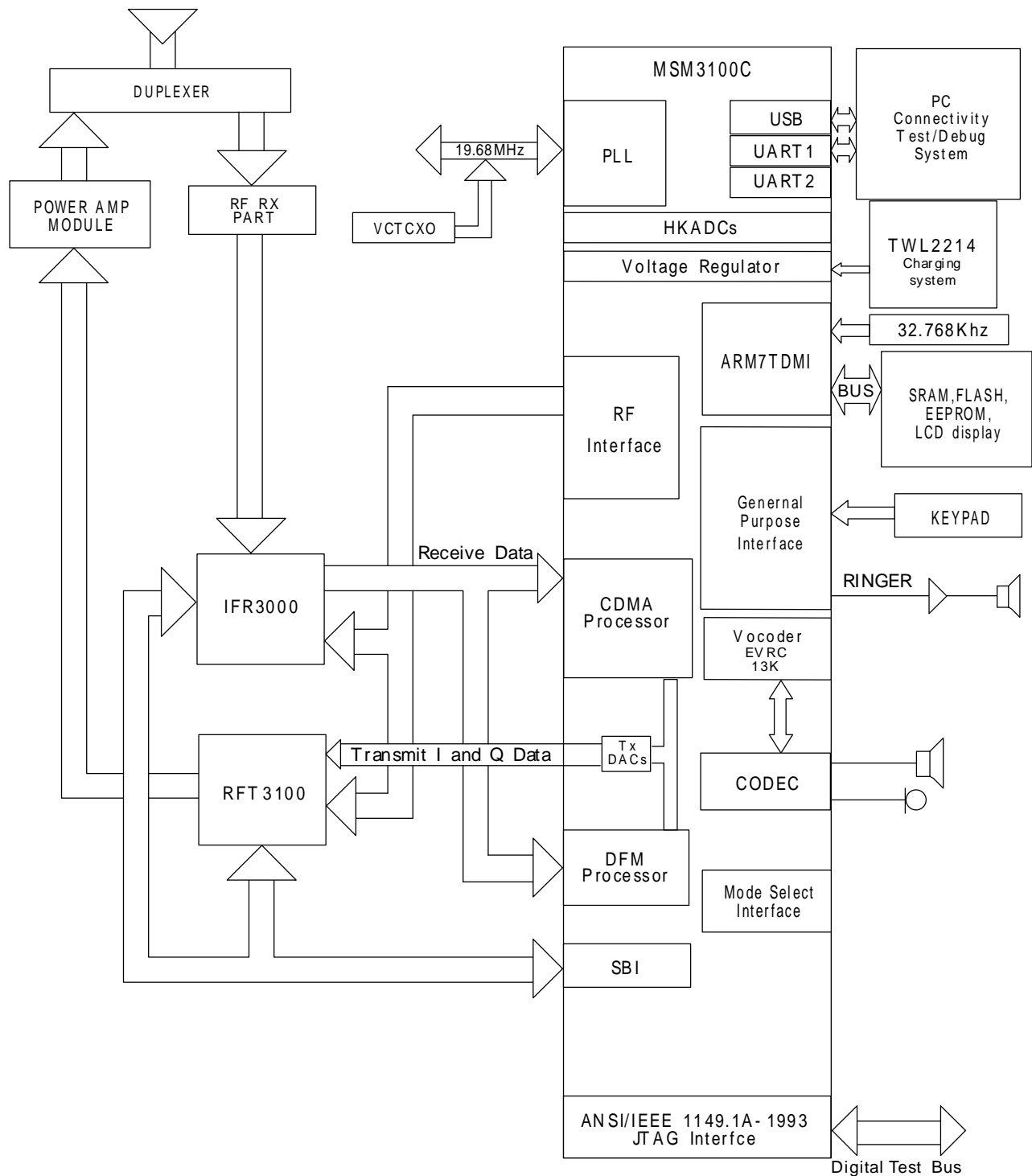
The RF BPF(F303, F201) accepts only specific frequency(836.03 ± 12.5 MHz) to send it out to base station module. The bandwidth is 25 MHz.

PM1000

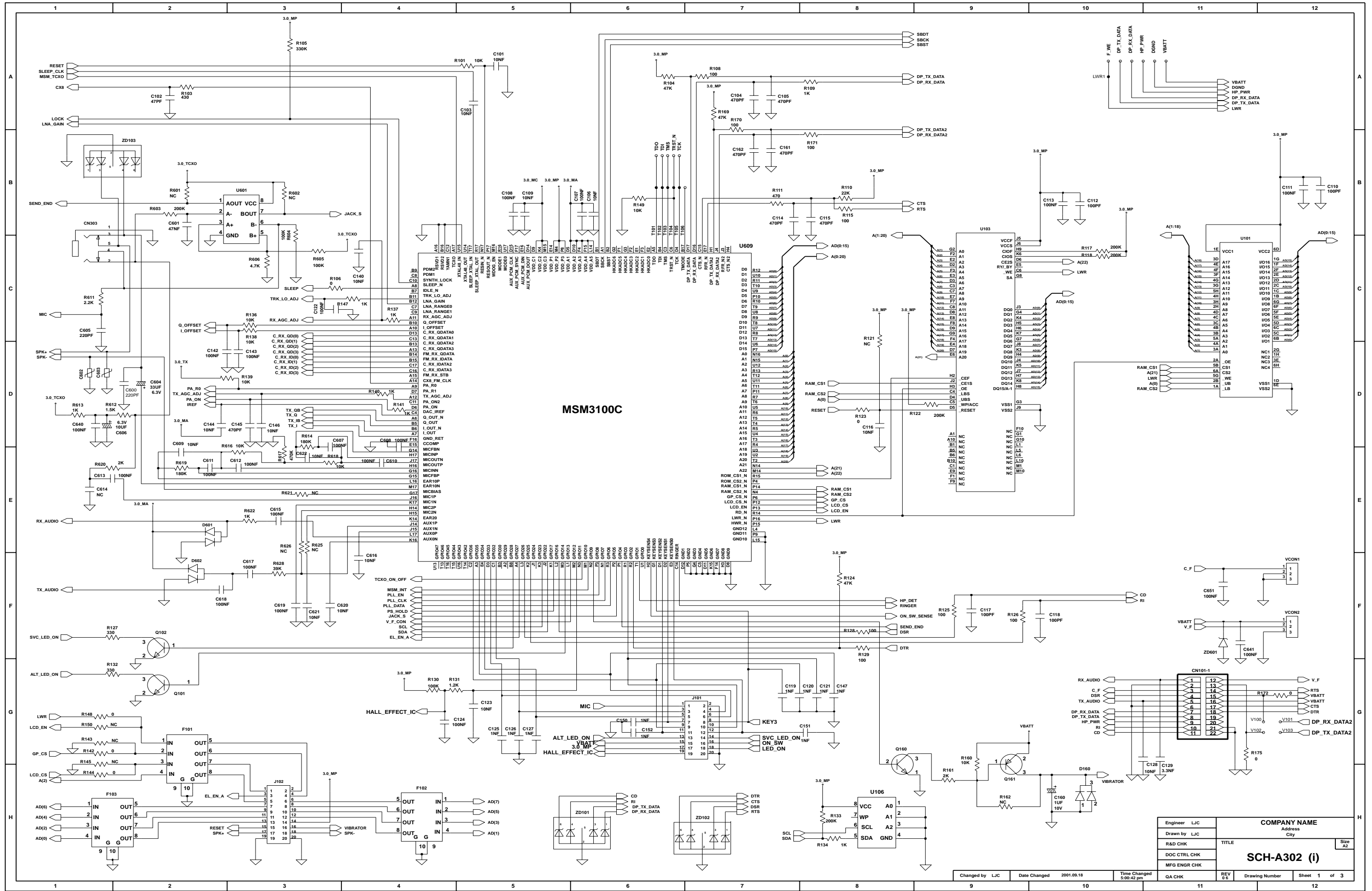
The PM1000(U501) supply a regulated power to each part of transmitter.

U501 supplies 3.0 V to the RFT3100(U204) and V_{BATT} is connected to power amp module(U201) directly.

3. BASIC BLOCK DIAGRAM

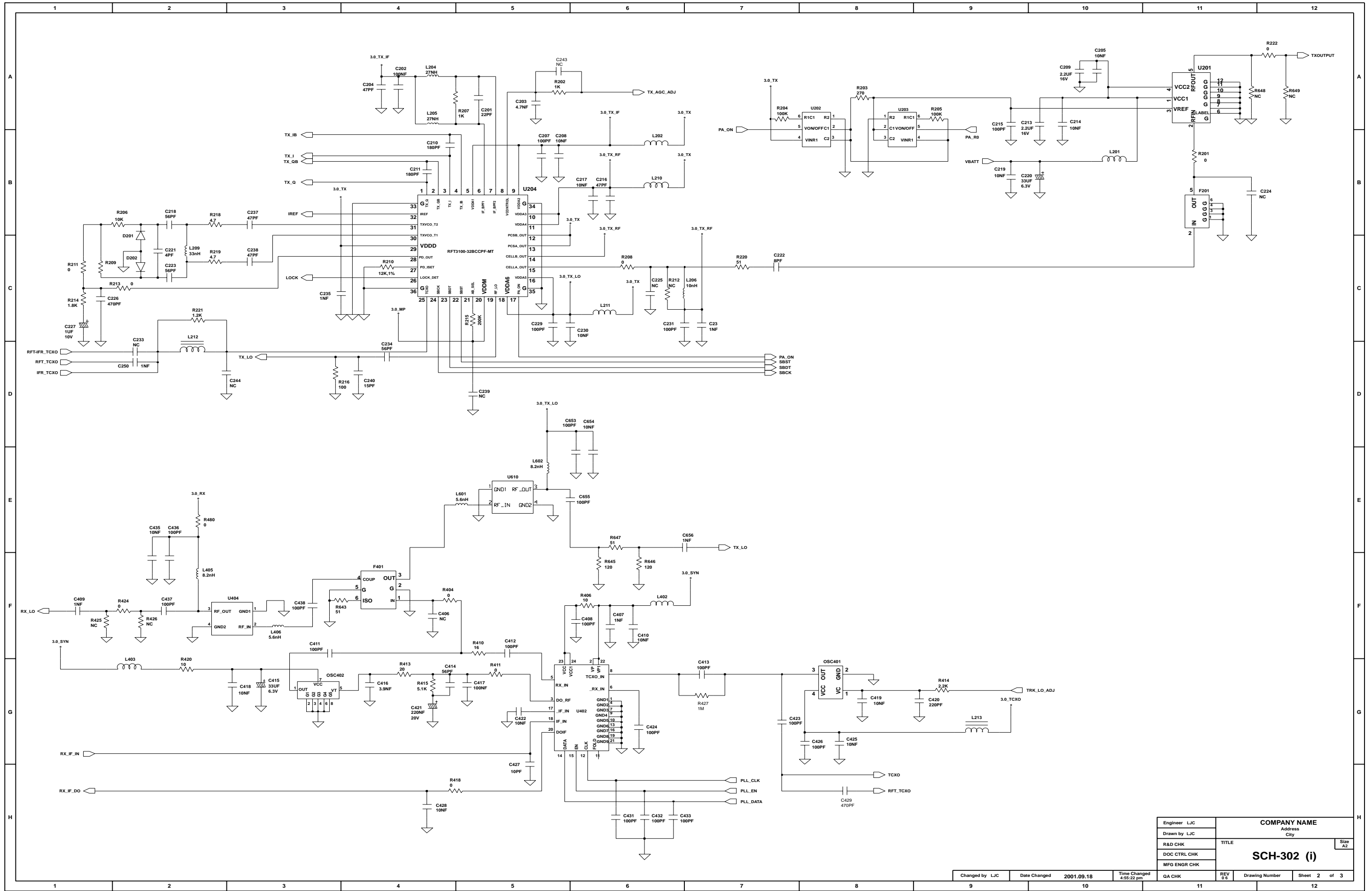


4. RF Circuit Diagram



Engineer	LJC	COMPANY NAME	
Drawn by	LJC	Address	
R&D CHK		City	
DOC CTRL CHK		TITLE	
MFG ENGR CHK		SCH-A302 (i)	
QA CHK		REV	9.6
Changed by	LJC	Date Changed	2001.09.16
		Time Changed	5:50:42 pm
		Drawing Number	Sheet 1 of 3

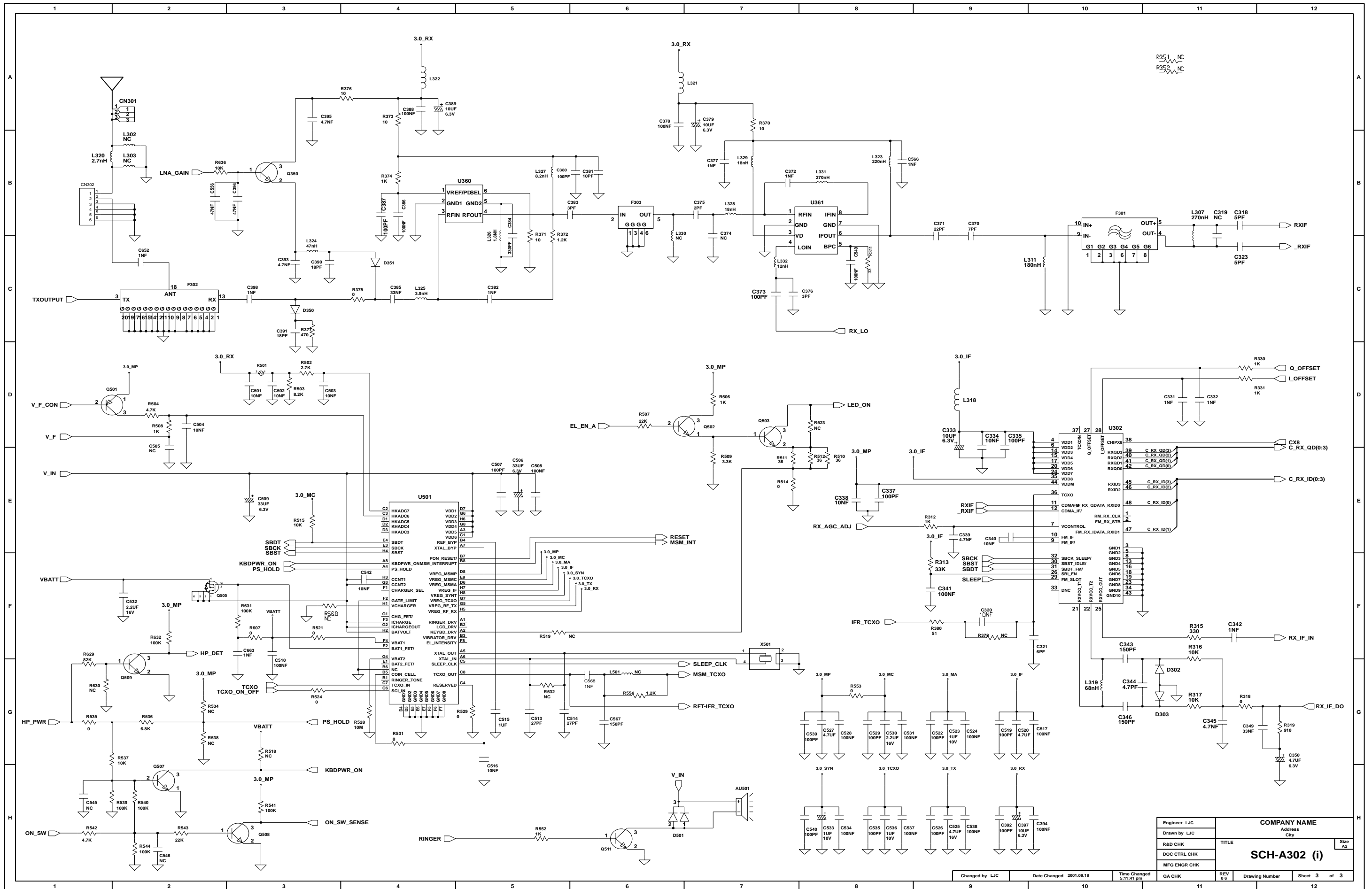
5. RF Circuit Diagram



Engineer LJC	COMPANY NAME	
Drawn by LJC	Address	
R&D CHK	City	
DOC CTRL CHK	TITLE	Size
MFG ENGR CHK	SCH-302 (i)	
QA CHK	REV 0.6	Sheet 2 of 3

Changed by LJC Date Changed 2001.09.18 Time Changed 4:56:22 pm

6. RF Circuit Diagram



Engineer: LJC	COMPANY NAME	
Drawn by: LJC	Address	
R&D CHK	City	
DOC CTRL CHK	TITLE	Size
MFG ENGR CHK	SCH-A302 (i)	
QA CHK	REV 0.6	Sheet 3 of 3