VPROG	(G6)	-	Supply to program the internal OTP memory. Shall not be connected in the application. Will be removed for BGA production version.
Reference and Mic Bias Generator			
REFC	H6	-	Reference capacitor; a ceramic capacitor of 100 nF shall be connected to this pin.
MICBIAS	J5	-	Microphone Bias Generator output
REFGND	J6	-	Ground reference for analog circuits; shall be connected to system ground. This voltage is the reference for all voltages in this document unless stated otherwise.
High voltage supply			
HVSVBAT	C8	-	Input voltage for HVS charge pump
HVSGND	A9	-	Ground for HVS charge pump
HVSVDD	D9	-	HVS regulator output
HVSSCP	C9	-	HVS switching capacitor positive side
HVSSCN	B9	-	HVS switching capacitor negative side
HVSOC	D8	-	HVS output capacitor. Note that this pin is also the input voltage for the HVS regulator.
SIM interface and charge pump			
SIMIO	C7	DVDD1	Bi-directional data line to system controller; has an internal pull-up resistor to DVDD1.
SIMCLK	C6	DVDD1	SIM clock from system controller
IO	D1	V_{CC}	I/O line to/from SIM card. Internal pull-up resistor to V_{CC}.
CLK	D2	V_{CC}	Clock to SIM card
CPRES	D3	ISUPD	Switch contact in SIM socket; high level enables SIM, low level stops SIM (emergency deactivation). Input has internal pull-up resistor to ISUPD.
RST	C1	V_{CC}	Reset for SIM card
VCC	C2	-	Supply voltage for SIM card
SIMSCP	B1	-	SIM charge pump switching capacitor positive side
SIMSCN	A1	-	SIM charge pump switching capacitor negative side
SIMVBAT	B2	-	Input for SIM charge pump
SIMGND	A2	-	Ground for SIM charge pump (it is not recommended to use this ground for the card)
I^2C-bus interface			
SDA	F3	DVDD2	Data line
SCL	E4	DVDD2	Clock line

Battery charging control			
CHRIV	E3	-	Charger I/V control
CHRREG	E2	-	Battery pack regulation loop control
CHRVBAT	E1	-	Charger input voltage
General grounds			
VSS	C3, H4, E8, C5, A8, J1		Ground

3.4.2 Logic circuit tuning up:

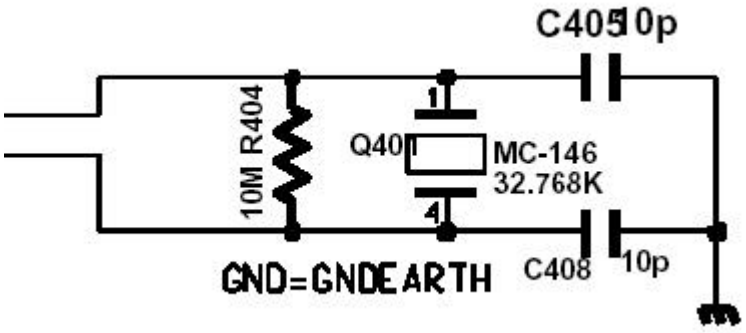
Cannot power on

a. Turn on power supply, test the pin-VBAT of U401, if the voltage is not correct; check the battery or the power supply voltage.

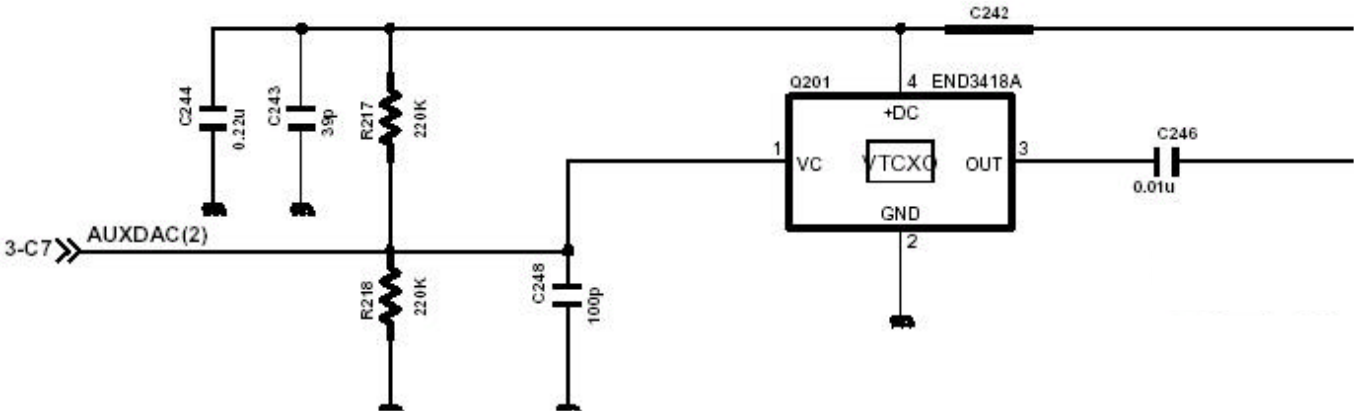
b. Check the battery contacts and see if it was cold soldered or unsoldered.

c. Check the Baseband supply and RF power supply of U401, change another U401 if necessary.

d. Test if 32KHz crystal oscillator clock works, otherwise change Q401, and check C408, C405, R404, U401



e. Check if 26M crystal oscillator works, otherwise change Q201 and check with C244, C243, R217, R218, C248, C246; Check AUXDAC(2) signal; change another U201 if necessary.

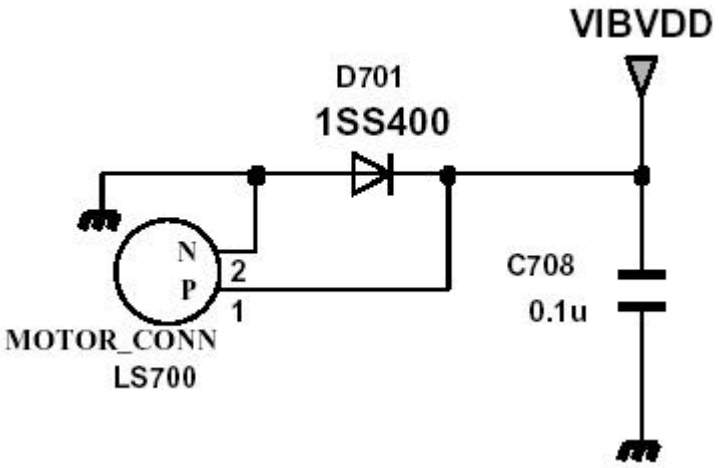


13M-crystal oscillator

f. Check the signal from Memory or change another U500, U301 step by step

Do not vibrate

1. Check with the vibrator. And change it, if necessary.
2. Check if C708, R705, D701 are cold soldered or unsoldered.
3. Check with the supply voltage –VIBVDD. If the voltage is abnormal, change another U401. Or check the VIB of U701.

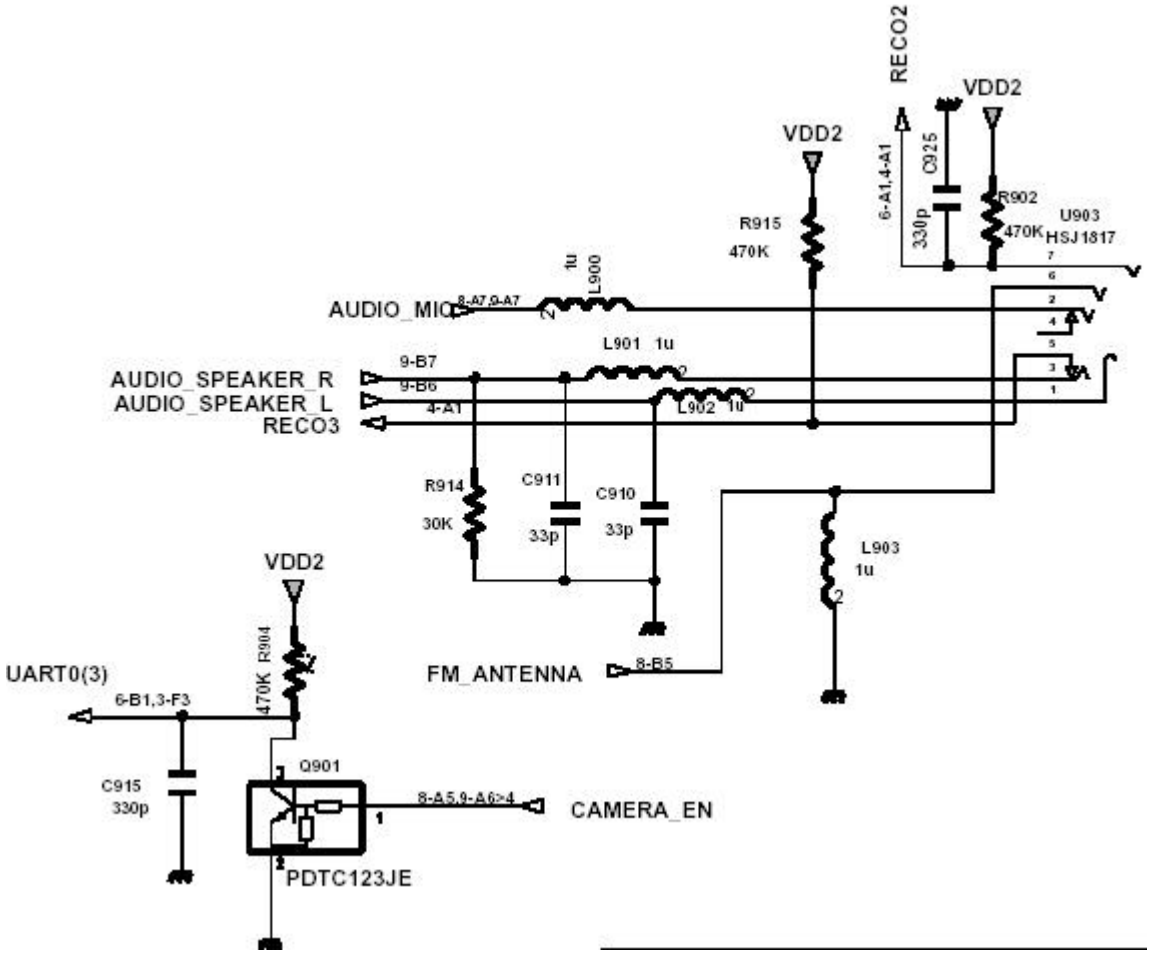


No keypad function

1. Check the connection between keypad and PCB
2. Check if the key board is placed above the shielding case nicely
3. Check if the connectors of the key board are cold soldered or damaged
4. Check if the connectors in the main PCB are cold soldered or damaged
5. Check if the contacts of the keypad are being oxygenated or not smooth
6. Check the signals on the main PCB
7. If the signal is incorrect, it might be the problem with cold soldered or unsoldered

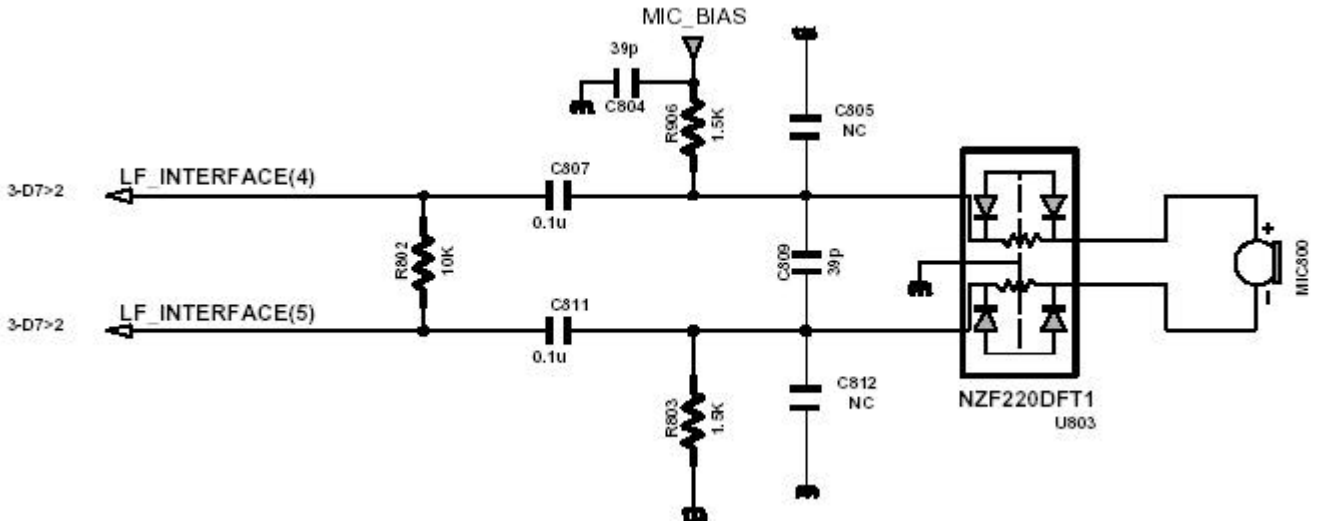
No hands free function

1. Check if the pieces are cold soldered? unsoldered or damaged
2. Check with the control signals
3. Check with the relevant chipset
4. Check if the problem with earpiece's contact or other component



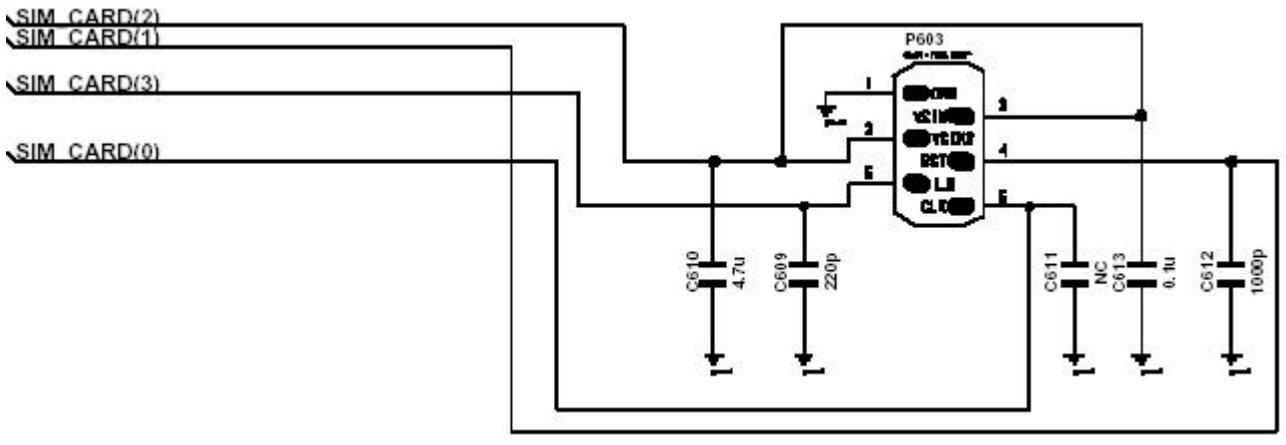
MIC does not work

1. Check if the MIC is placed nicely
2. Test if the signal of MIC contact is right or not
3. If the signal is incorrect, check the components of the path are soldered well or not
4. Check if voltage of MIC -BIAS is correct or not, or change U803
5. In the end check with the relevant chipset



SIM card invalid

1. Check if the SIM can work
2. Check if the SIM holder is soldered well
3. Check if the contacts of the SIM can be touched
4. Check if the contacts of the SIM with the same level
5. Check the signal of the power supply
6. Check the clock of the SIM
7. Check if the data information is correct

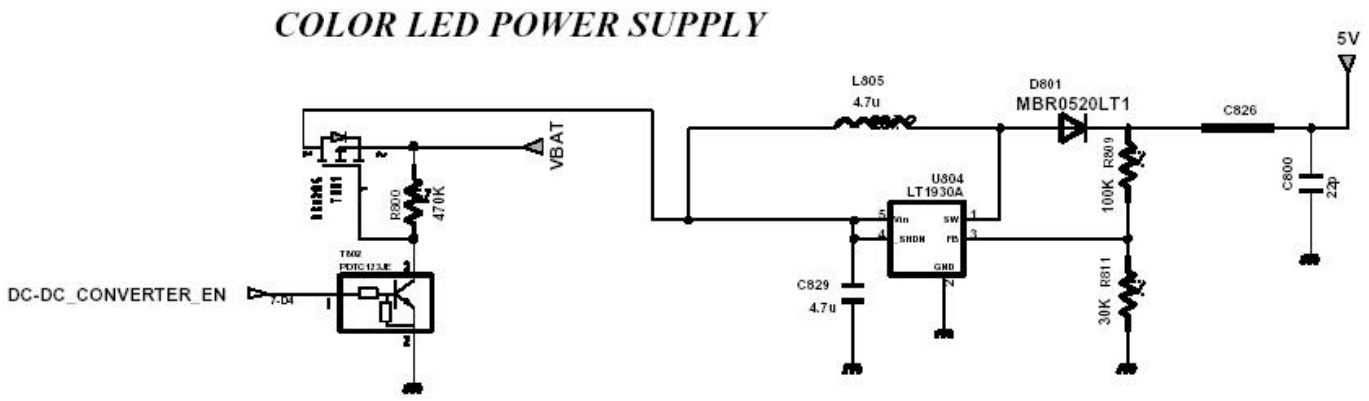


No backlight:

1. Check if the backlight is a good one
2. Check with the power supply voltage, if the voltage is not correct, change the power supply chipset U401.
3. Check with the relevant small components

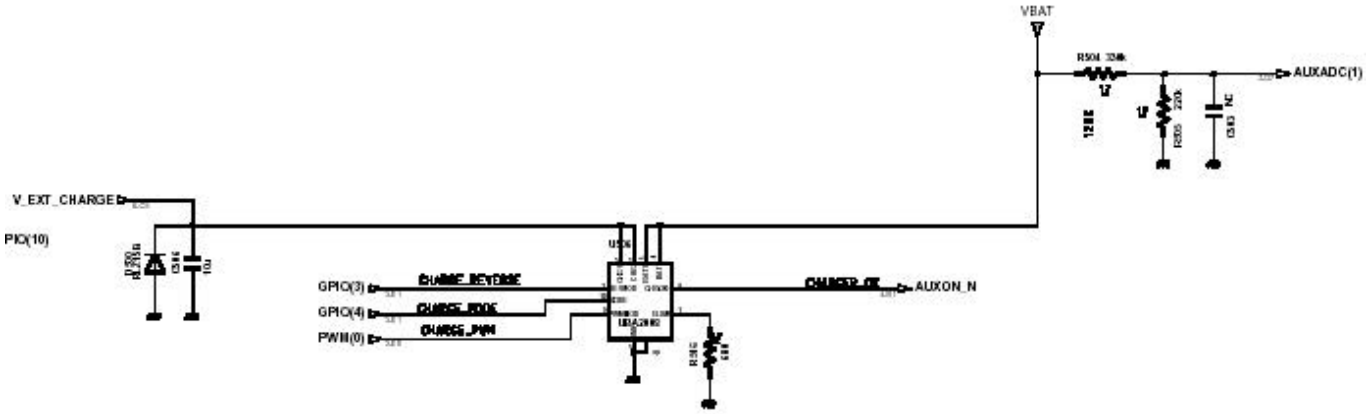
No color LED:

1. Check with the power supply circuit of the color LED
2. Check with control circuit of the color LED U701
3. Check with the relevant components

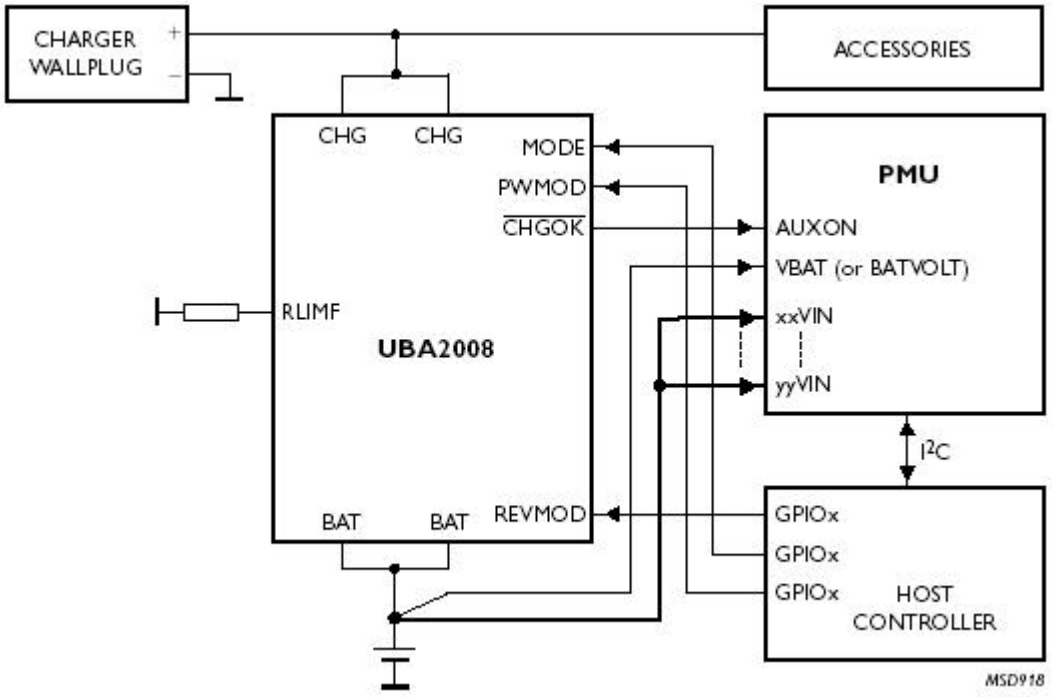


Can not charge:

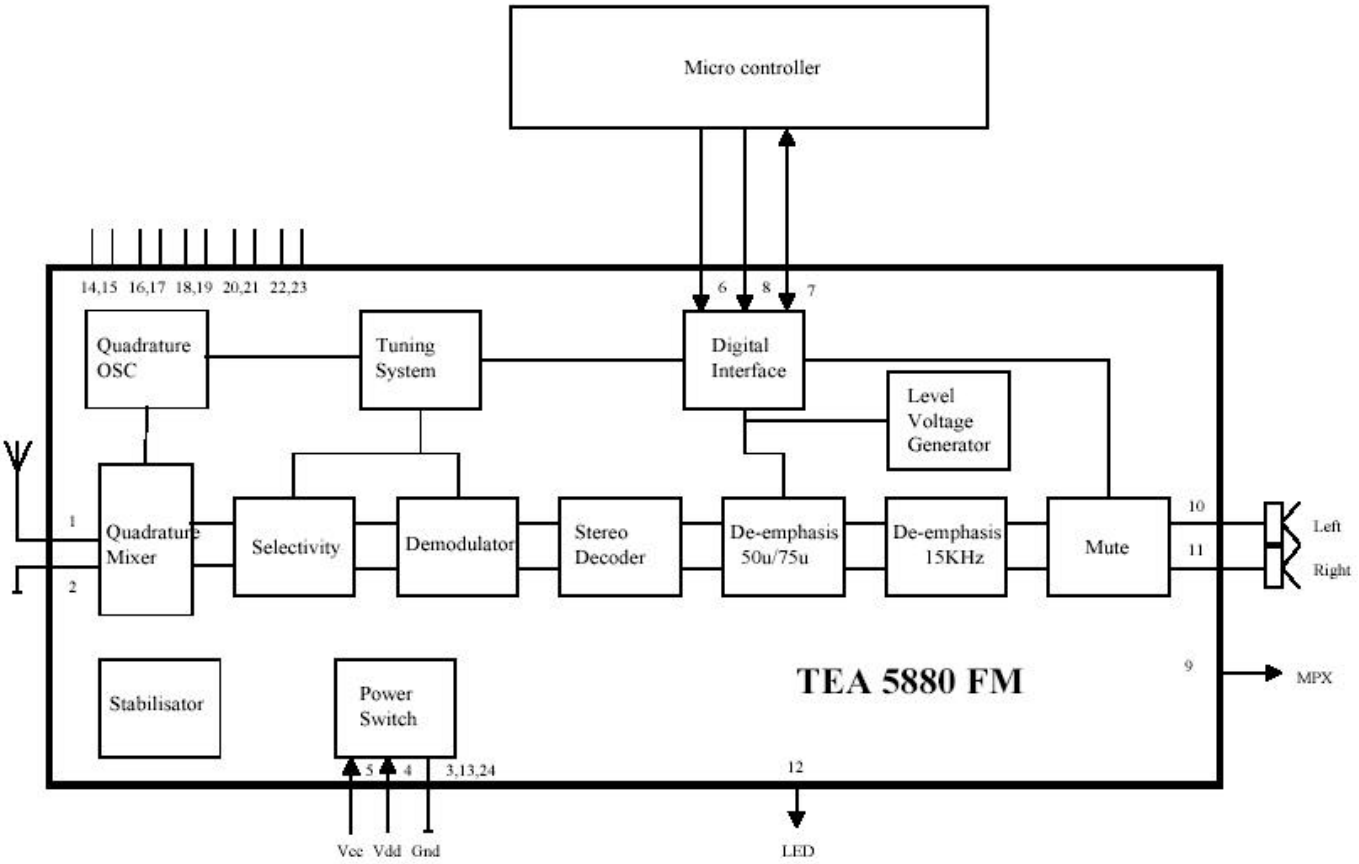
1. Check with the battery contacts
2. Check with the charge control chipset U506
3. Check with the relevant components
4. In the end, change U401, U301 step by step



Block diagram of the charging circuit:

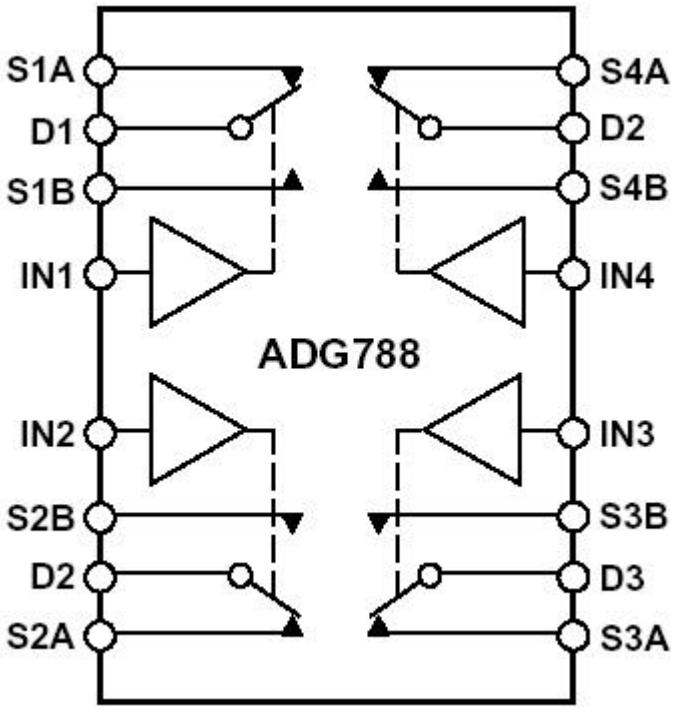


Block diagram of U802 function:

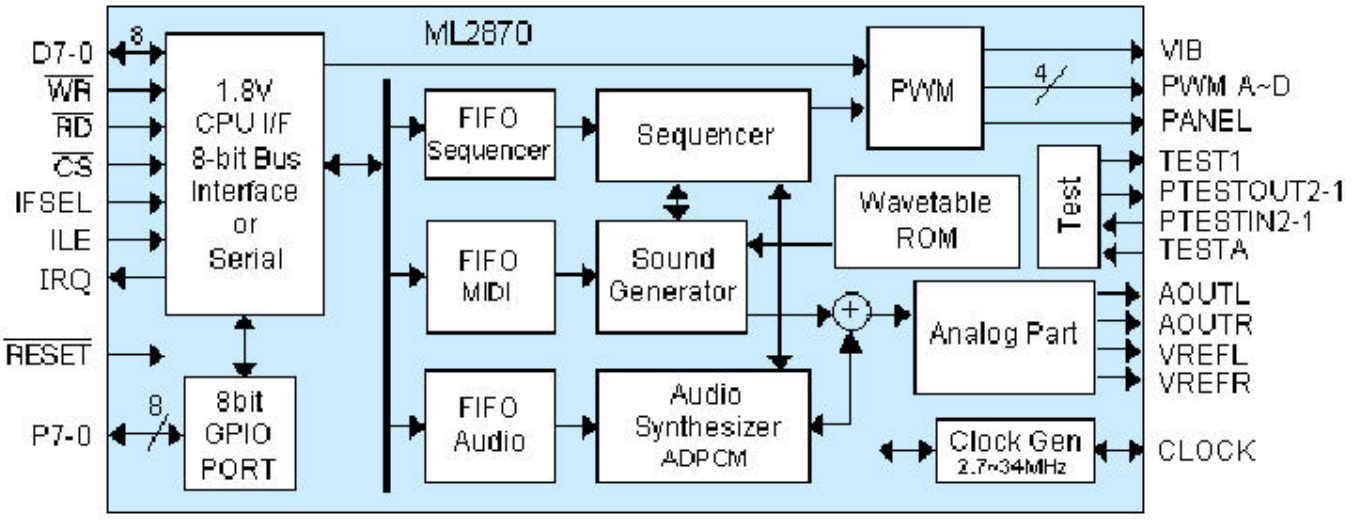


4.0 Reference

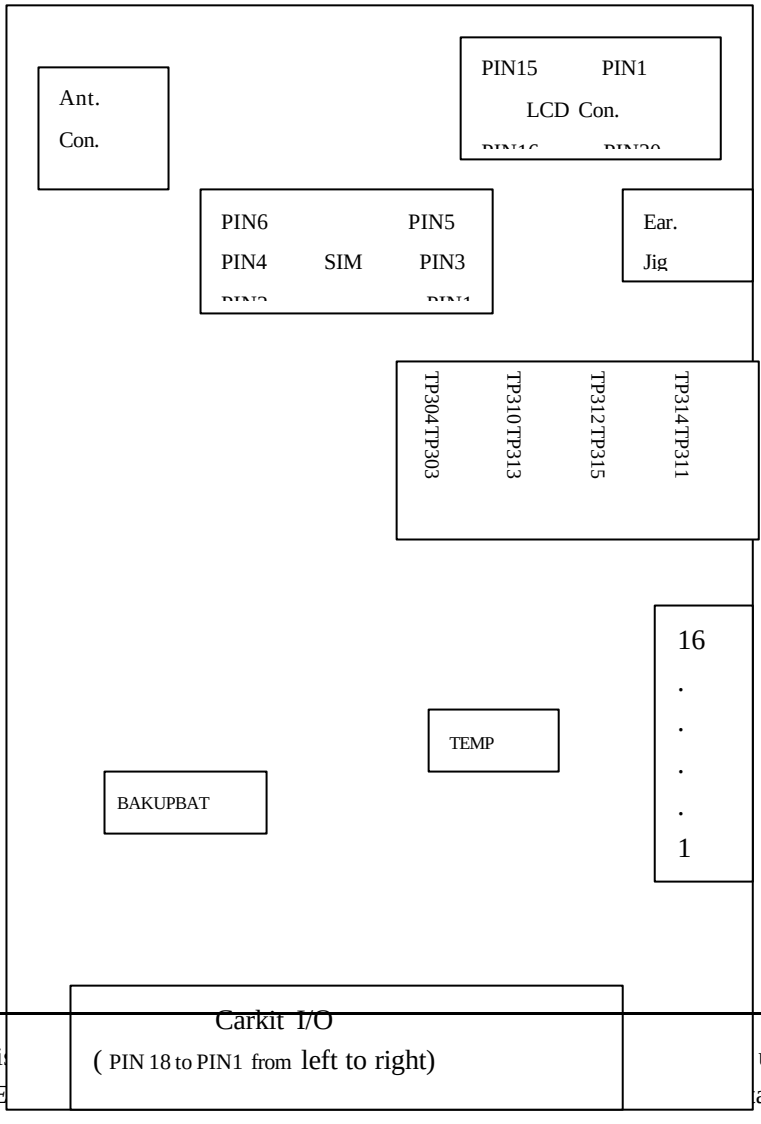
U906-ADG788 function diagram:



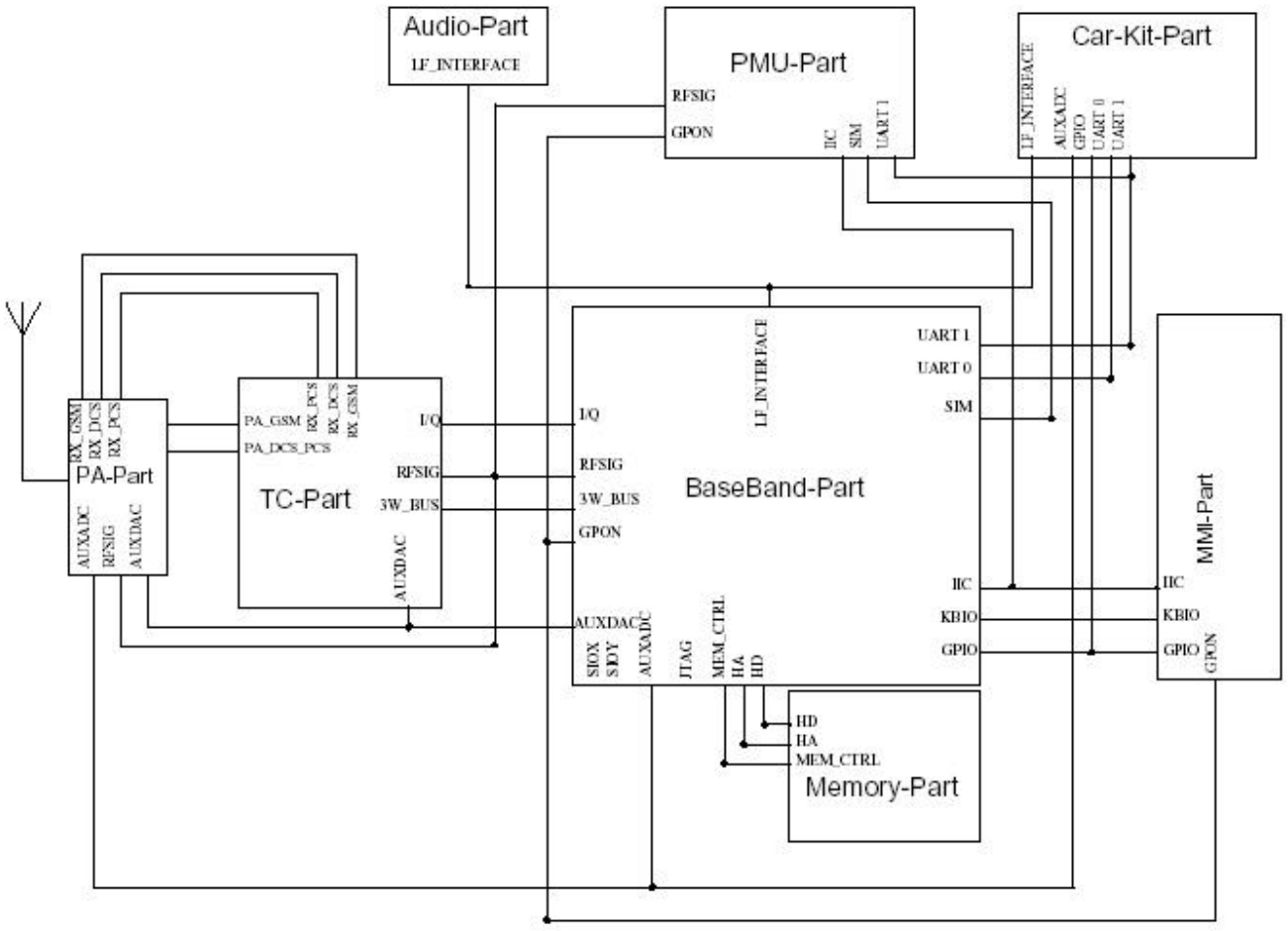
U701-ML2870 MIDI function diagram:



Main board connector:



5.0 Operational Manual



Solution and its interfaces

5.1 GPIO

The GPIO signals are used as general-purpose I/O pins for various functions. A description of the usage of these pins is shown in table 5.1

GPIO	Name/definition
GPIO(0)	SPEED_MODE
GPI0(1)	AMP_EN
GPIO(2)	CHARGE_REVERSE
GP1O(3)	CHARGE_MODE
GPIO(4)	CAMERA_EN
GPIO(5)	FLIP_SENSE
GPIO(6)	TEST_CTS(CTS0)
GPIO(7)	CHARGE_PULSE_IT

Table 5.1 GPIO Interfaces

5.2 GPON

The GPON signals are used as general purpose on pins. A description of the usage of these pins is shown in table 5.2.

Line	Name in schematics	Description
GPON[0]	REF_ON	activation of BAI (inside the OM63xx), sleep mode of PMU
GPON[1]	AUXON	not used
GPON[2]	RSTN_LCD	reset LCD

Table 5.2 GPON Interfaces

5.3 RFSIG

The RFSIG signals are used to control the various functions of the RF-part. A description of the Usage of these pins is shown in table 5.3

Line	Name in schematics	Description
RFSIG[0]	TXVCO_SW1	control line 1 for TXVCO
RFSIG[1]	TXVCO_SW2	control line 2 for TXVCO
RFSIG[2]	TXVCO_SW3	control line 3 for TXVCO
RFSIG[3]	FSW3	control line 3 for Antenna Switchplexer
RFSIG[4]	PON_TX	power on/off TX mode of TC and PA control
RFSIG[5]	(not used)	
RFSIG[6]	FSW2	control line 2 for Antenna Switchplexer
RFSIG[7]	FSW1	control line 1 for Antenna Switchplexer
RFSIG[8]	PON_SYN	power on/off Synthesizer
RFSIG[9]	PON_RF1SW (not used)	test signal to control the switched regulator output RF1SW
RFSIG[10]	TC_RXON	power on/off RX mode of TC
RFSIG[11]	BAI_RXON	power on/off RX mode of BAI
RFSIG[12]	BAI_TXON	power on/off TX mode of BAI

Table 5.3 RFSIG descriptions

5.4 AUXDAC / AUXADC

The AUXDAC / AUXADC signals are used to control and measure some functions of the RF-part. A description of the usage of these pins is shown in table 5.4.

Line	Name in schematics	Description
AUXDAC1	(not used)	
AUXDAC2	AFC	automatic frequency control to adjust the reference clk
AUXDAC3	RAMP	ramping signal for PA controller
AUXADC3	TEMP_PRODUCT	to measure the temperature

Table 5.4 AUXDAC/AUXADE Interfaces

5.5 3WBUS

The 3-wire bus is used to program the transceiver and baseband. These signals are also available on the ST1 connector in the emulation part.

Line	Name in schematics	Description
3WBUS[1]	RF_BBI_CLK	clock
3WBUS[2]	BAI_DO	data line (BAI output data)
3WBUS[3]	RF_BBI_DATA	data line (baseband input data)
3WBUS[4]	RF_EN_TC	enable TC
3WBUS[5]	EN_BBI_IN	enable BAI
3WBUS[6]	(not used)	

Table 5.5 3WBUS Interfaces

5.6 SIOX / SIOY

The SIOX and the SIOY bus are used for communication between BB and BAI. Testing is provided by test points inside the phone application area and by signals on ST1 in the emulation part.

Line	Name in schematics	Test point	Description
SIOX0	BIOCLK	TP22	baseband serial interface clock
SIOX1	BIEN	TP21	baseband serial data enable TX
SIOX2	BOEN	TP20	baseband serial data enable RX
SIOX3	BDIO	TP19	baseband serial data
SIOY0	DU (ADO)	TP18	audio serial TX
SIOY1	DD (ADI)	TP17	audio serial RX
SIOY2	DCL (ACLK)	TP16	audio serial interface clock
SIOY3	FSC (AFS)	TP15	audio serial frame

Table 5.6 SIOX/SIOY Interfaces

5.7 UART0 / UART1

The UART0 part provides an interface for communication with an external terminal. This communication uses automatic baud-rate detection and hardware handshake.
The UART0 can be switched off by software using the line CMD_UART (GPIO 6) if this option is implemented. In that case, lines TEST_RXD and TEST_TXD are disconnected from bottom connector (BU2). Power supply for the UART0 block is VDD2.
The UART1 part provides interface for communication with an external terminal and can be

used only for tracking and testing. This UART does not provide any hardware handshake or automatic baud-rate detection. The signal RXD1 will be used for recognizing future external devices. Power supply for the UART1 block is VDD2.

Line	Name in schematics	Description
UART0_0	TEST_RXD	receive data
UART0_1	TEST_TXD	transmit data
UART0_2	TEST_RTS	request to send
UART0_3	TEST_CTS	clear to send
UART1_0	RXD1	receive data
UART1_1	TXD1	transmit data

Table 5.7 UART Interfaces

5.8 LF_INTERFACE

The LF_INTERFACE signals are used for audio signals from the microphone and to the earpiece as well as for the hands free. A description of the usage of these signals is shown in table 5.8.

Line	Name in schematics	Description
LF_INTERFACE0	EARP1	outputsignal for earpiece
LF_INTERFACE1	EARP2	outputsignal for earpiece
LF_INTERFACE2	AUX_SPK	auxiliary speaker for car kit
LF_INTERFACE3	BUZZER	
LF_INTERFACE4	MIC_AMP_P	amplifier inputsignal from microphone
LF_INTERFACE5	MIC_AMP_N	amplifier inputsignal from microphone
LF_INTERFACE6	AUX_MIC_P	auxiliary microphone input for car kit
LF_INTERFACE7	AUX_MIC_N	auxiliary microphone input for car kit

Table 5.8 LF Interfaces

5.9 SIM

On the C570 Design there are two SIM card connectors. One is in the “phone application” area (ST4) to show the position inside the design and the second one (ST5) is in the emulation area

for testing the C570 Reference Design.
The SIM-card is accessed via the SIM interface. A description of the usage of these signals is shown in table 5.9

Pins	Definition
Pin1	
Pin2	VCC for SIM
Pin3	VCC for SIM
Pin4	Reset for SIM
Pin5	Data line of SIM
Pin6	Clock for SIM

Table 5.9 SIM definitions

5.10 KBIO

The keyboard is organized as a triangular matrix as shown in Table 5.10.
The KBIO pins are available on the EVITA connector (ST2) and on separate KEYBOARD connector (ST3) in the emulation area to have the possibility to connect an external keyboard for ease of use (see figure 5.1).

O\I	KBIO_0	KBIO_1	KBIO_2	KBIO_3	KBIO_4	KBIO_5	KBIO_6	KBIO_7
KBIO_0	-	SEND	-	*	7	4	1	Clear
KBIO_1	-	-	-	0	8	5	2	-
KBIO_2	-	-	-	#	9	6	3	MENU
KBIO_3	-	-	-	-	-	-	-	-
KBIO_4	-	-	-	-	-	J_U	-	J_R
KBIO_5	-	-	-	-	-	-	J_L	-
KBIO_6	-	-	-	-	-	-	-	J_D
KBIO_7	-	-	-	-	-	-	-	-

Table 5.10 KBIO Interfaces

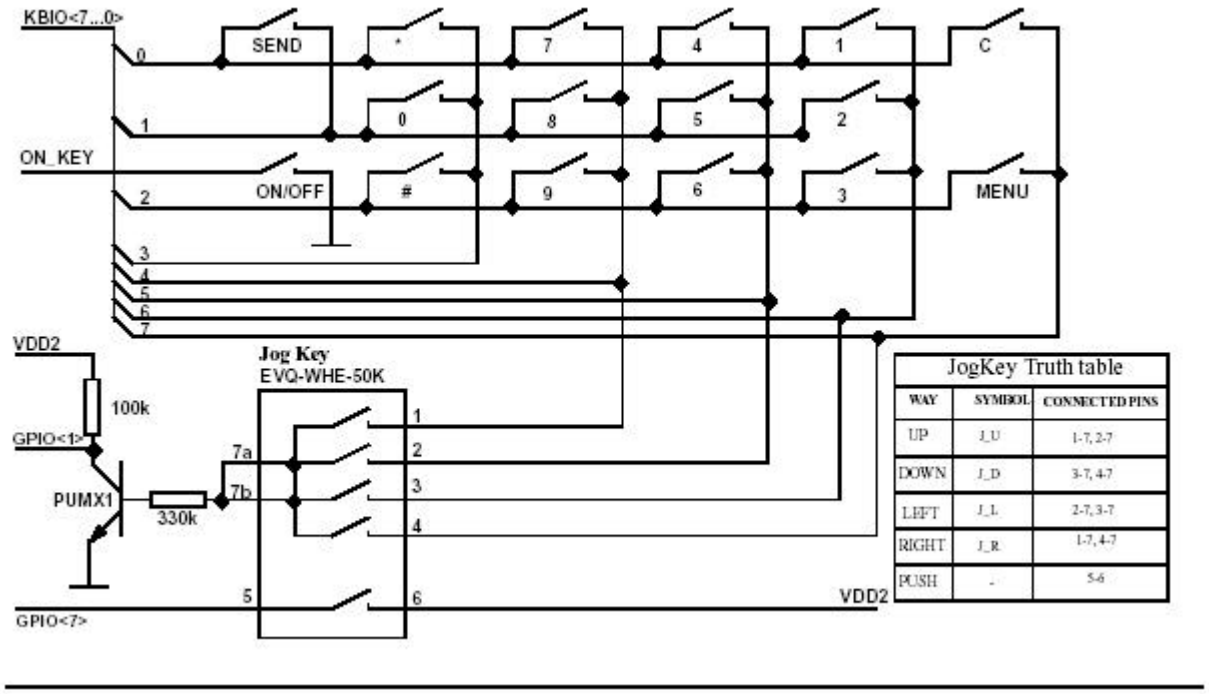


Figure 5.1 KEYBOARD

5.11 I/Q

A description of the usage of the I/Q signals is shown in table 5.11.

Line	Name in schematics	Description
IA	IA	BB differential I signal
IB	IB	BB differential I signal
QA	QA	BB differential Q signal
QB	QB	BB differential Q signal

Table 5.11 I/Q Interfaces

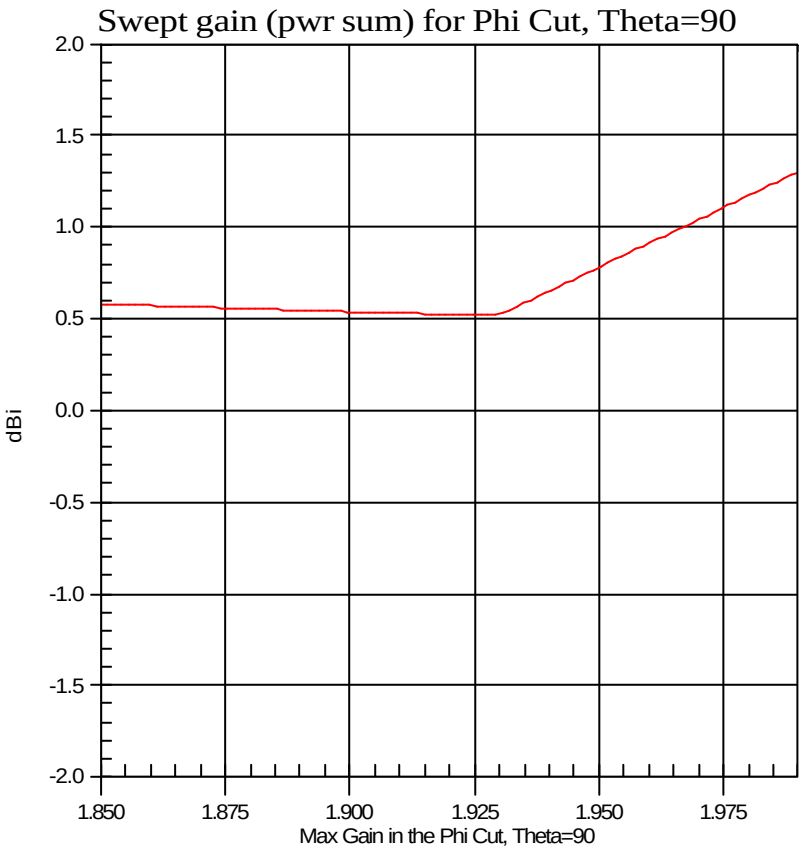
5.12 IIC

The IIC-bus is used for communication between the BB-processor, the PMU and the LCD. A description of the usage of these signals is shown in table 5.12.

Line	Name in schematics	Description
IIC<0>	SCL	IIC clock
IIC<1>	SDA	IIC data

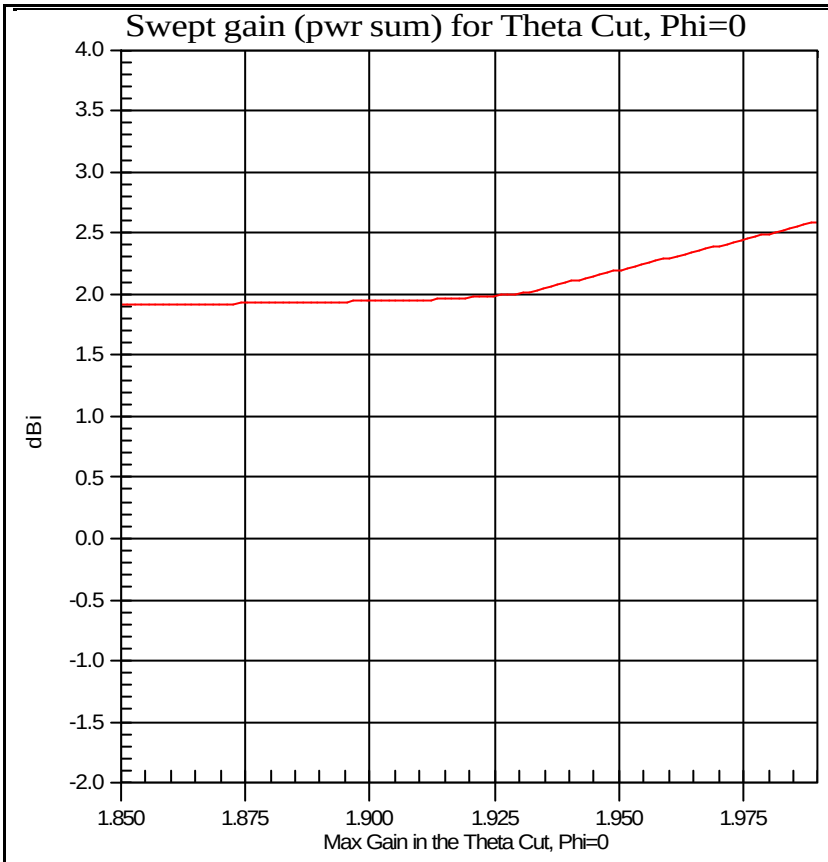
Table 5.12 IIC Interfaces

5.13 Antenna Features



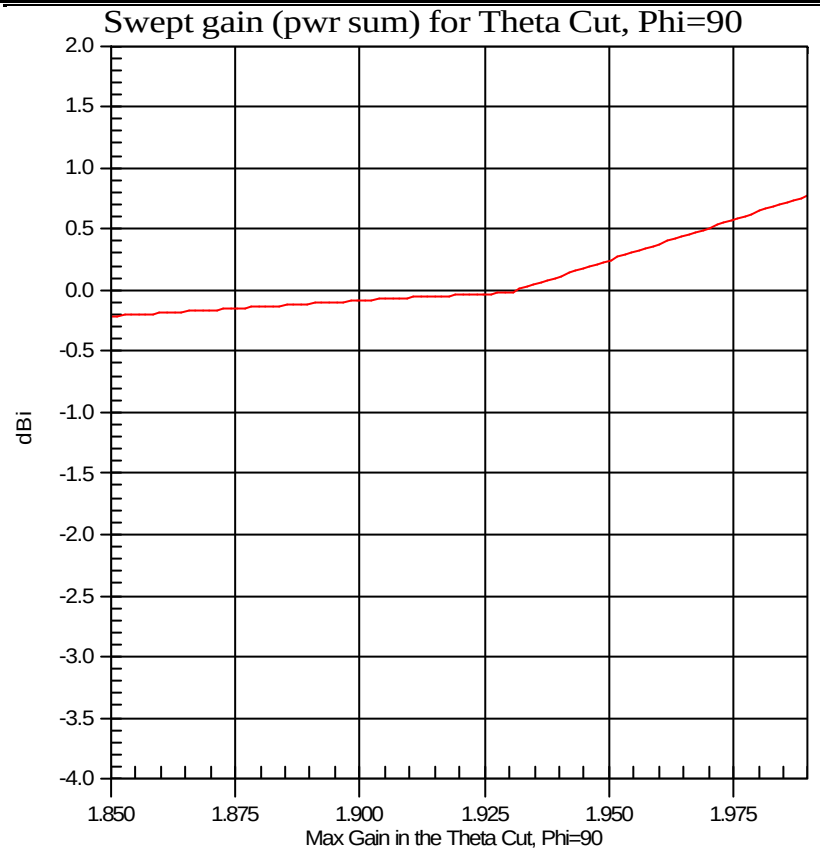
Swept gain (pwr sum) for Phi Cut, Theta=90

PCS band of C570
Computed values are terminal gains - AUT S11 not backed out
Average gain over this frequency range = 0.746dBi



Swept gain (pwr sum) for Theta Cut, Phi=0

PCS band of C570
Computed values are terminal gains - AUT S11 not backed out
Average gain over this frequency range = 2.121dBi



Swept gain (pwr sum) for Theta Cut, Phi=90

PCS band of C570
Computed values are terminal gains - AUT S11 not backed out
Average gain over this frequency range = 0.136dBi

Gain Summary for : Phi Cut, Theta=90

Frequency	Pwr Gn Peak (dBi)	Pwr Gn Ave (dBi)	Pol 1 Peak (dBi)	Pol 1 Ave (dBi)	Pol 2 Peak (dBi)	Pol 2 Ave(dBi)
1.85 GHz	0.580	-3.215	-6.665	-8.442	-0.310	-4.764
1.91 GHz	0.529	-3.328	-5.984	-7.915	-0.555	-5.185
1.93 GHz	0.520	-3.428	-5.928	-7.981	-0.576	-5.303
1.99 GHz	1.302	-2.910	-5.082	-7.147	0.183	-4.964

Gain Summary for : Theta Cut, Phi=0

Frequency	Pwr Gn Peak (dBi)	Pwr Gn Ave (dBi)	Pol 1 Peak (dBi)	Pol 1 Ave (dBi)	Pol 2 Peak (dBi)	Pol 2 Ave(dBi)
1.85 GHz	1.906	-2.151	-3.798	-8.531	0.963	-3.287
1.91 GHz	1.949	-2.574	-2.543	-7.862	0.441	-4.098
1.93 GHz	1.999	-2.719	-2.153	-7.817	0.198	-4.326
1.99 GHz	2.594	-2.568	-0.878	-6.951	0.200	-4.536

Gain Summary for : Theta Cut, Phi=90

Frequency	Pwr Gn Peak (dBi)	Pwr Gn Ave (dBi)	Pol 1 Peak (dBi)	Pol 1 Ave (dBi)	Pol 2 Peak (dBi)	Pol 2 Ave(dBi)
1.85 GHz	-0.215	-4.904	-0.271	-5.249	-10.968	-16.078
1.91 GHz	-0.062	-4.966	-0.112	-5.324	-9.632	-15.986
1.93 GHz	-0.023	-5.006	-0.074	-5.357	-9.227	-16.107
1.99 GHz	0.775	-4.390	0.739	-4.743	-8.129	-15.462

Pwr Gn Peak: Power Gain Peak
Pwr Gn Ave: Power Gain Average
Pol 1 Peak: Polarity 1 Peak
Pol 1 Ave: Polarity 1 Average
Pol 2 Peak: Polarity 2 Peak
Pol 2 Ave: Polarity 2 Average