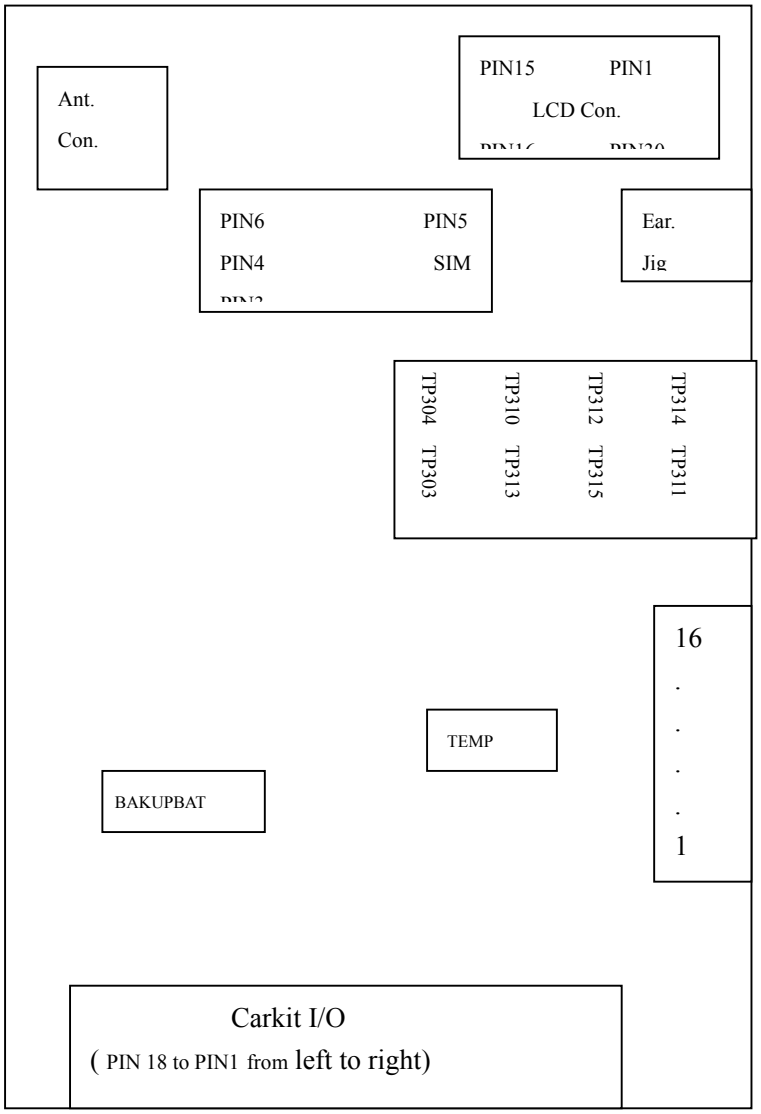
Main board connector:



5.0 Operational Manual

In this part, the operation process is explained by the interfaces.

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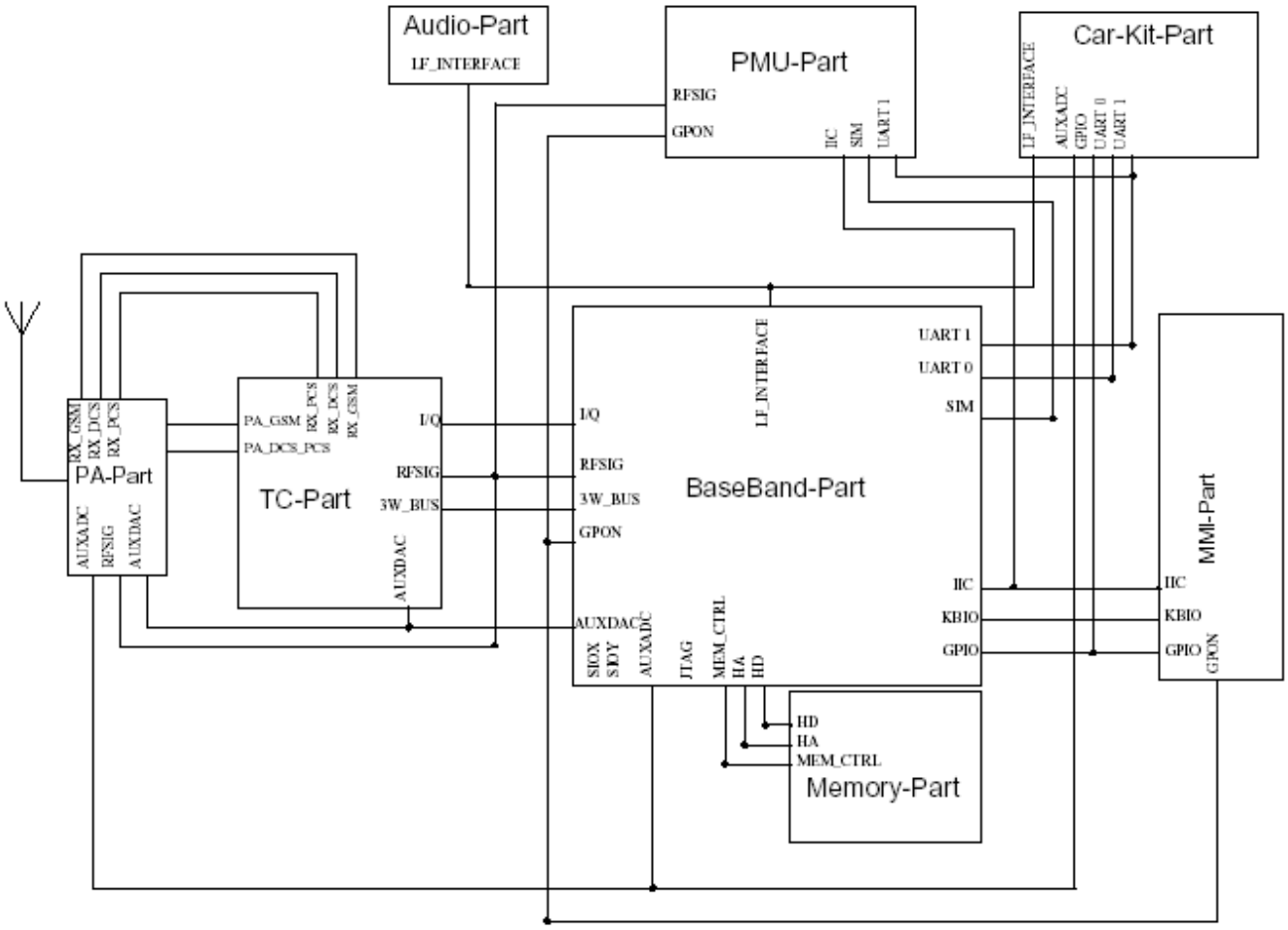

Solution and its interfaces

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
GPIO(1)	FM_DATA
GPI0(2)	AMP_EN
GPIO(3)	CHARGE_REVERSE
GP1O(4)	CHARGE_MODE
GPIO(5)	CAMERA_EN
GPIO(6)	FM_CLK
GPIO(7)	FLIP_SENSE

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GPIO(8)	FM_NR_W
GPIO(9)	TEST_CTS(CTS 0)
GPIO(10)	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

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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.

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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

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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 K570 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

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for testing the K570 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

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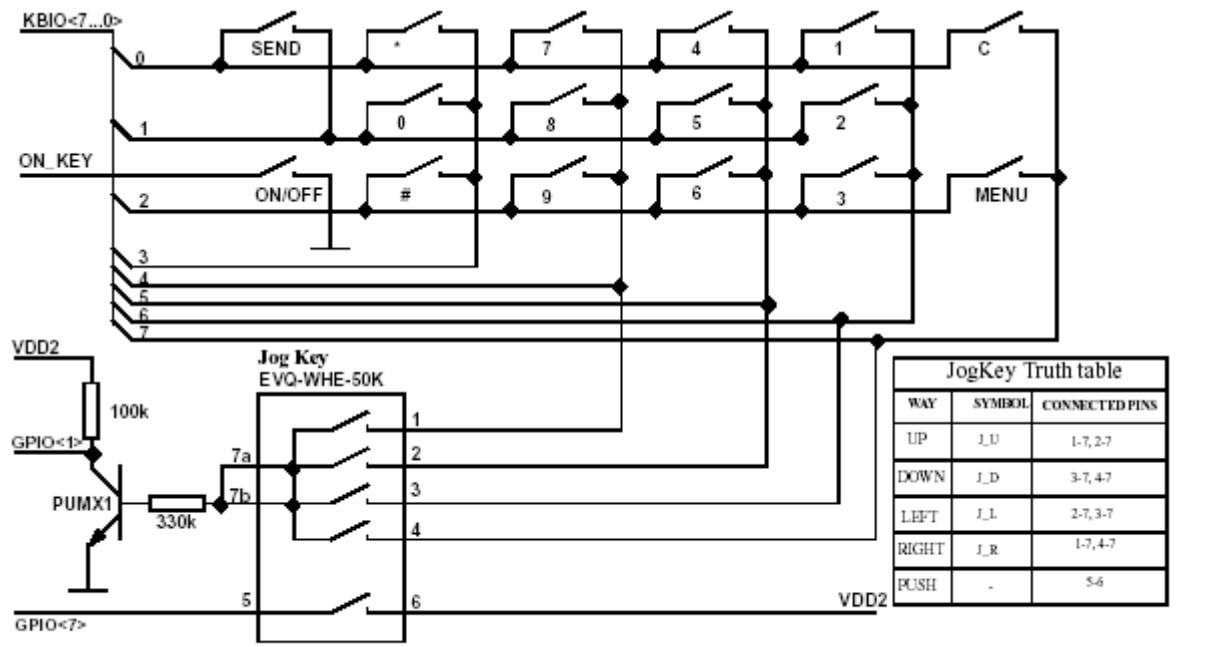

Figure 5.1 KEYBOARD

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.

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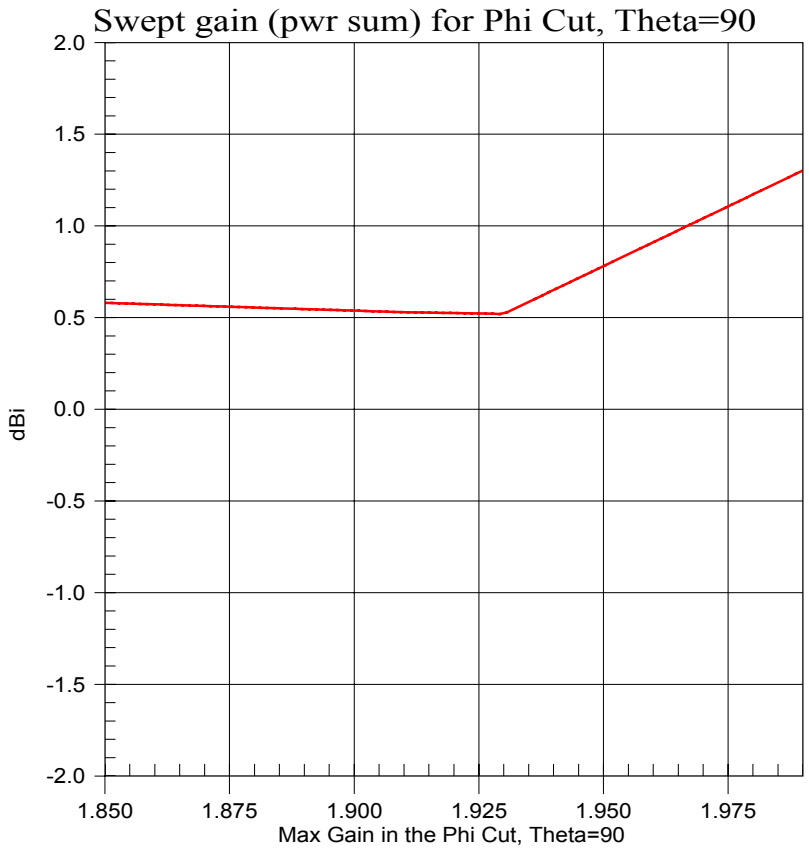
Line	Name in schematics	Description
IIC<0>	SCL	IIC clock
IIC<1>	SDA	IIC data

Table 5.12 IIC Interfaces

5.13 Antenna Features of K570



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

PCS band of K570
Computed values are terminal gains - AUT S11 not backed out
Average gain over this frequency range = 0.746dBi

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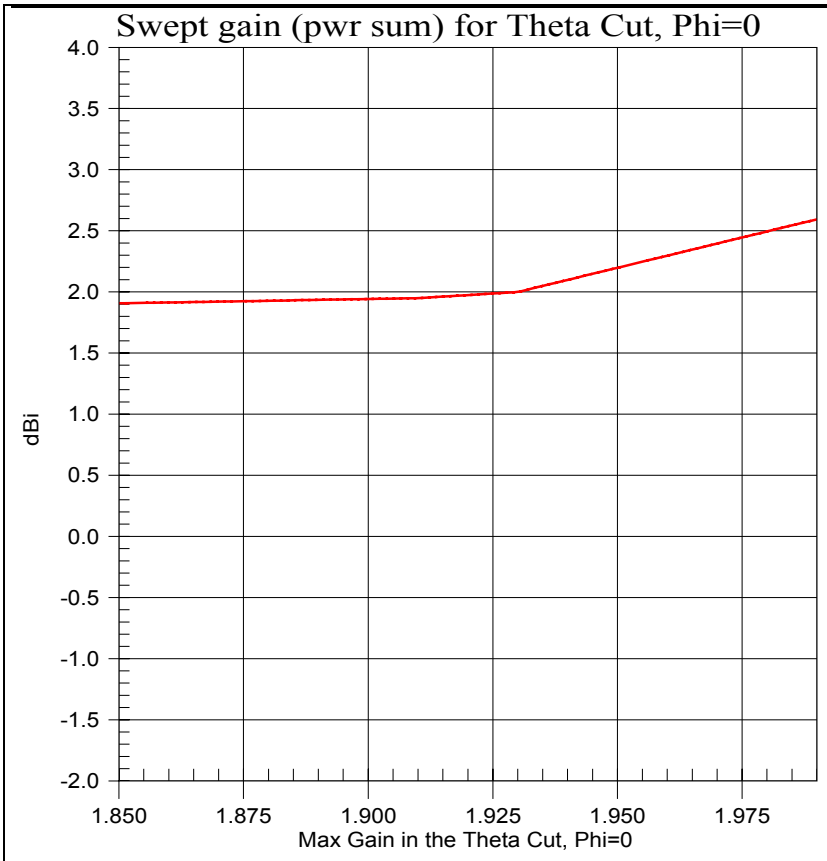

Swept gain (pwr sum) for Theta Cut, Phi=0

PCS band of K570
Computed values are terminal gains - AUT S11 not backed out
Average gain over this frequency range = 2.121dBi

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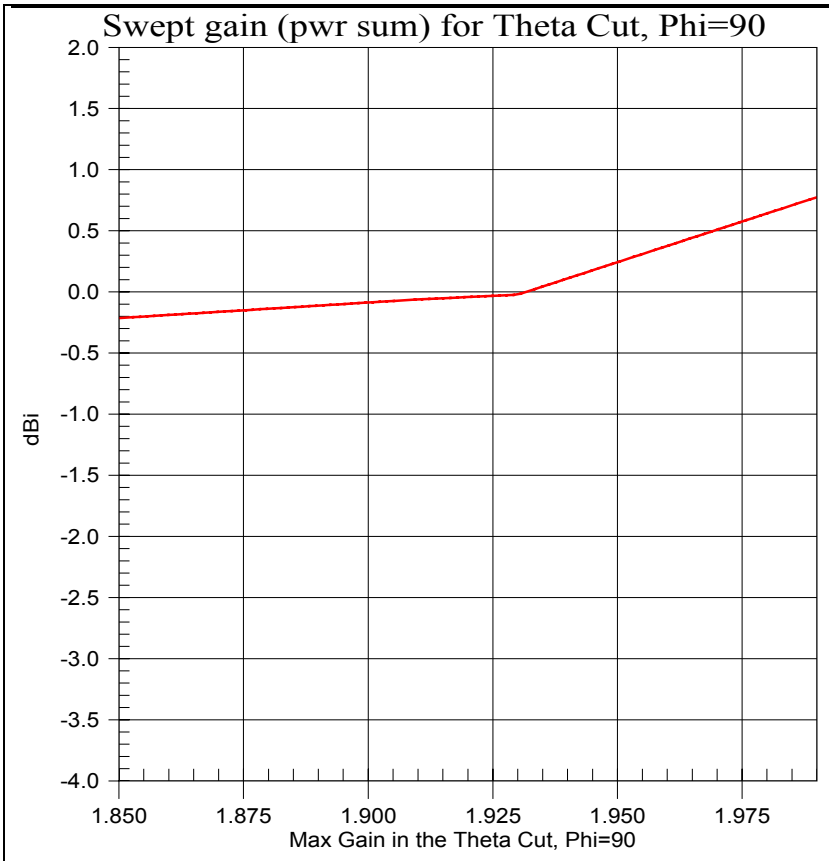

Swept gain (pwr sum) for Theta Cut, Phi=90

PCS band of K570
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

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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

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