DATA SHEET

PH10766 - 802.11b Mini PCI Card WLAN

PH10754 - 802.11b Mini PCI Card WLAN + V.90/92

Wi Fi™
The Standard for Wireless Fidelity.

Preliminary specification

PHILIPS

802.11b Mini PCI Card WLAN PH10766
802.11b Mini PCI Card WLAN + V.90/92 PH10754

DESCRIPTION

The PH10754 combination card has two communications functions; one is an 802.11 wireless LAN, and the other is a controllerless modem. Both functions will interface to the host system by means of the miniPCI interface.
The PH10766 stand-alone card contains the same WLAN radio as the combination card, but does not have the modem.

The card edge would insert into the standard miniPCI type III connector. A two-pin header connector on the card would provide a connection for a short cable to a standard RJ-11 modem connector elsewhere in the notebook. Two subminiature coaxial cable connectors on the card would provide the interface to a diversity antenna system for the wireless LAN, also provided elsewhere in the notebook. The 14-pin header provides for connection of the external LED(s). The LED connections are also available on the miniPCI edge connector.

The 802.11b Mini PCI Card WLAN embedded module is designed to operate in the 2.4 GHz ISM band, channels 1 to 14. The actual operating frequencies and channels depend on the regulations in the country of usage. The module implements Direct Sequence Spread Spectrum DSSS technology providing improved noise and signal jamming immunity including protection from interference in the 2.4 GHz band like the microwave ovens and cordless phones.

The modules can be used in peer to peer or ad-hoc infrastructure networks allowing for instant network set up in any office environment. Access points can be used to extend the area of coverage, in infrastructure mode, and increase the number of users.

802.11b Mini PCI Card WLAN and 802.11b Mini PCI Card WLAN + V.90/92 are certified to interoperate with other manufacturers' high-speed IEEE 802.11b compliant systems and are fully compliant with WECA Wi-Fi. [1]

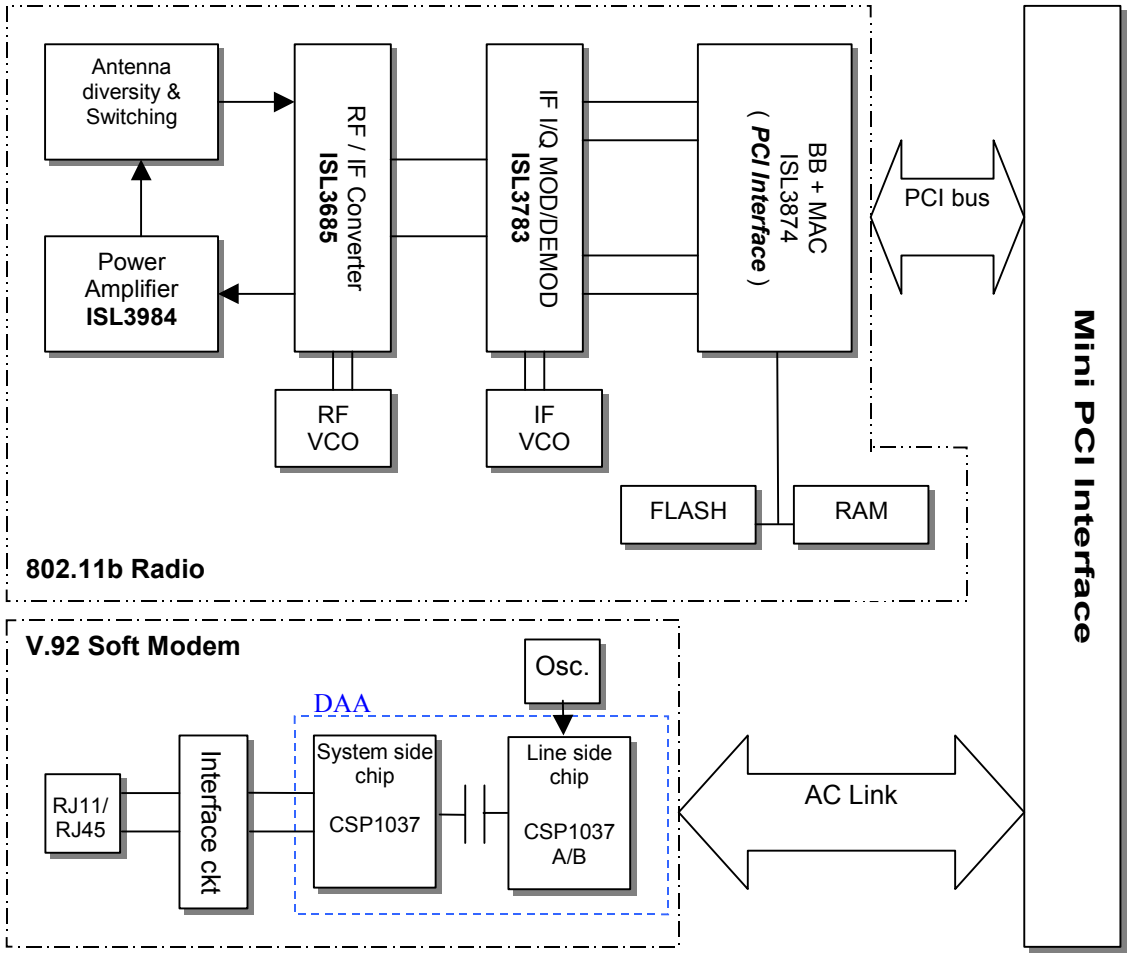
The main features of this design are as follows :

- IEEE 802.11b WLAN High data rate standard compatible
- Wi-Fi Certified
- Backwards compatible to existing 1-2 ; 5.5 Mbps standard
- Automatic data rate selection
- 2.4 GHz, DSSS, CCK modulation scheme
- Supports both Infrastructure mode & Ad-hoc networking
- Security … Real time WEP (64-bit and 128-bit) / Encryption & Decryption
- Improved multi-path distortion performance
- Equalized Rake Receiver
- Diversity antennas
- Win 98/NT/2K/XP/CE and Linux support
- Power management as defined in the mini PCI specs
- Mini PCI Type 3A Form factor & Interface

1 The Wireless Ethernet Compatibility Alliance (WECA) is a nonprofit organization formed in 1999 to certify interoperability of Wi-Fi (IEEE 802.11b) and Wi-Fi5 (IEEE 802.11a) products and to promote Wi-Fi as the global, wireless LAN standards across all market segments.

802.11b Mini PCI Card WLAN PH10766
802.11b Mini PCI Card WLAN + V.90/92 PH10754

BLOCK DIAGRAM



RATINGS

NON-OPERATIONAL CONDITIONS:

- ambient temperature : -25°C to +85°C
- relative humidity : 100% max.
- bump acceleration : 245m/s^2 max (25g)
- Shock acceleration : 245m/s^2 max (25g)
- Supply Voltage : 4V Max
- Input, Output or I/O Voltage : Gnd-0.5V to Vcc+0.5V

OPERATIONAL CONDITIONS:

- supply voltage : 3.3V ± 10%
- ambient temperature : -10°C to +55°C
- Relative humidity : 95% max

LOGIC CONDITIONS:

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Logical One Input Voltage	V_{IH}	V_{CC}=Max,Min	0.7V_{CC}	-	-	V
Logical Zero Input Voltage	V_{IL}	V_{CC}=Max,Min	-	-	V_{CC}+0.3	V
Logical One Output Voltage	V_{OH}	I_{OH} = -1mA, V_{CC} = Min	Vcc-0.2	2.6	-	V
Logical Zero Output Voltage	V_{OL}	I_{OL} = 2mA, Vcc = Min	-	0.05	0.2	V
Input leakage Current	I_{IH} OR I_{IL}		-10	-	10	чA
Input Capacitance	C_{IN}	All measurements referenced to GND		5	10	pF
Output Capacitance	C_{OUT}	All measurements referenced to GND		5	10	pF

SPECIFICATION DATA

If not otherwise stated the electrical performance refers to:

- ambient temperature : 22°C ±2°C
- relative humidity : 60% ±10%
- all supply voltages : 3.3V ±0.1V
- supply voltages 'ripple' : < 15mVpp (50Hz to 200kHz)
- Aux voltage : 3.3V ±0.1V

802.11b Mini PCI Card WLAN PH10766
802.11b Mini PCI Card WLAN + V.90/92 PH10754

General Specifications: 802.11b

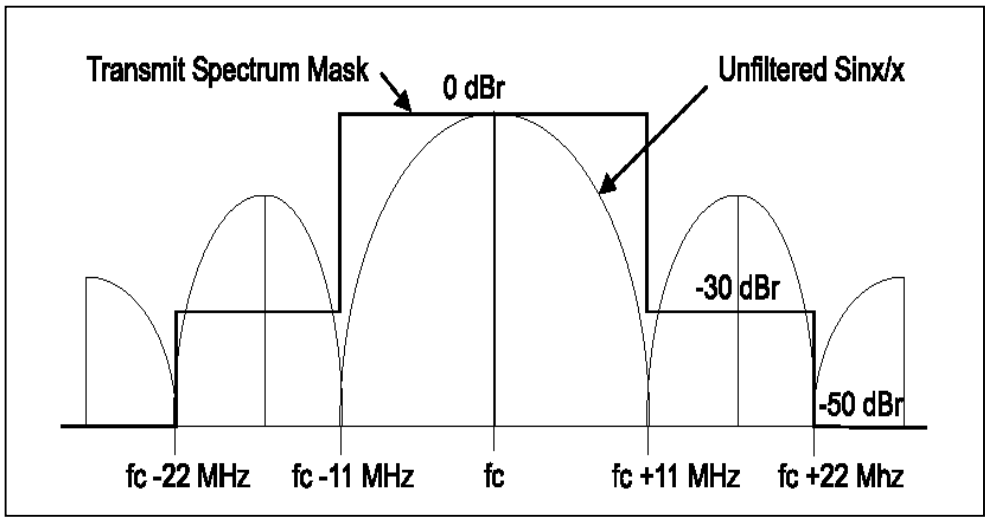
Parameter	Test Condition	Specification	Remarks
PHY Layer		DSSS, HR 802.11b	Full compliance to IEEE802.11b-1999 standards HR – High Rate DSSS – Direct Sequence Spread Spectrum
Media Access Control		CSMA / CA	CSMA / CA – Carrier Sense Multiple Access with Collision Avoidance
Modulation	11Mbps & 5,5 Mbps 2 Mbps 1 Mbps	CCK DQPSK DBPSK	CCK – Complementary Code Keying DQPSK – Differential Quadrature Phase Shift Keying DBPSK – Differential Binary Phase Shift Keying
Spreading		11 chip Barker Code	
Frequency Band		2.4 -2.4897 GHz ISM band	Actual channels used will depend on local regulations
Data Rate		11Mbps Max Raw, with fall back to 5.5, 2 and 1 Mbps	Typical data through put for 11Mbps raw data rate is 5 Mbps
Networking Support		Infrastructure & Adhoc	
Security	128 bit encryption tested with multiple manufacturers 128 bit encryption access points	Real time WEP ; 64 bit Encryption / Decryption	128 bit optional User Settable
Delay Spread Robustness		125nS @ 11 Mbps Data rate ; 250nS @ 5.5Mbps	With Diversity antennas (Note : Improves greatly at lower data rates)
Power Management		Yes, built in sleep mode	
Interoperability	WECA, WiFi	Supports complete NIC level interoperability	SNMP network management agent with industry standard MIB for status reporting
Drivers	WHQL certification - pending	Win98SE, WinME, ,NT,2K,CE 3.0 XP support to follow	Installation uses InstallShield or equivalent. Philips Components copyright statement inserted in start up splash screen that can be disabled.
Network Protocol		TCP/IP, IPX, NDIS3, NDIS4, NDIS5, NDIS 5.1 for XP	
Host Interface		Mini PCI- Type 3A Spec V1.0	

802.11b WLAN

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
CURRENT CONSUMPTION							
Average Current (Without Power Saving Mode)		I_{CC}	2% Transmit 98% Receive	-	195	-	mA
Average Current (With Power Saving Mode)		I_{CC}	2% TX 90% Standby 8% RX (Standby typ 65mA)	-	80	-	mA
Continuous Transmit Mode				240	280	350	mA
Continuous Receive Mode				140	190	240	mA
Standby				20	65	75	mA
RF SYSTEM SPECIFICATIONS							
Frequency Band		Fband			2400 to 2483.5		MHz
Number of selectable sub channels		Europe/ AP	ETSI	13			
		USA	FCC	11			
		France	French	4			
		Japan	MPT	14			
Transmitter Power Output		P_{OUT}	(Occupied Channel Power, conducted measurement)	+12	+16	+18	dBm
Maximum Power Density		Pden	FCC 247 compliance	-	-	+10	dBm/ MHz
Transmit Centre Frequency Tolerance		Fc-tol			+/-20	+/- 25	PPM
Transmit Spectral Mask		TSM	Refer template below				
RF Carrier Suppression (below peak Sin x / x spectrum)		RFsup	DQPSK, 2Mbps, Scrambler off, 1010..pattern , @ Fc, 100KHz RBW	20	35		dB
Antenna Impedance		Zout			50		Ohms
Receive Sensitivity	DBPSK	RX_S	1Mbps, 8% FER (or 1E-5BER) (note : Measured on Antenna 1)	-90	-93	-	dBm
	DQPSK		2Mbps, 8% FER (or 1E-5BER) (note : Measured on Antenna 1)	-88	-91	-	dBm
	CCK		5.5Mbps, 8% FER (or 1E-5 BER) (note : Measured on Antenna 1)	-84	-87	-	dBm
	CCK		11Mbps, 8% FER (or 1E-5 BER) (note : Measured on Antenna 1)	-78	-82	-	dBm
Maximum Receive Level		RX_MAX	FER <8%	-10	-5	-	dBm
Image Rejection		IR	FER <8%	40	50	-	dB
IF Rejection		IFR	FER <8%	60	70		dB
Adjacent Channel Rejection		ACR	FER <8% [2]	40	45	-	dB
Tx and Rx Spurious Emissions		USA	FCC	FCC 15.247, 15.205, and 15.209.			
		Europe	ETSI	ETS 300–328			
		Japan	MPT	MPT ordinance for Regulating Radio Equipment, Article 49-20.			

[2] Adjacent channel measurements refer to two channels separated by 25 MHz, main channel at –70dbm

Transmit Spectral Mask



The transmitted spectral products shall be less than –30 dBr (dB relative to the SINx/x peak) for
f c – 22 MHz < f < f c –11 MHz; and
f c + 11 MHz < f < f c + 22 MHz;
and shall be less than –50 dBr for
f < f c – 22 MHz; and
f > f c + 22 MHz.
Where f c is the channel center frequency.[3]

TYPICAL THROUGHPUT DATA (FOR INFORMATION ONLY)

Net Throughput (Payload, excluding headers etc)	**11 Mbps CCK**	**5.5 Mbps CCK**	**2 Mbps DQPSK**
Station to Station (TCP/IP)	**Typical Throughput (min)**		
Peer to Peer	5.0	3.5	1.5
Peer to Peer (with WEP128)	4.5	3.5	1.5
Via AP (one on Ethernet)	TBF	TBF	TBF
Via AP (one on Ethernet, with WEP128)	TBF	TBF	TBF

(Note: DUT set to receive at –76dBm, any channel)

[3] The measurements shall be made using a 100 kHz resolution bandwidth and a 100 kHz video bandwidth.

GENERAL SPECIFICATIONS – V.92 MODEM (APPLICABLE TO THE COMBINATION CARD ONLY)

MODEM STANDARDS	SUPPORT
ITU-V.250 (AT Command Set)	Yes
ITU-V.90/V.92 56K	Yes
V.34	Yes
ITU-T V.34	Yes
ITU-T V.32	Yes
ITU-T V.32bis	Yes
ITU-T V.23	Yes
ITU-T V.22	Yes
ITU-T V.22bis	Yes
ITU-T V.21	Yes
BELL 103	Yes
BELL 212	Yes

FAX STANDARDS	SUPPORT
ITU-T V.29	Yes
ITU-T V.27TER	Yes
ITU-T V.17	Yes
EIA Class 1	Yes

ERROR CORRECTION AND DATA COMPRESSION PROTOCOL	SUPPORT
MNP Level	Yes
ITU-T V.42	Yes
ITU-T V.42bis	Yes
ITU-T V.44	Yes

DIALING CAPABILITY	Tone / Rotary
Ringer Equivalence	REN = 0.8 (typ) with caller ID, 0.2 (max) without
Receiver Sensitivity	-45dbm
Asynchronous Character Format	Up to 10 bit
Pulse Data Rate	10 pulses / sec (20 pps for countries that needs it)
Tone Detection	Dial, Busy, Ringback, Answer Tones
Line Requirement	PSTN / Equivalent PBX
Data/Fax/Voice Call Discrimination	Yes
DTMF Tones Detection	Yes
Message/fax Time Stamping	Yes – application related
Local Message / Fax Storage	Yes - application related
Caller ID	Yes – US only
Call Waiting	Yes – V.92 feature (MOH)
Call Forwarding	Yes – application related
Fax Display on PC	Yes – application related
Acoustic Echo Cancellation	Yes

Operating System	Win 9x, Me, NT, 2K, XP

ELECTRICAL CHARACTERISTICS – V.90 / V.92

LOOP CHARACTERISTICS

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
DC termination voltage	V_{TR}	I_L = 20 mA (mode 3)*	-	-	7.5	V
DC termination voltage	V_{TR}	I_L = 42 mA (mode 3)*	-	-	14.5	V
DC termination voltage	V_{TR}	I_L = 50 mA (mode 3)*	-	-	40	V
DC termination voltage	V_{TR}	I_L = 60 mA (mode 3)*	40	-	-	V
DC termination voltage	V_{TR}	I_L = 20 mA (mode 1)*	-	-	6.0	V
DC termination voltage	V_{TR}	I_L = 100 mA (mode 1)*	11	-	-	V
DC termination voltage	V_{TR}	I_L = 20 mA (mode 2)*	-	-	7.5	V
DC termination voltage	V_{TR}	I_L = 100 mA (mode 2)*	12	-	-	V
On-hook leakage current	I_{LK}	V_{BAT} = -48 V	1	-	-	mA
Operating loop current	I_{LP}	-	13	-	120	mA
DC ring current	-	Without Caller-ID	-	-	20	μA
DC ring current	-	With Caller-ID	-	450	-	μA
Ring detect voltage	V_{RD}	RT = 0** (15.0 Vrms ± 4.5 Vrms)	11	-	22	Vrms
Ring detect Voltage	V_{RD}	RT = 1** (21.5 Vrms ± 4.5 Vrms)	17	-	29	Vrms
Ring frequency	F_R	-	15	-	68	Hz

*
Mode 1 – a lower-voltage mode that supports a transmit full-scale level of –2.71 dBm at tip and ring.
Mode 2 – supports a transmit full-scale level of –1 dBm at tip and ring. This is the default mode.
Mode 3 – supports a transmit full-scale level of –1 dBm at tip and ring with current limiting before reaching 60 mA.

** Ringer Threshold Select used to fulfil country requirements on ring detection. Signals below the lower level will not generate a ring detection. Signals above the upper level are guaranteed to generate a ring detection.

DC CHARACTERISTICS

V_D = +3.3 V

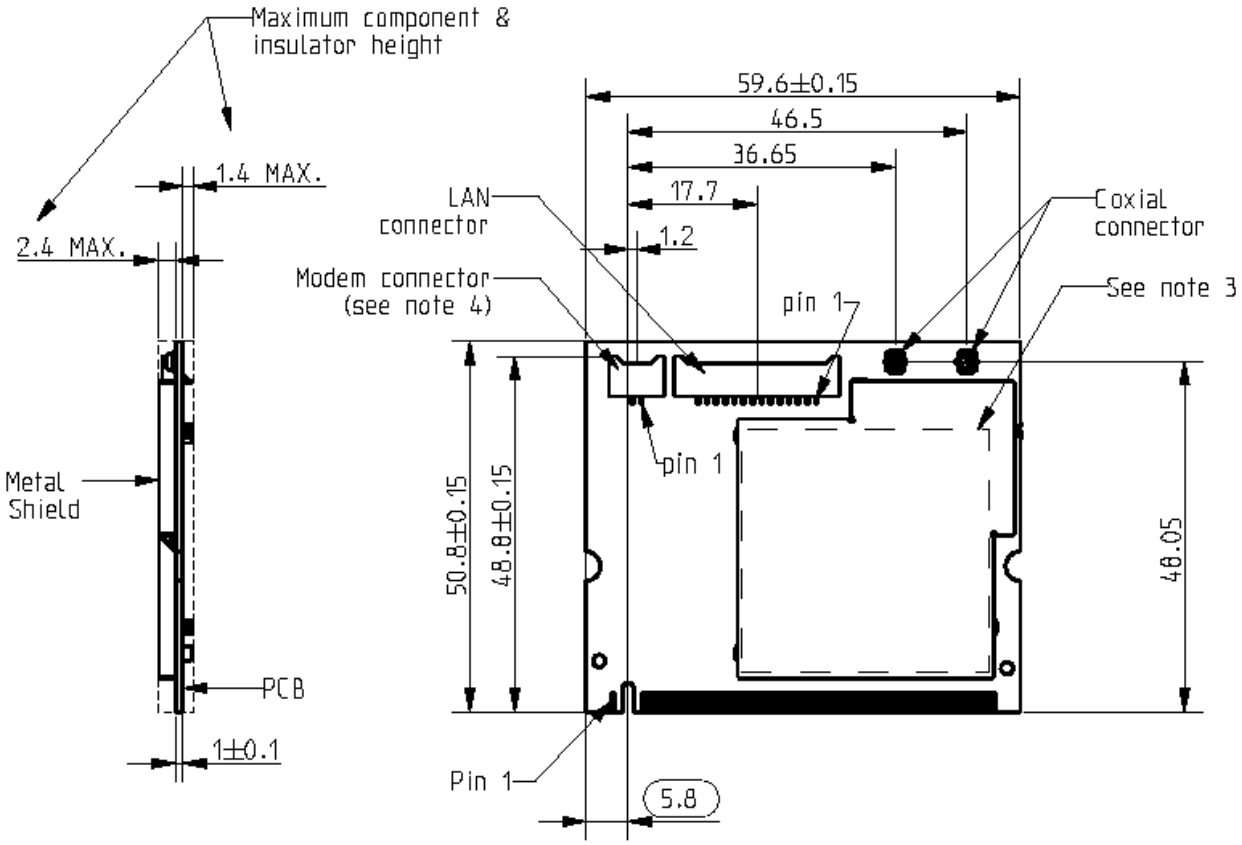
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
High-level Input Voltage	V_{IH}	-	2.4	-	-	V
Low-level Input Voltage	V_{IL}	-	-	-	0.8	V
High-level Output Voltage	V_{OH}	Io = -2 mA	2.4	-	-	V
Low-level Output Voltage	V_{OL}	Io = +2 mA	-	-	0.35	V
Input Leakage Current	I_L	-	-	-	±10	μA
Power Supply Current, Analog	I_A	V_A pin	-	1	6	mA
Power Supply Current, Digital	I_D	V_D pin	-	8	11	mA
Total Supply Current, Sleep Mode	-	-	-	-	1.5	mA

AC CHARACTERISTICS

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Transmit Frequency Response	-	Low –3 dB corner	-	5	-	Hz
Receive Frequency Response	-	Low –3 dB corner	-	5	-	Hz
Transmit Full-scale Level	V_{FS}	-	-	1	-	Vpeak
Receive Full-scale Level	V_{FS}	-	-	1	-	Vpeak
Dynamic Range	DR	I_L = 100 mA, Fs = 7200 (ACT = 0, DCT = mode 2)*	-	84	-	DB
Dynamic Range	DR	I_L = 100 mA, Fs = 10300 (ACT = 1, DCT = mode 1)*	-	82	-	DB
Dynamic Range (call progress AOUT)	DR_{AO}	V_{IN} = 1 kHz	-	-	-	dB
Transmit Total Harmonic Distortion	THD	I_L = 100 mA, Fs = 7200 (ACT = 0, DCT = mode 2)*	-	85	-	dB
Transmit Total Harmonic Distortion	THD	I_L = 100 mA, Fs = 10300 (ACT = 1, DCT = mode 1)*	-	85	-	dB
Receive Total Harmonic Distortion	THD	I_L = 100 mA, Fs = 7200 (ACT = 0, DCT = mode 2)*	-	80	-	dB
Receive Total Harmonic Distortion	THD	I_L = 100 mA, Fs = 10300 (ACT = 1, DCT = mode 1)*	-	80	-	dB
Receive Total Harmonic Distortion	THD	I_L = 20 mA, Fs = 7200 (ACT = 1, DCT = mode 1)*	-	78	-	dB
Receive Total Harmonic Distortion	THD	I_L = 20 mA, Fs = 7200 (ACT = 0, DCT = mode 2)*	-	78	-	dB
Receive Total Harmonic Distortion	THD	I_L = 20 mA, Fs = 7200 (ACT = 1, DCT = mode 3)*	-	78	-	dB
Receive Total Harmonic Distortion	THD	I_L = 42 mA, Fs = 7200 (ACT = 1, DCT = mode 3)*	-	80	-	dB
Receive Total Harmonic Distortion	THD	I_L = 60 mA, Fs = 7200 (ACT = 0, DCT = mode 2)*	-	80	-	dB
Dynamic Range (caller-ID mode)	DR_{CID}	V_{IN} = 1 kHz, -13 dB	-	60	-	dB
Caller-ID Full-scale Level (0 dBm gain)	V_{CID}	-	-	0.8	-	Vpeak

*ACT and DCT are among several parameters used to set the modem chipset for compliance with specific country requirements.

MECHANICAL DIMENSIONS (mm)



Notes :

1) All dimensions are in millimeter.
2) Drawing not to scale.
3) Place product label on top of metal shield.
4) Modem connector not required for Yuma (3139 147 18590).

DEFINITION OF TERMINALS / SUPPLY DATA

(Note : Refer drawing on page 11)

MINI PCI INTERFACE

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	TIP	2	RING	63	3.3V	64	FRAME#
	Key		Key	65	CLKRUN#	66	TRDY#
3	8PMJ-3[3, 4]	4	8PMJ-1[3, 4]	67	SERR#	68	STOP#
5	8PMJ-6[3, 4]	6	8PMJ-2[3, 4]	69	GROUND	70	3.3V
7	8PMJ-7[3, 4]	8	8PMJ-4[3, 4]	71	PERR#	72	DEVSEL#
9	8PMJ-8[3, 4]	10	8PMJ-5[3, 4]	73	C/BE[1]#	74	GROUND
11	LED1_GRNP	12	LED2_YELP	75	AD[14]	76	AD[15]
13	LED1_GRNN	14	LED2_YELN	77	GROUND	78	AD[13]
15	CHSGND	16	RESERVED	79	AD[12]	80	AD[11]
17	INTB#	18	5V	81	AD[10]	82	GROUND
19	3.3V	20	INTA#	83	GROUND	84	AD[09]
21	RESERVED	22	RESERVED	85	AD[08]	86	C/BE[0]#
23	GROUND	24	3.3VAUX	87	AD[07]	88	3.3V
25	CLK	26	RST#	89	3.3V	90	AD[06]
27	GROUND	28	3.3V	91	AD[05]	92	AD[04]
29	REQ#	30	GNT#	93	RESERVED	94	AD[02]
31	3.3V	32	GROUND	95	AD[03]	96	AD[00]
33	AD[31]	34	PME#	97	5V	98	RESERVED_WIP[5]
35	AD[29]	36	RESERVED	99	AD[01]	100	RESERVED_WIP[5]
37	GROUND	38	AD[30]	101	GROUND	102	GROUND
39	AD[27]	40	3.3V	103	AC_SYNC	104	M66EN
41	AD[25]	42	AD[28]	105	AC_SDATA_IN	106	AC_SDATA_OUT
43	RESERVED	44	AD[26]	107	AC_BIT_CLK	108	AC_CODEC_ID0#
45	C/BE[3]#	46	AD[24]	109	AC_CODEC_ID1#	110	AC_RESET#
47	AD[23]	48	IDSEL	111	MOD_AUDIO_MON	112	RESERVED
49	GROUND	50	GROUND	113	AUDIO_GND	114	GROUND
51	AD[21]	52	AD[22]	115	SYS_AUDIO_OUT	116	SYS_AUDIO_IN
53	AD[19]	54	AD[20]	117	SYS_AUDIO_OUT GND	118	SYS_AUDIO_IN GND
55	GROUND	56	PAR	119	AUDIO_GND	120	AUDIO_GND
57	AD[17]	58	AD[18]	121	RESERVED	122	MPCIACT#
59	C/BE[2]#	60	AD[16]	123	VCC5VA	124	3.3VAUX
61	IRDY#	62	GROUND				

Modem Connector

Pin 1 Tip (*Tip and Ring is only available on the modem connector.*
Pin 2 Ring *They do not appear on the mini-PCI interface card edge connector.*)

LAN CONNECTOR

LAN Connector Pin	Function	Signal	Mini PCI Pin
1	Not Used		
2	Not Used		
3	Not Used		
4	Not Used		
5	Not Used		
6	Not Used		
7	Power LED	+ve	10
8	Power LED	Gnd	8

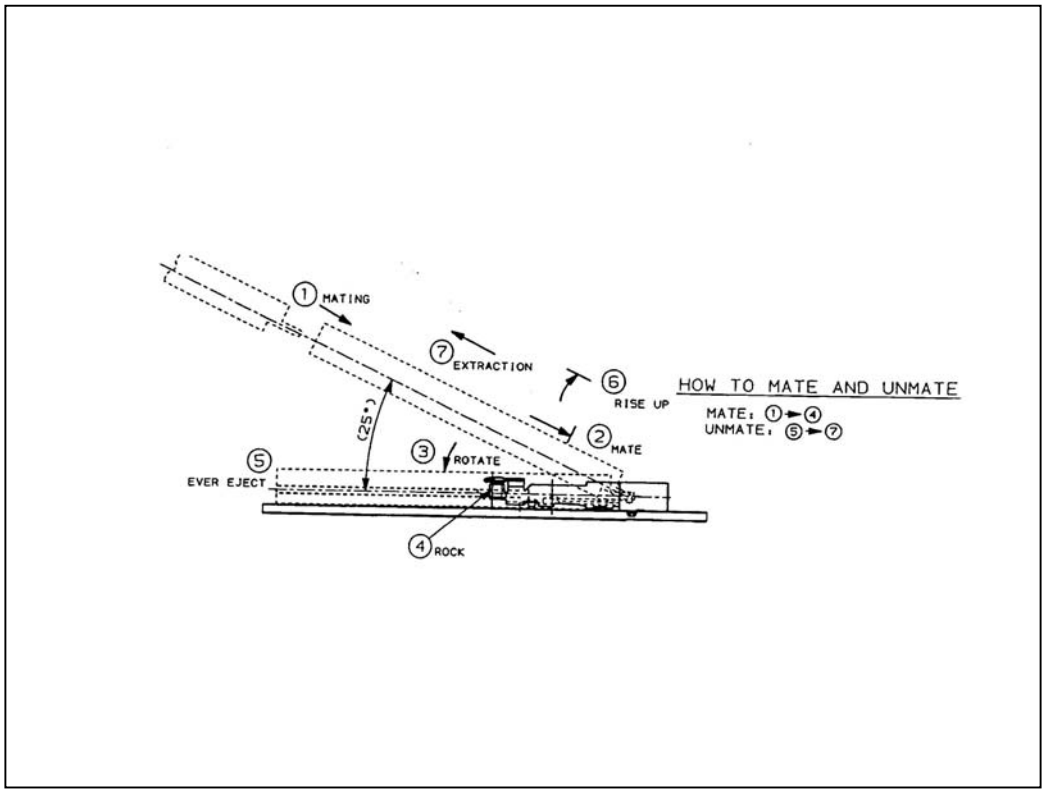
LAN Connector Pin	Function	Signal	Mini PCI Pin
9	Not Used		
10	Not Used		
11	Link LED	+ve	11
12	Link LED	Gnd	13
13	Reserved		12
14	Reserved		14

APPLICATION / MOUNTING NOTES

MOUNTING OF THE MODULE BOARD

1. After confirming that the front and back side of module boards are correct, insert the module board at an angle of 20° to 30° into the innermost part of the connector.
2. Pushing down the module board downwards, when load is kept applied, the latches at both sides will be turned on. The total mating force should not exceed 51.5 N.
3. If the module board is held by the latches and does not get up, mounting will finish.

Be sure to confirm that latches at both sides are turned on correctly e.g. half fitting, remove the board in accordance with the next paragraph 9.3 How to remove the module board and refit it once again by starting the fitting procedure.



HOW TO REMOVE THE MODULE BOARD

1. Move both sides of Latch simultaneously in the outward direction from the module.
2. When the lock is released, the board will tilt approximately 25° in angle to the connector. The board must be pulled out straight and softly in the angle direction.

CONNECTION/DISCONNECTION OF COAXIAL CONNECTORS

1. To couple the connectors, the coupling axes of both connectors are aligned and the connectors are inserted as perpendicularly as possible. Do not attempt to insert on an extreme angle.
2. To disconnect connectors, hook the end portion of E.FL-LP-N onto the connector cover and pull off vertically in the direction of the connector coupling axis. To remove the connector directly, hold the connector cover and pull off vertically in the direction of the connector coupling axis.

WITHRAWAL OF WIRE TO BOARD CONNECTOR

Pull out the mating part (female connector) horizontally in the direction parallel to the housing. Apply axial pull out force of 3.0 N minimum at the speed rate of 25±3 mm/minute.

PACKING

The modules are packed in a cupboard box. The packaging fulfilled the requirements of transportation test stipulated in UAN-D1463. The transport of filled boxes should be done on pool pallets.

ORDERING INFORMATION

Product Name	Mounting / Host Interface	RF-connector(s)	Description	12 NC
PH10766	MiniPCI	URL	802.11b Mini PCI Card WLAN	9307 008 10766
PH10754	MiniPCI	URL	802.11b Mini PCI Card WLAN + V.90/92	9307 008 10754

DOCUMENT REVISION HISTORY

Date	Document status	Rev. no.	Revised by	Revision details
19 Jul. 01	Objective Specifications	0.7	M Guruprasad	Objective Specs Created
1 Oct. 01	Preliminary Specifications	0.9	M Guruprasad	Fully revamped, Specs revised, Current consumption figures reduced, drawings updated, Ordering info added
16 Oct. 01	Document Release	1.0	E. Noble	
17 Oct. 01	Model name update	1.1	E. Noble	Remove model names. Added note regarding “tip & ring” pinouts.
23 Oct. 01	LAN Connector update	1.2	E. Noble	Updated LAN Connector pinouts and added cross reference table. Added model names back in.
24 May 02	Preliminary Specifications	1.3	H. Wiesenthal	Updated names and 12NC
19 June 02	Preliminary Specifications	1.4	H. Wiesenthal	Added: WHQL certification - pending

DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specification.
Application Information	
Where application information is given, it is advisory and does not form part of the specification	

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunctions of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

802.11b Mini PCI Card WLAN PH10766
802.11b Mini PCI Card WLAN + V.90/92 PH10754

Philips – Business Connectivity

Headquarters

Connectivity Headquarters
1000 West Maude Avenue
Sunnyvale, California 94085
U.S.A.
Phone: 408 617 5700
Fax: 408 617 7705
connectivity@philips.com

Global Offices:

Netherlands
Anton Philipsweg
P.O. Box 32
1200 JD Hilversum
The Netherlands
Phone: +31 35 689 3415

Japan
Philips Building
13-37, Kohnan 2-chome
Minato-ku, Tokyo
108-8501 Japan
Phone: +81 3 3740 5111
Fax: +81 3 3740 5305

Taiwan
6-F, 96 Chien Kuo N. Road, Sec.I
P.O.Box 22978
Taipei 104, Taiwan, R.O.C.
Phone: +886 2 2388 7666
Fax: +866 2 2134 2430

PHILIPS