

Harmony 8150 PCI Adapter Technical Description

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PRODUCT:

The product is a WLAN adapter operating in the 5.15 – 5.35 GHz band with a maximum TX output power of 50mW. It is a circuit board assembly with a 62-pin power/data card edge connector and a pair of integral antennas. The peak gain for the two antennas is 3dBi and 1dBi, respectively. Refer to the manual for MPE statement. The device is design to fit into a universal PCI slot inside a PC.

USER CONNECTIONS:

Data and power are provided through the 62-pin card edge connector. A unique antenna connector is provided for attaching each of the antennas to the adapter.

TEST CONNECTIONS:

There are two 50 ohm RF ports on the PCA, one for each of the two antenna connections. Each antenna is terminated with a Radiall UMP3.0 lock-on plug. A slide-on version of the plug can be used during FCC certification for conducted measurements.

INTERNAL CLOCK AND RF OSCILLATOR FREQUENCIES:

MAC/baseband Processor ASIC	32MHz
PCI BUS interface	33MHz
RF synthesizer	PLL frequencies of 40, 80, or 160MHz derived from a 32 MHz oscillator
TX and RX frequencies	5180-5320MHz, 20MHz steps
LO Leakage	4144-4256MHz
Mixer Product	6216-6384MHz
Baseband bandwidth	20MHz

SIGNAL FLOW:

Data is transferred through the 62-pin card edge connector (PCI bus) to the MAC/baseband processor which integrates the media access control (MAC), the baseband radio functions, A/D and D/A converters, transceiver control functions and a PCI/Cardbus interface.

In transmit, the synthesizer tunes to one of the TX frequencies listed above. Data is initiated at the PCI interface, which is part of the MAC/baseband processor. Current outputs from the DAC of the MAC/baseband processor are low-pass filtered through the external reconstruction filter. The I and Q signals are converted to RF thru a dual-conversion architecture, from baseband to IF and from IF to RF signals. These signals are driven off-chip through a power amplifier, through the antenna switch, and to the antenna connector.

In receive, the synthesizer tunes to one of the RX frequencies listed above. The receive signal path is from the antenna connector, through the antenna switch, a band pass filter, an LNA, a receive balun, and to the integrated transceiver IC. Inside the transceiver IC, the RF mixer converts the output of the on-chip LNA to an intermediate frequency. The IF mixer converts this signal down to baseband I and Q signals. The I and Q signals are low-pass filtered by the external channel select filters, and amplified by a baseband PGA controlled by digital logic. The baseband signals continue through external anti-alias filters before being sent to the ADC of the MAC/baseband processor. Data at the PCI interface of the MAC/baseband processor is processed and then sent to the PCI interface of the PC.